Gorgon Gas Development
Backfill Fields Site Investigation Surveys 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 of the activity	Section 8
35(7)(a)(v)	A summary of the 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	Section 9, Section 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 (the Gorgon Backfill Fields Development OPP; Ref. 3) which was accepted by NOPSEMA in October 2025.

To inform ongoing engineering design for the future development of the Chrysaor and Dionysus (C&D) and Chandon gas fields, CAPL is proposing to undertake additional site investigation (geophysical, geotechnical, and environmental) surveys within these fields. This EP documents the assessment and management of potential environmental impacts and risks associated with these site investigation surveys.

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 site investigation surveys (the 'petroleum activity') will be undertaken within petroleum titles WA-14-R, WA-15-R, WA-19-R, WA-53-R, WA-36-L, WA-37-L, WA-39-L, and WA-65-L. These petroleum titles are located wholly within Commonwealth waters off the northwest coast of WA (Figure 2-1).

The Operational Area (OA) for the petroleum activity is described within Section 4.1.1.

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

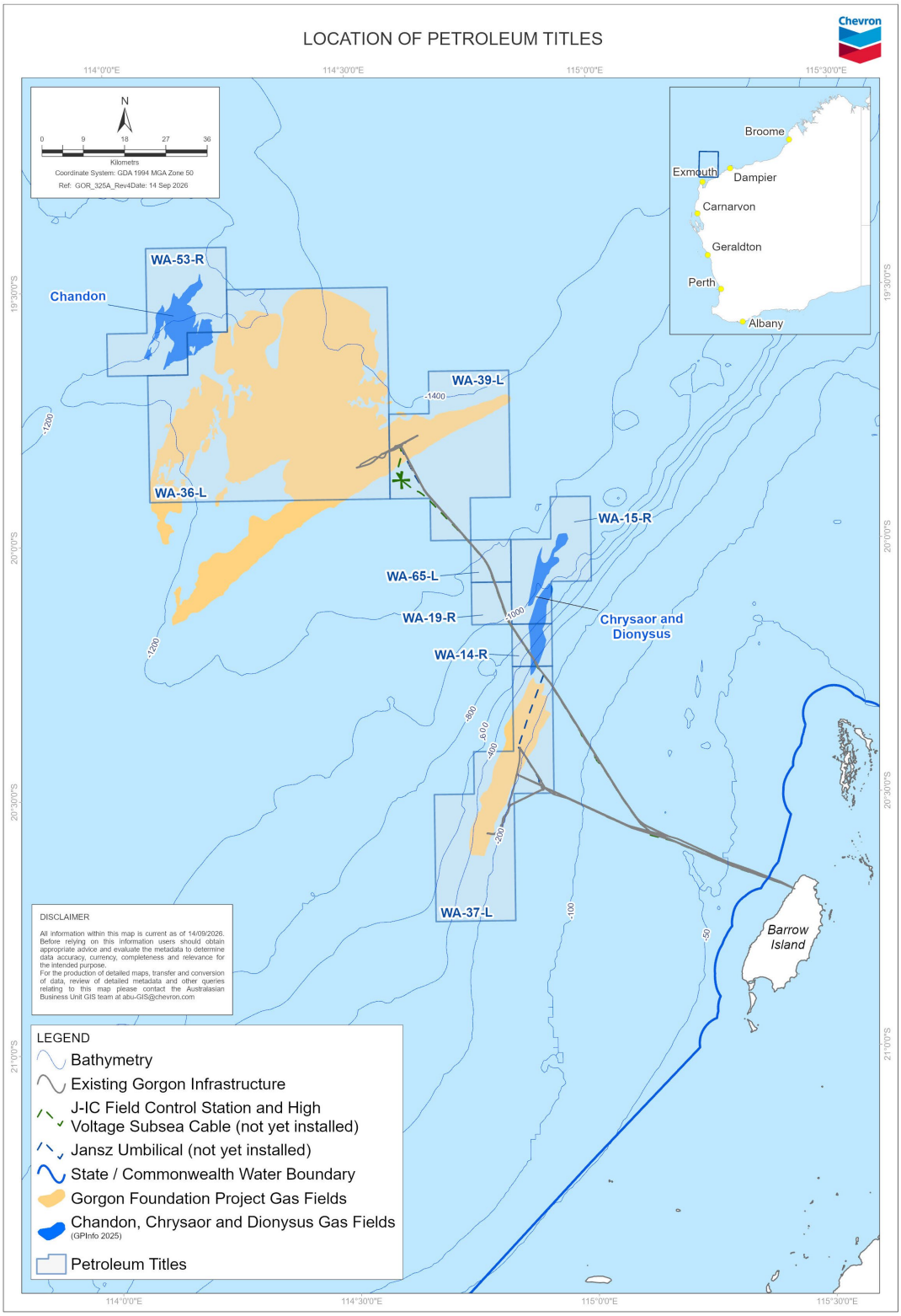


Figure 2-1: Location of petroleum titles

2.3 Scope

This EP addresses the petroleum activity within Commonwealth waters.

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

- Vessels (including emergence 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 Act1998* (Cth) and not performing the petroleum activity
- Installation or operation of any subsea infrastructure.

2.4 Titleholder details

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

Regulation 23(3) of the OPGGS(E)R requires that notification is provided to NOPSEMA of a change in the titleholder, the nominated liaison, or in the contact details for either the titleholder or nominated liaison.

Regulation 286A of the OPGGS Act requires notification is provided to NOPSEMA and the National Offshore Petroleum Titles Administrator (NOPTA) if there is a change to a registered titleholder or contact details for 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-14-R	Retention lease	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-15-R	Retention lease		
WA-19-R	Retention lease		
WA-53-R	Retention lease		
WA-36-L	Production licence		
WA-37-L	Production licence		
WA-39-L	Production licence		
WA-65-L	Production licence		

Table 2-2: Details of nominated liaison

Name	Kevin Keosoff
Business address	1 The Esplanade, Perth WA 6000
Telephone number	+61 8 9216 4000
Fax number	+61 8 9216 4444
Email address	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 provides the legal framework for the exploration and recovery of petroleum in offshore areas[2]. 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. Regulation 26(3) provides that a titleholder may submit an EP for a petroleum activity that is, or is part of, an offshore project[3], only if:

- There is a NOPSEMA accepted offshore project proposal (OPP) that includes that petroleum activity, or
- The Commonwealth Environment Minister has:

[2] The OPGGS Act defines an offshore area as (a) starts three 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.

[3] 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[4] 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 Backfill Fields Development OPP (Ref. 3), which was accepted by NOPSEMA in October 2025[5].

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 2025 (Cth) (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)
- Promote ESD through the conservation and ecologically sustainable use of natural resources
- Promote the conservation of biodiversity
- 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 (GHG) 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. 5). 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. 5).

[4] The EP submission also includes the OPEP (Ref. 2) and Operational and Scientific Monitoring Bridging Implementation Plan (OSM-BIP; Ref. 4).

[5] The Gorgon 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: Commonwealth legislative requirements

Legislation	Description	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Australian Maritime Safety Authority Act 1990	The objects of this Act include to: • 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 8.10.
		Ballast water and biofouling management.	Section 8.10.
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	Risk management measures identified under IChEMS may have implications for the use or disposal of industrial chemicals during the petroleum activity.[6]	Section 8.7.

[6] Note: Planned discharges to the marine environment are subject to selection and environmental assessment as per CAPL's Hazardous Materials Management Procedure (Ref. 6).

Legislation	Description	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
	Territories adopting them into their environmental laws.		
National Greenhouse and Energy Reporting Act 2007 (NGER Act) National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015 (Safeguard Rule)	This Act establishes the national scheme for the reporting of GHG emissions, energy production and energy consumption. The emissions reductions established under the Safeguard Mechanism are designed to deliver emissions reductions consistent with Australia's Nationally Determined Contributions (NDCs) under the Paris Agreement.	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 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.	Section 8.3.
Navigation Act 2012 Various marine orders	Provides standards regarding collision prevention for vessels. The Act also 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 8.8 and 8.14.
		Marine Order 15 (Construction—fire protection, fire detection and fire extinction) 2014.[7]	Section 8.7.
		Marine Order 27 (Safety of navigation and radio equipment) 2023.	Section 8.14.
		Marine Order 28 (Operations standards and procedures) 2025.	Section 8.14.
		Marine Order 30 (Prevention of collisions) 2016.	Section 8.14.
Navigation Act 2012 *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* Various marine order	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) 2025.	Sections 8.13 and 8.14.
		Marine Order 95 (Marine pollution prevention—garbage) 2018.	Section 8.12.
		Marine Order 96 (Marine pollution prevention—sewage) 2018.	Section 8.7.
		Marine Order 97 (Marine pollution prevention—air pollution) 2022.	Sections 8.2 and 8.3.

[7] Inclusive of Marine Orders Miscellaneous Amendment Order 2026 (No. 1), which incorporates the international shipping restrictions on the storage and disposal of firefighting foams that contain perfluorooctanesulfonic acid (PFOS).

Legislation	Description	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Underwater Cultural Heritage Act 2018 (UCH Act)	This Act protects the heritage values of shipwrecks, sunken aircraft, and relics (>75 years old) in Australian waters from the low water mark to the outer edge of the continental shelf (excluding the State's internal waterways). The Act allows for protection through the designation of protection zones. Activities and conduct prohibited within each zone will be specified.	Identification of the presence of protected cultural heritage sites and, where relevant, the assessment of any potential impacts and risks to these sites.	Sections 8.1 and 8.11.

Table 3-2: State legislative requirements

Legislation	Description	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
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, where relevant, the assessment of any potential impacts and risks to these sites.	Section 5.
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, the assessment of any potential impacts and risks to these areas.	Sections 5 and 8.14.

Table 3-3: Policies and guidelines

Policy or guideline	Description	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters (Ref. 7)	Provides guidance on identifying, assessing, and protecting underwater cultural heritage (UCH). Includes guidance on how proponents can comply with the UCH Act.	Identification of the presence of protected cultural heritage sites and, where relevant, the assessment of any potential impacts and risks to these sites. Used as guidance for CAPL's Inadvertent Underwater Cultural Heritage Discovery Procedure (Ref. 8).	Sections 5, 8.1, 8.11 and 8.14.

Policy or guideline	Description	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Australian Ballast Water Management Requirements (Ref. 9)	Provides guidance on how vessel operators should manage ballast water when operating within Australian seas in order to comply with the *Biosecurity Act 2015*. These requirements also align with the International Convention for the Control and Management of Ships' Ballast Water and Sediments 2004 (the Ballast Water Management Convention).	Ballast water management for vessels including ballast water management plans and certificates (unless an exemption applies).	Section 8.10.
Australian Biofouling Management Requirements for Commercial Vessels (Ref. 10)	Sets out vessel operator obligations for the management of biofouling when operating vessels under biosecurity control within Australian territorial seas in order to comply with the *Biosecurity Act 2015*.	Biofouling management for vessels including PAR and biofouling management plans (or alternate management options).	Section 8.10.
National biofouling management guidelines for the petroleum production and exploration industry (Ref. 11)	A voluntary biofouling management guidance document that has been developed to assist the petroleum industry manage biofouling risks.	Guidance for evaluating the biofouling risk and management recommendations for vessels, equipment, and infrastructure. Used as guidance for CAPL's Quarantine Procedure Marine Vessels (Ref. 12).	Section 8.10.
National Light Pollution Guidelines for Wildlife (Ref. 13)	These guidelines provide technical information to guide the management of artificial light for EPBC Act listed threatened and migratory species, species that are part of a listed ecological community, and species protected under State or Territory legislation for which artificial light has been demonstrated to affect behaviour, survivorship or reproduction.	Provides guidance on assessing impacts of artificial light to wildlife, and recommends management tools to minimise and mitigate potential effects from artificial light emissions.	Section 8.4.
National Strategy for Reducing Vessel Strike on Cetaceans and other Marine Megafauna (Ref. 14)	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 8.9.

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:

- Geophysical surveys (Section 4.2)
- Geotechnical surveys (Section 4.3)
- Environmental surveys (Section 4.4)
- Use of vessels, helicopters, autonomous underwater vehicles (AUVs), and/or remotely operated vehicles (ROVs) as required in support of the above survey activities (Section 4.5).

4.1.1 Operational area

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

- 750 m buffer around the indicative survey areas and sampling sites
- 750 m buffer around indicative production flowline, monoethylene glycol (MEG) pipeline, and umbilical routes.

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

The C&D and Chandon OAs are located ~55 km and ~120 km northwest from Barrow Island, and in water depths of ~125–1,230 m and ~1,145–1,370 m respectively. It is within these OAs that the petroleum activity, defined within Section 4 of this EP, will be undertaken.

4.1.2 Timing

The petroleum activity is indicatively scheduled to commence from late-2026/early-2027. The surveys are estimated to have a combined duration of ~4–6 months, and may be undertaken as a single campaign or occur over multiple campaigns. The petroleum activity can occur 24 hours per day and 7 days per week.

These schedules and durations are indicative and subject to change (e.g. due to potential delays caused by vessel 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.

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

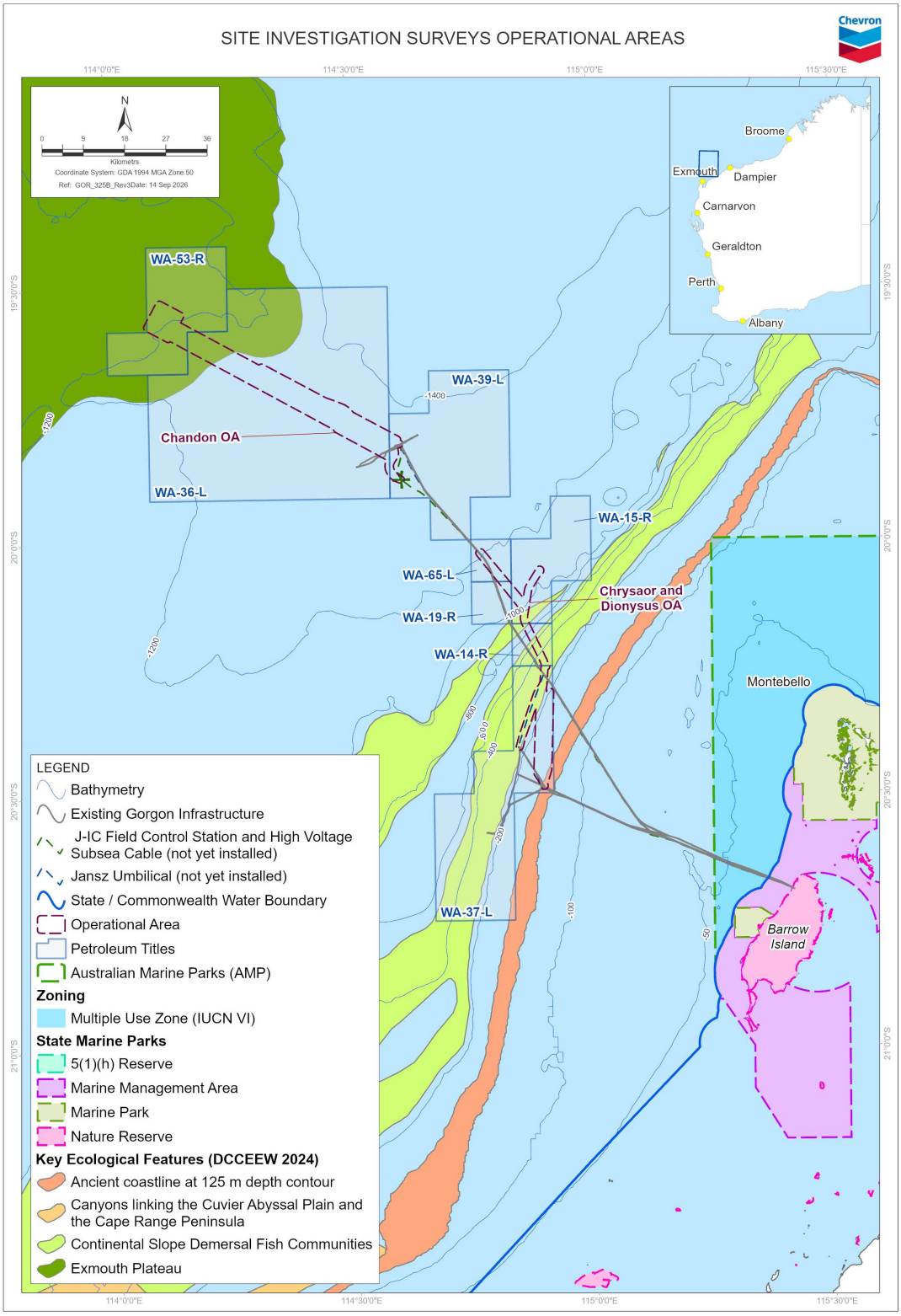


Figure 4-1: Operational areas for the site investigation surveys

4.2 Geophysical surveys

The geophysical surveys may include the use of: multibeam echo sounder (MBES), side-scan sonar (SSS), sub-bottom profiler (SBP), and magnetometry. The positioning of geophysical surveys may utilise ultra-short baseline (USBL) techniques.

These geophysical surveys provide data on water depth, seabed and shallow sub-seabed features and characteristics, and identification of any seabed hazards. The indicative geophysical survey areas are shown in Figure 4-2 and Figure 4-3. Note: The final survey areas are subject to change due to ongoing engineering and survey design optimisation; however, will be within the extent of the OAs described in Section 4.1.1.

Deployment methods for geophysical survey equipment can vary (e.g. AUV/ROV, towfish, hull-mounted, or surface-towed). The operating depth of geophysical equipment will vary depending on the deployment method used (e.g. within ~1 m of the sea surface for surface-towed equipment, to ~5–35 m above the seabed for AUV/ROV or towfish).

4.2.1 Multibeam echo sounder

MBES use multiple non-impulsive sound signals to detect the seabed and measure bathymetry and water depths. By using multiple beams, a swath of seabed can be mapped on a single line, reducing survey time while providing detailed information.

The MBES transmits a broad acoustic pulse from a transducer over a swath through the water to the seabed. The MBES then forms a series of received beams that are each much narrower and form a ‘fan’ across the seabed, perpendicular to the survey line. This reflected sound is measured by the receiver transducer, and this provides information on the bathymetry of the seabed. The fans of seabed coverage produce a series of strips along each survey line, which are combined to generate a two-dimensional bathymetric map of the seabed.

4.2.2 Side-scan sonar

SSS generates oblique acoustic images of the seabed, and is used to identify natural features (e.g. reefs) or other hazards (e.g. debris) present on the seabed. SSS uses non-impulsive acoustic signals that are reflected off the seabed to create an image of morphology and differences in seabed texture.

A SSS has inbuilt transducers that both transit acoustic pulses and receive the returning echoes within a specific frequency range. Typically, a dual-channel, dual-frequency SSS is used.

4.2.3 Sub-bottom profiler

SBPs are used to determine the layering and thickness of the upper seabed sediments. The penetration depth and image resolution from SBPs vary depending on the frequency of the acoustic signal used. SBPs use impulsive sound signals.

Transducer systems including pingers, parametric echo sounding, and compressed high-intensity radar pulse (chirp) typically produce a swept-frequency signal (i.e. the signal is emitted over time and over a specific frequency range). The transducer that emits the acoustic energy also receives the reflected signal.

Chirp signals typically penetrate ~5–10 m into the seabed and provide the best resolution, but lowest penetration of the very high frequency systems.

Boomer systems generate a broadband, high amplitude acoustic signal in the water column that is directed vertically downward. Depending on seabed geology, boomer signals can penetrate to depths of up to ~100 m beneath the seabed.

Sparker systems create an electric arc between two electrodes; this arc vaporises water and generates a pressure have. Sparker systems can provide low resolution data to much greater penetration depth below the seabed.

The receiver for the boomer or sparker system is usually a hydrophone or hydrophone array consisting of a string of individual hydrophone elements. They typically contain 8–12 hydrophone elements evenly spaced in a tube (~2.5–4.5 m length, ~25 mm diameter).

4.2.4 Magnetometry

A magnetometer is used to detect metallic objects on or below the seabed. A magnetometer is a passive sensor that measures variations in the ambient magnetic field (i.e. it does not generate its own magnetic field or acoustic signals). The magnetometer sensor is typically towed close to the seabed (and away from the vessel to isolate the sensor from the magnetic field of the vessel itself).

4.2.5 Acoustic positioning (ultrashort baseline)

USBL may be used to assist with accurate positioning and real-time navigation of the geophysical and/or geotechnical equipment. A USBL transceiver may be hull-mounted or deployed from the vessel, and the USBL transponders can be attached to deployed equipment. The USBL transceiver emits acoustic signals to determine the distances and bearings toward the target (e.g. AUV). The USBL transponders reply to acoustic signals from the USBL transceiver with their own acoustic pulses, allowing the transceiver to calculate the targets' positions.

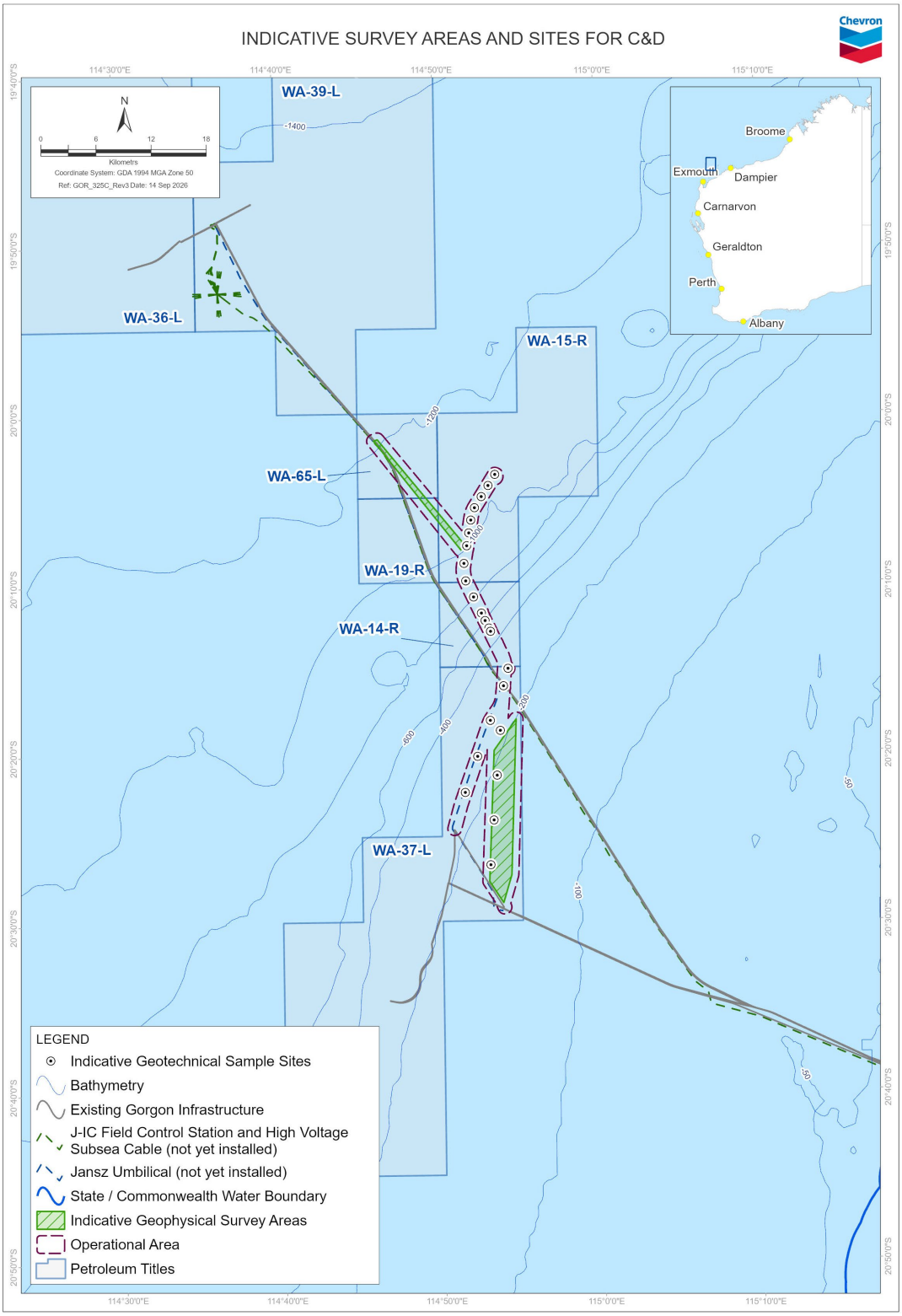


Figure 4-2: Indicative geophysical survey areas and geotechnical sampling sites for C&D

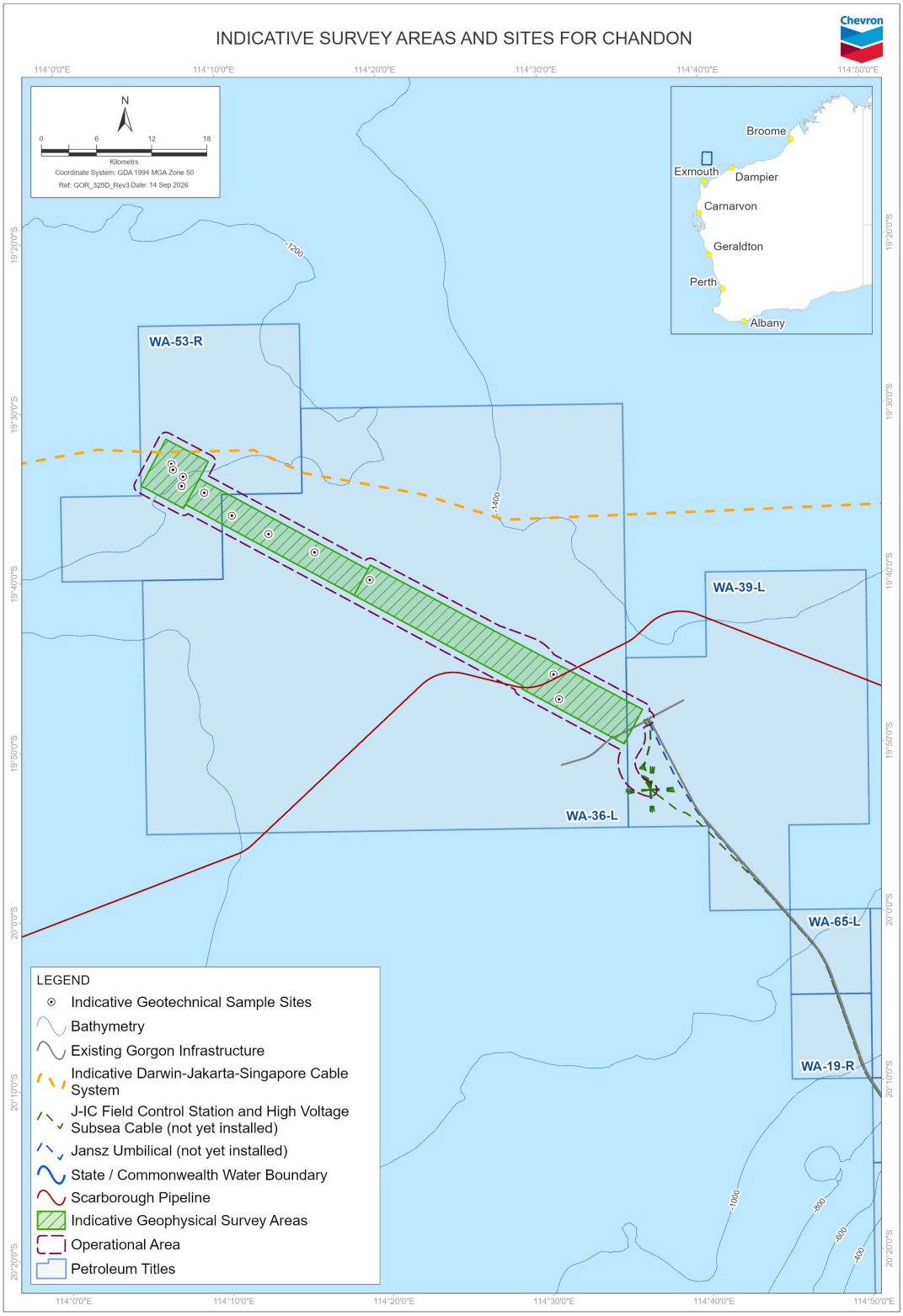


Figure 4-3: Indicative geophysical survey areas and geotechnical sampling sites for Chandon

4.3 Geotechnical surveys

The geotechnical surveys may include the collection of sediment samples (e.g. grab, box, core, or borehole samples) and in situ testing (e.g. penetration tests). These geotechnical surveys will provide data on sediment profile and characteristics below the seabed.

Geotechnical surveys are performed using sampling/testing equipment deployed from the vessel. Once the equipment is placed upon the seabed, the test is performed and/or the sample is collected. Upon collection of the sample or completion of the test, the equipment will be retrieved back to the vessel (i.e. no equipment remains on the seabed).

The indicative geotechnical survey sites are shown in Figure 4-2 and Figure 4-3. Note: The final survey sites areas are subject to change due to ongoing engineering and survey design optimisation; however, will be within the extent of the OAs described in Section 4.1.1. Not all types of geotechnical sampling or testing may be carried out at each site.

For the purpose of impact and risk assessment within this EP, ~35 sites within the C&D OA and ~20 sites within Chandon OA has been used (i.e. a greater number of sampling sites than the indicative geotechnical survey sites shown in Figure 4-2 and Figure 4-3) to allow for potential changes to final survey design, and that all samples/tests are undertaken at each site.

4.3.1 Sediment sampling

4.3.1.1 Grab sampling

Grab sampling involves collecting samples of the surface layer of unconsolidated seabed sediments for analysis; these are typically collected using Van Veen grab sampler (or similar). Van Veen grab samplers are typically lightweight clamshell buckets, deployed over the side of the vessel, and can penetrate soft sediment up to ~0.2 m depth (dependant on the size of the sampler). A typical disturbance footprint for a grab sampler is ~1.5 m^2.

4.3.1.2 Box cores

Box coring involves collecting samples of unconsolidated subsurface seabed sediments for analysis. A box corer is lowered to the seabed, and then triggered via a self-releasing trigger mechanism that passes through its frame. The system may also use additional weights to aid penetration of the corer. The target investigation depth for this survey is ~0.5 m below seabed. When removing the corer from the seabed, a spade closes underneath the box to prevent sample loss. Box corers are designed to collect a relatively undisturbed sediment sample. A box corer (with frame) can typically have a disturbance footprint of ~2.25 m^2 per sample. The box core sample itself is a smaller footprint, typically 0.5 m x 0.5 m.

4.3.1.3 Coring

Coring involves collecting samples of unconsolidated subsurface seabed sediments for analysis; these are typically collected using vibro, piston, or gravity corer samplers. The target investigation depth for this survey is ~9 m below seabed.

The vibrocore unit is lowered from the vessel to the seafloor, then a vibrating device (typically electric motors) is used to drive a coring tube into the seabed. The core is extracted and then recovered to the vessel with the vibrocore unit. A

vibrocore (with frame) can typically have a disturbance footprint of up to ~25 m^2 per sample.

Piston corers are deployed from the vessel using a core handling system. A piston corer is lowered by wire rope to the seabed. It has a trigger device that hits the seabed before the core barrel and releases the corer allowing it to freefall. As the barrel enters the sediment, an internal piston creates a vacuum to help draw the core into the barrel. Core catchers prevent the sediment from coming out of the coring tube. A piston corer can typically have a disturbance footprint of up to ~0.02 m^2 per sample.

Gravity corers are lowered to a predetermined height above the seabed from the vessel using a wire rope before being allowed to freefall. The resulting core enters the internal sleeve and is held in place by a core catcher. A gravity corer can typically have a disturbance footprint of up to ~0.02 m^2 per sample.

4.3.1.4 Boreholes

Borehole sampling involves drilling through seabed sediments with an open-centred drill bit which is used to recover the seabed core sample. Drilling will either be undertaken from the vessel or using a seabed drilling system. The target investigation depth for this survey is ~40 m below seabed.

If a vessel-based system is used, the drilling takes place through a riser which is slotted into a base frame located on the seabed. The disturbance footprint is anticipated to be limited to the footprint of the subsea drill-string stabilisation frame with no need for wet storage of additional equipment. If a seabed drilling system is used, it will be positioned on the seabed with a guide base and connected by a control umbilical, which provides power and video to allow for real-time high-speed control. Deployment and recovery of the unit are done via the vessel crane or a dedicated launch and recovery system. A typical footprint of a seabed drilling system is estimated at ~15 m^2.

During boring, sediment samples are collected via a dedicated rotary coring drill string or a drop-in core barrel that latches inside the drill string. Core samples are typically ~40–150 mm in diameter. Once the core sample is extracted the borehole itself will remain in the seabed; however, it is expected this will naturally collapse and/or infill with the natural movement of seabed sediments. Borehole sampling generates minimal cuttings as the aim of the sample is to recover the core; however, small (e.g. ~0.5 m^3 per borehole) discharges of drill cuttings at the seabed may occur.

Drilling fluids are generally used during borehole sampling in order to lubricate and cool the drill bit, and to keep the borehole stable. Seawater is generally the primary constituent of geotechnical drilling fluids. Inert drilling fluid additives (e.g. bentonite) may be added to the seawater to form a water-based drilling fluid to ensure the drilling fluid has properties appropriate to the seabed conditions.

4.3.2 In situ testing

4.3.2.1 Cone penetration testing

A piezocone penetration test (PCPT) provides a detailed profile that describes soil characteristics and strengths. It involves pushing a probe into the seabed at a constant rate of penetration and continuously measuring cone resistance, sleeve friction, and pore water pressure. As PCPT data are obtained continuously with depth, it can detect fine changes in stratigraphy.

The target investigation depths for this survey are ~9–40 m below seabed. When the required investigation depth is reached, all equipment is withdrawn from the seabed. A small hole will remain in the seabed, which is expected to eventually collapse and/or infill. Piezocone penetrometers typically have a cross-sectional area of ~10–15 cm^2 (~36–44 mm) in diameter.

4.3.2.2 Penetrometer testing

A T-bar penetration test (TBT) and ball penetrometer test (BPT) are full-flow penetrometer tests designed to evaluate the shear strength (peak and remoulded) of soft sediments. These tests are similar to a PCPT, but use T-shaped or spherical ball tips.

A typical TBT may have a cross-sectional area of ~100 cm^2 (~250 mm long and ~40 mm diameter T-bar attached to the penetrometer body). Similarly, a typical BPT may have a cross-sectional area of ~100 cm^2 (~113 mm diameter sphere attached to the penetrometer body).

TBTs or BPTs may either be carried out in-the-box (i.e. within recovered box cores) or in situ on seabed.

4.4 Environmental surveys

During the above geophysical and geotechnical surveys, some additional vessel-based marine baseline surveys may also be undertaken. These surveys may include:

- Collection of sediment samples for sediment quality and/or benthic infauna assemblage analyses
- Video and/or still imagery collection for benthic habitat mapping.

It is intended that the collection of environmental sediment samples occur from within sediment recovered from the geotechnical surveys (i.e. no additional sediment samples). As such, no additional seabed disturbance is anticipated from the environmental surveys.

4.5 Support activities

4.5.1 Vessel operations

The vessel contractor and fleet have not yet been confirmed. A single multi-purpose survey vessel (MSV) capable of undertaking all survey requirements may be used; however, given the different requirements for geophysical and geotechnical surveys two different types of survey vessels may be mobilised for the different scopes. Note: Where different types of survey vessels are selected, only one survey vessel would be within an OA at any time (e.g. geophysical and geotechnical surveys would be mobilised separately).

Given the indicative duration of the surveys, a supply vessel may also be used for fuel bunkering or the transfer of crews and/or supplies for the main survey vessel. Therefore, while there will predominantly only be one survey vessel within the OA at any time, there will be short (e.g. ~8 hours) and infrequent (e.g. weekly or fortnightly) periods of two vessels within the OA.

Given the nature of the surveys, the survey vessel is expected to be either slow moving (e.g. 3–6 knots during geophysical data acquisition), or stationary (e.g. during geotechnical sampling and testing, equipment deployment and retrieval, or re-supply). The vessels will operate using a dynamic positioning (DP)

system. There will be a request to other marine users for a 500 m SNA (i.e. a temporary exclusion area) around the survey vessel and any deployed equipment during the petroleum activity.

Vessel anchoring is not planned to occur within the OA; however, may occur during emergencies if required.

Vessels will not use heavy fuel oil (HFOs) within the OA, but may use lighter marine fuel such as marine diesel oil (MDO) or marine gas oil.

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), any deployed equipment may be retrieved, and the vessels may transit away from the OA to a safer location. As per Section 2.3, once a vessel leaves the OA, the vessel is no longer undertaking the petroleum activity.

4.5.2 Helicopter operations

Helicopters may be used to transfer crews and/or minor supplies to and from the survey vessel in the OA. Helicopters may also be required to evacuate personnel in the event of an emergency.

Refuelling helicopters is not planned to occur within the OA.

4.5.3 AUV and ROV operations

AUVs and ROVs are autonomous or tethered underwater vehicles that may be deployed from the survey vessel.

A typical AUV is ~5 m in length with a standard operating speed of around ~3.5 knots. The AUV is battery-powered and does not store any chemicals or fuel onboard.

ROVs are generally equipped with a video camera and lighting. ROVs are closed systems, such that hydraulic fluids are circulated to move components. ROVs are typically stored on the vessel deck, but in rare circumstances may be wet parked on the seabed, resulting in a disturbance to a small (e.g. ~3 m × 3 m) area of the seabed.

4.5.4 Simultaneous operations

Based on the indicative survey timing (Section 4.1.2), CAPL may also be undertaking other vessel-based petroleum activities (e.g. J-IC Project, and/or Gorgon Stage 3 [GS3] Project) 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.

5 Description of the environment

5.1 Environment that may be affected

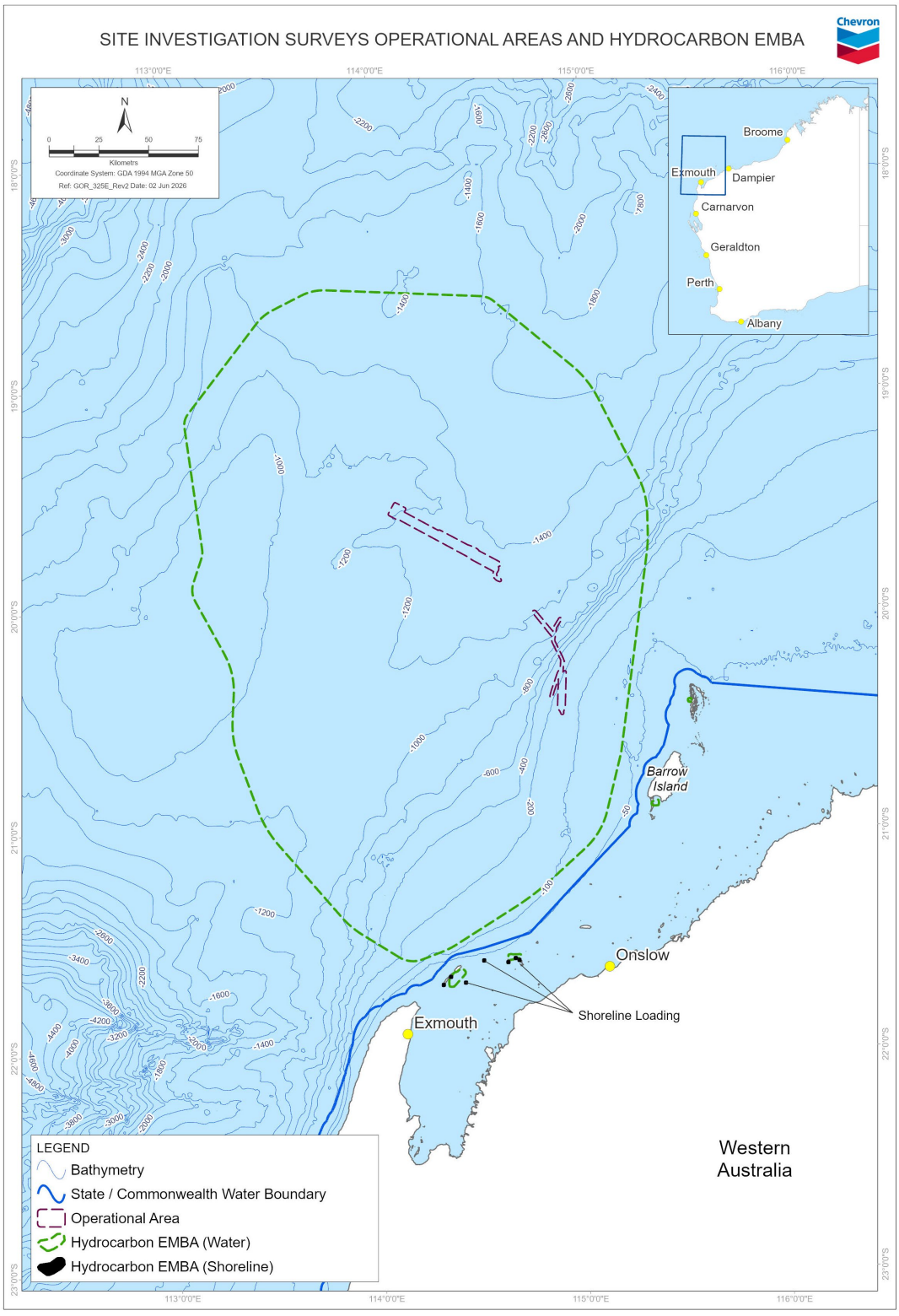
This section provides a description of the environment that may be affected (EMBA) by the petroleum activity as required by regulation 21(2) of the OPGGS(E)R.

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. 15). As such, this includes the EMBA by both planned activities and unplanned events associated with the petroleum activity (Ref. 15). 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. 15).

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

- OAs—the areas 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 oil spill scenario (Section 8.14).

Note: The exposure values adopted to define the Hydrocarbon EMBA are based on the recommended values in NOPSEMA's application of oil spill modelling information paper for identifying the EMBA by hydrocarbon (Ref. 16). See Section 8.14 and Table 8-70 for further information.



Note: The Hydrocarbon EMBA is displayed as two parts: water-based (comprising surface, entrained, and dissolved oils) and shoreline. Shorelines are only part of a Hydrocarbon EMBA where stochastic spill modelling predicts that shoreline loading above the relevant exposure value occurs.

Figure 5-1: OAs and Hydrocarbon EMBA

5.2 Matters of national environmental significance

Matters of national environmental significance (MNES) are protected under the EPBC Act. The presence of MNES within the OAs and Hydrocarbon EMBA has been determined from the Australian Government's online Protected Matters Search Tool (PMST) (Ref. 17) 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 or features 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[8] of MNES within the OAs and Hydrocarbon EMBA

MNES	C&D OA	Chandon OA	Hydrocarbon EMBA
World Heritage properties[9]	×	×	✓
National Heritage places[9]	×	×	✓
Wetlands of international importance (listed under the Ramsar Convention)[9]	×	×	×
Listed threatened species and communities[9]	✓ species × communities	✓ species × communities	✓ species × communities
Listed migratory species (protected under international agreements)[9]	✓	✓	✓
Commonwealth marine areas[9]	✓	✓	✓
Great Barrier Reef Marine Park	×	×	×
Nuclear actions (including uranium mines)	—	—	—
Water resources (that relate to unconventional gas development and large coal mining development)	—	—	—

5.3 Ecosystems and their constituent 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. 18).

The OAs 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. 19; Ref. 20). The high species richness is thought to be associated with the diversity of habitats available, such

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

[9] This MNES is also a relevant value and sensitivity identified in regulation 21(3) of the OPGGS(E)R.

as limestone pavement, coral reefs, and pinnacles (Ref. 19). The broad benthic communities and habitats (BCH) that may be present within the OAs and Hydrocarbon EMBA are summarised below, with additional data specific to the OAs 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. 21), the geomorphic features present within the OAs and Hydrocarbon EMBA are shown in Table 5-2. There are no shallow (<100 m water depth) complex bathymetric features within the OAs or Hydrocarbon EMBA.

Table 5-2: Geomorphic features within the OAs and Hydrocarbon EMBA[10]

Feature	C&D OA	Chandon OA	Hydrocarbon EMBA
Canyon	×	×	✓
Deep/hole/valley	✓	✓	✓
Pinnacle	×	×	✓
Plateau	×	✓	✓
Reef	×	×	✓
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 northwest region of WA comprises bio-clastic, calcareous, and organogenic sediments deposited from relatively slow and uniform sedimentation rates (Ref. 22). 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. 23).

Based on CSIRO's marine benthic substrate database (Ref. 24), the seafloor substrate type within the C&D OA is "calcareous gravel, sand and silt", and the Chandon OA is predominantly "mud and calcareous clay" and "calcareous ooze" with a small section of "calcareous gravel, sand and silt". These three substrate types also occur across the Hydrocarbon EMBA.

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[11] (Ref. 25). The study (Ref. 25) concluded that infauna associated with soft unconsolidated sediments within the general survey area are widespread and well represented throughout the NWS region. An infauna survey in shallower continental shelf waters comprised a suite of typical phyla dominated by burrowing polychate worms and crustaceans (Ref. 26).

These surveys are consistent with benthic surveys conducted at the Jansz–Io field and along the Jansz Feed Gas Pipeline route in waters depths of ~210–1,360 m

[10] Where ✓ = present and × = not present.

[11] Benthic organisms living within seabed sediments.

(Ref. 27; Ref. 28). Like other deep areas in the NWS, benthic fauna was depauperate, with low abundance, richness, and diversity (Ref. 27). Species richness, diversity and abundance decreased with depth (Ref. 28). Standardized comparisons showed that overall diversity, abundance, and species richness were typically greater at sites on the surveyed infrastructure (Ref. 28).

In offshore deep regions, epifauna[12] 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. 29). Offshore seabed surveys across the NWMR have observed a general reduction in epibenthic coverage with increasing depth (Ref. 20; Ref. 23). The benthic survey for deepwater (>900 m) habitats on the NWS identified the dominant types of epifauna as arthropods and echinoderms (Ref. 25).

The Hydrocarbon EMBA also includes some small discreate areas of nearshore waters near Bandicoot Bay (southern Barrow Island), eastern Montebello Islands, and around Muiron Islands and Serrurier Island (Figure 5-1). A mixture of coral, seagrass, and/or macroalgae habitats occur in the nearshore areas around these islands.

The Integrated Marine and Coastal Regionalisation of Australia (IMCRA) is a biogeographic regionalisation of oceanic waters within Australia's EEZ (Ref. 30). The Chandon OA occurs within the Northwest Province provincial bioregion[13] and the C&D OA occurs within the Northwest Shelf Province and Northwest Province provincial bioregion. The Hydrocarbon EMBA intersects both these two bioregions and a smaller intersection with the Central Western Shelf Transition. Table 5-3 summarises geomorphology, biological communities, and features or areas of ecological importance for each of these bioregions based on descriptions provided in the Bioregional Profile for the NWMR (Ref. 20).

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 OAs or Hydrocarbon EMBA.

Table 5-3: Presence[14] and features of provincial bioregions

IMCRA Provincial Bioregion	C&D OA	Chandon OA	Hydrocarbon EMBA
Central Western Shelf Transition	**✗ (~130 km)**	**✗ (~180 km)**	✓
Characteristics of the geomorphology and biological communities of the Central Western Shelf Transition include: • Bioregion is located entirely on the continental shelf and is comprised mainly of sandy sediments. • This bioregion includes both State and Commonwealth waters between water depths of 0 m to ~80 m – Commonwealth waters in this bioregion represent <1% of the total area of the NWMR. • The benthic ecological communities of the bioregion, include both tropical and temperate species transitioning along a north-south gradient.			

[12] Benthic organisms living on the seabed.

[13] 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. 30).

[14] Where ✓ = present and ✗ = not present. Approximate distance from feature to OA provided where relevant.

IMCRA Provincial Bioregion	C&D OA	Chandon OA	Hydrocarbon EMBA
• Ningaloo Reef[15] is the most significant geomorphic feature of this bioregion: – It extends along the Cape Range Peninsula for over 260 km, and is the only example in the world of an extensive fringing coral reef on the west coast of a continent – It is marked by a well-developed spur and groove system of fingers of coral formations penetrating into the ocean with coral sand channels in between – A lagoon on the inshore side separates Ningaloo reef from the mainland – The biological communities of the Ningaloo Reef differ from the hard coral reefs located elsewhere in the NWMR. • A large proportion of this bioregion is covered by the State and Commonwealth Ningaloo Marine Parks, which are one of the most significant hotspots of biodiversity within the NWMR. • The Ningaloo Marine Parks incorporate a diversity of habitats including the seabed of the Continental slope and shelf that supports demersal and benthic plants and animals including fish, molluscs, algae, sponges, soft corals and burrowing bivalves; as well as coral reefs and intertidal areas such as rocky shores and mangroves in State waters. Features and areas of ecological importance within the Central Western Shelf Transition have been identified as: • Ningaloo Marine Park – North West Cape. The OAs and Hydrocarbon EMBA do not intersect with this feature.			
Northwest Province	✓	✓	✓
Characteristics of the geomorphology and biological communities of the Northwest Province include: • Bioregion occurs entirely on the continental slope and is comprised of muddy sediments. • Distinguished by a number of topographic features, such as the Exmouth Plateau, terraces and canyons (including the Swan and Cape Range canyons), as well as deep holes and valleys on the inner slope (including the Montebello Trough). • The benthic shelf and slope communities of this bioregion comprise both tropical and temperate species with a north-south gradient. • The Continental slope between North West Cape and the Montebello Trough has been identified as one of the most diverse slope habitats of Australia. • The Exmouth Plateau is also likely to be an important area for biodiversity as it provides an extended area offshore for communities adapted to depths of ~1,000 m. • Information available on sediments in the bioregion indicates: – Benthic communities are likely to include filter feeders and other epifauna – Soft-bottom environments are likely to support patchy distributions of mobile epibenthos, such as sea cucumbers, ophiuroids, echinoderms, polychaetes and sea pens. 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 C&D OA intersects with the demersal fish communities associated with the slope, and the Hydrocarbon EMBA intersects with both the demersal fish communities and the Exmouth Plateau. Refer to Section 5.3.6.1 for further descriptions of these features.			

[15] Ningaloo Reef also extends into the Northwest Province and a small portion of the Northwest Shelf Province. The geomorphology and biological communities of Ningaloo Reef are discussed in this bioregion summary.

IMCRA Provincial Bioregion	C&D OA	Chandon OA	Hydrocarbon EMBA
Northwest Shelf Province	✓	✖ (~52 km)	✓

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.
- Continental shelf gradually slopes from the coast to the shelf break, but displays a number of seafloor features such as banks/shoals and holes/valleys, including:
  - Glomar Shoal occurs 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 within 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 Shoal.

Of these features and areas within the Northwest Shelf Province, the ancient coastline at 125 m depth contour occurs within the C&D OA and Hydrocarbon EMBA. Refer to Section 5.3.6.1 for further descriptions of this feature.

5.3.1.1 Operational areas

CAPL conducted surveys (Ref. 31) 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 within the C&D OA indicates that:

- On the continental shelf the BCH are predominantly ‘smooth seabed, bare substrate’ with smaller areas of reef mosaic with either low or high likelihood of biota, or depression with either low or high likelihood of biota (Figure 5-2; Table 5-4).
- Where the C&D OA overlaps the ancient coastline at 125 m depth contour KEF on the continental shelf, BCH consist of smooth seabed with bioturbation and no epibenthic biota observed (Ref. 31).
- On the continental slope and offshore the BCH are predominantly ‘irregular seabed’ (Figure 5-2; Table 5-4) with multiple smaller areas of other BCH including:
  - depression with bare substrate, low or high likelihood of biota
  - mound, bare substrate
  - reef mosaic with low or high likelihood of biota
  - rock reef with low or high likelihood of biota
  - scarp with bare substrate, low or high likelihood of biota
  - smooth seabed, bare substrate (in deeper offshore waters).
- Where the C&D OA overlaps the continental slope demersal fish communities KEF, a mixture of BCHs are present. Ground-truthing transects within this KEF identified sponges, echinoderms, cnidarians, or a mixture of these biotic groups along the scarp (Ref. 31).

Habitat mapping within the Chandon OA indicates that:

- The BCH are predominantly ‘smooth seabed, bare substrate’ and ‘irregular seabed’ with smaller areas of ‘scarp, bare substrate’ and ‘mound, bare substrate’ (Figure 5-3; Table 5-4).
- Where the Chandon OA overlaps with the Exmouth Plateau KEF a mixture of the same four BCH categories are present. Three discrete scarps with bare substrate are present within this part of the KEF (Ref. 31). However, while scarps or steep slopes may comprise three-dimensional hard structures or other structural features making the presence of biota more likely, no biota was not detected along ground-truthing transects (Ref. 31).

No benthic infauna was observed in samples collected from within the Chandon or C&D OAs. However, a small number of individual infauna were observed in sample sites from different fields in similar water depths (Ref. 31). The sparse distribution and types of benthic infauna that were collected in this study (e.g. marine worms, mollusc, polychaetes) are similar to previous seabed surveys in the NWS (Ref. 31).

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 (Ref. 31). This survey did not find any benthic communities and habitats of regional significance (Ref. 31).

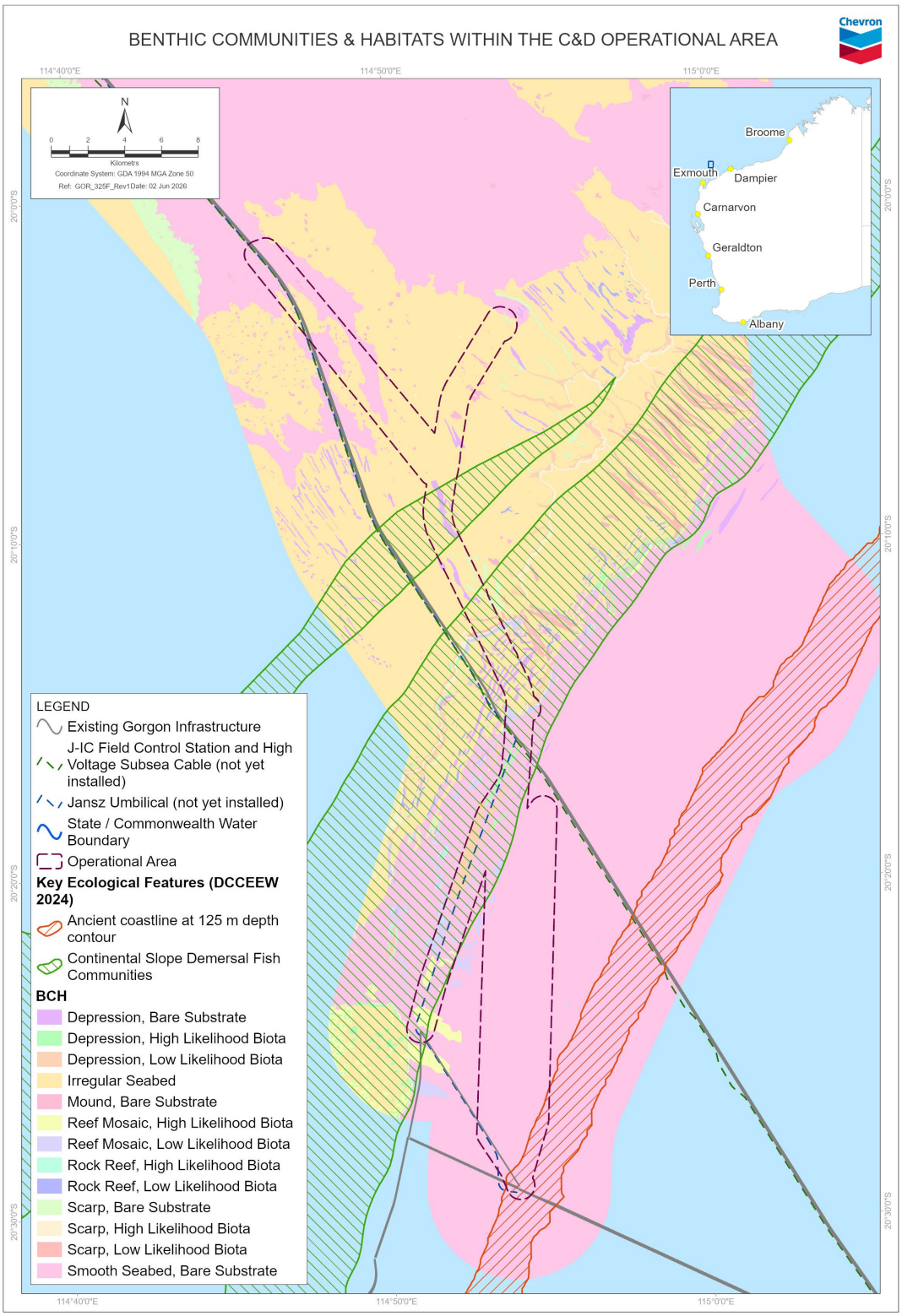


Figure 5-2: BCH within the C&D OA

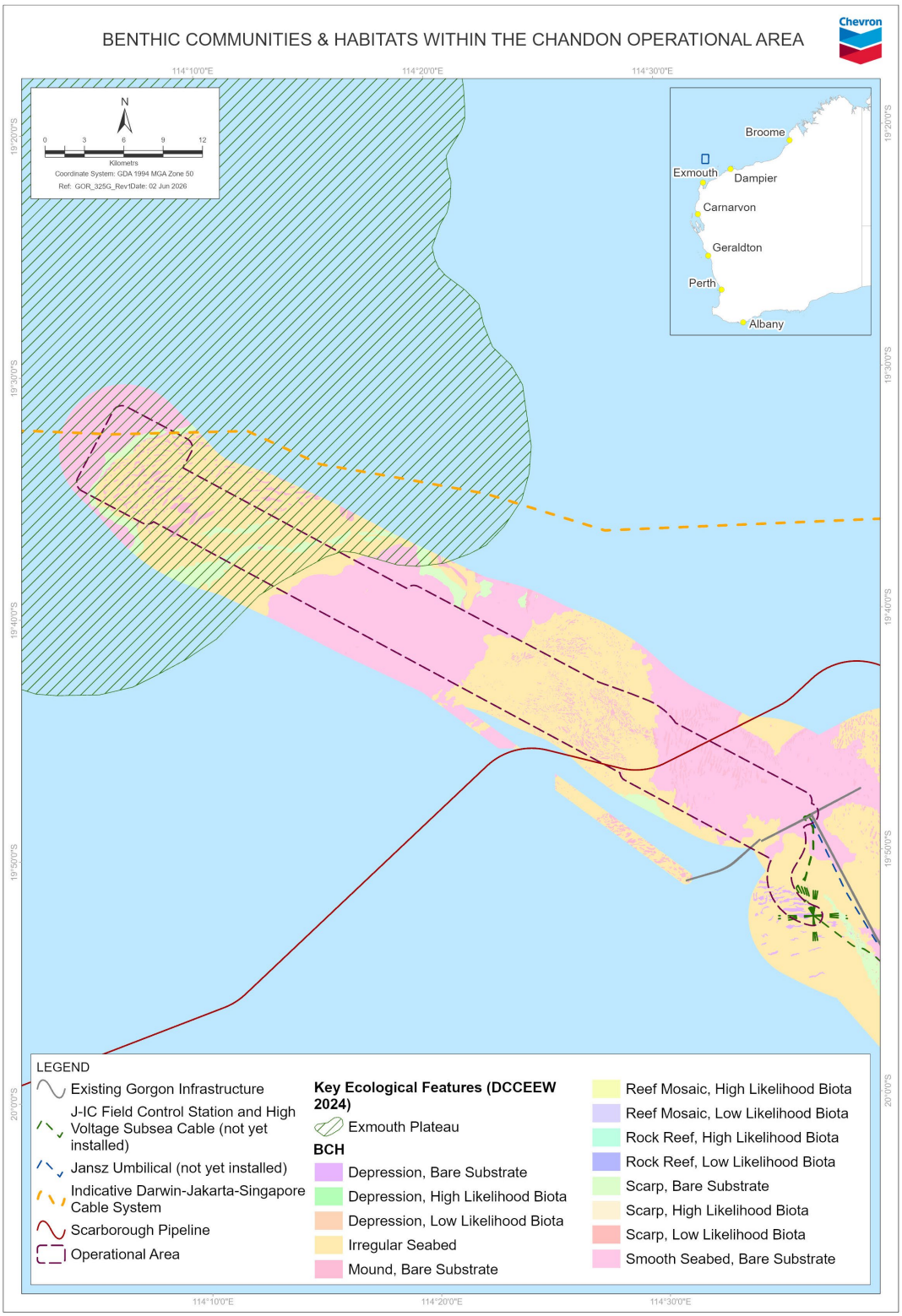


Figure 5-3: BCH within the Chandon OA

Table 5-4: Presence[16] and description of BCH categories within the OAs

BCH	Description	C&D OA	Chandon OA
Smooth seabed, bare substrate	Featureless sedimentary terrain. Bathymetry is smooth with no identifiable features. It can comprise of fine or coarse sediment; the slope is typically <2° with no topographic features. 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.	✓	✓
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.	✓	×
Depression, low likelihood biota[17]	Local depression which may be geological or biological in origin (e.g. scour or pockmark). Biota is typically absent in areas of smooth or soft seabed.	✓	×
Depression, high likelihood biota[18]	Local depression which may be geological or biological in origin (e.g. scour or pockmark). Biota is typically present in areas of hard or raised substrate.	✓	×
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.	✓	✓
Reef mosaic, low likelihood biota[17]	Irregular or patchwork arrangement of bedrock or other consolidated material outcrops over a large area. Rough bathymetric features measurable in profile. Varied and complex slope. Biota is typically absent in areas of smooth or soft seabed.	✓	×
Reef mosaic, high likelihood biota[18]	Irregular or patchwork arrangement of bedrock or other consolidated material outcrops over a large area. Rough bathymetric features measurable in profile. Varied and complex slope. Biota is typically present in areas of hard or raised substrate.	✓	×

[16] Where ✓ = present and × = not present.

[17] Low likelihood biota: Sediment habitat coverage is likely to provide a less diverse and/or lower benthic assemblage than other habitat types.

[18] High likelihood biota: Raised geomorphic features with hard substrate potentially supports more extensive communities and provides refuge to epibenthic and encrusting biota.

BCH	Description	C&D OA	Chandon OA
Rock reef, low likelihood biota[17]	Bedrock or other consolidated material outcrop. Rough bathymetric features measurable in profile. Varied and complex slope. Biota is typically absent in areas of smooth or soft seabed.	✓	×
Rock reef, high likelihood biota[18]	Bedrock or other consolidated material outcrop. Rough bathymetric features measurable in profile. Varied and complex slope. Biota is typically present in areas of hard or raised substrate.	✓	×
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[17]	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.	✓	×
Scarp, high likelihood biota[18]	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 present in areas of hard or raised substrate.	✓	×

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. Like benthic communities (as described in Section 5.3.1), coastal communities are likely to play an important role in maintaining the integrity and diversity of coastal ecosystems, and in supplying ecological services.

The OAs occur offshore and do not have any interface with the coast. The Hydrocarbon EMBA does not interface with the mainland coast, but does with some Pilbara inshore islands: South Muiron Island, Sunday Island, Peak Island, Flat Island, and Serrurier Island (Figure 5-1) due to potential shoreline oil accumulation associated with unplanned oil spill event. The coastal communities and habitats that may be present within the Hydrocarbon EMBA are summarised below.

Based on Smartline (Ref. 32; Ref. 33), a spatial database containing geomorphic classifications for Australia's coasts, and aerial photography, the types of shorelines present within the Hydrocarbon EMBA includes sandy beaches and hard/rocky coasts.

The Seamap Australia spatial database collates and classifies marine and coastal habitats on the Australian continental shelf (Ref. 34). Based on this dataset, isolated areas of mangrove may be present on Muiron, Barrow, and Montebello Islands. Mangroves grow within the intertidal zone and are typically located within sheltered areas. The mangrove communities within the Montebello Islands are considered globally unique because they occur in the lagoons of offshore islands (Ref. 35). Mangroves on Barrow Island are typically small areas of stunted *Avicennia marina* occurring in narrow fringing strips in embayments, including the western side of Bandicoot Bay (Ref. 35).

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 OAs 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 OAs and Hydrocarbon EMBA.

Note: The Australian Government's Australian Marine Spatial Information System (AMSIS) (Ref. 36), geospatial datasets (Ref. 37), and a review of relevant recovery plans adopted under the EPBC Act (Section 3.2.2.1; Appendix C) were used to verify the presence of biologically important areas (BIAs)[19] and habitat critical to the survival (HCTS)[20] of the species within the OAs and Hydrocarbon EMBA.

[19] BIAs are areas used by protected marine species for critical life functions, such as reproduction, feeding, migration or resting (Ref. 38). These behaviours are referred to as biologically important behaviours.

[20] 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. 39). HCTS may be identified within a recovery plan for the species or ecological community (Ref. 39).

5.3.3.1 Marine mammals

Based on searches of the online PMST (Ref. 17; Appendix D), the threatened and/or migratory mammal species shown in Table 5-5 may be present within the OAs and/or Hydrocarbon EMBA. The full list of marine species identified in the PMST is provided in Appendix D. BIAs for protected marine mammal species within the OAs and Hydrocarbon EMBA are listed in Table 5-6. There is no known HCTS of threatened marine mammal species within the OAs or Hydrocarbon EMBA.

The threatened and/or migratory cetaceans that may be present within the OAs and Hydrocarbon EMBA are predominantly:

- Very low frequency (VLF)[21] (blue, fin, and southern right whales)
- Low frequency (LF) cetaceans[21] (Antarctic minke, Bryde's, humpback, Omura's, and sei whales)
- High-frequency (HF) cetaceans[22] (killer and sperm whales, Australian humpback, Australian snubfin, and spotted bottlenose dolphins)

Very-high-frequency (VHF) cetaceans[23] (e.g. dwarf sperm and pygmy sperm whales) were also identified within the PMST (Ref. 17; Appendix D) as species or species habitat that may occur within the OAs 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[24]) 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. 42; Ref. 43).

For the threatened and/or migratory species with BIAs within the OAs, additional information has been provided in the following subsections. Information on other threatened and/or migratory species is provided within the Description of the Environment – Operational and Scientific Monitoring Planning Area (Appendix G of the OSM-BIP; Ref. 4]).

Table 5-5: Presence[25] of threatened and/or migratory marine mammals

Common name	C&D OA	Chandon OA	Hydrocarbon EMBA
Cetaceans (whales)			
Antarctic minke whale (*Migratory*)	✓	✓	✓
Blue whale (*Endangered, migratory*)	✓	✓	✓
Bryde's whale (*Migratory*)	✓	✓	✓
Fin whale (*Vulnerable, migratory*)	✓	✓	✓

[21] VLF and LF cetaceans refers to the functional 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. 40; Ref. 41).

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

[23] VHF cetaceans are the functional cetacean hearing group that are specialised for hearing very high frequencies (e.g. *Kogia* spp.).

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

[25] Where ✓ = present and × = not present.

Common name	C&D OA	Chandon OA	Hydrocarbon EMBA
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*)	×	×	✓

Table 5-6: Presence[26] of BIAs for marine mammals

Common name	BIA Behaviour	Seasonal presence	C&D OA	Chandon OA	Hydrocarbon EMBA
Humpback whale[27]	Migration (north and south)	Northern migration, late July to September.	× (~1.5 km)	× (~75 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).	✓	✓	✓

5.3.3.1.1 Pygmy blue whale

The pygmy blue whale (*Balaenoptera musculus brevicauda*) is a subspecies of blue whale. The blue whale is listed as endangered and migratory under the EPBC Act. A migration BIA for the pygmy blue whale intersects with the C&D and Chandon OAs (Table 5-6; Figure 5-5).

It was estimated by McCauley and Jenner (Ref. 44) 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. 45). A more recent preliminary abundance estimate by McCauley et al. (Ref. 46) indicated that ~3,554 pygmy blue whales migrated north through

[26] Where ✓ = present and × = not present. Approximate distance from feature to OA provided where relevant.

[27] Although the PMST report (Appendix D) indicates the migration (north and south) BIA for humpback whale overlaps with the C&D OA, the PMST map viewer, the AMSIS map viewer, and the geospatial dataset from the DCCEEW do not show any overlap.

the NWS region during 2022. It is unknown what proportion of the total population these seasonal migratory estimates encompass (Ref. 44; Ref. 45).

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. 44; Ref. 47). 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. 48; Ref. 49; Ref. 50). 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. 51; Ref. 52).

Acoustic monitoring analysed by McCauley and Jenner (Ref. 44), 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. 44). The shorter southbound compared to northbound migratory period suggests the animals are swimming purposely through the area to reach southern feeding areas (Ref. 44). A difference in travel speed for pygmy blue whales was also reported by Thums et al. (Ref. 53), 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[28]) 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. 46). These migration periods are in agreement with McCauley and Jenner (Ref. 44), Double et al. (Ref. 51) and McCauley et al. (Ref. 54). During the 2019 soundscape monitoring pygmy blue whale song was detected on more days than any other type of mysticete (baleen whale) sound (Ref. 42). Higher numbers of singers were detected during the northern migration compared to southern migration (Ref. 46). The presence of migratory whales was also observed to vary temporally and spatially each year (Ref. 43; Ref. 46).

Predictions from modelling based on passive acoustic data indicate the greatest numbers of pygmy blue whales during April and June/July (northern migration), and November and December (southern migration) (Ref. 53). Monthly spatial predictions indicated higher densities around the Montebello Island region during May and June (northern migration) and November and December (southern migration) (Ref. 53).

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. 19; Ref. 45). 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

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

depths of 1,000 m but centred near the 500 m depth contour (Ref. 44). 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. 53).

Literature (e.g. Ref. 44; Ref. 47; Ref. 51) 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. 46; Ref. 47; Ref. 51).

Double et al. (Ref. 51) 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. 53). Gavrilov et al. (Ref. 47) conducted a study using an array of ocean bottom seismographs to detect pygmy blue whales traversing the area to the northwest of the North West Cape during their southern migration. This study found that pygmy blue whales migrated southward much further from the WA coast compared to the northbound migration, at distances of up to 400 km from the coast (Ref. 47).

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 the continental shelf edge[29], and one ~65 km west of Jansz field infrastructure[30] (Ref. 46). The focal point for the southern migration corridor was also detected ~65 km to the west of the Jansz field infrastructure (Ref. 46). 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. 55) 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. 55). The southern end of the C&D OA (on the continental shelf) intersects with areas 'validated as suitable habitat' for migration (see Figure 5-4); the Chandon OA does not intersect with these areas.

Thums et al. (Ref. 53) 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[31] along the WA coast. This analysis identified an almost continuous area from southern WA to around the latitude of Rowley Shoals; and thereafter was

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

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

[31] 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. 53).

more dispersed (Ref. 53). The Chandon OA and the northern extent of the C&D OA intersect with these 'most important areas' for migration (Figure 5-5).

Therefore, while the OAs intersect 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. 56). 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. 53). The areas around the Perth Canyon and Australian Coastal Upwelling System correspond to 'Foraging Areas'[32] and 'Known Foraging Areas' within the Conservation Management Plan for the Blue Whale (Ref. 45). 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. 45). The Conservation Management Plan for the Blue Whale (Ref. 45) also identifies 'Possible Foraging Areas'[33], including two in WA, one off the Ningaloo coast, and another around Scott Reef. These 'Possible Foraging Areas' have been characterised as foraging BIAs and occur >175 km southwest and >890 km northeast of the OAs respectively.

Analyses by Ferreira et al. (Ref. 55) 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 northwest of WA; with the highest relative suitability occurred from just south of Shark Bay to Scott Reef along the continental shelf break and slope, and also extending to the Exmouth Plateau (Ref. 55). The study indicates suitable habitat is related to dynamic and localised oceanic processes that may occur at different temporal scales (Ref. 55). The OAs do occur within areas 'validated as suitable habitat' for foraging (see Figure 5-4).

Thums et al. (Ref. 53) 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. 53). Data collected from both passive acoustic monitoring and satellite telemetry data was analysed and determined the 'most important areas' for foraging[34] 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. 53). These spatially

[32] The Conservation Management Plan for the Blue Whale (Ref. 45) 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".

[33] The Conservation Management Plan for the Blue Whale (Ref. 45) 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".

[34] 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. 53).

non-continuous foraging areas may be used by pygmy blue whales during their migration north in the Austral winter (Ref. 57). Although foraging areas are described as static, they are likely to be dynamic given their dependence on presence of prey (Ref. 53; Ref. 58). 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. 55; Ref. 59; Ref. 60). The OAs do not intersect with these 'most important areas' for foraging (Figure 5-6).

Thums et al. (Ref. 57) 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. 57). However, it was noted that more opportunistic foraging occurred off northwest Australia where foraging dives were shallower, horizontal travel rates faster, and there was an absence of a diurnal pattern in diving (Ref. 57). 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. 57).

A review by Pattiaratchi (Ref. 61) 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 (Ref. 62). 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. 62). Therefore, the Jansz field and surrounding areas, including the OAs, 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. 57).

Owen et al. (Ref. 63) 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.

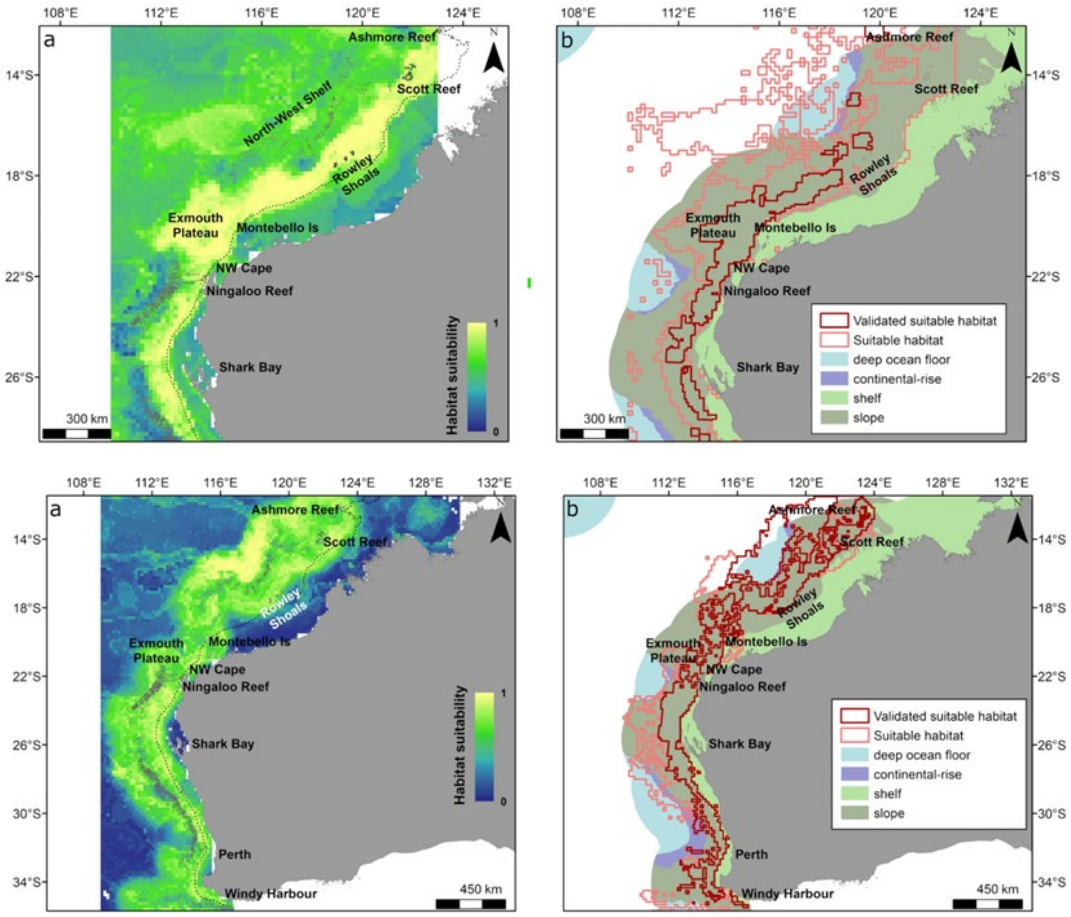
Based on analysis of nine tagged pygmy blue whales (eight at Perth Canyon and one at Ningaloo), Thums et al. (Ref. 57) determined that maximum dive depths of foraging and lunge feeding dives were deeper in the Perth (321 m, 31–540 m) and Geraldton (338 m, 64–483 m) regions, followed by Savu Sea (176 m, 42–259 m),

with Ningaloo being the shallowest (99 m, 39–306 m). As part of a different study, Thums et al. (Ref. 53) 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. 64). 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. 64). Studies in several locations where pygmy blue whales are known to aggregate (southern Australia [Ref. 65], New Zealand [Ref. 64]; California [Ref. 66], Canada [Ref. 67]; Chile [Ref. 68]) 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. 64) 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. 61) 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. 69). Furthermore, a krill biomass survey undertaken by McCauley and Erbe (Ref. 62) 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. 55.

Figure 5-4: Predicted habitat suitability for foraging (top panel) and migration (bottom panel)

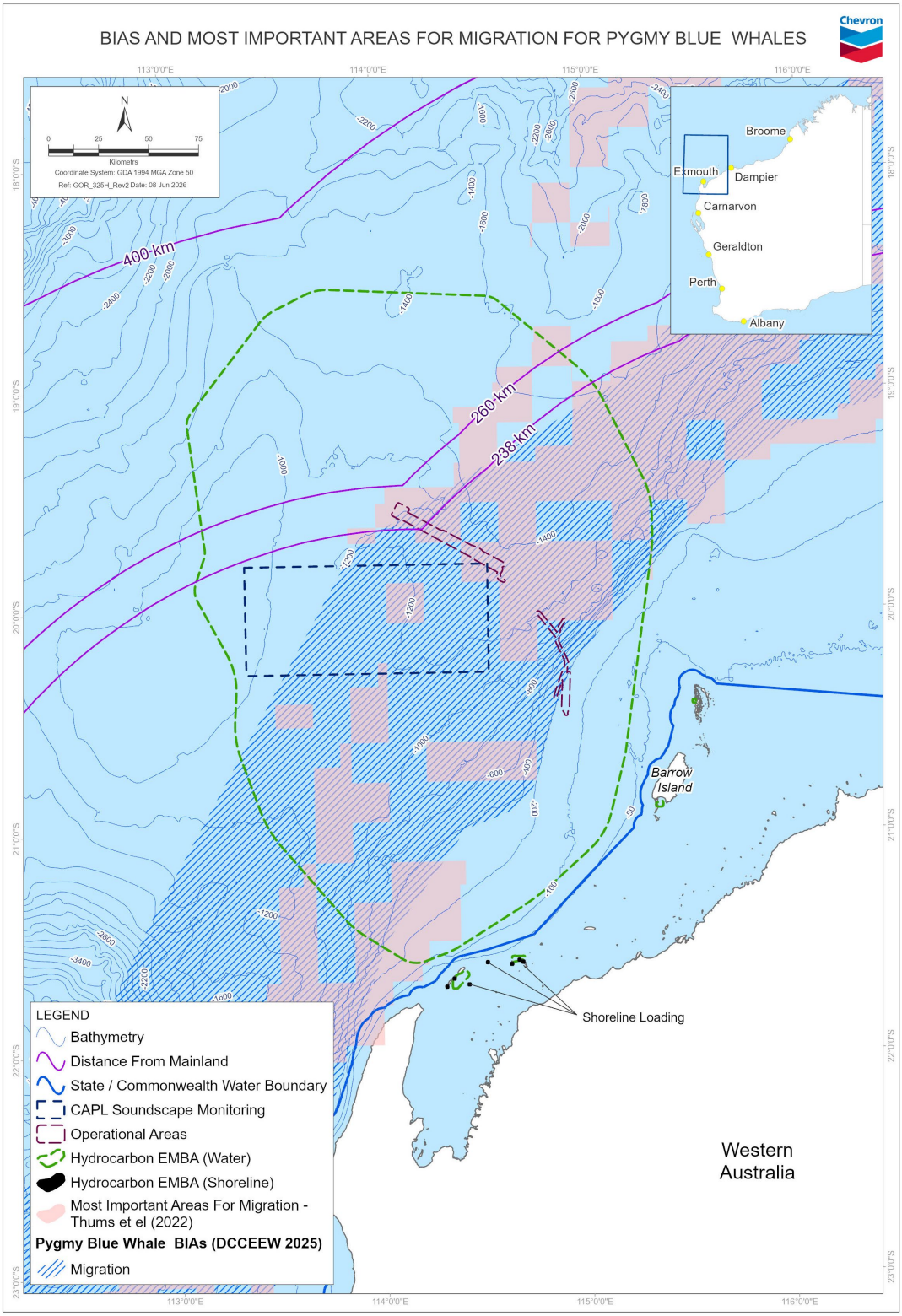
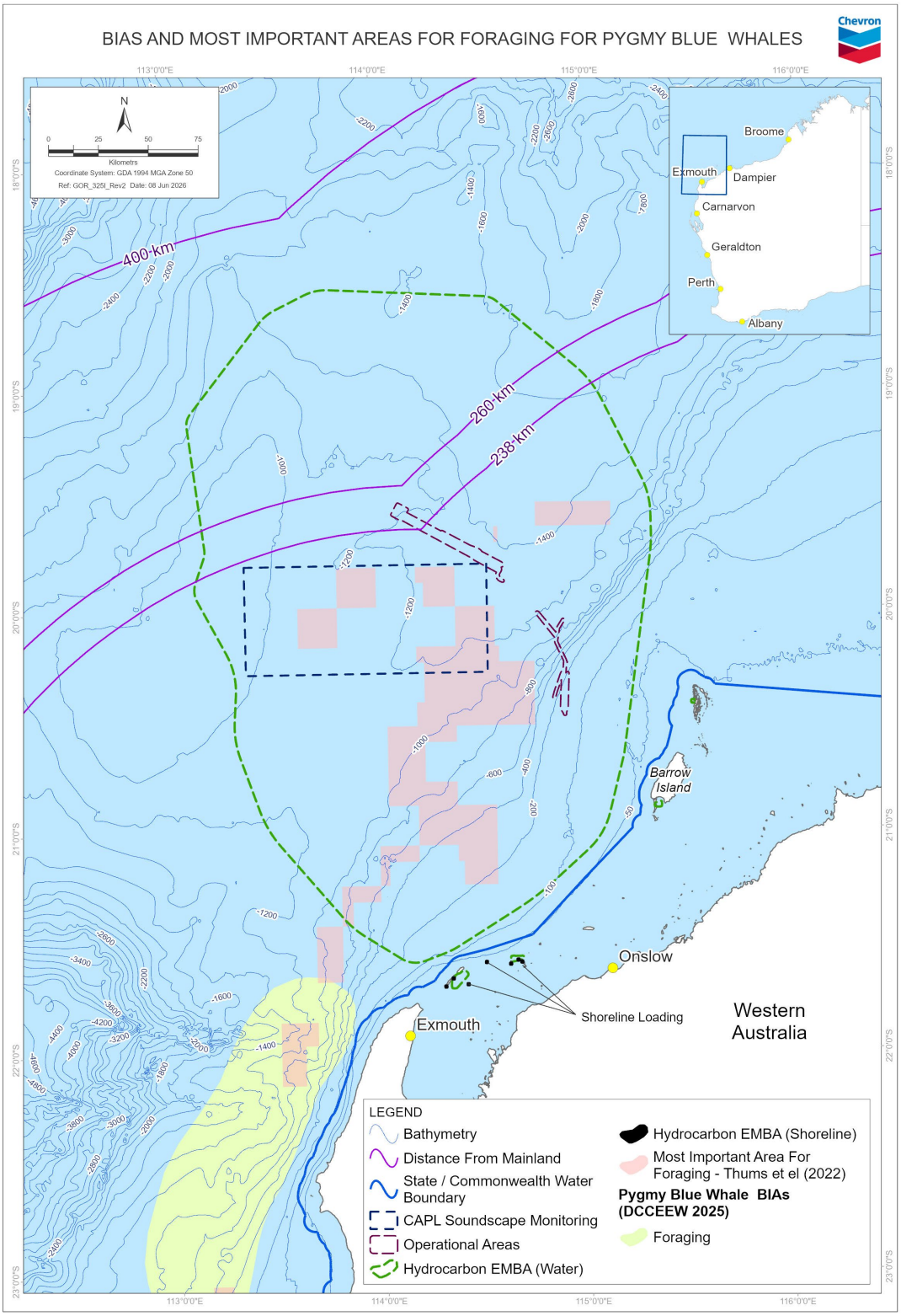


Figure 5-5: BIAs and 'most important areas' for migration for pygmy blue whales



Note: The foraging BIA shown in this figure corresponds to a 'Possible Foraging Area' in Figure 1 of the Conservation Management Plan for the Blue Whale (Ref. 45).

Figure 5-6: BIAs and 'most important areas' for foraging for pygmy blue whales

5.3.3.2 Marine reptiles

Based on searches of the online PMST (Ref. 17; Appendix D), the threatened and/or migratory marine reptile species shown in Table 5-7 may be present within the OAs and/or Hydrocarbon EMBA. The full list of marine species identified in the PMST is provided in Appendix D. HCTS of threatened marine reptile species and BIAs for protected marine reptile species within the OAs and/or Hydrocarbon EMBA are listed in Table 5-8 and Table 5-9 respectively.

For the threatened and/or migratory species with BIAs or HCTS of the species within the OAs, additional information has been provided in the following subsections. Information on other threatened and/or migratory species is provided within the Description of the Environment – Operational and Scientific Monitoring Planning Area (Appendix G of the OSM-BIP; Ref. 4]).

Note: The leaf-scaled sea snake and short-nosed sea snake were both identified within the PMST as potentially being present within the C&D OA; however, this species is not considered likely to be present. Both the short-nosed sea snake and leaf-scaled sea snake occur primarily on reef flats or in shallow waters of the outer reef edges to depths of 10 m (Ref. 71; Ref. 70). The C&D OA occurs in water depths of ~125–1,230 m with no emergent reef features.

Similarly, the salt-water crocodile was identified within the PMST as potentially being present within the OAs; however, this species is also not considered likely to be present. The salt-water crocodile inhabits Australian coastal waters, estuaries, lakes, inland swamps, and marshes (Ref. 72). The C&D and Chandon OAs are located ~55 km and ~120 km northwest from Barrow Island, and in water depths of ~125–1,230 m and ~1,145–1,370 m respectively. There are no islands or other emergent features within or adjacent to the OAs.

Table 5-7: Presence[35] of threatened and/or migratory marine reptiles

Common name	C&D OA	Chandon OA	Hydrocarbon EMBA
Crocodiles			
Salt-water Crocodile (*Migratory*)	✓	✓	✓
Marine 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*)	✓	×	✓

[35] Where ✓ = present and × = not present.

Table 5-8: Presence[36] of HCTS of marine turtle species

Common name	Nesting location	Internesting buffer	Seasonal presence	C&D OA	Chandon OA	Hydrocarbon EMBA
Flatback turtle	Barrow Island, Montebello Islands, coastal islands from Cape Preston to Locker Island.	60 km	October to March.	✓	× (~50 km)	✓
Green turtle	Barrow Island, Montebello Islands, Serrurier Island and Thevenard Island.	20 km	November to March.	× (~35 km)	× (~85 km)	✓
	Exmouth Gulf and Ningaloo coast.	20 km	November to March.	× (~140 km)	× (~195 km)	✓
Hawksbill turtle	Cape Preston to mouth of Exmouth Gulf including Montebello Islands and Lowendal Islands.	20 km	October to February.	× (~35 km)	× (~85 km)	✓
Loggerhead turtle	Exmouth Gulf and Ningaloo coast.	20 km	November to May.	× (~140 km)	× (~195 km)	✓

Table 5-9: Presence[35] of BIAs for marine reptiles

Common name	BIA behaviour	Seasonal presence	C&D OA	Chandon OA	Hydrocarbon EMBA
Flatback turtle	Foraging	Early in summer	× (~60 km)	× (~105 km)	✓
		Not identified in the database	× (~50 km)	× (~120 km)	✓
	Internesting buffer	Early in summer	✓	× (~50 km)	✓
		Summer	× (~15 km)	× (~90 km)	✓
	Mating	Early in summer	× (~60 km)	× (~110 km)	✓
		Not identified in the database	× (~65 km)	× (~135 km)	✓
	Nesting	Early in summer	× (~60 km)	× (~110 km)	✓
		Short summer nesting season, predominantly November- March	× (~65 km)	× (~135 km)	✓

[36] Where ✓ = present and × = not present. Approximate distance from feature to OA provided where relevant. Nesting locations, internesting buffer, and seasonal presence are as defined in the Recovery Plan for Marine Turtles in Australia (Ref. 73) and/or DCCEEW geospatial datasets (Ref. 37).

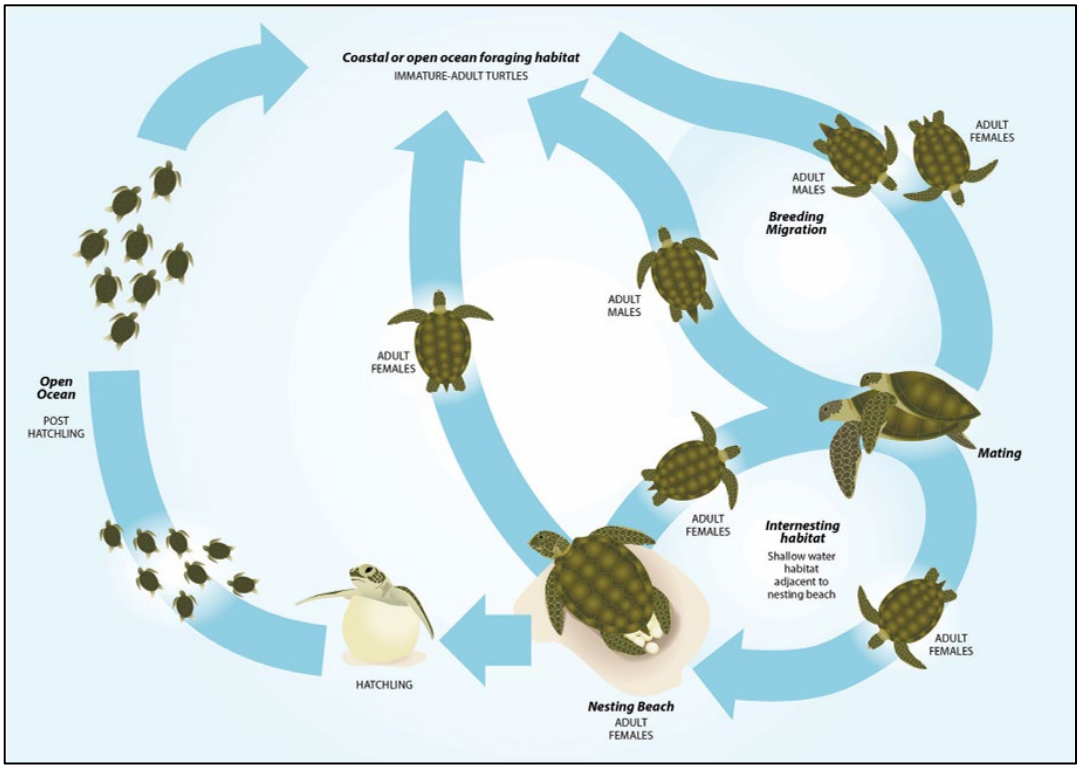
Common name	BIA behaviour	Seasonal presence	C&D OA	Chandon OA	Hydrocarbon EMBA
		with peak in January			
		Summer	× (~125 km)	× (~190 km)	✓
Green turtle	Foraging	Early in summer	× (~60 km)	× (~110 km)	✓
		Summer	× (~60 km)	× (~110 km)	✓
		Year round	× (~65 km)	× (~135 km)	✓
	Internesting	Not identified in the database	× (~60 km)	× (~135 km)	✓
		Summer	× (~60 km)	× (~110 km)	✓
	Internesting buffer	Early in summer	× (~60 km)	× (~110 km)	✓
		Summer	× (~30 km)	× (~100 km)	✓
	Mating	Early in summer	× (~60 km)	× (~110 km)	✓
		Summer	× (~60 km)	× (~110 km)	✓
	Nesting	Early in summer	× (~60 km)	× (~110 km)	✓
		Summer	× (~60 km)	× (~110 km)	✓
Hawksbill turtle	Foraging	Early in summer	× (~60 km)	× (~110 km)	✓
		Year round	× (~65 km)	× (~135 km)	✓
	Internesting buffer	Early in summer	× (~60 km)	× (~110 km)	✓
		Not identified in the database	× (~140 km)	× (~190 km)	✓
		Peak nesting in spring and early summer	× (~35 km)	× (~100 km)	✓
		Spring and early summer, peak nesting October	× (~60 km)	× (~110 km)	✓
	Mating	Early in summer	× (~60 km)	× (~110 km)	✓
		Year round	× (~65 km)	× (~135 km)	✓
	Nesting	Early in summer	× (~60 km)	× (~110 km)	✓
		Peak nesting in spring and early summer	× (~65 km)	× (~135 km)	✓
Loggerhead turtle	Internesting buffer	Not identified in the database	× (~60 km)	× (~110 km)	✓
	Nesting	Not identified in the database	× (~135 km)	× (~195 km)	✓

5.3.3.2.1 Flatback turtle

The flatback turtle (*Natator depressus*) is listed as vulnerable and migratory under the EPBC Act. An internesting buffer BIA and HCTS of the species intersects with the C&D OA (Table 5-8; Table 5-9; Figure 5-8).

Marine turtles share a broadly similar life cycle (Ref. 73; Figure 5-7). During non-breeding periods, adults inhabit foraging habitats. Breeding adults migrate from these foraging areas to mating grounds, which may or may not be near nesting

beaches (Ref. 74). After mating, males return to foraging areas, while females remain in internesting habitats close to the nesting beach or rookery (Ref. 73). Once the last clutch is laid, females also return to foraging areas to build up their fat reserves before the next breeding migration (Ref. 73).



Source: Ref. 73.

Figure 5-7: Generalised life cycle of marine turtles

Nesting

Five flatback turtle stocks are recognised in Australia, with the southwest Kimberley and Pilbara stocks occurring in WA (Ref. 73). The Montebello Islands and Barrow Islands are identified as nesting HCTS of the Pilbara stock (Ref. 73). The C&D and Chandon OAs are located ~55 km and ~120 km northwest from Barrow Island, and ~60 km and ~110 km from Montebello Islands respectively.

Female flatback turtles nest on Barrow Island beaches during the wet season, typically between October and March, with peak nesting activity occurring November to January (Ref. 75; Ref. 76). Peak hatchling emergence occurs during February and March (Ref. 76; Ref. 75). Flatback turtle nesting activity on Barrow Island is concentrated on the central east coast on sandy, low-sloped, low-energy beaches with wide, shallow intertidal zones (Ref. 77; Ref. 78). Limited nesting activity has also been recorded on the southwest, north, and northeast beaches of Barrow Island (Ref. 79).

Flatback turtles require sandy beaches for nesting, with sand temperatures between 25°C and 33°C needed for egg incubation (Ref. 80). Most females return to the same beach in successive breeding seasons and show a fidelity to the area where they were born. This means that a first-time nesting turtle might return to their ‘predetermined’ nest site that they emerged from, regardless of the nesting suitability of the location (Ref. 81). Flatback turtles make long reproductive

migrations; however, these movements are restricted to the continental shelf (Ref. 80). The exact locations of foraging and mating grounds for flatback turtles are not well understood (Ref. 76). Satellite tracking of adult female flatback turtles indicate that they move large distances between multiple geographically distinct areas, ranging from the Pilbara coast to the Gulf of Carpentaria (Ref. 76). It is acknowledged within the Recovery Plan that there are knowledge gaps around migratory corridors for flatback turtles (Ref. 73).

Internesting

During internesting, turtles remain close to the nesting beach or rookery (Ref. 73). The 60 km internesting buffer defined within the Recovery Plan for Marine Turtles in Australia (Ref. 73) is based primarily on the movements of tagged internesting flatback turtles in WA (Ref. 82). The study tracked 56 turtles from four different rookeries, which demonstrated varying internesting movements, with distances ranging from 3–62 km, with some turtles at all four rookeries remaining within 10 km of their nesting beaches. However, tracking data showed these movements were largely longshore movements in nearshore coastal waters or travel between island rookeries and the adjacent mainland, which represent the greater distances (Ref. 82). There is little evidence to suggest that flatback turtles move to deep offshore waters during internesting periods.

A habitat suitability modelling study for internesting flatback turtles in the NWS region of WA (Ref. 83) was conducted to identify areas of suitable flatback turtle internesting habitat and determine overlap with identified industrial hazards. The study used a turtle tracking dataset of 47 nesting female turtles from five important rookeries in the NWS study area, including Barrow Island. The results showed internesting flatback turtles from all rookeries remained within water depths of <44 m, with a mean depth of <10 m (Ref. 83). Results also showed internesting turtles from all rookeries remained within <28 km of the nearest coast, with a mean distance from the coast of <6.1 km. The habitat suitability modelling study defined suitable flatback turtle internesting habitat as water depths of 0–16 m within 5–10 km of the coast. Unsuitable flatback turtle internesting habitat was defined as waters >25 m deep and >27 km from the coast (Ref. 83).

Another study involving satellite tracking data for 11 flatback turtles following nesting on the Lacepede Islands (Ref. 84) found that flatback turtles remained at an average distance of 15.75±12.25 km from the nesting beach in water depths of 16±3 m. Other previous studies (e.g. Ref. 85; Ref. 86; Ref. 87) have also presented findings that internesting behaviour was only observed in water depths of <40 m. One of these studies (Ref. 87) further indicates that internesting flatback turtles have relatively shallow dives, with 85% of the time during spent in ≤20 m water depth, of which most was spent in 5–10 m (27±2.7%) and 10–15 m (22.3±3.5%) water depths.

The C&D and Chandon OAs are located ~55 km and ~120 km northwest from Barrow Island (the closest island), and in water depths of ~125–1,230 m and ~1,145–1,370 m respectively. Therefore, while the southern section of the C&D OA intersects with the internesting buffer BIA and internesting HCTS of flatback turtles (Figure 5-8), it is considered highly unlikely that the C&D OA would be utilised during internesting periods by flatback turtles due to the unsuitability of the habitat (i.e. deeper waters and further offshore than where previous studies have recorded internesting behaviour occurring).

Hatchlings and juveniles

Hatchlings typically emerge from the nest at night and orient toward the sea using topographic and brightness cues, orienting to the low elevation light horizon (Ref. 88). Upon entering the water, hatchlings undergo a period of intense, continuous swimming known as the frenzy. This phase, lasting ~24–48 hours, is characterised by rapid and sustained offshore movement to reduce predation risk in nearshore waters (Ref. 89). During the frenzy, hatchlings primarily use wave direction as an orientation cue to reach deeper water (Ref. 73; Ref. 89; Ref. 90). Once the frenzy ends, they reduce active swimming and transition to passive drifting, using ocean currents as their primary orientation cue and floating seaweed for refuge (Ref. 91).

Unlike other marine turtle species, flatback turtles do not have a known oceanic development phase; instead, the post-hatchling (or pelagic juvenile) phase is considered to occur in shallow waters on the Australian continental shelf (Ref. 73; Ref. 92; Ref. 93 cited in Ref. 76). Juvenile turtles (i.e. not sexually mature) generally take up residency in continental shelf waters (Ref. 73).

In general, marine turtle growth is slow and varies among species, habitats, sex and maturity (Ref. 73). A study on age-specific growth and maturity for flatback turtles estimated that age at sexual maturation is 18 years (95% CI: 16 to 24) (Ref. 94). Females will only reproduce when they are able to obtain and store sufficient fat to make the breeding migration and produce eggs (Ref. 73).

Foraging

It is acknowledged within the Recovery Plan that there are knowledge gaps around foraging for flatback turtles (Ref. 73). However, flatback turtles have been reported foraging over the Australian continental shelf, and within continental waters of Papua New Guinea and Indonesia (Ref. 80). The flatback turtle feeds mostly on benthic invertebrates (e.g. sea cucumbers, soft corals, molluscs, crabs) and jellyfish; however, may also feed on seaweed (Ref. 95; Ref. 96; Ref. 97). They feed mainly in subtidal, soft-bottomed habitats (Ref. 95).

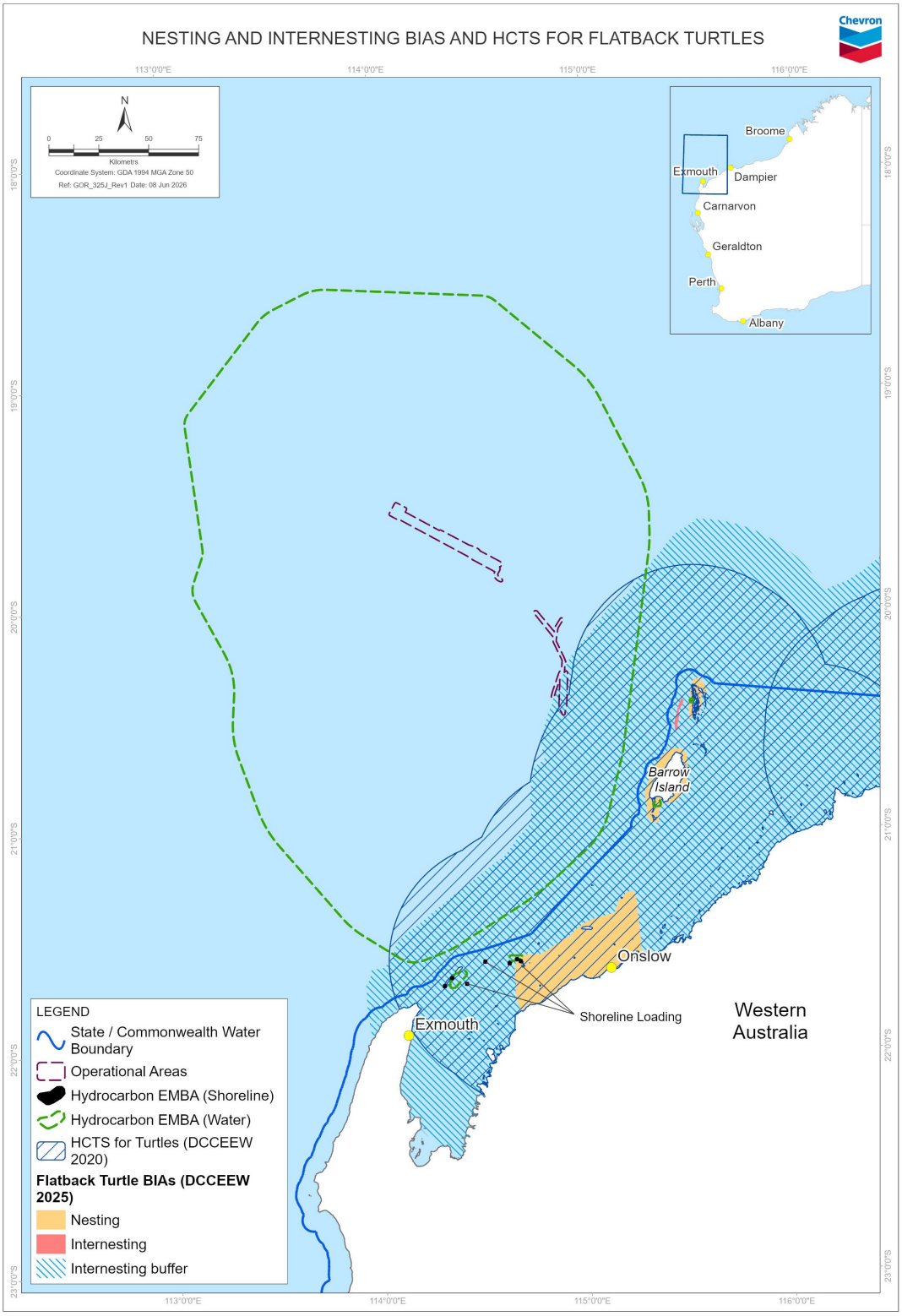


Figure 5-8: Nesting and internesting BIAs and HCTS for flatback turtles

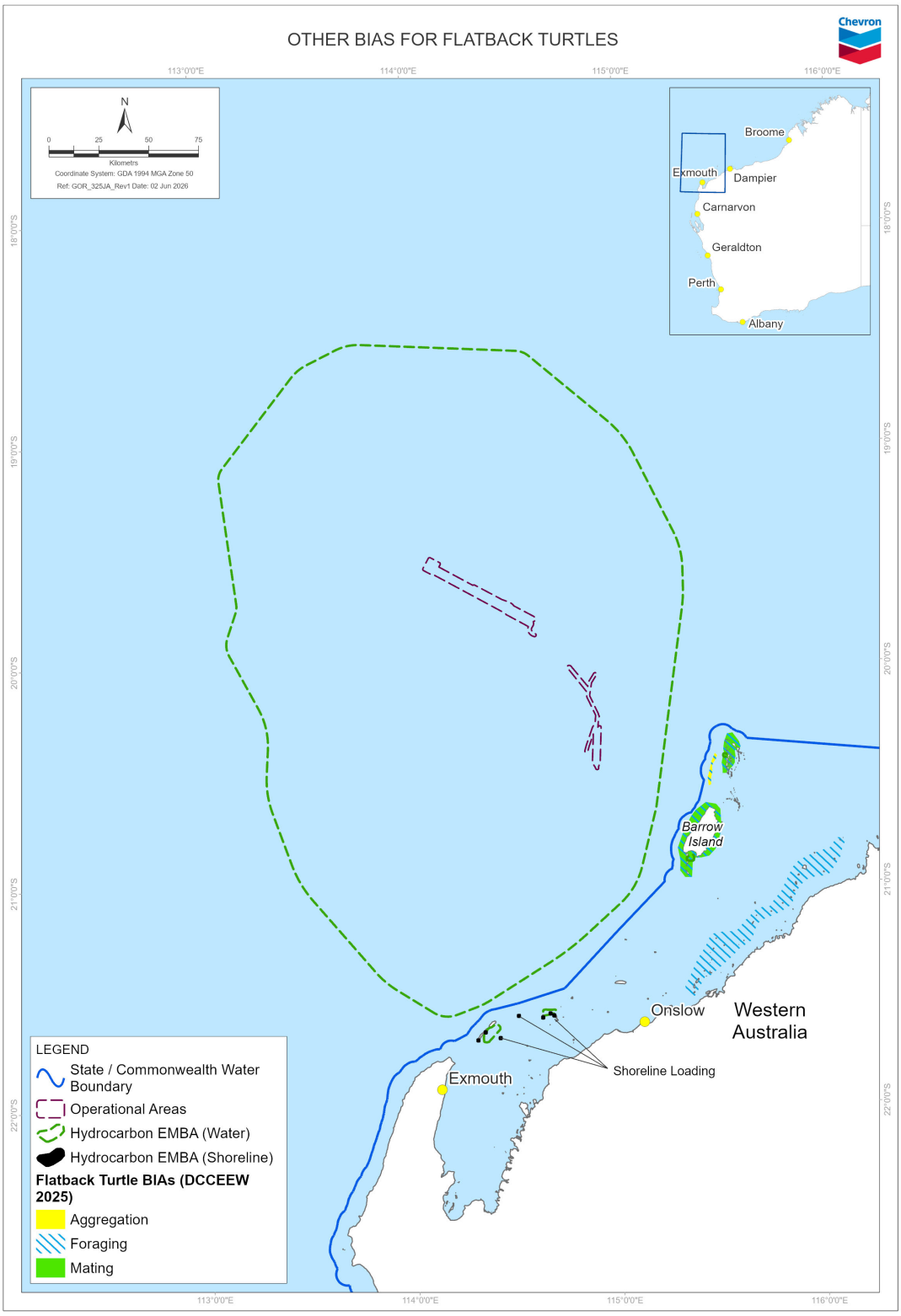


Figure 5-9: Other BIAs for flatback turtles

5.3.3.3 Fishes, including sharks and rays

Based on searches of the online PMST (Ref. 17; Appendix D), the threatened and/or migratory fish species shown in Table 5-10 may be present within the OAs and/or Hydrocarbon EMBA. The full list of marine species identified in the PMST is provided in Appendix D. HCTS of threatened fish species and BIAs for protected fish species within the OAs and/or Hydrocarbon EMBA are listed in Table 5-11 and Table 5-12 respectively.

For the threatened and/or migratory species with BIAs within the OAs, additional information has been provided in the following subsections. Information on other threatened and/or migratory species is provided within the Description of the Environment – Operational and Scientific Monitoring Planning Area (Appendix G of the OSM-BIP; Ref. 4]).

A fish assemblage survey was undertaken as part of the benthic survey (Ref. 31) that supported the Gorgon Backfill Fields Development OPP; survey sites included areas within the C&D and Chandon fields. Across all survey sites, observations were predominantly pelagic fishes (Ref. 31). Pelagic fishes are generally considered mobile and/or transient in nature (Ref. 98). The demersal fishes observed throughout soft sediment habitats (Ref. 31) are also generally mobile taxa without any site attachment (Ref. 98).

The patterns of assemblage composition, abundance and number of taxa identified during the Backfill Fields Development survey indicated that there is distinct fauna assemblages associated with water depth and water masses (Ref. 31). For example, the shallower and warmer sites located in tropical surface waters (including those within the ancient coastline KEF) had a greater number of fish recorded than other sites. The shallower sites were characterised by sharks and Carangidae such as yellowtail scad. In comparison, the fish assemblages of the deeper continental slope were mostly dominated by Carangidae, Macrouridae (rat tails), Halosauridae (halosaurs), and unidentified anguilliform (eel-like) fishes. This zone was characterised by the Southern Indian central water mass and included the continental slope geomorphic feature and the continental slope demersal fish communities KEF (Ref. 31). A different fauna assemblage was also associated with the deeper waters of >800 m and the Antarctic intermediate water mass. The cold deep-water and lower saline current of the Antarctic intermediate water mass has a strong influence on the distribution of fish communities as seen in the southwest region between the Great Australian Bight and north of the Ningaloo Reef (Ref. 31).

Within KEFs the following fish assemblages were recorded (Ref. 31):

- **Exmouth Plateau KEF**—A total of 165 individual fish from 14 taxa were identified. The fish assemblage was dominated by an unidentified anguilliform fish and *Bathypterois sp1* (family Ipnopidae), representing over 65% of the total number of individual fish recorded. Other abundant taxa included *Aldrovandia sp1*, *Aldrovandia sp2* (Halosauridae), and *Macrouridae sp2* (Macrouridae, rat tails).
- **Continental slope demersal fish communities KEF**—A total of 468 fish belonging to 25 taxa were recorded. The fish assemblage was dominated by Trevallies (Carangidae) with four species from three genera accounting for 256 of the individuals observed. The five most abundant fish taxa were *Decapterus kurroides*, *Decapterus sp1*, and *Seriola dumerili* (Carangidae), an unidentified bait fish, and *Synodontidae sp2* (Synodontidae). The fish

assemblages of this KEF were significantly different to the fish assemblages at the Exmouth Plateau KEF and outside any KEFs.

- **Ancient coastline at 125 m depth contour KEF**—Recorded a total of 18,011 individuals from 13 fish taxa. The fish assemblage was dominated by Trevallies (Carangidae) with three species representing 14,231 of the total individuals. The most abundant fish taxa were *Carangoides sp1* and *Seriola dumerili* (Carangidae), an unidentified baitfish, *Carcharhinus sp1* (Carcharhinidae), and *Rachycentron canadum* (Rachycentridae).

Table 5-10: Presence[37] of threatened and/or migratory fishes

Common name	C&D OA	Chandon 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[38] of HCTS of fishes

Common name	HCTS location	C&D OA	Chandon OA	Hydrocarbon EMBA
Dwarf sawfish	All of these species rely on the inshore coastal areas, including the major rivers and estuarine regions of northern Australia (Ref. 99). Given lack of distribution information, areas where aggregations of	× (~15 km)	× (~60 km)	May be present (based on species distribution mapping for the 'species or species habitat likely to occur' category (Ref. 100); 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. 99).

[37] Where ✓ = present and × = not present.

[38] Where ✓ = present and × = not present. Approximate distance from feature to OA provided where relevant.

Common name	HCTS location	C&D OA	Chandon OA	Hydrocarbon EMBA
Green sawfish	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. 99).	May be present (refer to Hydrocarbon EMBA column for justification).	× (~45 km)	May be present (based on species distribution mapping within the 'species or species habitat likely to occur' category (Ref. 100); 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. 99).
Largetooth sawfish		May be present (refer to Hydrocarbon EMBA column for justification).	× (~50 km)	May be present (based on species distribution mapping within the 'species or species habitat likely to occur' category (Ref. 100); however does not coincide with any distribution areas within Figure 1a of the Recovery Plan (Ref. 99).

Table 5-12: Presence[38] of BIAs for fishes

Common name	BIA Behaviour	Seasonal presence	C&D OA	Chandon OA	Hydrocarbon EMBA
Whale shark	Foraging	Spring	✓	× (~50 km)	✓

5.3.3.3.1 Whale shark

The whale shark (*Rhincodon typus*) is listed as vulnerable and migratory under the EPBC Act. A foraging BIA intersects with the C&D OA (Table 5-12; Figure 5-10).

The whale shark has a global distribution in tropical and warm temperate seas (Ref. 101); they migrate to and from these oceanic seascapes to seasonal aggregations in coastal waters (Ref. 102 cited in Ref. 103). In Australian waters, whale sharks have shown year-round presence in WA's North West (Ref. 104); and also form seasonal coastal aggregations at Ningaloo Reef (March to July), Christmas Island (December to January), and in the Coral Sea (November to December) (Ref. 105). Ningaloo Reef is considered the main known seasonal aggregation area (Ref. 106). Whale sharks aggregate off Ningaloo Reef each year to feed (Ref. 107; Ref. 108); with this seasonal presence linked to mass coral spawning timing (Ref. 107). The population during this period is dominated by juveniles that amass for feeding purposes (Ref. 104). The Ningaloo population is part of a broader Eastern Indian Ocean stock (Ref. 103; Ref. 109).

Based on satellite tagging undertaken between 2005 and 2008, when leaving Ningaloo Reef after the seasonal aggregation period, whale sharks generally headed south before migrating on three broad trajectories (Ref. 110; Ref. 111):

- Northwest into the Indian Ocean (towards Christmas Island)
- North towards Sumatra and Java

- Northeast, passing through the NWS region, travelling along the shelf break and continental slope towards the Timor Sea.

This is also consistent with further satellite tracking analysis (2005 to 2019) that found that after leaving coastal sites (Ningaloo Reef and Shark Bay), whale sharks movements were mostly along the continental shelf break of WA but also into deeper offshore areas and waters off the southern coast of Indonesia (Ref. 103). Satellite tagging of whale sharks (between 2015 and 2018) indicates that females may leave Ningaloo earlier, and spend more time in offshore waters, compared to males (Ref. 112).

The foraging BIA that overlaps the southern section of the C&D OA runs northward from Ningaloo along the 200 m isobath (Figure 5-10). Migration from Ningaloo towards the northeast broadly follows the 200 m isobath and typically occurs between July and November (Ref. 105). A review of satellite tracking data from 78 whale sharks tagged between 2005 and 2019 at either Ningaloo Reef or Shark Bay during their seasonal aggregations in austral autumn and winter was analysed to determine habitat use and connectivity at local (hundreds of kilometres; North West Australia) and regional (thousands of kilometres; Eastern Indian Ocean) scales (Ref. 103). The analysis showed that movement patterns and high-use areas for whale sharks were influenced by both natural geomorphic features and anthropogenic features (petroleum platforms). Natural features associated with abrupt changes in seafloor topography, such as escarpments, pinnacles, seamounts, and canyons, were found to have the greatest influence on habitat use and connectivity; and the petroleum platforms influenced movement dynamics and connectivity in a comparable way to natural features (Ref. 103).

At the regional Eastern Indian Ocean scale, movement paths were identified that linked Ningaloo Reef to Indonesia, Shark Bay, and to the southwest region of WA; at the local North West Australia scale, the most common movement pathway away from Ningaloo Reef was north towards pinnacle features and south to Shark Bay (Ref. 103). Note: These pinnacle features occur to the northeast and north of Montebello Islands; and are outside of the OAs (see inset of Figure 5-10).

Pinnacles had the highest effect on habitat use at both Eastern Indian Ocean and North West Australia scales (Ref. 103). Whereas seamounts and escarpments, and canyons and escarpments, were the features with highest effects on habitat connectivity at the Eastern Indian Ocean and North West Australia scales respectively (Ref. 103). Movement pathways across North West Australia that involved petroleum platforms also had similar effects to those of natural feature types (Ref. 103). The petroleum platform most used by whale sharks during this study was north of Ningaloo, in similar vicinity to the pinnacle features (see inset of Figure 5-10).

The whale shark is a suction filter feeder, with a diet comprising planktonic and nektonic prey, and feeds at or close to the water's surface by swimming forward with mouth agape, sucking in prey (Ref. 107). Feeding behaviours of the whale shark recorded at Ningaloo Reef observed two distinct patters: passive feeding (ram filter-feeding) and active feeding at the surface; nocturnal surface feeding behaviour was also observed (Ref. 113). The targeted prey species were specific to the different feeding techniques and time (Ref. 113).

Although the species is generally encountered close to or at the surface, it will regularly dive and move through the water column. Research has found that whale sharks at Ningaloo Reef move between the sea surface and deeper water, spending 40% of their time in the upper 15 m of the water column and 50% of

their time at 30 m or less (Ref. 107; Ref. 114). Off the outer NWS, whale sharks spend much of their time swimming near the seabed and can dive to around 1,000 m (Ref. 107). Deep dives are thought to be primarily for prey, such as krill, lantern fish, squid and jellyfish (Ref. 107). Analysis of 39 tagged whale sharks tracked on migratory routes from Ningaloo showed they spent >90% of time in waters ≤200 m and dived to a maximum depth of 1,906 m (Ref. 112).

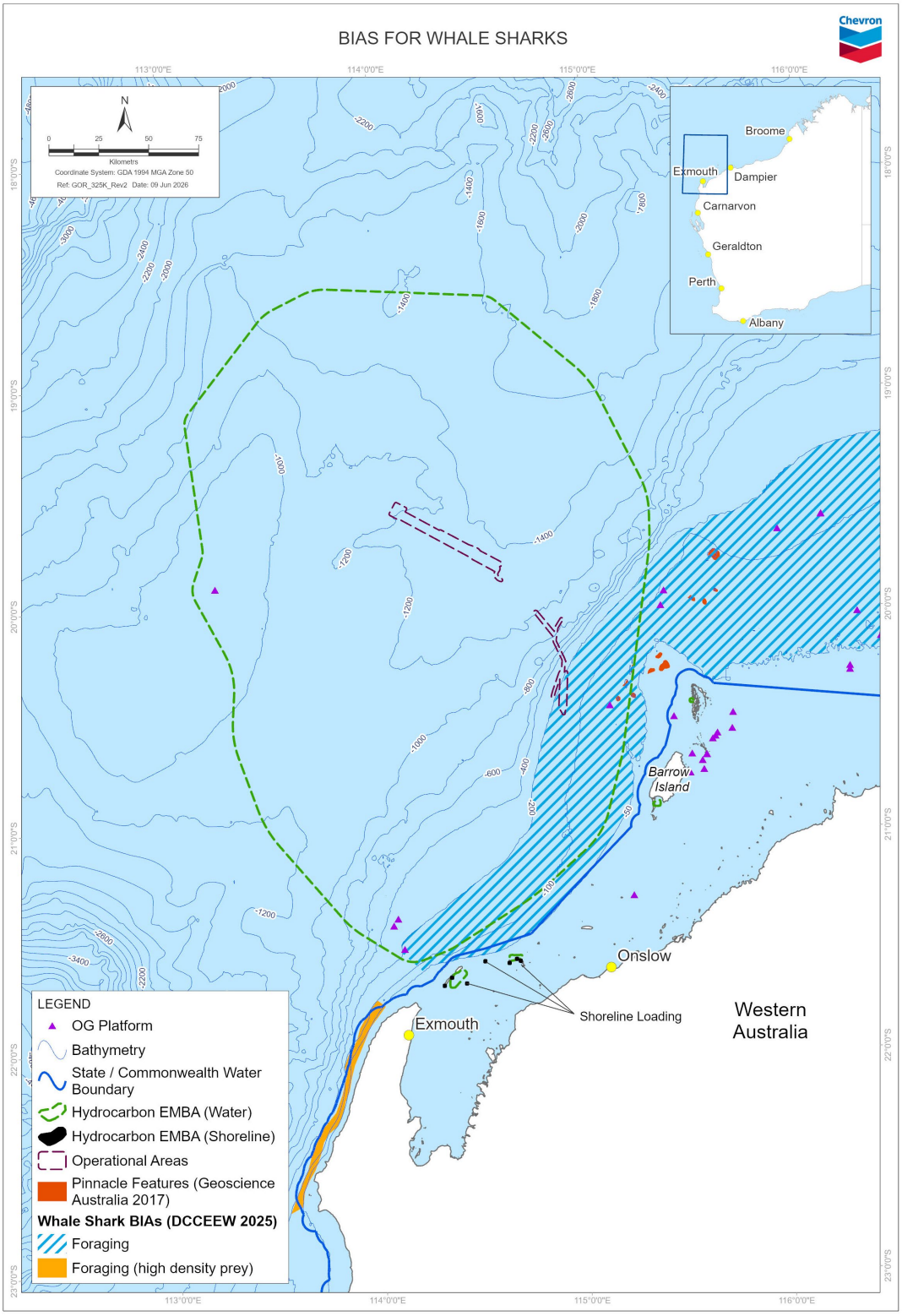


Figure 5-10: BIAs for whale sharks

5.3.3.4 Seabirds and shorebirds

Based on searches of the online PMST (Ref. 17; Appendix D), the threatened and/or migratory seabird and shorebird species shown in Table 5-13 may be present within the OAs and/or Hydrocarbon EMBA. The full list of marine species identified in the PMST is provided in Appendix D. HCTS of threatened bird species and BIAs for protected bird species within the OAs and/or Hydrocarbon EMBA are listed in Table 5-14 and Table 5-15 respectively.

For the threatened and/or migratory species with BIAs or HCTS of the species within the OAs, additional information has been provided in the following subsections. Information on other threatened and/or migratory species is provided within the Description of the Environment – Operational and Scientific Monitoring Planning Area (Appendix G of the OSM-BIP; Ref. 4]).

Table 5-13: Presence[39] of threatened and/or migratory seabirds and shorebirds

Common name	C&D OA	Chandon OA	Hydrocarbon EMBA
Asian Dowitcher (*Vulnerable, migratory*)	×	×	✓
Australian fairy tern (*Vulnerable*)	✓	✓	✓
Australian painted snipe (*Endangered*)	×	×	✓
Barn swallow (*Migratory*)	×	×	✓
Bar-tailed godwit (*Migratory*)	×	×	✓
Bridled Tern (*Migratory*)	×	×	✓
Caspian tern (*Migratory*)	×	×	✓
Christmas Island white-tailed tropicbird (*Endangered*)	✓	✓	✓
Common greenshank (*Endangered, Migratory*)	×	×	✓
Common noddy (*Migratory*)	✓	✓	✓
Common sandpiper (*Migratory*)	✓	✓	✓
Curlew sandpiper (*Critically endangered, migratory*)	✓	×	✓
Eastern curlew (*Critically endangered, migratory*)	✓	✓	✓
Flesh-footed shearwater (*Migratory*)	×	×	✓
Fork-tailed swift (*Migratory*)	×	×	✓
Great frigatebird (*Migratory*)	×	×	✓
Greater crested tern (*Migratory*)	×	×	✓
Greater sand plover (*Vulnerable, 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*)	×	×	✓

[39] Where ✓ = present and × = not present.

Common name	C&D OA	Chandon OA	Hydrocarbon EMBA
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*)	×	×	✓
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[40] of HCTS of seabirds and shorebirds species

Common name	HCTS location	C&D OA	Chandon 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. 115).	May be present (refer to Hydrocarbon EMBA column for justification).	× (~60 km)	May be present (based on species distribution mapping for the 'species or species habitat known or likely to occur' category (Ref. 100; Ref. 115).

Table 5-15: Presence[40] of BIAs for seabirds and shorebirds

Common name	BIA behaviour	Seasonal presence	C&D OA	Chandon OA	Hydrocarbon EMBA
Fairy tern	Breeding	Breeding from July to late September.	× (~45 km)	× (~100 km)	✓
Lesser crested Tern	Breeding	Breeding March to June.	× (~40 km)	× (~100 km)	✓
Roseate tern	Breeding	Breeding from mid-March to July.	× (~45 km)	× (~100 km)	✓
Wedge-tailed shearwater[41]	Breeding	Breeding visitor arriving in mid-August and leaving in April in Pilbara and mid-May in Shark Bay.	✓	× (~20 km)	✓

[40] Where ✓ = present and × = not present. Approximate distance from feature to OA provided where relevant.

[41] Although the PMST report (Appendix D) indicates the breeding BIA for wedge-tailed shearwaters overlaps with the Chandon OA, the PMST map viewer, the AMSIS map viewer, and the geospatial dataset from the Department of Climate Change, Energy, the Environment and Water (DCCEEW) do not show any overlap.

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 C&D OA (Figure 5-11). 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 (>600 km from the OAs and ~475 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. 116); out of an estimated global population of five million (Ref. 117). 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. 118; Ref. 119). Migration from the rockery is very synchronous, but the return is less so (Ref. 119). Once adults cease returning to feed their young, the young (fledgling) wedge-tailed shearwaters fledge and depart nests (Ref. 120; Ref. 121). 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[42] 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. 117). One of the closest rookeries to the OAs is Double Island (east of Barrow Island), supporting 5,000–10,000 pairs of wedge-tailed shearwaters (Ref. 122 as cited in Ref. 123).

When foraging, wedge-tailed shearwaters fly <10 m above the water and dive to depths around 2–3 m (Ref. 124). Their diet consists of squid, fish, and crustaceans (Ref. 117). This species is known to forage relatively close to breeding islands (Ref. 117); however, other studies (e.g. Ref. 119; Ref. 125) 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. 119). 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. 119). 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. 119; Ref. 125). 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. 119).

[42] Of these known breeding locations in the NWMR, South Muiron Island and Serrurier Island occur in the Hydrocarbon EMBA (Shoreline).

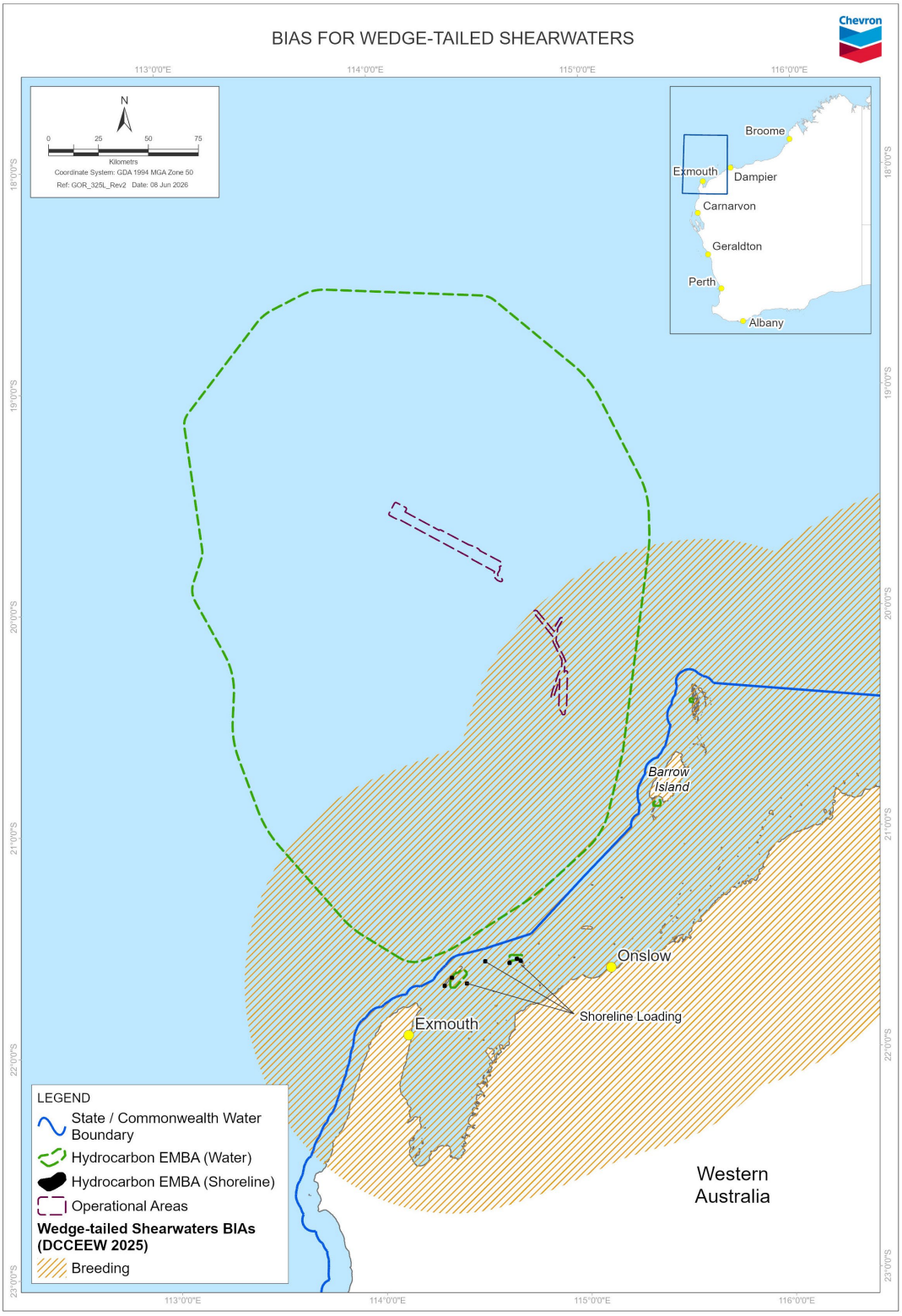


Figure 5-11: BIAs for wedge-tailed shearwater BIAs

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 OAs are presented in Table 5-16.

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

Activity/Species	January	February	March	April	May	June	July	August	September	October	November	December
Petroleum activity												
Site investigation surveys[43]												
Pygmy blue whale												
Northern migration[44]												
Southern migration[44]												
Opportunistic foraging[45]												
Flatback turtle												
Nesting[46]												
Whale shark												
Foraging and migration[47]												
Wedge-tailed shearwater												
Migration[48]												
Breeding[48]												

	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.

[43] As described in Section 4.1.2, the petroleum activity is indicatively scheduled to commence from late-2026/early-2027 and take ~4–6 months to complete. However, the surveys may occur as multiple campaigns and occur during any time of year.

[44] Pygmy blue whale presence during northern migrations along the WA coast have been detected between approximately January and August (Ref. 44; Ref. 47) and during southern migrations between November and January (Ref. 44; Ref. 47). 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. 46).

[45] Habitat suitability modelling indicates that foraging habitat may exist along the continental shelf break and slope in north-west WA (Ref. 55). 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. 53).

[46] Nesting on Barrow Island beaches generally occurs from November to January (Ref. 75). Peak hatchling emergence occurs during February and March (Ref. 76; Ref. 75).

[47] Whale sharks have shown year-round presence in WA's North West (Ref. 104). Migration from Ningaloo towards the northeast broadly follows the 200 m isobath and typically occurs between July and November (Ref. 105). A foraging BIA for whale sharks is associated with the area around this isobath.

[48] 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. 118; Ref. 119). Once adults cease returning to feed their young, the young (fledging) wedge-tailed shearwaters fledge and depart nests (Ref. 120; Ref. 121).

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. 126).

5.3.4.1 Water quality

Water clarity in 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. 127). Baseline monitoring (pre-construction of the GFP, in waters off the west coast of Barrow Island, turbidity and concentrations of suspended sediments were generally low (Ref. 128).

CAPL conducted surveys (Ref. 31) to characterise the marine environment as part of the Gorgon Backfill Fields Development OPP; these surveys included water quality data collected at sites within the C&D and Chandon OAs. Concentrations of hydrocarbons and metals in the samples were compared against the Australian and New Zealand Guidelines (ANZG) default guideline values (DGVs) for 99% species protection (Ref. 129). Concentrations of metal and hydrocarbon (total recoverable hydrocarbon [TRH], benzene, toluene, ethylbenzene and xylene [BTEX], and polycyclic aromatic hydrocarbons [PAHs]), 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. 31). Dissolved copper exceeded the DGV for 99% species protection in both replicate surface water samples at Chandon DC-1 and Gorgon GMT; however, concentrations were below the 95% species protection DGV (Ref. 31). Dissolved cobalt concentrations in one replicate water sample near the seabed at Gorgon GMT also exceeded the DCV for 99% species protection (Ref. 31). 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 (Ref. 31). Barium concentrations were notably higher (more than double) in the near seabed sample compared to the surface sample for most sites; this trend didn’t occur within the exist for other constituents (Ref. 31). Total dissolved solids (TDS) varied between 38,000–38,700 mg/L at sites within the Chandon OA, and 38,750–39,900 mg/L at sites within the C&D OA (Ref. 31). Nutrient levels were generally low; total phosphorus (TP) concentrations were 0.01–0.11 mg/kg, and total nitrogen (TN) was 0.10–0.75 mg/kg. TP and TN concentrations were generally higher in near-seabed samples compared to those from the surface samples (Ref. 31).

Water temperature and salinity

Waters in northwest WA are tropical year-round, with sea surface temperature in open shelf waters reaching ~26°C in summer and ~22°C in winter. Nearshore temperatures off northwest WA fluctuate through a higher temperature range of ~17°C in winter to ~31°C in summer (Ref. 122).

Baseline monitoring (pre-construction of the GFP) in waters off the west coast of Barrow Island recorded salinity levels of 34.9–35.1 psu in both near-surface and near-seabed (Ref. 128). 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. 130).

Salinity and temperature water column profiles were collected as part of Gorgon Backfill Fields Development surveys (Ref. 31), which included sites within the

C&D and Chandon OAs. Across the full survey area (i.e. all sites across the Development Area[49] 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 (Ref. 31). 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 mS/cm 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 depth (Ref. 31).

Temperature-salinity profiles were typical for the region (Ref. 31). 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 m 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. 31).

5.3.4.2 Sediment quality

Marine sediment quality within the OAs 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. 130). 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. 130). Total petroleum hydrocarbon (TPH) 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. 130).

Sediment quality samples were collected as part of Gorgon Backfill Fields Development surveys (Ref. 31), which included sites within the C&D and Chandon OAs. The concentrations of hydrocarbons (TRH, BTEX, and PAH), were all below the LoR (Ref. 31). Concentrations of metals and metalloids were below ANZG DGVs (where they are established), with the exception of nickel in the Chandon OA. Total nickel in all three replicate sediment samples from site Chandon DC-1 exceeded the ANZG DGV; however, were below the GV-High value (Ref. 31). Given that this was a baseline study and no previous petroleum activity has

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

occurred in the vicinity of the Chandon DC-1 site, it is expected that this sediment chemistry would be representative of natural background levels.

Particle size

Sediment samples collected from within the Chandon OA were predominantly comprised of fine particles: ~60% clay (<2 µm) and ~30% silt (2–60 µm), and a smaller (~10%) proportion of sands (0.06–2 mm) (Ref. 31). Sediment samples collected from within the C&D OA were also predominantly comprised of fine particles: ~35% clay (<2 µm) and ~60% silt (2–60 µm), and smaller (~5%) proportion of sands (0.06–2 mm) (Ref. 31).

5.3.4.3 Air quality

Air quality within the OAs 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. 131). There have been exceedances of particulate matter (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. 131).

It is expected that these low levels of contamination would continue throughout the OAs and Hydrocarbon EMBA, unless within the immediate vicinity of an offshore point source such as a vessel or offshore petroleum activity where presence of air 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 are directly affected, or are affected by the existing physical and biological environments.

The NWMR supports a range of economic, social, and cultural activities. At present, industries within the NWMR include petroleum exploration and production, commercial and recreational fishing, tourism, ports and shipping (Ref. 19). These uses of the NWMR make an important economic and social contribution to settlements along the coast (Ref. 19). Industry activities present with the OAs and Hydrocarbon EMBA are identified and described in Section 5.4.6.

5.3.5.1 Land use

The OAs occur offshore and do not have any interface with the coast. The Hydrocarbon EMBA does not interface with the mainland coast, but does with some Pilbara inshore islands: South Muiron Island, Sunday Island, Peak Island, Flat Island, and Serrurier Island (Figure 5-1). Note: The Hydrocarbon EMBA typically only extends landward to the high-water mark (HWM).

The land uses that may be present within the Hydrocarbon EMBA (Shoreline) are summarised below.

The Pilbara Inshore Islands are a group of over 170 islands, islets, rocks and cays that lie between the bottom of Exmouth Gulf and the Regnard Islands near Cape Preston (Ref. 132). Only two islands (Muiron and Serrurier Islands) that occur within the Hydrocarbon EMBA (Shoreline) are classified as Nature Reserves (IUCN Ia) (Section 5.5.3). Both of the nature reserves on these islands are gazetted to the HWM. The Pilbara Inshore Islands Nature Reserves are known as important breeding and resting places for migratory and resident shorebirds, seabirds and marine turtles (Ref. 132). Fishing, beach walks and wildlife viewing are types of activities that may occur in the Pilbara Inshore Islands Nature Reserves (Ref. 132). Camping is only permitted on certain islands and may require a permit (Ref. 132).

No Native Title determinations or claims extend into the Hydrocarbon EMBA (Section 5.6).

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

5.3.5.2 Heritage

Heritage includes places, values, traditions, events and experiences that capture where we have come from, where we are now and gives context to where we are headed as a community (Ref. 133).

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 OAs 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. 134). 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. 135), guiding not just movement, but culture, lore, and identity.
Kearney et al. (Ref. 136) 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. 137). When Country is damaged or altered, so too are songlines and the knowledge they embody and enact (Ref. 135).

Nunn and Reid (Ref. 138) discuss how First Nations oral traditions have documented sea level rise over the last 7,000 years. Kearney et al. (Ref. 136) 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. 139). UCH, including First Nations UCH, as protected under the UCH Act is discussed in Section 5.6.2.

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. 140). 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. 140).

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. 141). 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. 141).

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 mainland 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[50] 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 incorporated into 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.
Nhuwala Claim Group	Cultural heritage values and features 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.

[50] These islands occur outside of the Hydrocarbon EMBA. Some nearshore waters adjacent to southern Barrow Island and western Montebello Islands are within the Hydrocarbon EMBA.

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. 19). British colonisation didn't begin in the Pilbara until 1860s; pastoralism was the first major industry, followed by small ports and service centres (Ref. 19). The pearling industry began in the late-1800s, and remains a significant contributor to the economy of northwest WA (Ref. 19). 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. 19). Petroleum discovery and development commenced from the 1950s, with both onshore and offshore discoveries (Ref. 19).

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

5.3.6 Commonwealth marine area

The Commonwealth marine area is a MNES under the EPBC Act, and a relevant value and sensitivity under the OPGGS(E)R. The OAs and Hydrocarbon EMBA for this petroleum activity occur 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. 19). 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. 19). 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. 21). 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. 19).

Conservation values of the Commonwealth marine area include:

- Protected species and/or their habitat (Section 5.3.3)
- Protected places including Australian Marine Parks (AMPs; 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.

The criteria used to identify KEFs are (Ref. 19; Ref. 142):

- A species, group of species, or a community with a regionally important ecological role
- 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
  - Aggregations of marine life
  - Biodiversity and endemism
- A unique sea floor feature with ecological properties of regional significance.

KEFs have been identified by the Australian Government based on advice from scientists about the ecological processes and characteristics of the area (Ref. 142).

The presence of KEFs within the OAs and Hydrocarbon EMBA are shown in Figure 5-12, and a description of their values and characteristics is provided in Table 5-18. Where relevant, descriptions of benthic habitats observed during the Gorgon Backfill Fields Development benthic survey (Ref. 31) have also been included.

Table 5-18: Presence[51] and values and characteristics of KEFs

KEF	C&D OA	Chandon OA	Hydrocarbon EMBA
Ancient coastline at 125 m depth contour	✓	✗ (~60 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. 19). 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 NWMR (Ref. 19), little is known about fauna associated with the hard substrate of the escarpment 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. 19). **Gorgon Backfill Fields Development benthic survey:** Key findings from the benthic survey within this KEF identified (Ref. 31): • BCH at Gorgon MPTS and the Development Area within this KEF is predicted to be comprised of smooth seabed with bioturbation and bare substrate and appeared to be devoid of epibenthic biota. This may indicate a layer of soft substrate over consolidated hard substrate, which is unlikely to provide significant habitat to biota. • A total of 18,011 individuals from 13 fish taxa. The fish assemblage was dominated by Trevallies (Carangidae) with three species representing 14,231 of the total individuals.			
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	✗ (~105 km)	✗ (~165 km)	✓
The canyons are associated with upwelling as they channel deep water from the Cuvier Abyssal Plain up onto the slope. This nutrient-rich water interacts with the Leeuwin Current at the canyon heads. Aggregations of whale sharks, manta rays, sea snakes, sharks, large predatory fish and seabirds are known to occur in this area (Ref. 19). The canyons on the slope of the Cuvier Abyssal Plain and Cape Range Peninsula are connected to the Commonwealth waters adjacent to Ningaloo Reef and may also have connections to Exmouth Plateau. The narrow shelf width (about 10 km) near the canyons facilitates nutrient upwelling. Thus, the canyons probably play a part in the enhanced productivity of the Ningaloo Reef system (Ref. 19). The canyons are also repositories for organic and inorganic particulate matter from the shelf and serve as conduits for its transfer from the surface and shelf to greater			

[51] Where ✓ = present and ✗ = not present. Approximate distance from feature to OA provided where relevant.

KEF	C&D OA	Chandon OA	Hydrocarbon EMBA
depths. The hard substrates of canyons provide habitat for deepwater snapper and other species (Ref. 23). **Values**: Unique sea floor features with ecological properties of regional significance.			
Continental slope demersal fish communities	✓	✖ (~40 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. 143). According to the Marine Bioregional Plan for the NWMR (Ref. 19), the demersal fish species occupy two 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. 19). **Values**: High levels of endemism with a diversity of fish assemblages (Ref. 19). **Gorgon Backfill Fields Development benthic survey:** Key findings from the benthic survey within this KEF identified (Ref. 31): • The most dominant BCH identified in the habitat mapping was irregular and smooth seabed with bare substrates, and discrete depressions of bioturbated sediments. • Topographically complex scarps were also predicted to be present traversing through the Development Area between ~400–800 m depths. Ground-truthing transects verified the presence of cnidarians, echinoderms, sponges, and a mixture of these biotic groups in the scarps in varying percent cover (from low [<10%] to high cover [>80%]). • A total of 468 fish belonging to 25 taxa, with the fish assemblage dominated by Trevallies (Carangidae) with four species from three genera accounting for 256 of the individuals observed. In comparison to the other KEFs within the Development Area, there was no significant difference in the mean number of fish taxa within the continental slope demersal fish communities KEF.			
Exmouth Plateau	✖ (~60 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. 19). 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. 19). Fauna in the pelagic waters above the plateau are likely to include small pelagic species and nekton (Ref. 23). **Values**: Unique sea floor feature with ecological properties of regional significance (Ref. 19). **Gorgon Backfill Fields Development benthic survey:** Key findings from the benthic survey within this KEF identified (Ref. 31): • The most dominant BCH were identified as relatively uniform and dominated by irregular seabed with bioturbation or bare substrate and have a low likelihood of providing epibiota with significant habitat. • Two scarps cross through the indicative Chandon flowline route from east to west. A third one was identified north of Chandon DC-1. These scarps, however, are devoid of epibenthic fauna as observed in the ground-truthing videos.			

KEF	C&D OA	Chandon OA	Hydrocarbon EMBA
• A total of 165 individual fish from 14 taxa were identified. The fish assemblage was dominated by an unidentified anguilliform fish and *Bathypterois sp1* (family Ipnopidae), representing over 65% of the total number of individual fish recorded.			

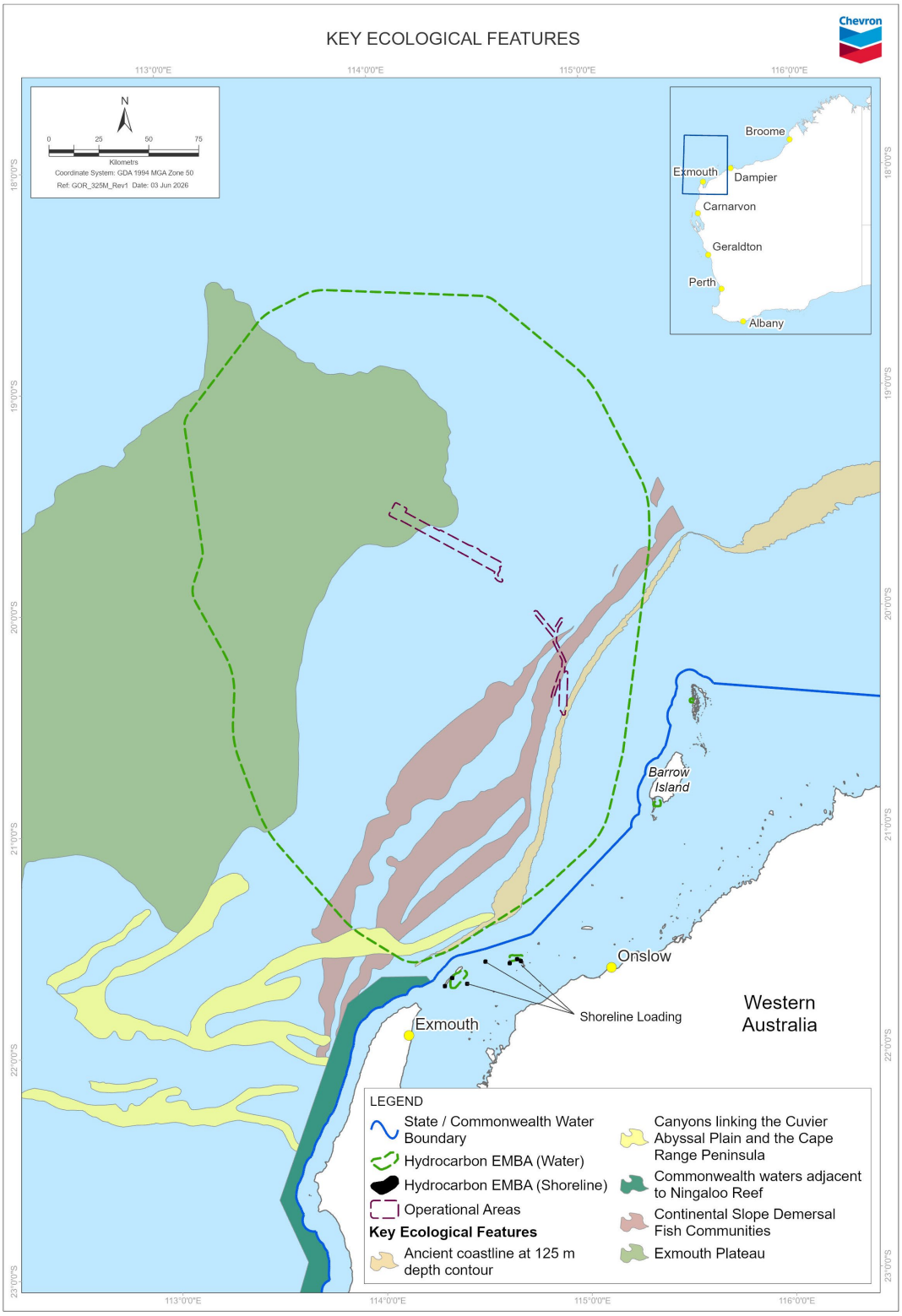


Figure 5-12: KEFs within the vicinity of the OA and Hydrocarbon EMBA

5.3.7 Commonwealth land area

Commonwealth land[52] is a relevant value and sensitivity under the OPGGS(E)R. Based on searches of the online PMST (Ref. 17; Appendix D) there is no Commonwealth land within the OAs or 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 such resources as fishing stocks, petroleum reservoirs, or values of the Commonwealth marine area. Marine and coastal industries have been developed based on natural and physical resources, and where these industries may intersect with the OAs and/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 OAs and/or Hydrocarbon EMBA, and that have fishing effort recorded over a 10-year period (2015–2024; Ref. 144) are listed in Table 5-19.

For the commercial fisheries with fishing effort recorded within the 60 nm graticular reporting blocks intersecting the OAs, additional information has been provided below.

Table 5-19: Fishing effort recorded[53] during 2015–2024 within Commonwealth-managed commercial fisheries

Fishery	C&D OA	Chandon OA	Hydrocarbon EMBA
North West Slope Trawl Fishery (NWSTF)	✓	✓	✓
Western Deepwater Trawl Fishery	×	×	✓

North West Slope Trawl Fishery

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. 145). 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. 145).

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 5-13;

[52] 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.

[53] Where ✓ = fishing effort recorded, × = no fishing effort recorded.

Ref. 144). The C&D OA only overlaps the recorded fishing effort for the 2020, and the Chandon OA only in 2015. The Hydrocarbon EMBA overlaps multiple reporting grids with recorded fishing effort for the NWSTF (Figure 5-13; Ref. 144).

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 and Sciences (ABARES) Fishery Status Report 2025, the NWSTF is not subject to overfishing (Ref. 145).

Tuna fisheries

While the OAs 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 OAs and Hydrocarbon EMBA within the 2015–2024 period. The SBTF is typically active within waters in the Great Australian Bight and south-eastern Australia, and the WTBF is 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. 145; Ref. 146). This indicative spawning ground (based on geospatial data provided by ABARES, and as shown in annual Commonwealth fishery status reports) extends into the Chandon OA and Hydrocarbon EMBA. Spawning can take place from September to April (Ref. 147; Ref. 148), with two peaks observed in their spawning activity: September–October and February–March (Ref. 149; Ref. 150). 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. 149). A female can release ~14–15 million eggs during a spawning period (Ref. 151). Individual fish probably stay in the spawning area for one month or so (Ref. 149; Ref. 152). Larvae drift passively and become entrained in the southward-flowing South Java and Leeuwin Currents, transporting them along the Western Australian coast (Ref. 149). 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. 147). One to two-year old juveniles then migrate either east to the Great Australian Bight, or west to the waters off South Africa (Ref. 150). 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. 147).

Known spawning grounds for yellowfin tuna generally occur in equatorial waters (~15ºS –10ºN), with peak spawning typically occurring between November and April (Ref. 153; Ref. 154; Ref. 155). Recent habitat suitability modelling (Ref. 148) 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 northwest 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. 148). 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. 154). As adults, yellowfin tuna can undertake extensive migrations

between spawning areas in equatorial waters and feeding grounds in southern and northern latitudes (Ref. 156 as cited in Ref. 155).

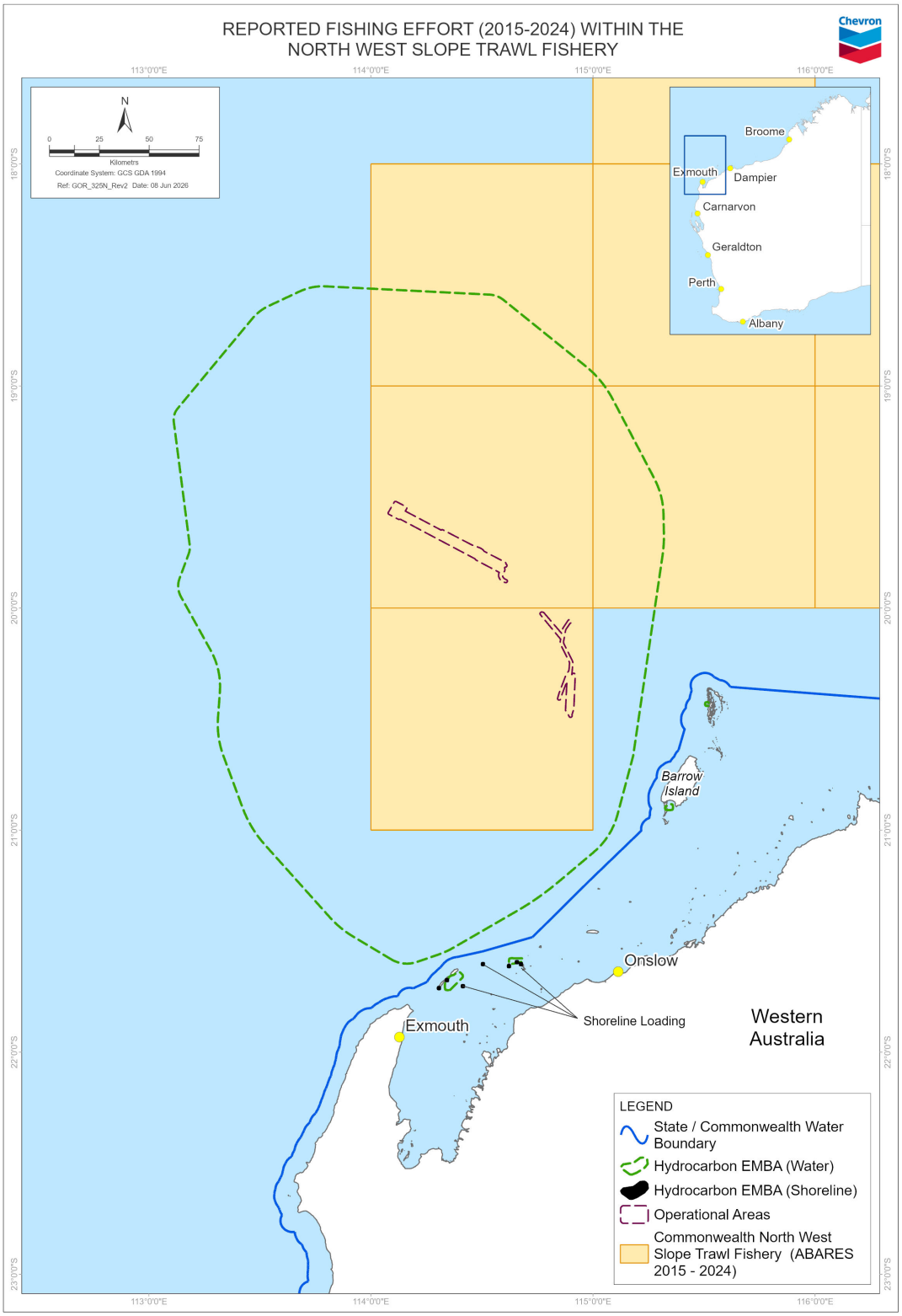


Figure 5-13: Presence of fishing activity (2015–2024) for the NWSTF in relation to the OA and Hydrocarbon EMBA

5.4.1.2 State managed fisheries

The State-managed commercial fisheries with fishery management areas that intersect the OAs and/or Hydrocarbon EMBA, and that have fishing effort recorded over a 10-year period (2015–2024; Ref. 157) are listed in Table 5-20.

For the commercial fisheries with fishing effort recorded within the graticular reporting blocks intersecting the OAs, additional information has been provided below.

Table 5-20: Fishing effort recorded[54] during 2015–2024 within State-managed commercial fisheries

Fishery	C&D OA	Chandon OA	Hydrocarbon EMBA
North Coast Bioregion			
Mackerel Managed Fishery	×	×	✓
Pilbara Crab Managed Fishery	×	×	✓
Pilbara Line Fishery	✓	✓	✓
Pilbara Trap Managed Fishery	✓	×	✓
West Australian Sea Cucumber (Beche-De-Mer) Fishery	×	×	✓
Gascoyne Bioregion			
Exmouth Gulf Prawn Managed Fishery	×	×	✓
West Coast Deep Sea Crustacean Fishery	×	×	✓
Statewide			
Marine Aquarium Fish Managed Fishery	×	×	✓
Specimen Shell Managed Fishery	×	×	✓

The Pilbara Line Fishery (line fishing methods) operates on an exemption basis which restricts vessels to operating within a nominated 5-month block period each year (Ref. 158), typically May to September. The Pilbara Line Fishery catch is made up of ~45–50 different fish species. The main species targeted by the fishery are bluespotted emperor (*Lethrinus punctulatus*), red emperor (*Lutjanus sebae*), rankin cod (*Epinephelus multinotatus*), as well as some deeper offshore species such as ruby snapper (*Eteliscarbunculus*) and eightbar grouper (*Hyporthodus octofasciatus*). The total catch for the fishery in 2023 was 114 t (Ref. 159). According to the fishing effort records from the Western Australian Department of Primary Industry and Regional Development (DPIRD; Ref. 157), fishing effort within the 60 nm graticular reporting block that intersects with the Chandon OA was only recorded in July and November 2015 and March 2016. In contrast, fishing effort within the 60 nm graticular reporting block that intersects C&D OA was recorded in all ten years between 2015–2024. For both OAs ≤3 vessels operated within the 60 nm graticular reporting blocks. Fishing effort data is not available for the Pilbara Line Fishery at the smaller 10 nm graticular reporting blocks (i.e. higher resolution data).

The Pilbara Trap Managed Fishery (trap methods) is managed through area closures and effort allocations (Ref. 159). Fishers use baited traps; the trap dimensions are ~1600 mm (length) x 1,600 mm (width) x 700 mm (height)

[54] Where ✓ = fishing effort recorded, × = no fishing effort recorded.

(Ref. 160). These traps are set individually, each with a single rope and surface float (Ref. 160). Trap fishing occurs in water depths of ~30–200 m (Ref. 160). The Pilbara Trap Managed Fishery catch is also made up of ~45–50 different fish species; with the main target species of bluespotted emperor, red emperor, and rankin cod. The total catch for the fishery in 2023 was 573 t (Ref. 159). According to the fishing effort records from DPIRD (Ref. 157), fishing effort within the 60 nm graticular reporting block that intersects C&D OA was recorded in all ten years between 2015–2024 with <3 vessels operating. The reported effort in the trap fishery was less than that for the line fishery for this reporting block. Fishing effort data is not available for the Pilbara Trap Managed Fishery at the smaller 10 nm graticular reporting blocks (i.e. higher resolution data).

These fisheries are part of the Pilbara Demersal Scalefish Fishery. For the 2023 fishing year, the bulk of the catch (~74%) within the Pilbara Demersal Scalefish Fishery was landed by the trawl sector (which does not occur within the OAs); followed by the trap sector (~22%) with a smaller contribution from the line (4%) sector (Ref. 159).

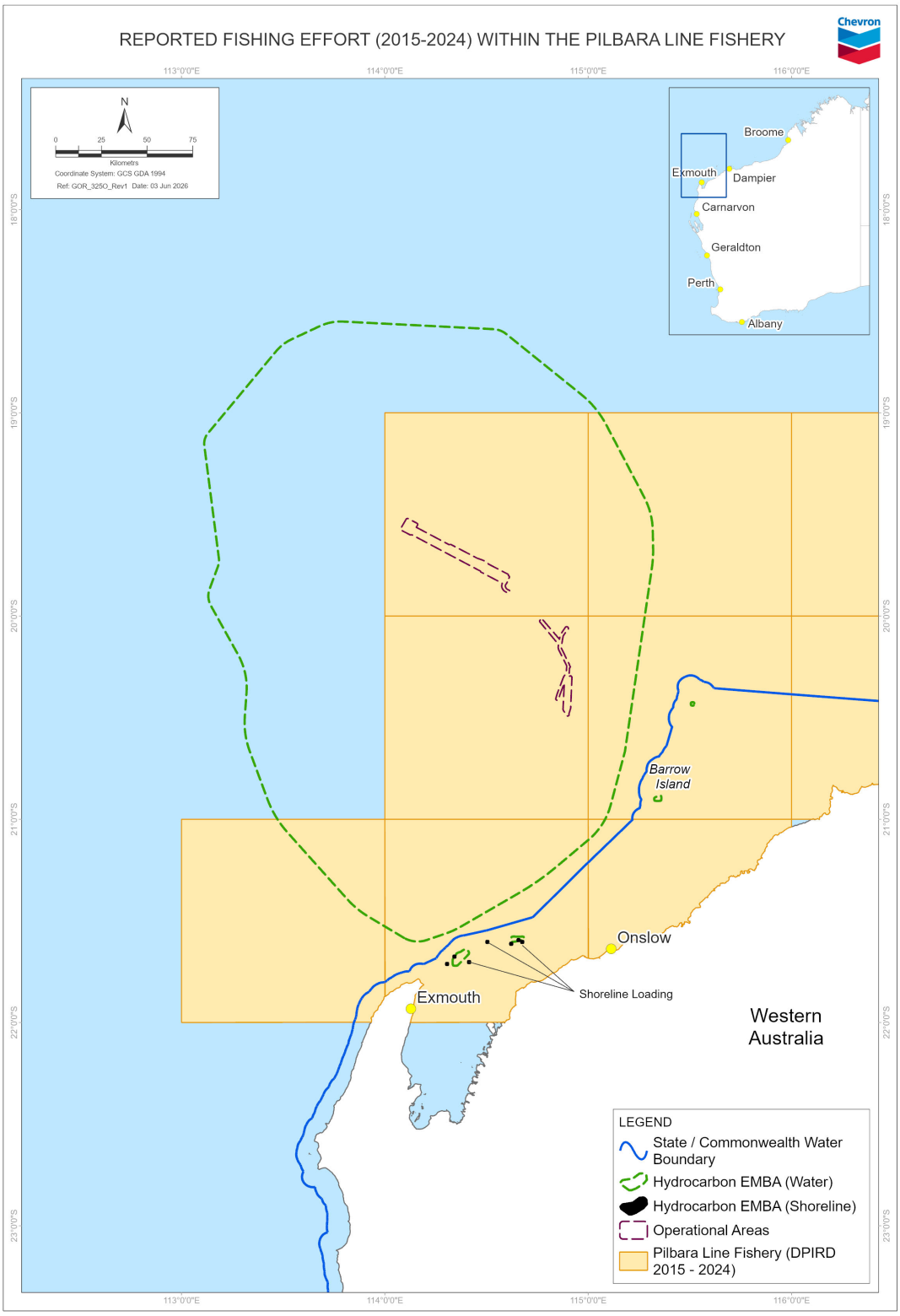


Figure 5-14: Recorded fishing effort (2015–2024) for the Pilbara Line Fishery within the vicinity of the OAs and Hydrocarbon EMBA

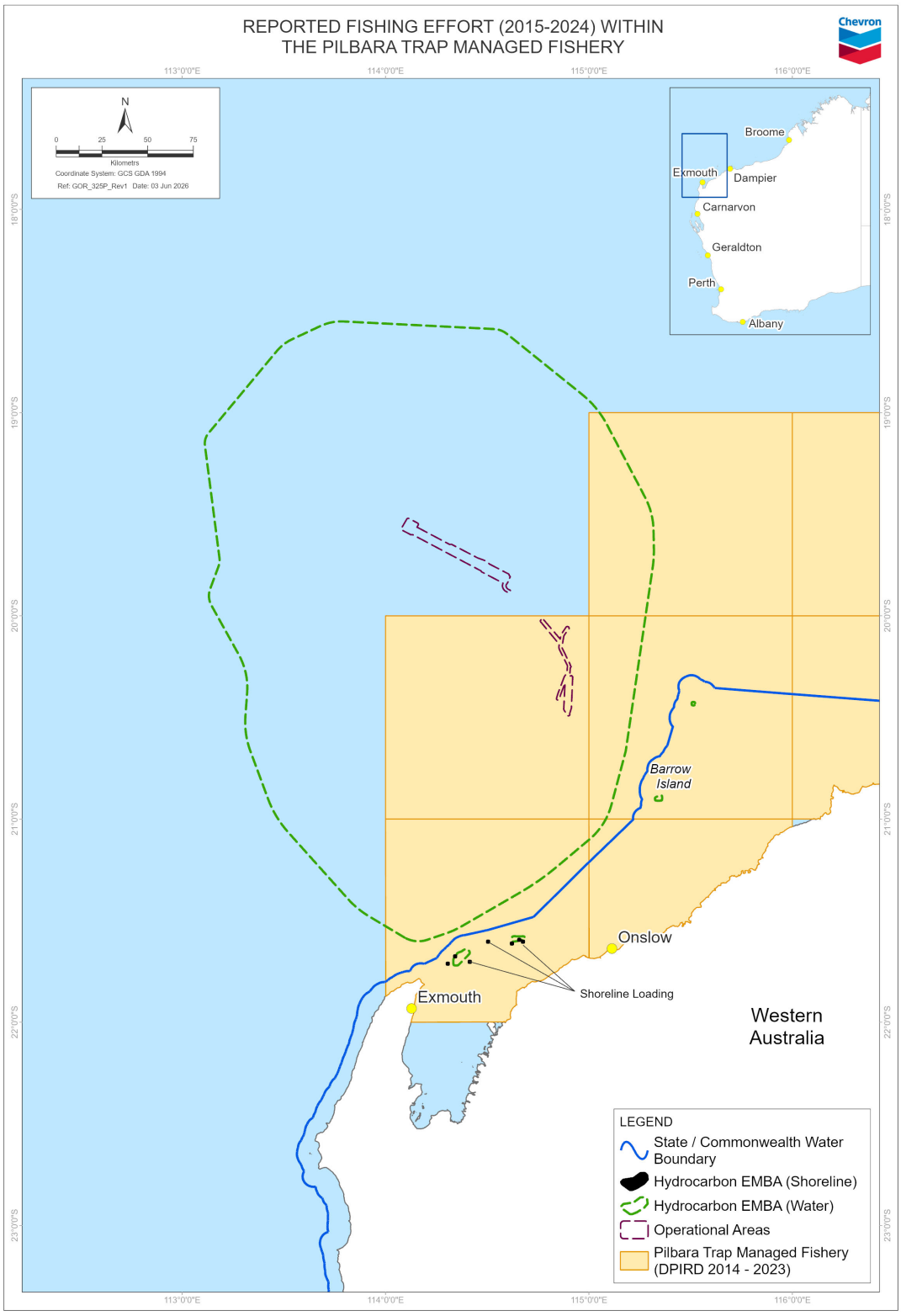


Figure 5-15: Recorded fishing effort (2015–2024) for the Pilbara Trap Managed Fishery within the vicinity of the OAs and Hydrocarbon EMBA

5.4.1.3 Pearling and aquaculture

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

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

The Hydrocarbon EMBA does not interface with the mainland coast, but does with some Pilbara inshore islands (South Muiron Island, Sunday Island, Peak Island, Flat Island, and Serrurier Island; Figure 5-1) due to potential shoreline oil accumulation associated with unplanned oil spill event. While no shoreline contact is predicted, the Hydrocarbon EMBA also includes some small patches of nearshore waters near Bandicoot Bay (southern Barrow Island) and eastern Montebello Islands (Figure 5-1). There are known pearl farm leases in nearshore waters around the Montebello 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. 161; Ref. 162). 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. 162) 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 OAs and Hydrocarbon EMBA are within the North Coast and Gascoyne bioregions. 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%) habitats[55] (Ref. 162). 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. 162). 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 effort recorded over a 10-year period (2015–2024) (Ref. 157) did not identify activity within the Chandon OA. Some tour operator effort was recorded within the 60 nm graticular reporting block that intersects C&D OA. Some shore-based fishing may also occur in the coastal regions within the Hydrocarbon EMBA (Section 5.3.5.1).

5.4.3 Traditional fisheries

The WA DPIRD recognises customary fishing as an integral part of WA's Aboriginal cultures in maintaining connection to Country (Ref. 163). Customary fishing has been incorporated into the *Fish Resources Management Act 1994* (WA). According to the Act, customary fishing means fishing by an Aboriginal

[55] Bioregions are divided into five depth-based habitats for fisheries management: pelagic (across all depths), offshore demersal (>250 m), inshore demersal (20–250 m), nearshore (to 20 m deep), estuarine (saltwater and 'brackish' to river mouth), and freshwater (river, stream, dams) (Ref. 162).

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

Ongoing use of marine and coastal resources, including customary fishing, is expected to occur in NWMR and adjacent coastal waters. However, it is expected that much of this activity will occur within shallow coastal waters and therefore would not intersect with the OAs. 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 (AIS) data, across Australia's Search and Rescue region. This data has been used to develop Figure 5-16, which shows vessel traffic within the vicinity of the OAs and Hydrocarbon EMBA.

AMSA has established a network of shipping fairways off the northwest coast of Australia (Ref. 164). 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. The OAs are not located within any of the established shipping fairways (Figure 5-16).

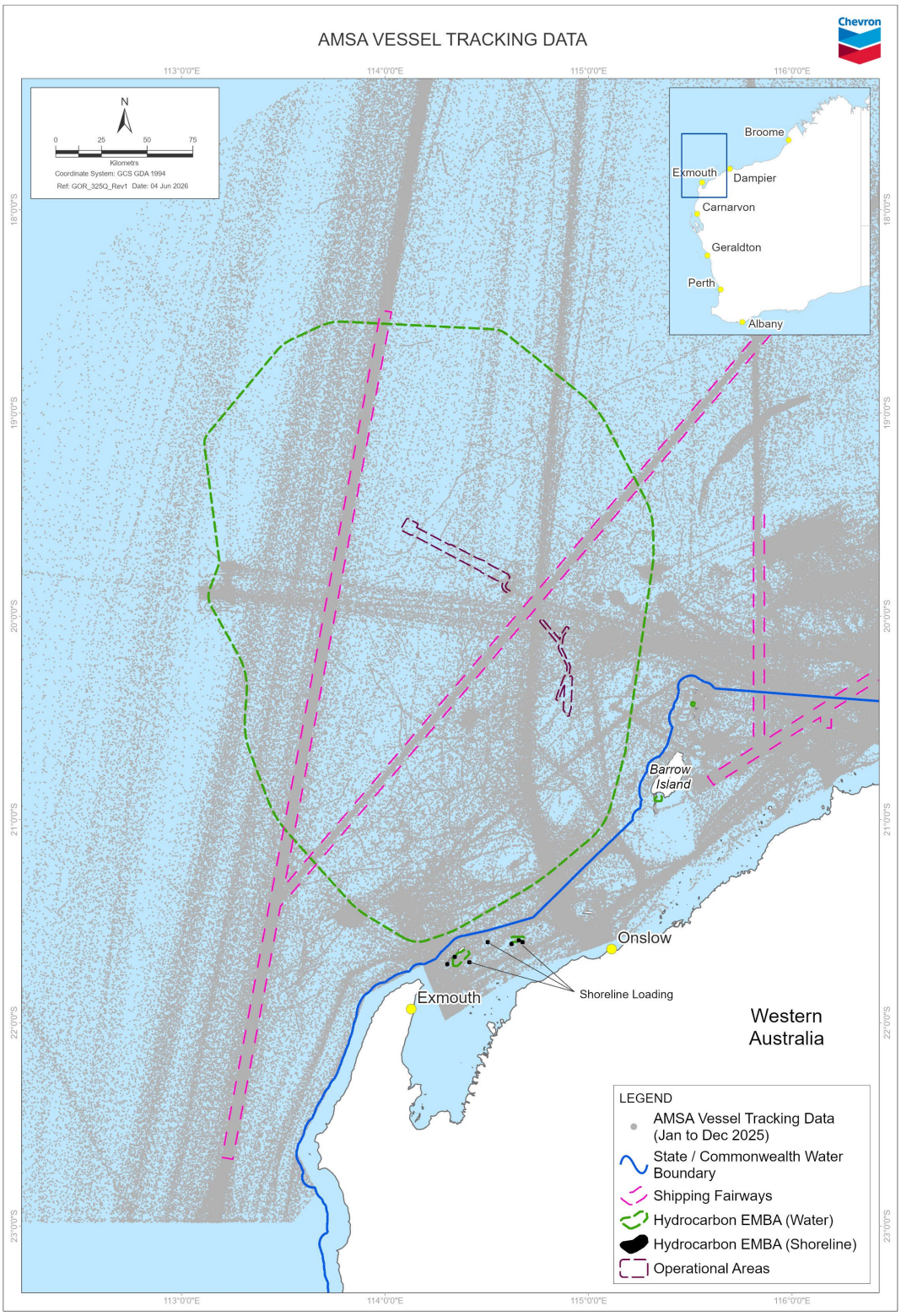


Figure 5-16: Vessel traffic within the vicinity of the OA and Hydrocarbon EMBA

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. 165). Charter fishing, diving, snorkelling, wildlife watching, and cruising are some of the commercial tourism activities in and adjacent to the NWMR (Ref. 19). 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. 19).

Both OAs occur offshore and do 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 does not interface with the mainland coast, but does with some Pilbara inshore islands (South Muiron Island, Sunday Island, Peak Island, Flat Island, and Serrurier Island; Figure 5-1); and also includes some nearshore waters around Bandicoot Bay (southern Barrow Island) and eastern Montebello Islands (Figure 5-1). As described in Section 5.3.5.1, some 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 (~130 km and ~190 km southwest of the C&D and Chandon OAs respectively). Activities undertaken include recreational fishing, snorkelling and scuba diving, wildlife watching and encounters (including whale sharks, manta rays, humpback whales and turtles) (Ref. 166), 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. 35).

5.4.6 Other petroleum activities

The OAs are 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. 167) run by various operators. According to Australia's Energy Commodity Resources 2025 (Ref. 168), ~93% of conventional gas resources are located on the North West Shelf 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. 169). Those activities that may occur in the vicinity (≤15 km) of the OAs[56] are described in Table 5-21.

In addition to the EPs that have been accepted or are under assessment, CAPL is also proposing to undertake installation activities for the GS3 Project; relevant person consultation for this petroleum activity has been undertaken (Ref. 170).

[56] Given that the largest predicted exposure area from planned activities under the scope of this EP (underwater sound emissions; Section 8.5) was predicted to be ~5.6 km, a conservative 15 km buffer was applied for the review of concurrent petroleum activities. This buffer represents a conservative approach to assessing the potential for cumulative impacts.

Table 5-21: Petroleum activities within ~15 km from the OAs

Operator and EP	Key characteristics of petroleum activity	Distance from OAs
Operations (Accepted EPs)		
CAPL – Gorgon and Jansz Feed Gas Pipeline and Wells Operations (Commonwealth Waters) EP	Activities include: • Commissioning and start-up associated with the J-IC Project. Commissioning is anticipated to commence from 2026, with start-up and operations from 2027 or 2028. • Ongoing operations and inspection, maintenance, and repairs (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.	Some activities for J-IC Project would occur within or adjacent to the Chandon OA. The Jansz Feed Gas Pipeline route also occurs within the C&D and Chandon OAs.
Woodside – Scarborough Offshore Facility and Trunkline (Operations) EP	Activities include ongoing IMR for the Scarborough trunkline. Note: All other Scarborough facilities are much further west from the OAs and associated activities have not been described.	Scarborough trunkline traverses the Chandon OA.
Santos – Varanus Island Hub Operations EP	Activities include ongoing operations and IMR for subsea hydrocarbon system. Note: Most infrastructure is location >15 km from the C&D OA; some wells (e.g. Spar-2, Halyard-1 and Halyard-2 occur within 15 km).	Some wells ~12–13 km from C&D OA.
Installation (Accepted EPs)		
CAPL – Gorgon Gas Development Jansz Umbilical EP	Activities include installation, hook-up and contingency IMR of the Jansz umbilical. Activities may occur between mid-2026 to mid-2028 for an estimated duration of ~3–6 months.	The proposed Jansz umbilical route occurs within parts of the C&D and Chandon OAs.
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 late-2024 to mid-2027.	Some activities for J-IC Project would occur within or adjacent to the Chandon OA. The proposed HVSC route also occurs within the C&D and Chandon OAs.
EPs under assessment		
None identified within 15 km buffer of OAs.		

5.4.7 Other marine and coastal industries

Several other marine and coastal industries may be present within the OAs and/or Hydrocarbon EMBA (Table 5-22; Figure 5-17). There were no offshore renewable energy facilities, salt mines, or onshore processing facilities identified within or adjacent to the Hydrocarbon EMBA.

Table 5-22: Presence[57] of other industries

Industry	C&D OA	Chandon OA	Hydrocarbon EMBA
Defence	✓	✓	✓
Ports	×	×	×
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. 171) which overlaps the OAs and the Hydrocarbon EMBA. There are no known sites of unexploded ordnance within the OAs (Ref. 172).

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 submarine cable is likely to intersect with the Chandon OA and 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.

The *Port Authorities Act 1999* (WA) governs Western Australian port authorities, covering their functions, responsibilities, concept of operations and related matters. No ports proclaimed under this Act occur within the OAs or Hydrocarbon EMBA. The *Shipping and Pilotage Act 1967* (WA) governs shipping and pilotage in and about ports, boat harbours, and mooring control areas of WA. No ports proclaimed under either of these Acts occur within the OAs or Hydrocarbon EMBA.

[57] Where ✓ = present, × = not present.

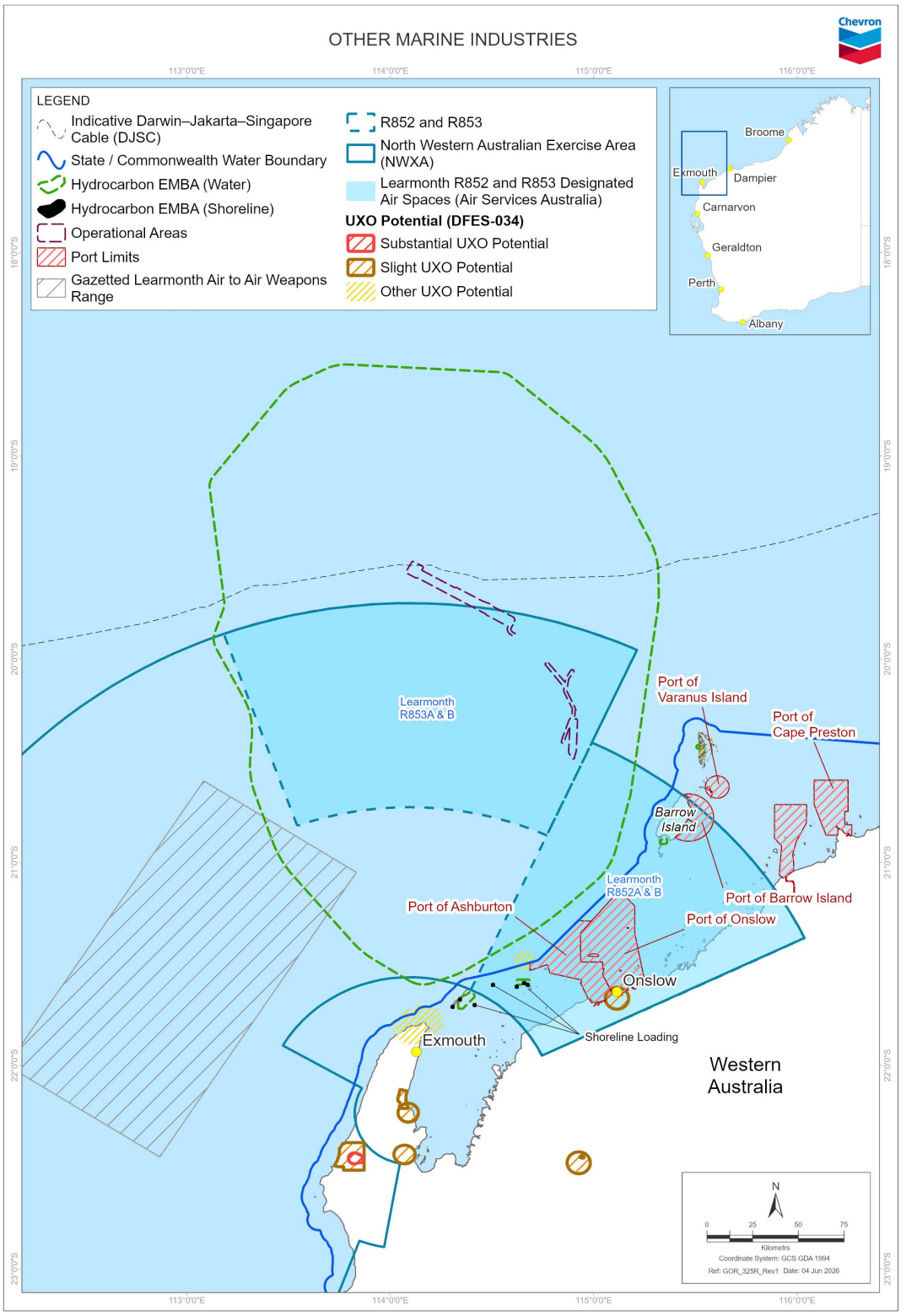


Figure 5-17: Other industries within the vicinity of the OAs and Hydrocarbon EMBA

5.5 Qualities and characteristics of locations, places, and areas

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

5.5.1 Australian Marine Parks

AMPs help conserve marine habitats and the marine species that live within and rely on these habitats (Ref. 173). Marine parks also provide places for people to watch wildlife, dive, and go boating, snorkelling, or fishing (Ref. 173).

The North-west Marine Parks Network Management Plan (Ref. 174) defines the following types of values for the AMPs 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. 174) 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).

AMPs occur within Commonwealth waters and have been proclaimed under the EPBC Act. There are no AMPs within the OAs; the closest is the Montebello Marine Park located ~35 km east and ~70 southeast of the C&D OA and Chandon OA respectively. The presence of AMPs within the Hydrocarbon EMBA, and a summary of values, is described in Table 5-23 and shown in Figure 5-18.

Table 5-23 Presence[58] and values of AMPs

AMP[59]	C&D OA	Chandon OA	Hydrocarbon EMBA
Gascoyne (Multiple Use Zone [IUCN VI])	✗ (~120 km)	✗ (~125 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			

[58] Where ✓ = present and ✗ = not present. Approximate distance from feature to OA provided where relevant.

[59] Data source: Ref. 174.

AMP[59]	C&D OA	Chandon OA	Hydrocarbon EMBA
• Central Western Transition—Characterised by large areas of continental slope; a range of topographic features such as terraces, rises, and canyons; seasonal and sporadic upwelling; and benthic slope communities comprising tropical and temperate species • Northwest Province—An area of continental slope comprising diverse and endemic fish communities. KEFs of the Marine Park are: • Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula—An area resulting in upwelling of nutrient rich water and aggregations of marine life • Commonwealth waters adjacent to Ningaloo Reef—An area where the Leeuwin and Ningaloo currents interact resulting in enhanced productivity and aggregations of marine life • Continental slope demersal fish communities—An area of high diversity of demersal fish assemblages on the continental slope • Exmouth Plateau—A regionally and nationally unique deep-sea plateau in tropical waters. Ecosystems represented in the Marine Park are influenced by the interaction of the Leeuwin Current, Leeuwin Undercurrent, and the Ningaloo Current. The Marine Park supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the Marine Park include breeding habitat for seabirds, internesting habitat for marine turtles, a migratory pathway for humpback whales, and foraging habitat and migratory pathway for pygmy blue whales. **Cultural values** Sea Country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their Sea Country for tens of thousands of years. CAPL understands 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 property. The Marine Park contains more than five known historic shipwrecks. **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])	**✖ (~35 km)**	**✖ (~70 km)**	**✓**
The Montebello Marine Park is located offshore of Barrow Island and 80 km west of Dampier extending from the Western Australian state waters boundary, and is adjacent to the Western Australian Barrow Island and Montebello Islands Marine Parks. The Marine Park covers an area of 3,413 km² and water depths from <15 m to 150 m. **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 thought to be an important seafloor feature and migratory pathway for humpback whales. A KEF of the Marine Park is the ancient coastline at the 125 m depth contour where rocky escarpments are thought to provide biologically important habitat in areas otherwise dominated by soft sediments. The Marine Park supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the Marine Park include breeding habitat for seabirds, internesting, foraging, mating, and nesting habitat for marine turtles, a migratory pathway for humpback whales and foraging habitat for whale sharks. **Cultural values** Sea Country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their Sea Country for tens of thousands of years.			

AMP[59]	C&D OA	Chandon OA	Hydrocarbon EMBA
CAPL understands through consultation that the Thalanyji and Nhuwala People are the Traditional Custodians of the Sea Country in this Marine Park. **Heritage values** No World, Commonwealth, or National Heritage 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. The Marine Park contains two known shipwrecks: *Trial* (wrecked in 1622), the earliest known shipwreck in Australian waters and *Tanami* (unknown date). **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.			

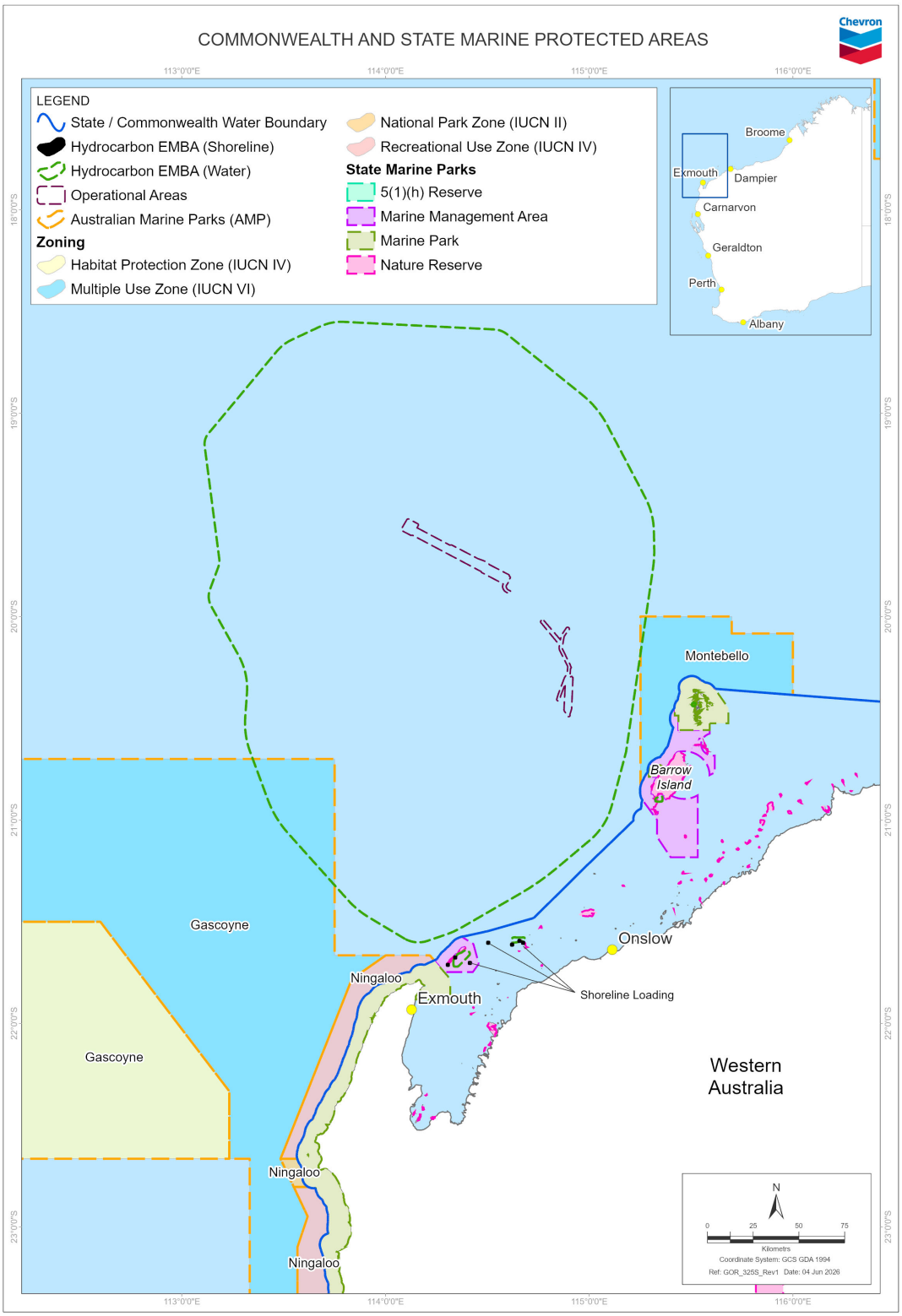


Figure 5-18: Commonwealth and State marine protected areas

5.5.2 State marine protected areas

State marine parks and marine management areas 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 OAs. The presence of marine parks or marine management areas within the Hydrocarbon EMBA is shown in Table 5-24 and Figure 5-18.

Table 5-24: Presence[60] of state marine protected areas

State protected areas	IUCN zones	C&D OA	Chandon OA	Hydrocarbon EMBA
Barrow Island – Marine Management Area	Unassigned (IUCN VI)	× (~50 km)	× (~115 km)	✓
Montebello Islands – Marine Park	General Use Zone (IUCN II)	× (~50 km)	× (~100 km)	✓
	Sanctuary Zone (IUCN IA)	× (~55 km)	× (~105 km)	✓
	Special Purpose Zone (Pearling) (IUCN VI)	× (~60 km)	× (~110 km)	✓
Muiron Islands – Marine Management Area	Conservation Area (IUCN Ia)	× (~135 km)	× (~195 km)	✓
	Unclassified (IUCN VI)	× (~130 km)	× (~185 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.

Both OAs occur offshore in Commonwealth waters, and as such there is no interface with State terrestrial protected areas. The Hydrocarbon EMBA does not interface with the mainland coast, but does with some Pilbara inshore islands (South Muiron Island, Sunday Island, Peak Island, Flat Island, and Serrurier Island; Figure 5-1). Note: The Hydrocarbon EMBA typically only extends landward to the HWM. The State terrestrial protected areas that occur adjacent to the Hydrocarbon EMBA are shown in Table 5-25.

Table 5-25: Presence[60] of state terrestrial protected areas

Land protected areas	IUCN Zones	C&D OA	Chandon OA	Hydrocarbon EMBA
Muiron Islands[61]	Nature Reserve (IUCN Ia)	× (~135 km)	× (~190 km)	✓
Serrurier Island[61]	Nature Reserve (IUCN Ia)	× (~125 km)	× (~185 km)	✓

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.

[60] Where ✓ = present and × = not present. Approximate distance from feature to OA provided where relevant.
[61] Terrestrial protected area is landward of HWM.

Table 5-26 identifies the presence of these, and other marine or coastal heritage protected places, within the OAs and Hydrocarbon EMBA.

Table 5-26: Presence of heritage values

Feature	C&D OA	Chandon OA	Hydrocarbon EMBA
World Heritage property			
The Ningaloo Coast	×	×	✓
National Heritage place			
The Ningaloo Coast	×	×	✓
Commonwealth Heritage place			
—	(None identified within the OAs and Hydrocarbon EMBA)		
Indigenous Protected Area			
—	(None identified within the OAs and Hydrocarbon EMBA)		
Sites or artefacts protected under the UCH Act			
Historic shipwrecks (>75 years old)	×	×	✓
Shipwrecks	×	×	✓
Sunken aircraft	(None identified within the OAs and Hydrocarbon EMBA)		
In situ artefacts	(None identified within the OAs and Hydrocarbon EMBA)		
Sites or artefacts protected under the *Aboriginal Cultural Heritage Act 1972* (WA)			
—	(None identified within the OAs and Hydrocarbon EMBA)		
Determined areas under the *Native Title Act 1993* (Cth)			
—	(None identified within the OAs and Hydrocarbon EMBA)		
Claim areas under the *Native Title Act 1993* (Cth)			
—	(None identified within the OAs and Hydrocarbon EMBA)		

5.6.1 Ningaloo Coast

The Ningaloo Coast is located in WA adjacent to the Eastern Indian Ocean. The Ningaloo Reef and Exmouth Peninsula karst system is a cohesive limestone structure that is at the heart of the natural heritage significance of the Ningaloo Coast (Ref. 175). The area has a high level of terrestrial species endemism, and high marine species diversity and abundance (Ref. 176). The waters of the Ningaloo Coast contain one of the best developed near-shore reefs in the world, a continuous series of more than 200 km of wave-swept ramparts off a rugged limestone peninsula (Ref. 177).

The marine portion of the World Heritage property contains a high diversity of habitats that includes lagoon, reef, open ocean, the continental slope, and the continental shelf (Ref. 176). Intertidal systems such as rocky shores, sandy beaches, estuaries, and mangroves are also present (Ref. 176). The most dominant marine habitat is Ningaloo Reef, which sustains both tropical and temperate marine fauna and flora, including marine reptiles and mammals (Ref. 176).

The main terrestrial feature of the Ningaloo Coast is the extensive karst system and network of underground caves and water courses of the Cape Range (Ref. 176). The karst system includes hundreds of separate features such as caves, dolines, and subterranean water bodies and supports a rich diversity of

highly specialised subterranean species (Ref. 176). Above ground, the Cape Range Peninsula belongs to an arid ecoregion recognised for its high levels of species richness and endemism, particularly for birds and reptiles (Ref. 176).

In addition to the natural values of the Ningaloo Coast, values of Traditional Owners are identified under the National Heritage listing (Ref. 175). Archaeological deposits in the rock shelters on Cape Range show Traditional Owners had a sophisticated knowledge of marine resources between 35,000 and 17,000 years ago. The rock shelters are considered to provide the best evidence in Australia for the use of marine resources during the Pleistocene (Ref. 175). Shell beads have been dated to more than 32,000 old, which is the earliest evidence known in Australia for the manufacture of personal ornaments (Ref. 175).

5.6.2 Underwater cultural heritage

Australia's UCH is primarily protected under the UCH Act; this legislation protects shipwrecks, sunken aircraft, and other types of UCH, including First Nations UCH in Australian waters[62]. Additional legislation 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 that UCH is 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. 7). 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. 7).

No known UCH was identified in the OAs which are located in water depths of ~125–1,230 m and ~1,145–1,370 m (for the C&D OA and Chandon OA respectively). These areas have been assessed as having a very low probability of encountering any historic UCH given the water depth range (Ref. 178). 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 C&D OA and the Hydrocarbon EMBA have a higher relative likelihood of encountering historical 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. 178).

Although outside the Hydrocarbon EMBA, evidence from offshore waters near Murujuga (Burrup Peninsula) and on Barrow Island 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 Deep History of Sea

[62] 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).

Country Project (Ref. 179). 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)[63]. Studies at Murujuga have demonstrated that archaeological material remains on the seabed, predating inundation by rising seas (Ref. 179; Ref. 181).

At the LGM sea level was ~125 m below present (Ref. 182); this coincides with the ancient coastline at 125 m depth KEF (see Section 5.3.6.1 for a description of this KEF). The Chandon OA is in >1,145 m water depth and has never been part of habitable land and therefore, no Aboriginal UCH is expected. Most of the C&D OA is also in water depths that would not have been habitable land and similarly 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. 7).

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 OAs where seabed disturbance could credibly occur.

[63] The period of the LGM in Australia is described as 24 to 18 ka (Ref. 180).

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. 183) and Environmental Risk Assessment Management Procedure (ERAM Procedure) (Ref. 184), and uses Chevron Corporation's Integrated Risk Prioritisation Matrix (Table 6-2) from the ABU OE Risk Management RiskMan Procedure (Ref. 185). This approach generally aligns with the processes outlined in ISO 31000:2018 Risk Management – Guidelines (Ref. 186).

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 OAs 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 OAs 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. 184) 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 discharges
- Planned emissions
- 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				Emergency response
Category	**Description**	**Geophysical surveys**	**Geotechnical surveys**	**Environmental surveys**	**Support activities**	
Physical presence	Vessels and equipment	✓	✓		✓	
	Seabed disturbance		✓		✓	
Planned discharges	Vessel operations				✓	
Planned emissions	Air				✓	
	Greenhouse gases				✓	
	Artificial light				✓	
	Underwater sound (non-impulsive)	✓	✓		✓	
	Underwater sound (impulsive)	✓	✓			
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					✓
	Shoreline clean-up					✓
Cultural heritage	Intangible values	✓	✓		✓	✓

6.4 Identification of relevant environmental impacts and risks

The ERAM Procedure (Ref. 184) 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[64]

Likelihood Descriptions	Expected to occur	Likely	1	6	5	4	3	2	1
	Conditions may allow to occur	Occasional	2	7	6	5	4	3	2
	Exceptional conditions may allow to occur	Seldom	3	8	7	6	5	4	3
	Reasonable to expect will not occur	Unlikely	4	9	8	7	6	5	4
	Has occurred once or twice in the industry	Remote	5	10	9	8	7	6	5
	Rare or unheard of	Rare	6	10	10	9	8	7	6
Consequence Descriptions				6	5	4	3	2	1
				Incidental	Minor	Moderate	Major	Severe	Catastrophic
				Limited 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

[64] 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. 187), 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. 184) adopts an environmental mitigation hierarchy based on the IPIECA mitigation hierarchy (Ref. 188). 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. 189), 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.

CAPL evaluates all potential environmental impacts and risks as lower-order until one or more factors trigger the impact or risk to be evaluated at a higher level. Factors that may trigger consideration as a higher-order impact or risk are:

- Uncertainty or complexity in the impact or risk assessment (e.g. where modelling has been used to define the spatial scale of an aspect relative to sensitive receptors)
- A consequence level of 1–3 (Table 6-2) for potential environmental impacts, or a residual risk level of 1–5 (Table 6-2) for potential environmental risks
- ALARP type B or C decision context (Section 6.5.2.1)
- Any new material information or concerns raised by relevant persons that justify evaluation at a higher level[65] (Section 7; Appendix E).

CAPL consider that ALARP has been demonstrated if good practice control measures have been adopted, and where commensurate with the predicted level of impact and risk, reasonably practicable control measures that are not grossly disproportionate to the risk benefit (environmental benefit) have also been adopted.

6.5.2.1 ALARP decision context

CAPL has adapted the approach developed by Offshore Energies UK (OEUK) (Ref. 187) and described in NOPSEMA's ALARP guidance note (Ref. 190) for use in an environmental context to inform the assessment technique(s) that may be required to demonstrate that impacts and risks have been reduced to ALARP. The ALARP decision making framework (Ref. 187) 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 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.

[65] Consideration of an impact or risk for a higher level of evaluation will be triggered if information is raised which has not already been considered or addressed in preparation of the EP and that information has a credible potential to significantly affect how the environmental impacts or risks are assessed or managed.

A **type B decision context** (Figure 6-1) is made for higher-order impacts and risks 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, 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 HSE as satisfying the law when applied to a particular relevant case in an appropriate manner” (Ref. 187). 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 generally not required to identify additional control measures.

Engineering risk assessment

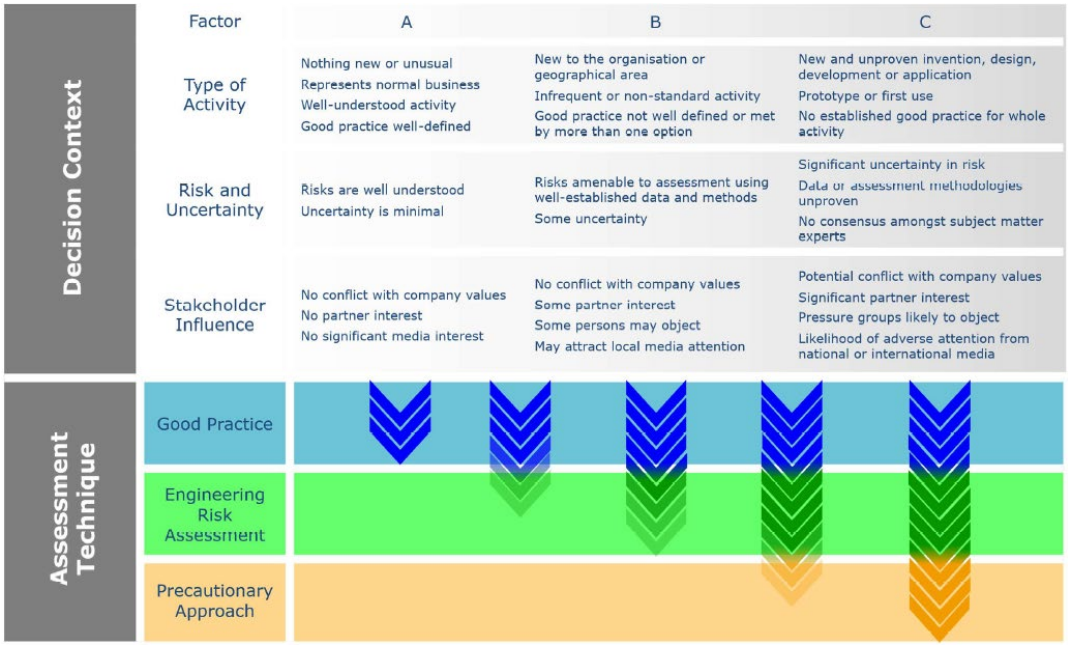
Based on the various assessment techniques identified by OEUK (Ref. 187), CAPL believes the technique most suited to an EP is a cost benefit analysis, a comparative assessment to show the balance between the risk benefit (or environmental benefit) and the cost of implementing the control measure.

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. 187) 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. 187).

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. 187).



Source: Ref. 187.

Figure 6-1: ALARP decision support framework

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. 15) 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 6-3.

Table 6-3: Backfill Fields Development acceptable levels relevant to this petroleum activity

Aspect	Environmental value or sensitivity	Acceptable level(s)[66],[67]
Planned activities		
Physical presence—Seabed disturbance	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.
	KEFs (BCH)	
	UCH	**AL-04**: No adverse impact[68] on declared or protected underwater cultural heritage[69] from the Development that would be inconsistent with the protection and conservation objects of the *Underwater Cultural Heritage Act 2018* (Cth).
Planned emissions—Air	Air 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.
Planned emissions—Greenhouse gases	Atmospheric GHG concentration	**AL-08**: Greenhouse gas emissions from the Gorgon Gas Development[70,71,72] will be within limits as set by the *National Greenhouse and Energy*

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

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

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

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

[70] The Gorgon Gas Development includes the GFP, the Backfill Fields 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.

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

[72] Gorgon Operations is registered with the Clean Energy Regulator (CER) as a facility under both the NGER and Safeguard Mechanism schemes (Section 8.3.3.3). 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

Aspect	Environmental value or sensitivity	Acceptable level(s)[66],[67]
		Reporting Act 2007 (Cth) and *Environmental Protection Act 1986* (WA).
Planned emissions—Artificial light	Ambient light Marine reptiles Fishes, including sharks and rays Seabirds and shorebirds	**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[73] to the extent that it interferes with the survival of the population of an EPBC Act listed migratory species.
Planned emissions—Underwater sound (non-impulsive) Planned emissions—Underwater sound (impulsive)	Ambient sound Marine mammals Marine reptiles Fishes, including sharks and rays	**AL-12**, **AL-13**, **AL-14**, and **AL-15** (see above).
Planned discharges–Vessel operations	Water quality	**AL-01** (see above).
	Fishes, including sharks and ray Seabirds and shorebirds	**AL-12**, **AL-13**, **AL-14**, and **AL-15** (see above).
Physical presence—Vessels and equipment	Commercial fisheries Commercial shipping	**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).
Unplanned events		
Unplanned disturbance—Fauna interaction	Marine mammals Marine reptiles Fishes, including sharks and rays Seabirds and shorebirds	**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.

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.

[73] Where important habitat for migratory species are defined within the MNES Significant Impact Guidelines (Ref. 191).

Aspect	Environmental value or sensitivity	Acceptable level(s)[66],[67]
Non-indigenous species—Introduction of invasive marine pests	BCH	**AL-20**: No introduction and establishment of an invasive marine pest attributable to the Development.
	KEFs (BCH)	
Unplanned disturbance—Seabed disturbance	BCH	**AL-21**: No unplanned release of solid objects to the environment from the Development.
	KEFs (BCH)	
	UCH	
Unplanned releases—Solid waste	Marine reptiles	**AL-21** (see above).
	Fishes, including sharks and rays	
	Seabirds and shorebirds	
	BCH	
	KEFs (BCH)	
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 event)	Water quality	**AL-23**: No unplanned release of hydrocarbons to the environment from the Development.
	Sediment quality	
	BCH	
	Marine mammals	
	Marine reptiles	
	Fishes, including sharks and rays	
	Seabirds and shorebirds	
	AMPs	
	State marine protected areas	
	Commercial fisheries	
	Tourism and recreation	
	UCH	
	Listed heritage places	
Oil spill response—Oiled wildlife	Marine mammals	**AL-23** (see above).
	Marine reptiles	
	Fishes, including sharks and rays	

Aspect	Environmental value or sensitivity	Acceptable level(s)[66],[67]
	Seabirds and shorebirds	
Oil spill response—Shoreline clean-up	Coastal habitats and associated communities	**AL-23** (see above).
	Marine reptiles	
	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. 15).

6.7.2 Principles of ESD

The principles of ESD are considered in Table 6-4 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 6-4: 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, environmental, social, and equitable considerations.	CAPL’s impact and risk assessment process integrates long-term and short-term economic, environmental, social, and equitable considerations. This is demonstrated through the Integrated Risk Prioritization Matrix (Table 6-2), which includes provision for understanding the 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.

Principles of ESD	How they have been applied
	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 6-5 outlines the criteria that CAPL use to demonstrate that potential impacts and risks from each environmental aspect are acceptable.

Table 6-5: 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 6-4.
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. 15; Ref. 192). A concordance table for EPOs from the Gorgon Backfill Fields Development OPP that are relevant to the petroleum activity within this EP[74] are summarised in Appendix B.

[74] 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."[75]

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. 194). 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. 193 at paragraphs 55–57; Ref. 195 at paragraph 48).

[75] Paragraph 89 of *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193* (Ref. 193). 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. 196 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. 194).

Consultation is undertaken in the course of preparing an EP (Ref. 194). 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 – ABU Standardised OE Process (Ref. 197) and further guided by:

- NOPSEMA's environment plan decision making guideline (Ref. 189)
- NOPSEMA's environment plan content requirements guidance note (Ref. 15)
- NOPSEMA's consultation in the course of preparing an environment plan guideline (Ref. 194)
- NOPSEMA's consultation with Commonwealth agencies with responsibilities in the marine area guideline (Ref. 198)
- NOPSEMA's petroleum activities and Australian Marine Parks guidance note (Ref. 199)
- Full Court of the Federal Court of Australia's decision in *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193* (Ref. 193)
- Colvin J of the Federal Court in *Cooper v National Offshore Petroleum and Safety Management Authority [2023] FCA 1112* (Ref. 195)
- Colvin J of the Federal Court in *Cooper v National Offshore Petroleum and Safety Management Authority (No 2) [2023] FCA 1158* (Ref. 196)
- Australian Government's interim guidance on engaging with First Nations People and Communities on assessments and approvals under the EPBC Act (Ref. 200)
- Government of WA's consultation policy for section 18 applications under the *Aboriginal Heritage Act 1972* (WA) (Ref. 201)
- Western Australian Department of Mines, Petroleum and Exploration (DMPE) guideline for the development of petroleum, geothermal and pipeline environment plans in WA (Ref. 202)

- Australian Fisheries Management Authority's (AFMA's) information for the offshore energy industry on consulting with the commercial fishing industry (Ref. 203)
- Western Australian Fishing Industry Council's (WAFIC's) consultation approach for unplanned events (Ref. 204)
- DPIRD's guidance statement for oil and gas industry consultation with the department (Ref. 205)
- 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. 206).

7.3 Consultation principles

Consistent with NOPSEMA's consultation in the course of preparing an EP guideline (Ref. 194), 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 environment plan

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.

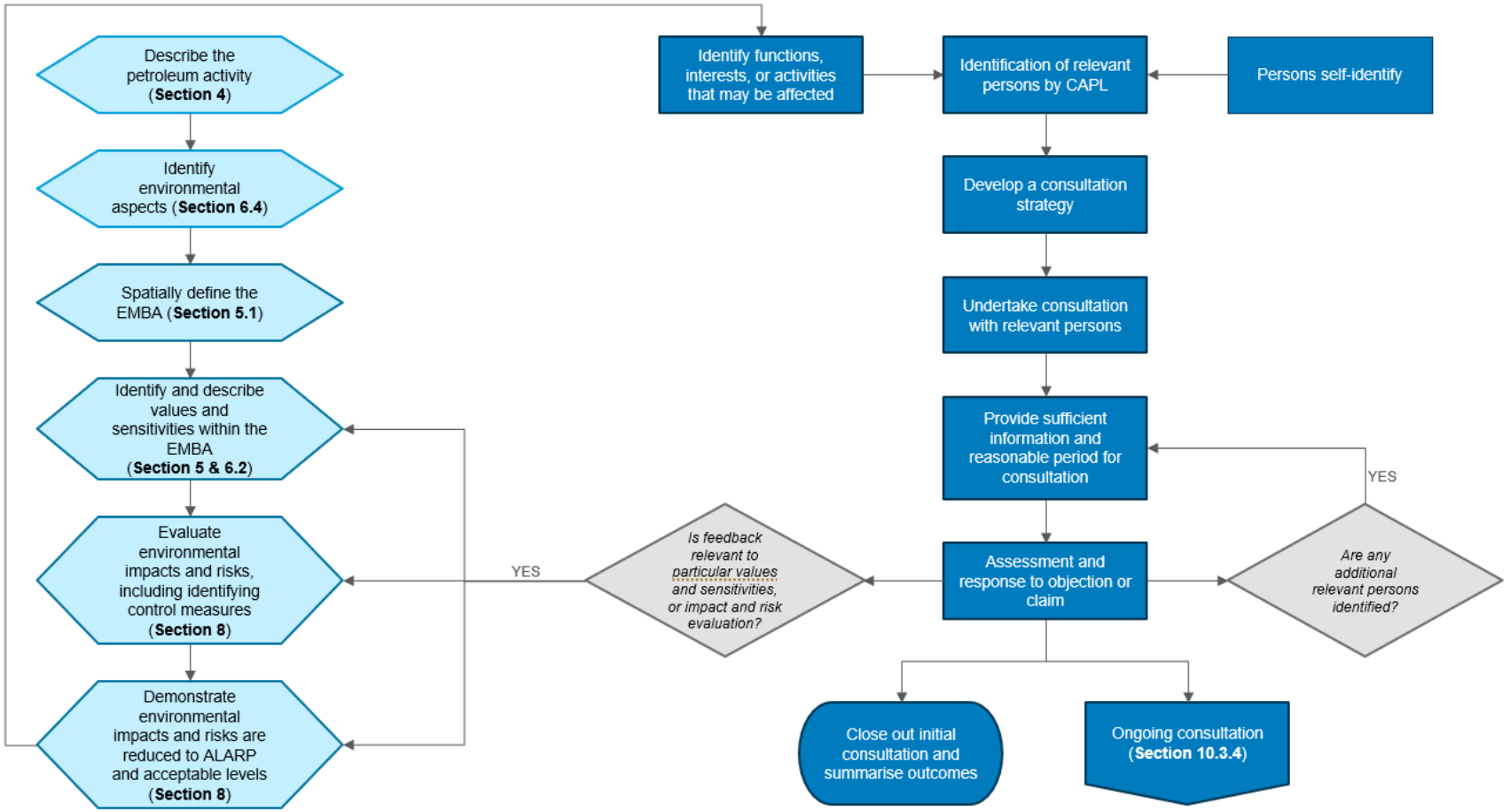


Figure 7-1: Relevant persons consultation process

7.5 Identification of relevant persons

In accordance with NOPSEMA's guideline for consultation (Ref. 194), 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. 198; Ref. 199; Ref. 203; Ref. 204; Ref. 205; Ref. 206)
  - 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 in 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—Seabed disturbance • Sediment sample collection and/or in situ testing • Contingency wet parking of equipment or vessel anchoring during emergencies.	BCH KEFs UCH	• Interest and activity—Environmental conservation • Cultural values, activities and obligations.	• Localised and short-term alteration of BCH • Potential change to values and sensitivities of KEFs • Potential adverse effect to unknown UCH sites and/or artefacts	Refer to evaluation in Section 8.1.	• Government departments or agencies • First Nations people and/or representative bodies • Environmental non–government organisations (ENGOs).
Planned emissions—Air • Combustion of fuel from planned vessels and/or helicopter activities.	Air quality	• Interest and activity—Environmental conservation.	• Localised and temporary reduction in air quality.	Refer to evaluation in Section 8.2.	• Government departments or agencies • ENGOs.
Planned emissions—GHG • Combustion of fuel from planned vessels and/or helicopter activities.	Atmospheric GHG concentration	• Interest and activity—Environmental conservation.	• A potential reduction to IPCC's estimated 'remaining carbon budget' to limit global warming to 1.5–2.0°C.	Refer to evaluation in Section 8.3.	• 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 8.4.	• 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
Planned emissions—underwater sound • Vessel, ROV/AUV, and helicopter operations • Acoustic survey equipment during geophysical survey activities • Use of acoustic position equipment.	Ambient sound Marine fauna	• Interest and activity—Environmental conservation.	• Localised and temporary change in ambient underwater sound • Potential behavioural disturbance of marine fauna • Potential auditory impairment or injury to marine fauna.	Refer to evaluation in Sections 8.5 and 8.6.	• Government departments or agencies • ENGOs.
Planned discharges—Vessel operations • General vessels operations.	Water quality Marine fauna	• Interest and activity—Environmental conservation.	• Localised and temporary reduction in water quality • Potential change in behaviour of marine fauna.	Refer to evaluation in Section 8.7.	• Government departments or agencies.
Physical presence—Vessels and equipment • Temporary presence of vessels and survey equipment within the OAs.	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 8.8.	• Commercial fishery licence holders and/or representative bodies • Commercial shipping industry • Government departments or agencies.
Unplanned disturbance—Fauna interaction • Temporary presence of vessels, survey	Marine fauna	• Interest and activity—Environmental conservation.	• Potential injury or mortality to marine fauna.	Refer to evaluation in Section 8.9.	• 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
equipment, and helicopters within the OAs.					
Non-indigenous species—Introduction on invasive marine pests • Planned discharged of ballast water • Presence of biofouling on vessels or subsea equipment.	BCH KEFs	• Interest and activity—Environmental conservation.	• Potential alteration of BCH • Potential change to values and sensitivities of KEFs.	Refer to evaluation in Section 8.10.	• Government departments or agencies • ENGOs.
Unplanned disturbance—Seabed disturbance • Dropped objects from the vessels • Geotechnical equipment drag due to unplanned and temporary vessel movement off station.	BCH KEFs UCH	• Interest and activity—Environmental conservation • Cultural values, activities and obligations.	• Potential localised alteration of BCH • Potential change to values and sensitivities of KEFs • 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.
Unplanned release—Solid waste • Inappropriately handled or stored solid waste onboard vessels.	BCH KEFs Marine fauna	• Interest and activity—Environmental conservation.	• Potential localised alteration to BCH • Potential change to values and sensitivities of KEFs. • Potential injury or mortality of marine fauna.	Refer to evaluation in Section 8.12.	• 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
Unplanned release—Leaks and spills • Use, handing, and transferring of materials • Hydraulic line failure from equipment.	Water quality Marine fauna	• Interest and activity—Environmental conservation.	• Localised and temporary change in water quality • Potential adverse effects to marine fauna.	Refer to evaluation in Section 8.13.	• Government departments or agencies • ENGOs.
Unplanned release—Loss of containment • Vessel collision event.	Water quality Sediment 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 • Change in sediment quality • Potential adverse effects to BCH • Potential adverse effects to marine fauna • Potential change to the functions, interests and activities of other marine users • Potential changes to values and sensitivities of protected areas • Potential changes to values and sensitivities of cultural heritage sites and/or artefacts.	Refer to evaluation in Section 8.14.	• Government departments or agencies • First Nations people and/or representative bodies • WA World Heritage advisory committees • ENGOs • Commercial fishery licence holders and/or representative bodies • Commercial shipping industry • Tourism and recreation operators • Other petroleum titleholders • Submarine cable operators

Environmental aspect (and aspect source)	Values and sensitivities	Function, interest, or activity	Potential impact or risk	Intersection	Category of persons or organisations
					• Research organisations.
Oil spill response—Shoreline clean-up	Coastal communities and habitats Marine fauna	• Interest and activity—Environmental conservation.	• Potential adverse effects to coastal communities and habitats and/or marine fauna.	Refer to evaluation in Section 8.15.	• Government departments or agencies.
Oil spill response—Oiled wildlife	Marine fauna	• Interest and activity—Environmental conservation.	• Potential adverse effects to marine fauna.	Refer to evaluation in Section 8.16.	• 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 8.17.	• 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 in the NWS
  - Online searches
  - Published guidance, including NOPSEMA's consultation with Commonwealth agencies with responsibilities in the marine area guideline (Ref. 198).

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 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. 204) 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.

Category of persons or organisations	Considerations for identifying a relevant person
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 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. 208) • 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.

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. 193), and subsequent NOPSEMA guidance (Ref. 194), it is clear that the phrase "functions, interests or activities" stated in regulation 25(1)(d) should be broadly construed[76] 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.[77]
- **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".[78]
- **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.[79]

[76] Paragraph 51 of *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193* (Ref. 193).
[77] Paragraph 60 of *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193* (Ref. 193).
[78] Paragraphs 63 and 65 of *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193* (Ref. 193).
[79] Paragraphs 58 and 59 of *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193* (Ref. 193).

Persons or organisations are considered relevant persons under regulation 25(1)(d) of the OPGGS(E)R if their functions, interests or activities may be affected by the petroleum activity to be carried out under the EP. CAPL's approach has been to take a broad interpretation of "function, interest, and activity" and 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. 193 at paragraphs 96–102) and has sought to do so through meetings (Ref. 193 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. 193 at paragraph 47) and CAPL has also sought to identify those representative body organisations themselves as relevant persons (Ref. 193 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 (se Section 7.6) 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 7.5.5); 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. 198), 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 OAs 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. 198), 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 4.5.1) and a SNA will be requested around the vessels (Sections 4.1.1 and 4.5.1). Therefore, the activities under the EP may be relevant to the AHO.
AMSA	As identified in NOPSEMA's consultation guideline (Ref. 198), 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.
CER	As identified in NOPSEMA's consultation guideline (Ref. 198), the CER is a relevant agency for consultation where: • A change to an existing 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. While the activities under this EP relate to site investigation surveys, this EP may be relevant to the CER.
Department of Agriculture, Fisheries and Forestry (DAFF)	As identified in NOPSEMA's consultation guideline (Ref. 198), 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 OAs 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. 198), 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.
DCCEEW	As identified in NOPSEMA's consultation guideline (Ref. 198), 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 5.6.2). Therefore, the activities under the EP may be relevant to the DCCEEW.
Department of Defence (DoD)	As identified in NOPSEMA's consultation guideline (Ref. 198), 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 OAs and Hydrocarbon EMBA (Section 5.4.7). Therefore, the activities under the EP may be relevant to the DoD.
Department of Foreign Affairs and Trade (DFAT)	As identified in NOPSEMA's consultation guideline (Ref. 198), DFAT is a relevant agency for consultation where: • A proposed activity may cross into or impact on waters of a specific country or region outside of Australia's maritime jurisdiction • A proposed activity poses any oil spill or other environmental risks that could result in impacts to other international jurisdictions where persons or organisations that may be impacted by a proposed activity include foreign individuals or governments. This EP may be relevant to DFAT.
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.

Category of persons or organisations	Considerations for identifying a relevant person
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 terrestrial and marine protected areas (Sections 5.5.2 and 5.5.3). 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. 205), DPIRD considers that it is a relevant person where a petroleum activity may potentially affect commercially and recreationally important fish species, their prey and habitats, and the business activities of the fishers who harvest these resources in State or Commonwealth waters. State managed fisheries and recreational fisheries have been identified as overlapping with the Hydrocarbon EMBA (Sections 5.4.1.2 and 5.4.2). Therefore, the activities under the EP may be relevant to DPIRD.
Department of Transport and Major Infrastructure (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. 206). The unplanned hydrocarbon release scenario predicted some areas of State waters may be exposed (Section 8.14). 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.

Category of persons or organisations	Considerations for identifying a relevant person
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 BTAC identified that Sea Country is of recognised value to the Thalanyji people, the activities under the EP may therefore be relevant to this RNTBC and the Thalanyji people. Note: CAPL has also consulted NTGAC who also represents the Thalanyji people for Native Title rights and interests.
MCH (individual representative) MCH (family organisation)	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.
NTGAC Baiyungu people Thalanyji people Yinggarda people	The NTGAC was registered in 2019 to represent, protect and support the interests of the Baiyungu, Thalanyji and Yinggarda people. The RNTBC represents an area that extends approximately from Exmouth Gulf to Lake Macleod. The 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 (BAC) have advised CAPL to undertake EP engagement with them via NTGAC.
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.

Category of persons or organisations	Considerations for identifying a relevant person
	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 OAs and Hydrocarbon EMBA (Section 5.4.1). As such, these organisations have functions, interests, or activities, that may be affected by the activities to be carried out under the EP.
Aquaculture Council of Western Australia	
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 coastal and 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	

Category of persons or organisations	Considerations for identifying a relevant person
Apache Fishing Charters	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.
Aquatic Adventure Exmouth	
Baiyungu Dreaming	
Blue Juice Charters	
Blue Horizon Charters	
Blue Lightning Fishing Charters	
Cape Immersion Tours	
Exmouth Dive and Whalesharks Ningaloo	
Exmouth Game Fishing Club	
Image Dive and Charters	
Innkeeper Sport Fishing Charter	
Kings Ningaloo Reef Tours	
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	

Category of persons or organisations	Considerations for identifying a relevant person
Ningaloo Reef to Range Tours	
Ningaloo Safari Tours	
Ningaloo Sportfishing Charters	
Ningaloo Whaleshark n Dive	
Ningaloo Whaleshark Swim	
Ocean Eco Adventures	
On Strike Charters	
Peak Sportfishing Charters	
Sail Ningaloo	
Three Islands Whale Shark Tours	
Top Gun Charters	
Ultimate WaterSports	
View Ningaloo	
Wilderness Island	
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 Carnarvon	
Shire of Exmouth	
WA World Heritage advisory committees	
Ningaloo Coast World Heritage Advisory Committee	The Ningaloo Coast World Heritage Advisory Committee provides advice to the Commonwealth and State Environment Ministers on the protection, conservation and management specific to Ningaloo Coast World Heritage Area. The Hydrocarbon EMBA intersects the Ningaloo Coast World and National Heritage areas (Section 5.6). Therefore, Ningaloo Coast World Heritage Advisory Committee is considered a relevant person under regulation 25(1)(d) of the OPGGS(E)R.

Category of persons or organisations	Considerations for identifying a relevant person
Other petroleum titleholders	
BP Australia	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.
Carnarvon Energy	
Eni Australia	
Equus Energy	
Exxon Mobil	
Jadestone Energy	
Kato Energy / Kato NWS Pty Ltd	
KUFPEC	
Pathfinder Energy	
PGS Australia Pty Ltd	
Santos	
Shell	
Vantris Energy	
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	

Category of persons or organisations	Considerations for identifying a relevant person
Other	
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.
Australian Marine Oil Spill Response Centre (AMOSC)	AMOSC are a person or organisation whose functions, interests or activities may be affected by the activities to be carried out under the environment plan. Therefore, they are considered relevant persons under regulation 25(1)(d) of the OPGGS(E)R.
Care for Hedland Environmental Association	Care for Hedland are an independent environmental interest group, pursuing a shared vision of environmental awareness and improvements for the townships of Port and South Hedland, along with the wider Pilbara region. They run a community-based Flatback Turtle monitoring program, and engagement with the representative identified that a genetic link existed between the Flatback Turtles nesting populations at Port Hedland, Barrow Island, and the broader NWS. While there is no predicted interaction with Port Hedland from planned activities or an unplanned event associated with this EP, given the migratory nature of marine turtles and that the Pilbara Coast represents a single genetic stock, CAPL considers that the Care for Hedland Environmental Association has functions, interests or activities that may be affected by the petroleum activity to be carried out under the EP. Therefore, they are considered relevant persons under regulation 25(1)(d) of the OPGGS(E)R.
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.
Exmouth Gulf Taskforce	The Exmouth Gulf Taskforce provides high level advice to the Minister for the Environment, on the environmental management of the Exmouth Gulf and its surrounds, to help preserve the region's unique environmental, cultural and social values. Therefore, Exmouth Gulf Taskforce 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.

Category of persons or organisations	Considerations for identifying a relevant person
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 Communications	Vocus Communications are a person or organisation whose functions, interests or activities may be affected by the activities to be carried out under the environment plan. Therefore, they are considered relevant persons under regulation 25(1)(d) of the OPGGS(E)R.
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.

Category of persons or organisations	Considerations for identifying a relevant person
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.
Gascoyne Junction Community Resource Centre (GJCRC)	GJCRC provides information about places of interest and provide direction for local services and business providers within that Gascoyne region. Therefore, the activities under the EP may be relevant to the GJCRC.
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.
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	

Category of persons or organisations	Considerations for identifying a relevant person
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. 189; Ref. 194), 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, indicative timing, potential impacts and risks, and the schedule for formal consultation.
- CAPL issued an information sheet to identified relevant persons on the 27 February 2026. This information sheet included information about the proposed petroleum activity, potential impacts and risks, control measures, and included maps showing the OA and Hydrocarbon EMBA.
- CAPL published information regarding the proposed activity to the Online Consultation Hub (https://australia.chevron.com/what-we-do/upcoming-activities) on 27 February 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 and The West Australian on 9 March 2026, The Pilbara News, Mid-West Times, and Northwest Telegraph on 11 March 2026; in Business News on 16 March 2026, and in the National Indigenous Times March 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.
Environmental non–government organisations (ENGOs) Government departments or agencies Other petroleum titleholders / commercial industries Tourism and recreation operators WA World Heritage advisory committees Self-identified and other relevant persons	• Provision of base level information on the petroleum activity and link to the CAPL Online Consultation Hub via email with a request for 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 or town meetings may be held using presentations, posters, and/or 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. 189; Ref. 194), 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. 193), 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. 189) or up to eight weeks (Ref. 198).

Available guidance regarding consultation with State departments or agencies indicates a reasonable period for standard activities is no less than 20 business days (Ref. 205) and up to six weeks (Ref. 206).

Guidance taken from the repealed and retracted *Aboriginal Cultural Heritage Act 2021* (WA) consultation guidelines (Ref. 207) 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 person's 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."[80]

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 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[81] .

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"[82].

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[83].

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

[81] Paragraphs 55–57 of *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193* (Ref. 193) and paragraph 48 of *Cooper v National Offshore Petroleum Safety and Environmental Management Authority [2023] FCA 1112* (Ref. 195).

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

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

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 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 information (Section 7.6) and a reasonable period of time (Section 7.7) to enable relevant persons to make an informed assessment of the possible impacts and risks of the petroleum activity on their functions, interests or activities (meeting the requirements of regulation 25). 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 27 February 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 10 April 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 been 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

This section provides an evaluation of the potential environmental impacts and risks associated with the petroleum activity (including any potential emergency conditions) 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—Seabed disturbance

8.1.1 Aspect source

Activities identified as having the potential to cause seabed disturbance are:

- Sediment sample collection and/or in situ testing
- Contingency temporary wet parking of equipment or vessel anchoring during emergencies.

8.1.2 Environmental impact and risk evaluation

Seabed disturbance may result in a:

- Localised and short-term alteration of BCH
- Potential change to values and sensitivities of KEFs
- Potential adverse effect to unknown UCH sites and/or artefacts.

8.1.2.1 Consequence evaluation

Impact: Localised and short-term alteration of BCH

Sediment sampling and/or in situ testing requires physical interaction with the seabed. The geotechnical surveys will be performed using standard industry equipment deployed from the survey vessel. Based on the types of sampling and equipment in Section 4.3 and assuming 55 sites with all samples/tests conducted at each site, a seabed disturbance footprint of ~2,410 m^2 (~0.0024 km^2) may occur within the OAs. The C&D OA is ~172.5 km^2 and the Chandon OA ~346.6 km^2; the estimated seabed footprint from sediment testing and sampling is <0.0005% of the area of the combined OAs.

Where borehole samples are collected, a small (e.g. ~0.5 m^3 per borehole) volume of drill cuttings may be discharged at the seabed immediately adjacent to the borehole. The cuttings would be small pieces of the material being drilled (i.e. inert sediment/rock particles). If drilling fluids are used these are primarily seawater with inert additives (e.g. bentonite) if required. As such any drilling fluids that may be released are considered to pose no environmental risk to BCH.

Contingency activities are also expected to have a relatively small seabed disturbance footprint (e.g. ~9 m^2 for temporary wet parking an ROV; or ~1,300 m^2 for a single vessel anchor[84]). Footprints from these contingency activities represent <0.0004% of the OAs.

The BCH within the both the C&D OA and Chandon OA are predominantly smooth or irregular seabed with either bare substrate or bioturbation. Smaller areas of other mixed BCH (e.g. on the continental slope) also occur within the

[84] Based on a vessel using a single anchor in water depths >70 m (Ref. 209).

OAs (Figure 5-2; Figure 5-3; Section 5.3.1.1). The BCH within the OAs were not considered to be of regional significance (Section 5.3.1.1).

The potential impacts from the placement of geotechnical sampling equipment on the seabed are expected to be highly localised and temporary burial or smothering of BCH. Any displacement of sediments into the water column during equipment deployment/retrieval may result in temporary, localised suspended sediment with subsequent re-deposition onto the seabed within the immediate vicinity. Soft sediment communities and habitats have been shown to recover from physical disturbance within days to months (Ref. 210).

Therefore, the worst-case consequence of a short-term and recoverable change to BCH within the footprint of geotechnical sampling equipment and/or contingency disturbance areas has been evaluated as Incidental (6).

Risk: Potential change to values and sensitivities of KEFs

A localised and short-term alteration to BCH has the potential to change the values and sensitivities of KEFs.

The OAs extend into parts of three KEFs:

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

The proportion of each KEF that occurs within the OA is small (~0.03%, ~0.14%, and ~0.21% respectively). Of these KEFs, the ancient coastline and the Exmouth Plateau are recognised as unique sea floor features with ecological properties of regional significance (Table 5-18). The indicative survey design does not include sediment sampling within the ancient coastline KEF, but does within the Exmouth Plateau KEF; however, it is noted that changes may occur before final survey design (Section 4.3).

The ancient coastline KEF is considered to provide areas of hard substrate within the broader predominantly soft sediment habitat; with hard substrate providing the potential for higher abundance and diversity of biota. However, based on benthic surveys undertaken within the area where the KEF and C&D OA overlap, the BCH are comprised of smooth seabed with bioturbation and bare substrate and appeared to be devoid of epibenthic biota (Section 5.3.1.1; Table 5-18).

Similarly, benthic surveys within the area where the Exmouth Plateau KEF and Chandon OA overlap indicate that BCH are predominantly irregular seabed with bioturbation or bare substrate and have a low likelihood of providing epibiota with significant habitat (Section 5.3.1.1; Table 5-18). The scarps that are present within this area also demonstrate no epibenthic biota (Section 5.3.1.1; Table 5-18).

As per the previous consequence evaluation, alteration to BCH is expected to be highly localised and recoverable over the short-term. As such, any subsequent change to the values and sensitivities of KEFs is also considered be short-term and recoverable and has been evaluated as Incidental (6).

Risk: Potential adverse effect to unknown UCH sites and/or artefacts

No known UCH has been identified within the OAs (Section 5.6.2). However, the 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 C&D and Chandon OAs are located in water depths of ~125–1,230 m and ~1,145–1,370 m respectively. Consequently, the Chandon OA and most of the C&D OA would not have been emergent land during the history of First Nations occupation and the potential for unknown First Nations UCH in these areas is not considered credible. Further, the probability encountering any historic UCH within either OA is low (Section 5.6.2).

Given the highly localised nature of seabed disturbance and the low probability of encountering historic or First Nations UCH, the discovery of, and unintended disturbance to, unknown UCH is not expected. However, should such an event occur, the worst-case consequence of an adverse effect to unknown UCH has been evaluated as Minor (5).

8.1.2.2 Control measures

Table 8-1 and Table 8-2 describe the CMs relevant to this aspect.

Table 8-1: Good practice control measures for seabed disturbance

CM	Description
CM-01: Visual Inspection	The existing BCH mapping and ground-truthing does not indicate the presence of exposed hard substrate within the part of the C&D OA that overlaps the ancient coastline at 125 m depth contour KEF. The indicative survey design does not include sediment sampling sites within this KEF. However, in the event the final survey design does include sampling within this KEF, a visual inspection (e.g. via ROV or AUV) of the seabed will be undertaken prior to any geotechnical survey equipment being placed on the seabed to ensure this is not occurring on exposed hard substrate.
CM-02: Seabed Disturbance Area	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. The estimated seabed disturbance areas were based on: • A long-term disturbance area comprising a 30 m wide lay corridor along the production flowline, MEG pipeline, and umbilical routes and a 250 m radius buffer around the drill centres • Short-term disturbance area allowing for the temporary placement of equipment or infrastructure outside the long-term disturbance area • An additional 50% contingency for both the long-term and short-term disturbance areas. Note: Where equipment/infrastructure 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). This petroleum activity is part of the Backfill Fields Development and will have areas of seabed disturbance. Most sampling locations are expected to occur within the long-term disturbance area; however, where these don't, they are included within the short-term disturbance area.
CM-03: Inadvertent UCH Discovery Procedure	CAPL's Inadvertent UCH Discovery Procedure (Ref. 8) has been developed in alignment with the Australian Government's guidelines for Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters (Ref. 7). 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 identified and responded to with adequate conservation and management actions.

Table 8-2: Additional control measures considered for seabed disturbance

CM	Benefit	Cost
CM-04: No Vessel Anchoring within the OA during Planned Activities	Elimination of vessel anchoring would avoid the seabed disturbance and associated impacts and risks from this activity. As described in Section 4.5.1, there is no anchoring during planned activities. However, allowing anchoring in unplanned or emergency situations maintains the ability to protect personnel, vessels, and infrastructure should unforeseen circumstances arise. Restricting the use of anchoring to these unplanned events therefore significantly reduces the potential for seabed disturbance while maintaining the ability to respond to unplanned events.	Negligible. The petroleum activity has been designed to be undertaken without anchoring during planned activities, and the implementation of this control does not result in a material increase in cost or operational complexity. Therefore the costs associated with implementing this control measure are not considered grossly disproportionate to the environmental benefit gained, and it has been adopted for use.

8.1.2.3 ALARP justification

Vessel operations, geophysical surveys, and geotechnical surveys 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.

Based on the environmental impact and risk evaluation and application of relevant assessment tools as commensurate with the predicted level of impact and risk (e.g. lower-order impacts and risks), CAPL considers the adopted good practice and additional control measures (Section 8.1.2.2) are appropriate to manage the potential impacts and risks from seabed disturbance. No further reasonably practicable control measures were identified that would provide a meaningful reduction in environmental impact or risk without incurring grossly disproportionate costs. Accordingly, CAPL considers the potential environmental impacts and risks associated with this aspect to be reduced to ALARP.

8.1.2.4 Likelihood and risk level summary

With the application of the above control measures CAPL has assessed the likelihood and residual risk as shown in Table 8-3.

Table 8-3: Impact and risk summary for seabed disturbance

Impacts and risks	Consequence	Likelihood	Residual risk
Impacts			
Localised and short-term alteration to BCH	Incidental (6)	N/A	
Risks			
Potential change to values and sensitivities of KEFs	Incidental (6)	Unlikely (4)	Very Low (9)

Impacts and risks	Consequence	Likelihood	Residual risk
Potential adverse effect to unknown UCH sites and/or artefacts	Minor (5)	Unlikely (4)	Low (8)

8.1.3 Demonstration of acceptability

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

Table 8-4: Demonstration of acceptability for seabed disturbance

Comparison with acceptable level	
The acceptable levels for this aspect are **AL-02** and **AL-04** (see Section 6.6 for definitions). Seabed disturbance from the petroleum activity is predicted to result in highly localised and recoverable changes to BCH (Section 8.1.2.1). These impacts are not expected to substantially affect the biodiversity, ecosystem function, or integrity of the OAs. Therefore, the predicted level of impact for the relevant receptors is equivalent or better than **AL-02**. No known UCH has been identified within the OAs, and the probability 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 **AL-04**.	
Principles of ESD	
Precautionary Principle In accordance with Table 6-4, 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 6-4, 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* Seabed disturbance from the petroleum activity is predicted to result in highly 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 Discovery Procedure** control measure.
Internal context	
This management process or procedure was deemed relevant for this aspect: • Inadvertent UCH Discovery 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 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.

8.1.4 Environmental performance

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

Table 8-5: Environmental performance for seabed disturbance

EPO	CM	EPS	MC
EPO-03: No planned seabed disturbance from the petroleum activity to any previously undisturbed exposed hard substrate within the ancient coastline at 125 m depth contour KEF.	**CM-01:** Visual Inspection	**EPS-01:** If the final survey design includes sampling sites within the ancient coastline at 125 m depth contour KEF, then: • A visual inspection of the seabed will be conducted prior to any geotechnical survey equipment being placed on the seabed. This visual inspection is to ensure the site is not situated on any previously undisturbed exposed hard substrate within this KEF. • If exposed hard substrate is observed during the visual inspection, the proposed sampling site will be relocated.	**MC-01.1**: Records verify that a visual seabed inspection was undertaken prior to sediment sampling within the ancient coastline at 125 m water depth KEF. **MC-01.1**: Records verify that if hard substrate was observed, the sampling site was relocated.
EPO-04: Long-term direct disturbance from the Gorgon Backfill Fields Development is limited to 18.85 km^2 within the Development Area[85]. **EPO-05**: Short-term direct disturbance from the Gorgon Backfill Fields Development is limited to 0.98 km^2 within the Development Area[85].	**CM-02:**Seabed Disturbance Area	**EPS-02:** Planned seabed disturbance from the petroleum activity 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-02:** Records verify that planned seabed disturbance was within the spatial extents defined in the OPP.
	CM-04: No Vessel Anchoring within the	**EPS-04:** No anchoring of vessels	**MC-04:** Records show vessel position maintained through

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

EPO	CM	EPS	MC
	OA during Planned Activities	within the OA during planned activities.	DP or other station-keeping methods during planned activities.
EPO-08: No adverse impacts to declared UCH without a permit[86] from planned activities associated with the petroleum activity.	**CM-03:** Inadvertent UCH Discovery Procedure	**EPS-03.1:** Implement CAPL's Inadvertent Underwater Cultural Heritage Discovery Procedures (Ref. 8), including processes for notification and response to suspected discoveries.	**MC-03.1.1:** Induction materials include relevant UCH requirements.
			MC-03.1.2: Training records confirm personnel involved in offshore vessel activities and/or ROV operations have completed the induction.
			MC-03.1.3: Records verify that if UCH (or potential UCH) were identified within the OAs, conservation and management actions were implemented.
		EPS-03.2: Discovery of suspected UCH is reported to the Minister within 21 days of discovery as per section 40 of UCH Act.	**MC-03.2:** Record of lodgement of the notification to relevant agency.
		EPS-03.3: If First Nations UCH (or potential UCH) is identified during the petroleum activity, the finding will be shared with the relevant First Nations representative bodies.	**MC-03.3:** Relevant persons consultation records confirm that information has been shared with First Nations representative bodies

8.2 Planned emissions—Air

8.2.1 Aspect source

Activities identified as having the potential to generate air emissions are:

- Combustion of fuel from planned vessels and/or helicopter activities.

8.2.2 Environmental impact and risk evaluation

Air emissions may result in a:

- Localised and temporary reduction in air quality.

[86] Where a permit under section 23 of the UCH Act has been granted.

8.2.2.1 Consequence evaluation

Section 8.2.2 of the NOPSEMA-accepted Gorgon Backfill Fields Development OPP provides an evaluation of potential impacts from air emissions. As this petroleum activity forms part of the Backfill Fields Development (the offshore project), the planned emissions are of a similar nature and smaller scale, and the relevant receptors are the same as those previously assessed, the consequence evaluation for this EP is considered covered by the 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[87] it is not repeated here.

Impact: Localised and temporary reduction in air quality

The consequence evaluation for a localised and temporary reduction in air quality has been assessed as Incidental (6).

8.2.2.2 Control measures

Table 8-6 describes the good practice CMs relevant to this aspect.

Table 8-6: Good practice control measures for air emissions

CM	Description
CM-05: 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 Offshore Vessel Information System (OVIS) requirements within the Chevron Marine Standard Non Tankers: Corporate OE Standard (the Chevron Marine Standard; Ref. 211) 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 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. • 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.

8.2.2.3 ALARP justification

Vessel and helicopter operations 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

[87] The Gorgon Backfill Fields Development OPP is available online at: https://docs.nopsema.gov.au/A1265361.

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.

Based on the environmental impact evaluation and application of relevant assessment tools as commensurate with the predicted level of impact (e.g. lower-order impacts), CAPL considers the adopted good practice control measures (Section 8.2.2.2) are appropriate to manage the potential impacts from air emissions. No reasonably practicable additional control measures were identified that would provide a meaningful reduction in environmental impact. Accordingly, CAPL considers the potential environmental impacts associated with this aspect to be reduced to ALARP.

8.2.3 Demonstration of acceptability

Table 8-7 describes the demonstration of acceptability relevant to this aspect.

Table 8-7: Demonstration of acceptability for air emissions

Comparison with acceptable level	
The acceptable levels for this aspect are **AL-01** (see Section 6.6 for definitions). Air emissions from the petroleum activity are predicted to result in a localised and temporary reduction in air quality (Section 8.2.2). Therefore, the predicted level of impact for the relevant receptors is equivalent or better than **AL-01**.	
Principles of ESD	
Precautionary Principle In accordance with Table 6-4, 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 6-4, 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* Air emissions from the petroleum activity are predicted to result in a localised and temporary reduction in air quality. 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 97. CAPL considers that impact management is consistent with these requirements, as demonstrated below:	
Requirement	**Demonstration**
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.

Internal context
This management process or procedure was deemed relevant for this aspect: • Chevron Marine Standard (Ref. 211). 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.

8.2.4 Environmental performance

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

Table 8-8: Environmental performance for air emissions

EPO	CM	EPS	MC
EPO-10: Planned air emissions within the OAs 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-05:** Marine Order 97	**EPS-05:** Prior to commencement of vessel-based activities within the OAs, 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-05:** 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.

8.3 Planned emissions—Greenhouse gases

8.3.1 Aspect source

Activities identified as having the potential to generate GHG emissions are:

- Combustion of fuel from planned vessels and/or helicopter activities.

8.3.2 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. 212).

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. 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 OAs 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. 213), 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 site investigation surveys, nor is there any wells or subsea infrastructure in place that would facilitate hydrocarbon recovery from the C&D or Chandon fields
- There are multiple 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 8-9 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 ~0.008 Mt CO_2-e.

Table 8-9: Data inputs and assumptions for GHG inventory calculations

Inputs and assumptions
Site investigation surveys: • Duration of surveys is estimated at ~4–6 months (Section 4.1.2) • For calculation purposes conservatively assumed – A survey vessel present within the OAs for 6 months duration – A supply vessel within the OAs for ~1 day per week (26 days) – One round-trip helicopter flight per week for the duration (~26 trips) • Estimated fuel consumption for vessels and helicopter based on reported data from previous CAPL activities.

8.3.3 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.

8.3.3.1 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. 214). 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. 215).

Australia submitted its first Nationally Determined Contribution (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. 216). 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 CO_2-e)[88]. 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. 218).

8.3.3.2 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[89].

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. 217). Emissions for FY2025 were 28.5% below emissions for FY2005[90] (Ref. 217).

8.3.3.3 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

[88] Note: Following revisions to Australia's historical GHG emissions estimates, Australia's implied GHG emissions budget is 4,394 Mt CO_2-e (Ref. 217).

[89] In September 2025 the Australian Government submitted its second NDC; refer to Section 8.3.3.1.

[90] 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).

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. 219). 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. 219).

'Gorgon Operations' is a registered facility with the CER under both the NGER and Safeguard Mechanism schemes. The reporting boundary[91] of the Gorgon Operations Facility includes relevant Scope 1[92] 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 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.

8.3.4 Primary environmental approvals

The Gorgon Gas Development: Backfill Fields Offshore Project Proposal (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.

8.3.5 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

[91] 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.

[92] Note: Scope 2 emissions are also reportable under the NGER scheme. There are currently no Scope 2 emissions associated with the Gorgon Operations Facility.

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 Intergovernmental Panel on Climate Change's (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 OAs 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. 220) 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 sources"[93].

8.3.5.1 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.

8.3.5.2 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

[93] Statement of Reasons [44] (Ref. 220).

regarding natural or cultural heritage (Ref. 221). 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. 222). Twenty-one of these listed properties are within Australia (Ref. 222). Australia also has a further eight sites on the Tentative List for possible future World Heritage nomination (Ref. 223).

The National Heritage List comprises places of outstanding natural, historic, and Indigenous heritage values to the Australian nation (Ref. 224). 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. 225). The heritage values of each listed place are described within the Australian Heritage Database (Ref. 225) in relation to each of the National Heritage criteria against with the values of the place were assessed.

8.3.5.3 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. 226). Water within these areas can be static or flowing; fresh, brackish or saline; and can include inland rivers and coastal or marine waters (Ref. 226).

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. Once designated, these sites are added to the List of Wetlands of International Importance and become known as Ramsar sites (Ref. 226). 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. 227; Ref. 228). The ecological character of Australian Ramsar wetlands are described within reports available on the DCCEEW website (Ref. 229).

8.3.5.4 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. 230). 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. 230).

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. 231)
- 1,514 listed threatened flora species (35 extinct, 306 critically endangered, 610 endangered, and 563 vulnerable) (Ref. 232)
- 111 listed threatened ecological communities (49 critically endangered, 60 endangered, and two vulnerable) (Ref. 233).

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. 234).

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. 235).

8.3.5.5 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. 19).

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. 19; Ref. 236; Ref. 237; Ref. 238); 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. 239).

Australia has currently established 60 AMPs which are located within Commonwealth waters (Ref. 240). These AMPs are managed via a suite of management plans (Ref. 174; Ref. 241; Ref. 242; Ref. 243; Ref. 244; Ref. 245; Ref. 246; Ref. 247), which identify and describe natural, cultural, heritage, and socioeconomic values associated with each of the AMPs.

8.3.5.6 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. 248). 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. 248).

8.3.5.7 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. 249). 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. 250; Ref. 251). 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. 252) 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. 251; Ref. 252).

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. 251; Ref. 253). 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. 251; Ref. 254; Ref. 255). Terrestrial protected areas cover ~24.9% (as of November 2025) of Australia's landmass (Ref. 256).

For marine ecosystems, the IMCRA framework recognises 41 provincial bioregions based on a benthic bioregionalisation (biogeography of fish supplemented with a geophysical classification) (Ref. 30). 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. 257; Ref. 258). Marine protected areas cover ~52% of Australian waters (Ref. 256).

8.3.6 Environmental impact and risk evaluation

GHG emissions may result in:

- A potential[94] reduction to IPCC's estimated 'remaining carbon budget' to limit global warming to 1.5–2.0°C.

[94] 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]; Ref. 259); (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]).

8.3.6.1 Consequence evaluation

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. 260). 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. 260).

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."[95]

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[96]. 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. 261) 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 (0.008 Mt CO_2-e) represents a potential <0.000002% reduction in the IPCC's remaining carbon budget (estimated to remain at the beginning of 2020), and a potential <0.000005% 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 8.3.3.1 and 8.3.3.2). To FY2025, the estimated remaining carbon budget to reach the 2030

[95] IPCC, AR6, WG1, at SPM-28 Footnote 43 (Ref. 260).

[96] IPCC, AR6, WG1, at SPM-29 Table SPM.2 (Ref. 260).

target is 2,178 Mt CO_2-e (Ref. 217). The estimated petroleum activity GHG emissions (0.008 Mt CO_2-e) represent a potential ~0.0004% 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. 262) that "[o]bserved increases in well-mixed GHG concentrations since around 1750 are unequivocally caused by GHG emissions from human activities over this period"[97]. The Synthesis Report also recognises the "interdependence of climate, ecosystems and biodiversity, and human societies"[98] and WGI AR6 of the IPCC acknowledges that "[c]limate change is a global phenomenon, but manifests differently in different regions" (Ref. 263).

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 ppm (Ref. 264). 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. 265). The IPCC AR6 Synthesis Report states that "[i]n 2019, atmospheric CO_2 concentrations reached 410 parts per million (ppm), CH_4 reached 1866 parts per billion (ppb) and nitrous oxide (N_2O) reached 332 ppb"[99] and that "[s]ince 1750, increases in CO_2 (47%) and CH_4 (156%) concentrations far 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*)."[99] 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. 265).

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"[100].

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

[97] IPCC AR6, Synthesis Report, SPM-4 (Ref. 262).

[98] IPCC AR6, Synthesis Report, SPM-3 (Ref. 262).

[99] IPCC AR6, Synthesis Report, 42 (Ref. 266).

[100] IPCC AR6, Synthesis Report, SPM-4–5 (Ref. 262).

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. 267).

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. 263).

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. 267).

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. 268). Specifically, the IPCC projections[101] for the Australia include:

- **Droughts**—"Additional regional changes in Australasia … include a significant decrease in April to October rainfall in the south-west of the state of Western

[101] "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 (Ref. 262).

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".[102]

- **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."[103] Fire weather is projected to increase throughout Australia (*high confidence*).[104]
- **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."[105]
- **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."[106] "Relative sea-level rise is virtually certain to continue in the oceans around Australasia, contributing to increased coastal flooding in low-lying areas (*high confidence*) and shoreline retreat along most sandy coasts (*high confidence*)."[107]
- **Snowfall**—"Snowfall is expected to decrease throughout the region at high altitudes in [] Australia (*high confidence*)"[108]. "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."[109]
- **Tropical cyclones**—"In Australia, the number of [tropical cyclones] 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'"[110].

[102] IPCC AR6, WG1, TS-139 (Ref. 263).
[103] IPCC AR6, WG1, TS-109 (Ref. 263).
[104] IPCC AR6, WG1, TS-139 (Ref. 263).
[105] IPCC AR6, WG1, TS-139 (Ref. 263).
[106] IPCC AR6, WG1, TS-139 (Ref. 263).
[107] IPCC AR6, WG1, Chapter 12, 1812 (Ref. 268).
[108] IPCC AR6, WG1, TS-139 (Ref. 263).
[109] IPCC AR6, WG1, TS-140 (Ref. 263).
[110] IPCC AR6, WG1, Chapter 12, 1810 (Ref. 268).

The 2024 State of the Climate report by BoM and CSIRO (Ref. 265) 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."[111]
- "There has been an increase in rainfall and streamflow across parts of northern Australia since the 1970s."[111]
- "There has been an increase in extreme fire weather, and a longer fire season, across large parts of the country since the 1950s."[111]
- "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."[111]
- "Snow depth, snow cover and number of snow days have decreased in alpine regions since the late 1950s."[111]
- "There has been a decrease in the number of tropical cyclones observed in the Australian region since at least 1982."[111]

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. 265).

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. 269). The WGII AR6 report notes 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*)"[112] and that "[c]limate trends and extreme events have combined with exposure and vulnerabilities to cause major impacts for some human systems (*high confidence*)"[112]. 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*)

[111] BoM and CSIRO, Key Points, 2 (Ref. 265).

[112] IPCC AR6, WGII, Australasia, 1583 (Ref. 269).

- 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*)."[113]2

A previous (2009) report by Australia's Biodiversity and Climate Change Advisory Group (Ref. 271) 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. 271). 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. 271). 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. 271).

Climate change is identified as a pressure within the Australia State of the Environment 2021[114] (Ref. 249; Ref. 272). Observed and/or predicted impacts on terrestrial ecosystems and biodiversity include (Ref. 251):

- "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)

[113] IPCC AR6, WGII, Australasia FS (Ref. 270).

[114] The EPBC Act legislates a review of the state of the Australian environment every five years. The next State of the Environment report is due to be provided to the Minister for the Environment and Water in December 2026.

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. 251):

- "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. 257; Ref. 258):

- 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. 258).

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. 273) identified 56 nationally significant climate risks within seven key systems. The second pass assessment (released in September 2025; Ref. 274) 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. 273; Ref. 274):

- **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[115] to Australia's key systems, both now and in the future (Ref. 274). 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. 274).

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.
- 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. 274).

The IUCN World Heritage Outlook for the Ningaloo Coast (Ref. 275) 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. 275). 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. 275).

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. 276; Ref. 277). 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. 277). 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. 277). Further,

[115] 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. 274).

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. 278). Actions identified within this Threatened Species Action Plan include updating conservation plans to mitigate climate change risk for susceptible species (Ref. 278). 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. 278; Ref. 279).

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. 45) 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. 73) 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. 280) 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. 281) 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 Australian Marine Parks identify climate change as a pressure that may impact marine park values (Ref. 174; Ref. 241; Ref. 242; Ref. 243; Ref. 244; Ref. 245; Ref. 246; Ref. 247). The North-west Marine Parks Network Management Plan 2018 (Ref. 174) 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. 19), 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. 236; Ref. 237; Ref. 238).

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.

8.3.6.2 Control measures

Table 8-10 describes the good practice CMs relevant to this aspect.

Table 8-10: Good practice control measures for GHG emissions

CM	Description
CM-06: NGER and Safeguard Mechanisms	As described in Section 8.3.3.3, 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-05: 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. 211) 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-07: Fuel Consumption	Vessel fuel usage will be recorded during the petroleum activity.

8.3.6.3 ALARP 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 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.

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.

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

Based on the environmental impact evaluation and application of relevant assessment tools as commensurate with the predicted level of impact (e.g. lower-order impacts), CAPL considers the adopted good practice control measures (Section 8.3.6.2) are appropriate to manage the potential impacts from GHG emissions. No reasonably practicable additional control measures were identified that would provide a meaningful reduction in environmental impact. Accordingly, CAPL considers the potential environmental impacts associated with this aspect to be reduced to ALARP.

8.3.7 Demonstration of acceptability

Table 8-11 describes the demonstration of acceptability relevant to this aspect.

Table 8-11: Demonstration of acceptability for GHG emissions

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 ~0.008 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 (Ref. 259) 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 6-4, 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 ~0.008 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 6-4, 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:

- NGER Act and Safeguard Rule
- Marine Order 97
- Conservation Management Plan for the Blue Whale *(*Ref. 45)
- Conservation Advice for fin whale (Ref. 282)
- Conservation Advice for sei whale (Ref. 283)
- National Recovery Plan for the Southern Right Whale *(*Ref. 284)
- Conservation Advice for Australian humpback dolphin (Ref. 285)
- Conservation Advice for Australian snubfin dolphin (Ref. 286)
- Recovery Plan for Marine Turtles in Australia (Ref. 73)
- Conservation Advice for leaf-scaled sea snake (Ref. 70)
- Conservation Advice for short-nosed sea snake (Ref. 71)
- Recovery Plan for the Grey Nurse Shark (Ref. 287)
- Conservation Advice for largetooth sawfish (Ref. 288)

- Conservation Advice for the whale shark (Ref. 289)
- Recovery Plan for the White Shark (Ref. 290)
- National Recovery Plan for Albatrosses and Petrels (Ref. 291)
- Conservation Advice for Asian dowitcher (Ref. 292)
- National Recovery Plan for the Australian Fairy Tern (Ref. 293)
- National Recovery Plan for the Australian Painted Snipe (Ref. 294)
- Conservation Advice for Christmas Island white-tailed tropicbird (golden bosun) (Ref. 295)
- Conservation Advice for common greenshank (Ref. 296)
- Conservation Advice for curlew sandpiper (Ref. 297)
- Conservation Advice for eastern curlew (far eastern curlew) (Ref. 298)
- Conservation Advice for greater sand plover (Ref. 299)
- Conservation Advice for little tern (Ref. 300)
- Conservation Advice for Northern Siberian bar-tailed godwit (Yakutian bar-tailed godwit) (Ref. 301)
- Conservation Advice for red knot (Ref. 302)
- Conservation Advice for Indian Ocean red-tailed tropicbird (Ref. 303)
- Conservation Advice for sharp-tailed sandpiper (Ref. 304)
- Wildlife Conservation Plan for Seabirds (Ref. 280)
- Wildlife Conservation Plan for Migratory Shorebirds (Ref. 281)
- North-west Marine Parks Network Management Plan (Ref. 174)
- Marine Bioregional Plan for the NWMR (Ref. 19).

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.
Conservation Management Plan for the Blue Whale Action A.3.1: Continue to meet Australia's international commitments to reduce GHG emissions and regulate the krill fishery in Antarctica.	As described in the above impact evaluation, the estimated GHG emissions associated with the petroleum activity are considered *de minimis* (~0.008 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 Advice for fin whale Continue to meet Australia's international commitments to reduce GHG emissions and regulate the krill fishery in Antarctica.	
Conservation Advice for sei whale Continue to meet Australia's international commitments to reduce GHG emissions and regulate the krill fishery in Antarctica.	
National Recovery Plan for the Southern Right Whale	

Action A3.1: Continue to meet Australia's international commitments to address causes of climate change, including GHG emissions.	
Conservation Advice for Australian humpback dolphin No specific action identified.	N/A
Conservation Advice for Australian snubfin dolphin No specific action identified.	
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* (~0.008 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 the Recovery Plan for Marine Turtles in Australia.
Conservation Advice for leaf-scaled sea snake No specific action identified.	N/A
Conservation Advice for short-nosed sea snake No specific action identified.	
Recovery Plan for the Grey Nurse Shark No specific action identified.	
Conservation Advice for largetooth sawfish No specific action identified.	
Conservation Advice for whale shark No specific action identified.	
Recovery Plan for the White Shark No specific action identified.	
National Recovery Plan for Albatrosses and Petrels No specific action identified.	
Conservation Advice for the Asian dowitcher No specific action identified.	
National Recovery Plan for the Australian Fairy Tern No specific action identified.	
National Recovery Plan for the Australian Painted Snipe No specific action identified.	
Conservation Advice for Christmas Island white-tailed tropicbird No specific action identified.	
Conservation Advice for common greenshank No specific action identified.	

Conservation Advice for curlew sandpiper No specific action identified.	
Conservation Advice for eastern curlew No specific action identified.	
Conservation Advice for greater sand plover No specific action identified.	
Conservation Advice for little tern No specific action identified.	
Conservation Advice for Northern Siberian bar-tailed godwit No specific action identified.	
Conservation Advice for red knot No specific action identified.	
Conservation Advice for Indian Ocean red-tailed tropicbird No specific action identified.	
Conservation Advice for sharp-tailed sandpiper No specific action identified.	
Wildlife Conservation Plan for Seabirds No specific action identified.	
Wildlife Conservation Plan for Migratory Shorebirds No specific action identified.	
North-west Marine Parks Network Management Plan No specific action identified.	
Marine Bioregional Plan for the NWMR No specific action identified.	
Internal context	
This management process or procedure was deemed relevant for this aspect: • Chevron Marine Standard (Ref. 211). 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.	

8.3.8 Environmental performance

Table 8-12 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-12: Environmental performance for GHG emissions

EPO	CM	EPS	MC
EPO-11: GHG emissions are managed in accordance with requirements under the Commonwealth NGER and Safeguard Mechanism Schemes.	**CM-06:** NGER and Safeguard Mechanisms	**EPS-06:** 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-06:** Records confirm GHG emissions management, reductions, and reporting are aligned with applicable requirements under the Commonwealth Safeguard Mechanism.
	CM-05: Marine Order 97	**EPS-05:** 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-05:** 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-07: Fuel Consumption	**EPS-07:** Vessels fuel usage will be recorded during the petroleum activity.	**MC-07:** Records confirm Vessel fuel usage during the petroleum activity.

8.4 Planned emissions—Artificial light

8.4.1 Aspect source

Activities identified as having the potential to generate artificial light emissions are:

- Navigational and operational lighting on vessels.

8.4.2 Environmental impact and risk evaluation

Artificial light emissions may result in a:

- Localised and temporary change in ambient light
- Potential change in behaviour of marine fauna.

8.4.2.1 Consequence evaluation

Impact: Localised and temporary change in ambient light

Vessels will be present within the OA during the petroleum activity; the estimated combined duration of the site surveys is ~4–6 months (occurring either as a single or multiple campaigns). 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.

While modelling of a survey vessel and/or support vessel is not available, artificial light modelling based on larger construction vessels (a drillship, pipelay vessel, and heavy construction vessel [HCV]) is available and has been used to inform this evaluation. The survey and support vessels within scope of this EP are both likely to be substantially smaller than these construction vessels[116], and as such the light emissions from a survey or support vessel are expected to be less than those values presented here. Therefore, use of this available modelling is considered a highly conservative approach to informing this consequence evaluation.

Modelling of artificial light emissions from a large pipelay vessel, drillship, and HCV predicted that light or light glow may be visible up to ~18.6 km from each of these sources (Ref. 305; Ref. 306). Note: This is not a biologically relevant amount of light; this is considered the equivalent to the light output from a new moon. The modelling predicted that light may become biologically relevant at a distance of up to ~8.3 km (Ref. 305; Ref. 306). The light at this distance is considered equivalent to a first quarter moon. Modelling of the drillship together with two support vessels was also undertaken, with a predicted distance of visible light and biologically relevant light extending ~19.6 km and ~8.8 km from the combined sources (Ref. 306).

The C&D and Chandon OAs are located ~55 km and ~120 km northwest from Barrow Island respectively. All artificial light emissions from the vessels are occurring in open ocean away from offshore islands or mainland coast. Vessel operations are also only temporary sources of light; i.e. once the activity is finished, these light sources do not remain within the OAs. Light would return to ambient levels following the cessation of the activity.

The worst-case consequence of causing a localised and temporary change in ambient light from vessel operations has been assessed as Incidental (6) and conditions will return to ambient levels upon completion of the petroleum activity.

Concurrent activities

Section 5.4.6 identifies other petroleum activities that may occur within the vicinity of the OAs during the indicative schedule for the site surveys.

[116] Approximate dimensions (length x width) of the modelled construction vessels are ~230 m x ~40 m, ~300 m x ~40 m, and ~160 m x ~30 m for the drillship, pipelay vessel, and HCV respectively. Compared to suitable MSVs which are generally <150 m x <30 m or specialist survey vessels and support vessels which are typically smaller at <100 m x <20 m.

These activities include potential vessel-based IMR for ongoing petroleum operations (e.g. Gorgon Project, Scarborough Project, Varanus Island Hub). These IMR activities would generally be intermittent and short-duration campaigns (unless triggered by a major/emergency repair). Any vessel will require navigational and operational lighting, and therefore any vessels working within the immediate vicinity of the OAs has the potential to result in cumulative impacts. However, these impacts will be temporary, ceasing once the IMR vessel has moved away from the OA. Due to their intermittent nature of IMR vessels, negligible cumulative impacts are expected.

However, for installation projects (e.g. CAPL's J-IC Project and Jansz Umbilical) the potential for concurrent activities of longer duration is possible. Based on current deterministic and probabilistic schedules, the potential longest duration of overlap is activities associated with the J-IC Project. Where activities are spatially sperate (e.g. site surveys within C&D OA and J-IC activities at Jansz) negligible cumulative impacts are expected. If activities occurred in proximity to each other (e.g. site surveys within Chandon OA and J-IC activities at Jansz), cumulative impacts from light emissions may occur. However, as light intensity is inversely proportional to distance, any additive effect of overlapping light emissions substantially reduces the greater the distance between the vessels.

The worst-case consequence of any cumulative impacts to ambient light are not expected to have a consequence above that already assessed, and have been evaluated as Incidental (6).

Risk: Potential change in behaviour of marine fauna

Modelling of artificial light emissions from larger individual construction vessels and/or with support vessels predicted that biologically relevant light may extend up to ~8.8 km from the respective sources (Ref. 305; Ref. 306). The light at this distance is considered equivalent to a first quarter moon. The survey and support vessels within scope of this EP are both likely to be substantially smaller than the modelled construction vessels[116], and as such the light emissions from a survey or support vessel are expected to the less. Therefore, use of this modelling is considered a highly conservative approach to informing this consequence evaluation.

The C&D and Chandon OAs are located ~55 km and ~120 km northwest from Barrow Island respectively. All artificial light emissions from the vessels are occurring in open ocean away from offshore islands or mainland coast (e.g. if vessel was operating at the southern edge of the C&D OA, these light emissions would be >46 km from Barrow Island, the closest island coast).

Light-sensitive fauna (including birds, reptiles and fish) are the species most at risk from this aspect.

Marine reptiles

As identified in Section 5.3.3.2, marine reptiles listed as threatened and/or migratory under the EPBC Act have the potential to occur within the OAs. The internesting buffer BIA and internesting HCTS of flatback turtles also intersect with the C&D OA (Table 5-8; Table 5-9).

The Recovery Plan for Marine Turtles in Australia (Ref. 73) identifies light pollution as a 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; it is the onshore-based activities that are generally "of concern" (Ref. 307).

Given that levels of biologically relevant light are estimated at distances of >46 km from Barrow Island (the closest coast), this risk of behavioural changes to adult nesting turtles or emerging hatchlings on beaches and within nearshore areas is not considered credible and has not been evaluated further.

Once the frenzy period for hatchlings ends, they transition to passive drifting in ocean currents (Section 5.3.3.2.1). Flatback turtles do not have a known oceanic development phase; instead, hatchlings are considered to develop in shallow coastal waters without leaving the Australian continental shelf (Ref. 92; Ref. 93 as cited in Ref. 76). In contrast, green and hawksbill hatchlings disperse into oceanic currents and gyres. However, a study simulating particle dispersal from various coastal locations in WA found that particles released from wide continental shelves, such as those along the NWS, tended to remain on the shelf (Ref. 309). This suggests that green and hawksbill turtle hatchlings in WA may also be retained on the shelf during early dispersal. All of the Chandon OA, and most of the C&D OA occurs over the continental slope; only the southern section of the C&D OA occurs on the continental shelf. Any presence of hatchlings would be transitory in nature (passive drifting).

The Recovery Plan for Marine Turtles in Australia (Ref. 73) defines internesting HCTS of flatback turtles as a 60 km distance seaward from nesting HCTS of flatback turtles (the closest nesting location to the C&D OA is Barrow Island). However, studies (e.g. Ref. 83; Ref. 308) have indicated that internesting behaviour of flatback turtles on the NWS appears more spatially restricted than that suggested by the Recovery Plan. Whittock et al. (Ref. 83) 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. 83). Therefore, while the southern section of the C&D OA intersects with the internesting buffer BIA and internesting HCTS of flatback turtles (Figure 5-8), it is considered highly unlikely that the C&D OA would be utilised during internesting periods by flatback turtles due to the unsuitability of the habitat (i.e. deeper waters and further offshore than where previous studies have recorded internesting behaviour occurring). Flatback turtle nesting is also more common on the east coast beaches of Barrow Island (i.e. opposite side of the island to the offshore activities). Further, while flatback turtles may feed in soft-bottom habitats for epibenthic fauna (e.g. soft corals, sea cucumbers), the benthic surveys within the C&D OA on the continental shelf indicate the BCH is predominantly smooth seabed with bare substrate and no epibenthic biota was observed in ground-truthing transects (Section 5.3.1.1). As such, any presence of flatback turtles within or adjacent to the C&D OA is expected to be of a transitory nature.

The C&D OA, or the area that may be exposed to biologically relevant light, does not extend into internesting HCTS for green and hawksbill turtles (which is defined as a 20 km distance seaward from nesting areas for these species within the Recovery Plan [Ref. 73]). However, 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. 77). As such, internesting behaviour for these turtle species is also not expected within the OAs or predicted light exposure areas and any presence would be of a transitory nature.

The EPBC Act listed threatened short-nosed sea snake or leaf-scaled sea snake are not expected to be present within the OAs given known habitat preferences for shallow water and reef habitat; artificial light has also not been identified as a

threat for either species (Ref. 71; Ref. 70). While other EPBC Act listed marine sea snake species may occur in broader habitats within the NWMR, snakes are inactive at night (Ref. 307). As such, artificial light emissions are not considered to be a significant factor in sea snake behaviour or survival, and risks have not been evaluated further.

Therefore, the worst-case consequence of artificial light emissions resulting in a temporary change in the behaviour of a small number of transient adult turtles or hatchlings, has been assessed as Minor (5).

Fishes, including sharks and rays

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 OAs. The foraging BIA for whale sharks intersect the C&D OA (Table 5-12). HCTS of some sawfish species may also be present within the C&D OA (Table 5-11). However, artificial light has not been identified as a threat for the whale shark (Ref. 289) or sawfish species (Ref. 99; Ref. 310; Ref. 311; Ref. 288).

Observations from a fish assemblage survey undertaken for the Gorgon Backfill Fields Development were predominantly pelagic fishes (Ref. 31). Pelagic fishes are generally considered mobile and/or transient in nature (Ref. 98). The demersal fishes observed throughout soft sediment habitats (Ref. 31) are also generally mobile taxa without any site attachment (Ref. 98).

Artificial light may result in varied ecological changes to fish, including changes to predatory behaviour and abundance (Ref. 312; Ref. 313), altering hatching success (Ref. 314), acting as an attractant for plankton (Ref. 315), or altering circadian behavioural rhythms (Ref. 313).

The whale shark BIA is associated with foraging behaviours during northward migration from the Ningaloo Reef seasonal aggregation area, along the 200 m isobath during July to November (Ref. 289). Feeding observations of whale sharks at Ningaloo Reef show that whale sharks feed at the surface during the early hours of the night when the vertical migration of plankton attracts them to the surface (Ref. 113). Zooplankton are negatively phototactic, such that when exposed to light zooplankton will swim away from the light source (Ref. 313; Ref. 316). As such light emissions at night may affect the initiation and magnitude of the diel vertical migration (DVM; the vertical migration to surface waters) of zooplankton (Ref. 313). However, the area of exposure to limit the initiation of DVM is likely to be restricted to the immediate vicinity of the vessel where light spill may be directly visible to zooplankton in the water. The spatial intersect between the C&D OA and the whale shark BIA represents ~0.03% of the entire BIA. As such, any potential reduction in zooplankton DVM that subsequently reduces a nocturnal surface foraging opportunity for whale sharks is not considered to cause a reduction in fitness to the individual or species.

Therefore, the worst-case consequence of artificial light emissions resulting in a temporary change in the behaviour of a small number of transient fishes, has been assessed as Minor (5).

Seabirds and shorebirds

As identified in Section 5.3.3.4, seabirds and shorebirds listed as threatened and/or migratory under the EPBC Act have the potential to occur within the OAs. A breeding BIA for the wedge-tailed shearwater intersects with the C&D OA (Table 5-15). HCTS of the Australian fairy tern may also be present within the C&D OA (Table 5-14).

Anthropogenic disturbance (including artificial lighting) is identified as a threat within the Wildlife Conservation Plan for Migratory Shorebirds (Ref. 281), and light pollution is identified as a threat within the Wildlife Conservation Plan for Seabirds (Ref. 280). As noted in the National Light Pollution Guidelines for Wildlife (Ref. 13) lights can disorient flying birds, particularly during migration and cause them to divert from efficient migratory routes (Ref 317), disrupt foraging (Ref. 318), and disrupt fledgling seabirds from taking their first flight if their nesting habitat never becomes dark (Ref. 318). Fledglings are considered more vulnerable to artificial light than adults for several factors, including immature development of ganglions in the eyes, disturbance to sea-finding cues, and potential connection between light and food (Ref. 280). 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. 319).

Given that levels of biologically relevant light are estimated at distances of >46 km from Barrow Island (the closest coast), this risk of behavioural changes to nesting or roosting adult birds or fledglings on islands are not considered credible and no further evaluation has been undertaken.

It is possible that nocturnally active seabirds and/or migratory shorebirds may be affected by light and alter 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. 320; Ref. 321). Nocturnal foraging has been shown a positive correlation to the presence of the moon (Ref. 322). The mechanism of birds being attracted to light is not fully understood, but it is proposed that the artificial lighting may override the internal magnetic compass of migratory shorebirds or nocturnal seabirds (Ref. 323). However, Marquenie et al. (Ref. 319) estimated that a change in migratory behaviour of birds was limited to <5 km from the source.

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. 13). Peak spectral emissions from vessel lighting 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. 13).

Behaviours used to define BIAs for seabirds include breeding areas with a foraging buffer (Ref. 280). As described in Section 5.3.3.4.1, wedge-tailed shearwaters are migratory, typically arriving at WA rookeries around August, and leave nests in early-April to early-May. Known breeding locations within the NWMR include Double Island, Boodie Island, Lowendal Islands, and Montebello Islands.

The subpopulation of Australian fairy tern based along the Pilbara and upper Gascoyne coasts from Exmouth Gulf to the Dampier Archipelago, including Barrow, Montebello, and Lowendal islands are sedentary (Ref. 293). Nesting typically occurs from late-July to late-September (Ref. 293). Australian fairy terns feed almost entirely on fish in near-shore waters adjacent to nesting colonies and around island archipelagos (Ref. 293).

Therefore, given the offshore location of the petroleum activity, any potential changes in seabird or shorebird behaviour due to artificial light are expected to be limited to transient individuals during nocturnal migration or foraging. The worst-case consequence of artificial light emissions resulting in a temporary change in

the behaviour of a small number of transient seabirds or shorebirds, has been assessed as Minor (5).

8.4.2.2 Control measures

Table 8-13 and Table 8-14 describe the CMs relevant to this aspect.

Table 8-13: Good practice control measures for artificial light emissions

CM	Description
CM-08: Light Management for Night Operations	Biologically relevant light emissions have been conservatively estimated (based on modelling for larger construction vessels) to extend up to ~8.8 km from the respective individual/combined sources (Section 8.4.2.1). The C&D and Chandon OAs are located ~55 km and ~120 km northwest from Barrow Island, and in water depths of ~125–1,230 m and ~1,145–1,370 m respectively. Therefore, all artificial light emissions from the vessels are occurring in open ocean away from offshore islands (>46 km from Barrow island, the closest island coast) 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. 13) 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. 13) 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-09: Seabird Management Procedure	CAPL's Seabird Management Procedure (Ref. 324; 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 for Wildlife (Ref. 13) regarding the management of seabirds landing on vessels.

Table 8-14: Additional control measures considered for artificial light emissions

CM	Benefit	Cost
External Vessel Lighting	Table 5, Table 8, and Table 11 of the National Light Pollution Guidelines for Wildlife (Ref. 13) provide a toolbox of light mitigation options for marine turtles, seabirds, and migratory shorebirds respectively. Some of the additional mitigation options within these toolboxes include consideration of the use of lighting that is:	The cost of retrofitting external lighting of the vessels is considered grossly disproportionate to the limited environmental benefit (and no change in residual risk) it may provide for marine fauna in an offshore open ocean environment. Therefore, this control measure has not been adopted for use.

CM	Benefit	Cost
	• flashing or intermittent instead of fixed beam • uses motion sensors to turn on lights only when needed • uses luminaires with a particular spectral signature and/or intensity or • avoids high intensity light of any colour. Replacing existing external lighting on vessels with lighting that uses some or all of the above mitigations may further reduce the potential risks of artificial light on marine fauna. Modelling of artificial light emissions from larger individual construction vessels and/or with support vessels predicted that biologically relevant light may extend up to ~8.8 km from the respective sources. Note: The survey and support vessels within scope of this EP are both likely to be substantially smaller than the modelled construction vessels, and as such the light emissions from a survey or support vessel are expected to the less. Further, the C&D and Chandon OAs are located ~55 km and ~120 km northwest from Barrow Island respectively. As such, all artificial light emissions from the vessels are occurring in open ocean away from offshore islands or mainland coasts; i.e. the light emissions occur away from any potential nesting or breeding sites for seabirds, shorebirds, or marine turtles. The implementation of any or all of these external lighting controls are considered to be of limited environmental benefit, and would not result in a reduction of residual risk.	

8.4.2.3 ALARP 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.

Artificial light modelling has been used to inform the spatial extent of biologically relevant light, and this is considered an appropriate basis to inform environmental impact and risk assessments.

Based on the environmental impact and risk evaluation and application of relevant assessment tools as commensurate with the predicted level of impact and risk (e.g. higher-order impacts and risks), CAPL considers the adopted good practice control measures (Section 8.4.2.2) are appropriate to manage the potential impacts and risks from artificial light emissions. No further reasonably practicable control measures were identified that would provide a meaningful reduction in environmental impact or risk without incurring grossly disproportionate costs. Accordingly, CAPL considers the potential environmental impacts and risks associated with this aspect to be reduced to ALARP.

8.4.2.4 Likelihood and risk level summary

With the application of the above control measures CAPL has assessed the likelihood and residual risk to the receptors as shown in Table 8-15.

Table 8-15: Impact and risk summary for artificial light emissions

Impacts and risks	Consequence	Likelihood	Residual risk
Impacts			
Localised and temporary change in ambient light	Incidental (6)	N/A	
Risks			
Potential change in behaviour of marine fauna—marine reptiles	Minor (5)	Remote (5)	Very Low (9)
Potential change in behaviour of marine fauna—fishes	Minor (5)	Rare (6)	Very Low (10)
Potential change in behaviour of marine fauna—seabirds and migratory shorebirds	Minor (5)	Remote (5)	Very Low (9)

8.4.3 Demonstration of acceptability

Table 8-16 describes the demonstration of acceptability relevant to this aspect.

Table 8-16: Demonstration of acceptability for artificial light emissions

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). Artificial light emissions from the petroleum activity are predicted to result in a localised and temporary change in ambient light (Section 8.4.2.1). Subsequent potential impacts to marine fauna were predicted to the limited to temporary behavioural changes to a small number of transient fauna (marine reptiles, fishes, birds). The predicted impacts would not decrease the availability or quality of important habitat or result in impacts at population level that would prevent long-term recovery or survival. Therefore, the predicted level of impact for these receptors is equivalent or better than AL-12, AL-13, AL-14 and AL-15.
Principles of ESD
Precautionary Principle In accordance with Table 6-4, 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 6-4, 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

Artificial light emissions from the petroleum activity are predicted to result in a localised and temporary change in ambient light, and potential temporary behavioural changes to a small number of transient fauna (reptiles, fishes, birds). 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:

- National Light Pollution Guidelines for Wildlife (Ref. 13)
- Recovery Plan for Marine Turtles in Australia (Ref. 73)
- Wildlife Conservation Plan for Seabirds (Ref. 280)
- Wildlife Conservation Plan for Migratory Shorebirds (Ref. 281)
- Marine Bioregional Plan for the NWMR (Ref. 19).

CAPL considers that impact 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 8.4.2 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 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 this Recovery Plan]. Note: This is also a specific action identified for the NWS green turtle (G-NWS) stock. Action A8.3: Identify the cumulative impact on turtles from multiple sources of onshore and offshore light pollution. In addition, the following specific actions have been identified for individual turtle stocks: • Pilbara flatback turtle (F-Pil): Manage artificial light from onshore and offshore sources to ensure biologically important behaviours of nesting adults and emerging/dispersing hatchlings can continue • WA hawksbill turtle (H-WA): Manage artificial light from onshore and offshore sources to ensure biologically important behaviours of nesting adults and dispersing hatchlings can continue.	Section 8.4.2 provides a risk assessment for artificial light emissions from the petroleum activity (including where concurrent activities may result in cumulative effects) to marine turtles. Given that levels of biologically relevant light are estimated at distances of >46 km from Barrow Island (the closest coast), risks to adult nesting turtles or emerging hatchlings was not considered credible. The OAs are also not considered to be suitable internesting habitat (deeper waters and further offshore than where previous studies have recorded internesting behaviour occurring), and therefore potential risks to internesting turtles was not considered credible. The control measures identified above are considered appropriate to manage the risk to marine turtles to ALARP and acceptable levels. The petroleum 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.	
Marine Bioregional Plan for the NWMR No specific action identified.	
Internal context	
This management process or procedure was deemed relevant for this aspect: • Seabird Management Procedure (Ref. 324). 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.	

8.4.4 Environmental performance

Table 8-17 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-17: Environmental performance for artificial light emissions

EPO	CM	EPS	MC
EPO-13: Artificial light emissions from planned petroleum activities do not prevent light sensitive marine fauna[117] from undertaking biological important behaviours[118]. **EPO-14:** Artificial light within or adjacent to HCTS of marine turtles[119] will be managed such that marine turtles are not displaced from these habitats. **EPO-15:** Manage artificial light from offshore sources to ensure biologically important behaviours of: • Nesting adults and emerging/dispersing hatchlings of	**CM-08:** Light Management for Night Operations	**EPS-08:** 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-08:** 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).

[117] Where light sensitive marine fauna includes marine turtles, seabirds, and migratory shorebirds.

[118] Where biologically important behaviours are defined as behaviour associated with critical life functions (e.g. reproduction, foraging, migration, and resting) (Ref. 325).

[119] Where HCTS of marine turtle species is defined in Table 6 of the Recovery Plan for Marine Turtles in Australia (Ref. 73).

EPO	CM	EPS	MC
the flatback turtle Pilbara stock (F-Pil) can continue • Nesting adults and dispersing hatchlings of the hawksbill turtle WA (H-WA) can continue.	**CM-09:** Seabird Management Procedure	**EPS-09: Seabird Management Procedure** CAPL's Seabird Management Procedure (Ref. 324) will be implemented to manage interactions with seabirds on vessels.	**MC-09:** Inspection records (or equivalent) confirm the seabird management procedure was implemented as required.

8.5 Planned emissions—Underwater sound (non-impulsive)

8.5.1 Aspect source

Activities identified as having the potential to generate non-impulsive[120] 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 geophysical survey activities.

8.5.2 Underwater sound modelling

8.5.2.1 Vessel operations

JASCO Applied Sciences (JASCO) undertook acoustic and animat modelling studies (Ref. 328) to inform the impact and risk assessment associated with non-impulsive underwater sound emissions from the petroleum activity.

Scenarios

Two scenarios were modelled using the same vessels: one based in shallower water depths on the continental shelf, and the other in deeper waters on the continental slope (Table 8-18).

Underwater sound that radiates from vessels is produced mainly by cavitation at the propellers and thrusters, with a smaller proportion produced by sound transmitted through the hull, such as by engines, gearing, and other mechanical systems (Ref. 328). 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. 328).

Table 8-18: Description of modelled scenarios and sound source levels

Scenario	Description	Model water depth	Broadband source levels[121]
1	Survey vessel under DP, with a supply vessel alongside for 8 hours	120 m	Survey vessel: 182.5 dB re 1 μPa^2s Supply vessel: 181.2 dB re 1 μPa^2s
2		704 m	

[120] 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. 326; Ref. 327).

[121] Broadband source levels for the survey and supply vessel are given over a 10 Hz to 25 kHz range (Ref. 328).

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 8-19) which are based on the most applicable science available at the time of the modelling:

- Frequency-weighted accumulated sound exposure level[122] (SEL_{24h}) from the United States (US) Navy (Ref. 40) for the onset of auditory injury (AINJ)[123] and temporary threshold shift (TTS)[124] in marine mammals and marine turtles
- Un-weighted sound pressure level (SPL)[125] from the US National Oceanic and Atmospheric Administration (NOAA) for marine mammal behavioural disruption (Ref. 329)
- Sound exposure guidelines for fish, fish eggs and fish larvae, and marine turtles from shipping and continuous sounds in Popper et al. (Ref. 330)[126].

Note: For the purpose of interpreting and applying Action Area A.2 of the Conservation Management Plan for the Blue Whale (Ref. 45), 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. 331).

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 be the most appropriate representation of a distance to inform impact and risk evaluation.

Table 8-20 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

[122] Where sound exposure level (SEL) is the level of the sound exposure in a stated frequency band and time window (Ref. 328). To apply an SEL metric a specified accumulation period is needed. The effect criteria have been established using a 24-hour period (SEL_{24h}).

[123] 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. 326). 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. 326).

[124] 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. 326). TTS may or may not reduce fitness (Ref. 330).

[125] 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. 328).

[126] Only quantitative effect criteria were modelled; qualitative effect criteria were applied directly in the risk assessment.

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. 326). Accumulation time is driven primarily by the characteristics of the receiver (e.g. swim speed) (Ref. 326). Exposures closer to the source are also likely to be the primary exposures contributing to a receiver's accumulated level (Ref. 326).

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. 328). 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. 328). 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. 328). To generate statistically reliable probability density functions, model simulations by JASCO were run with animat sampling densities of 4 animats/km^2 (Ref. 328). 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. 53]). 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 8-21. 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. 328). The probability (P_{exp}) that an animat within the $ER_{95\%}$ was exposed above effect criteria was also computed and is shown in Table 8-21. Note: To facilitate comparison, the R_{max} and $R_{95\%}$ predicted from acoustic propagation modelling for the same scenarios is also shown in Table 8-21.

Under animat modelling, the effect criteria for AINJ onset was not reached for either of the modelled scenarios. 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 8-21). Similarly, the predicted $ER_{95\%}$ to behavioural effect criteria was substantially reduced compared to the $R_{max}/R_{95\%}$ from acoustic propagation modelling (Table 8-21). 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. 328).

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, 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 8-19: Effect criteria for non-impulsive sound for different types of impacts and species groups

Receptor	Mortality[127] and potential mortal injury[128]	Recoverable injury[129,128]	AINJ onset	TTS onset[128]	Masking[130,128]	Behaviour[131,128]
VLF cetaceans	N/A	N/A	SEL_{24h}: 197 dB re 1 µPa^{2}s	SEL_{24h}: 177 dB re 1 µPa^{2}s	N/A	SPL: 120 dB re 1 µPa
LF cetaceans						
HF cetaceans			SEL_{24h}: 201 dB re 1 µPa^{2}s	SEL_{24h}: 181 dB re 1 µPa^{2}s		
VHF cetaceans			SEL_{24h}: 181 dB re 1 µPa^{2}s	SEL_{24h}: 161 dB re 1 µPa^{2}s		
Sirenians			SEL_{24h}: 200 dB re 1 µPa^{2}s	SEL_{24h}: 180 dB re 1 µPa^{2}s		
Marine turtles	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	SEL_{24h}: 198 dB re 1 µPa^{2}s	SEL_{24h}: 178 dB re 1 µPa^{2}s	(N) High (I) High (F) Moderate	(N) High (I) Moderate (F) Low
Fish—no swim bladder (particle motion detection)[132]	(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

[127] Mortality and mortal injury refers to immediate or delayed death (Ref. 330).

[128] 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. 330).

[129] Recoverable injury includes injuries unlikely to result in mortality, such as hair cell damage and minor haematoma (Ref. 330).

[130] Masking refers to an impairment of hearing sensitivity in the presence of noise (Ref. 330).

[131] 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. 330). 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. 328). Behavioural effects in marine mammals can range in severity from no observable response to more substantial changes (Ref. 329).

[132] Also appropriate for sharks (Ref. 328).

Receptor	Mortality[127] and potential mortal injury[128]	Recoverable injury[129,128]	AINJ onset	TTS onset[128]	Masking[130,128]	Behaviour[131,128]
Fish—swim bladder involved in hearing (primarily pressure detection)	(N) Low (I) Low (F) Low	170 dB SPL for 48 hours		158 dB SPL for 12 hours	(N) High (I) High (F) High	(N) High (I) Moderate (F) Low
Fish eggs and fish larvae	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low		(N) Low (I) Low (F) Low	(N) High (I) Moderate (F) Low	(N) Moderate (I) Moderate (F) Low

Table 8-20: 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								
VLF cetaceans	N/A		SEL_{24h}: 0.07 km	SEL_{24h}: 0.07 km	SEL_{24h}: 1.41 km	SEL_{24h}: 1.25 km	SPL: 5.61 km	SPL: 5.20 km
LF cetaceans			SEL_{24h}: 0.06 km	SEL_{24h}: 0.05 km	SEL_{24h}: 0.73 km	SEL_{24h}: 0.69 km		
HF cetaceans			SEL_{24h}: 0.04 km	SEL_{24h}: 0.04 km	SEL_{24h}: 0.10 km	SEL_{24h}: 0.10 km		
VHF cetaceans			SEL_{24h}: 0.04 km	SEL_{24h}: 0.04 km	SEL_{24h}: 0.29 km	SEL_{24h}: 0.28 km		
Sirenians			SEL_{24h}: 0.02 km	SEL_{24h}: 0.02 km	SEL_{24h}: 0.06 km	SEL_{24h}: 0.05 km		
Marine turtles			SEL_{24h}: 0.06 km	SEL_{24h}: 0.06 km	SEL_{24h}: 1.12 km	SEL_{24h}: 0.95 km	N/A	
Fish—swim bladder involved in hearing	SPL for 48 hours: 0.04 km	SPL for 48 hours: 0.04 km	N/A		SPL for 12 hours: 0.04 km	SPL for 12 hours: 0.04 km		
Scenario 2								
VLF cetaceans	N/A		SEL_{24h}: 0.07 km	SEL_{24h}: 0.07 km	SEL_{24h}: 0.68 km	SEL_{24h}: 0.65 km	SPL: 3.44 km	SPL: 3.19 km
LF cetaceans			SEL_{24h}: 0.05 km	SEL_{24h}: 0.05 km	SEL_{24h}: 0.49 km	SEL_{24h}: 0.49 km		
HF cetaceans			SEL_{24h}: 0.03 km	SEL_{24h}: 0.03 km	SEL_{24h}: 0.11 km	SEL_{24h}: 0.11 km		
VHF cetaceans			SEL_{24h}: 0.04 km	SEL_{24h}: 0.04 km	SEL_{24h}: 0.29 km	SEL_{24h}: 0.29 km		

Receptor	Recoverable injury		AINJ onset		TTS onset		Behaviour	
	R_{max}	$R_{95\%}$	R_{max}	$R_{95\%}$	R_{max}	$R_{95\%}$	R_{max}	$R_{95\%}$
Sirenians			SEL_{24h}: 0.03 km	SEL_{24h}: 0.03 km	SEL_{24h}: 0.05 km	SEL_{24h}: 0.05 km		
Marine turtles			SEL_{24h}: 0.05 km	SEL_{24h}: 0.05 km	SEL_{24h}: 0.55 km	SEL_{24h}: 0.55 km	N/A	
Fish—swim bladder involved in hearing	SPL for 48 hours: 0.03 km	SPL for 48 hours: 0.03 km	N/A		SPL for 12 hours: 0.04 km	SPL for 12 hours: 0.04 km		

Table 8-21: Animat modelling exposure range ($ER_{95\%}$)[133] and predicted horizontal distance (R_{max}) from acoustic modelling to non-impulsive effect criteria for VLF cetaceans

Receptor	Parameter	AINJ onset	TTS onset	Behaviour
Scenario 1				
Acoustic modelling	R_{max}	SEL_{24h}: 0.07 km	SEL_{24h}: 1.41 km	SPL: 5.61 km
	$R_{95\%}$	SEL_{24h}: 0.07 km	SEL_{24h}: 1.25 km	SPL: 5.20 km
Animat modelling	$ER_{95\%}$ (P_{exp})	SEL_{24h}: –	SEL_{24h}: 0.02 km (88%)	SPL: 3.82 km (98%)
Scenario 2				
Acoustic modelling	R_{max}	SEL_{24h}: 0.07 km	SEL_{24h}: 0.68 km	SPL: 3.44 km
	$R_{95\%}$	SEL_{24h}: 0.07 km	SEL_{24h}: 0.65 km	SPL: 3.19 km
Animat modelling	$ER_{95\%}$ (P_{exp})	SEL_{24h}: –	SEL_{24h}: 0.02 km (89%)	SPL: 0.65 km (89%)

[133] A dash (–) indicates the no animats were exposed above the effect criteria.

8.5.2.2 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. 332). 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. 332; Ref. 333). Richardson et al. (Ref. 332) 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.

8.5.2.3 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. 334). AUVs typically have few moving parts and use low propulsion power, and as such have a very low underwater sound signature (Ref. 335). Measurements of an AUV indicated a broadband (100–5,000 Hz) source level of 124 dB re 1 µPa @ 1 m (Ref. 335).

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. 334). 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. 334). The underwater sound radiated by the propulsion system of an AUV is typically low compared to the sounds generated by its payload device (Ref. 334).

As such, ROV and AUV operations are not evaluated further within this impact and risk assessment.

8.5.2.4 Geophysical survey equipment (SSS and MBES)

Geophysical (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. 334). 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 8-22). 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. 334).
- 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. 334).

Table 8-22: 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

8.5.3 Concurrent petroleum activities

Other CAPL petroleum activities

As identified in Sections 4.5.4 and 5.4.6, there may be other CAPL petroleum activities occurring during the site investigation surveys. Based on deterministic and probabilistic schedules, combinations of the following vessel-based activities may occur concurrently:

- Site investigation surveys at C&D or Chandon fields
- GS3 drilling
- GS3 pipelay and/or subsea installation
- J-IC installation and/or pre-commissioning/commissioning
- Jansz umbilical installation.

JASCO has undertaken acoustic modelling studies (Ref. 328; Ref. 336; Ref. 337; Ref. 338; Ref. 339) that have been used to inform the risk assessment associated with non-impulsive underwater sound emissions from concurrent petroleum activities.

Table 8-23 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 ~23–43% (or ~18–49% 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 8-23 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. 53), 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 ~1.4 hours during northern migration or up to ~0.8 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 subsea compression station (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. 340). 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. 341). Interaction between the J-IC SCSt ensonified area and any ensonified area from site survey 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 OAs during the indicative schedule for the site survey activities. Third-party activities that may result in non-impulsive underwater sound emissions include vessel-based IMR for ongoing petroleum operations (e.g. Gorgon Project, Scarborough Project, Varanus Island Hub). These IMR activities would generally be intermittent and short-duration campaigns (unless triggered by a major/emergency repair).

Any vessel will generate non-impulsive sound emissions, and therefore any vessels working within the immediate vicinity of the OAs has the potential to result in cumulative impacts. However, given the type of activity (IMR campaigns) these impacts will be minor and temporary, ceasing once the IMR vessel has moved away from the OAs. Due to their intermittent nature of IMR vessels, negligible cumulative impacts are expected and have not been evaluated further within this risk assessment.

Table 8-23: 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 interpretating 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[134] 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[135] 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.						
CON-1	C&D site surveys	As per Scenario 1 in Table 8-18.	Estimated ~2–3 months for duration of C&D survey activities.	Predicted R_{max} for the scenarios were 5.61 km[136] and 6.72 km respectively. Therefore, potential total width of ensonified areas is ~24.7 km, which represents ~23% (18–26%) of the width of the migration BIA. Note: These activities would result in two 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 as the larger of the ensonified areas. 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	The estimated longest length of ensonified area above the TTS onset effect criteria is ~3.1 km; this is based on J-IC activities as the larger of the ensonified areas. During northern and southern migrations an animal may be within this ensonified area for ~1.3 hours and ~0.6–08 hours respectively (i.e. substantially less
	J-IC installation and pre-commissioning/ commissioning	1 x heavy lift vessel (HLV) and 2 x heavy transport vessels (HTVs), all under DP.				
		1 x MSV under DP, with a supply vessel alongside for 8 hours.				

[134] 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).

[135] 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).

[136] Not all activities on the continental shelf for C&D occur within the pygmy blue whale BIA; however, as a conservative approach to risk assessment the width of the ensonified area has been assumed to occur within the BIA.

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
					(assuming no avoidance behaviours).	than the 24-hr duration associated with the TTS effect criteria).
CON-2	C&D site surveys	As per Scenario 1 in Table 8-18.	Estimated ~2–3 months for duration of C&D survey activities.	Predicted R_{max} for the scenarios were 5.61 km[136], 6.72 km, 6.34 km, and 3.89 km respectively. Therefore, potential total width of ensonified areas is ~45.1 km, which represents ~41% (33–47%) of the width of the migration BIA. Note: These activities could result in up to four discrete ensonified areas. However, the depending on location of survey or umbilical activities, some of the ensonified areas may start to overlap.	As above for CON-1.	As above for CON-1.
	J-IC installation and pre-commissioning/ commissioning	1 x HLV and 2 x HTVs, all under DP.				
		1 x MSV under DP, with a supply vessel alongside for 8 hours.				
	GS3 drilling	Drillship under DP and drilling, with 1 x MSV under DP, and 1 x platform supply vessel (PSV) on standby.				
	Jansz umbilical installation	1 x heavy construction vessel (HCV) under DP, with a supply vessel alongside for 8 hours.				
CON-3	Chandon site surveys	As per Scenario 2 in Table 8-18.	Estimated ~2–3 months for duration of Chandon survey activities.	Predicted R_{max} for the scenarios were 3.44 km, 3.89 km, and 6.34 km respectively. Therefore, potential total width of ensonified areas is ~27.3 km, which represents ~25% (20–29%) of the width of the migration BIA. Note: These activities could result in up to three discrete	The estimated longest length of ensonified area above the behavioural effect criteria is ~12.7 km; this is based on the GS3 drilling activity as the larger of the ensonified areas. During northern and southern migrations this may result in ~5.3 hours and ~2.5–3.2 hours	The estimated longest length of ensonified area above the TTS onset effect criteria is ~2.9 km; this is based on the GS3 drilling activity as the larger of the ensonified areas. During northern and southern migrations an animal may be within this ensonified area for
	J-IC pre-commissioning/ commissioning	1 x MSV under DP, with a supply vessel alongside for 8 hours.				
	GS3 drilling	Drillship under DP and drilling, with 1 x MSV under DP, and 1 x PSV on standby.				

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
				ensonified areas. However, the depending on location of survey activities, some of the ensonified areas may start to overlap.	respectively of exposure to sound above the behavioural effect criteria (assuming no avoidance behaviours).	~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).
CON-4	Chandon site surveys	As per Scenario 1 in Table 8-18.	Estimated ~2–3 months for duration of Chandon survey activities.	Predicted R_{max} for the scenarios were 3.44 km, 6.72 km, 6.34 km, and 7.05 km respectively. Therefore, potential total width of ensonified areas is ~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. However, the depending on location of survey or pipelay activities, some of the ensonified areas may start to overlap.	The estimated longest length of ensonified area above the behavioural effect criteria is ~14.1 km; this is based on the GS3 pipelay activity as the larger of the ensonified areas. During northern and southern migrations this may result in ~5.9 hours and ~2.8–3.5 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 ~3.3 km; this is based on the GS3 pipelay activity as the larger of the ensonified areas. During northern and southern migrations an animal may be within this ensonified area for ~1.4 hours and ~0.7–0.8 hours respectively (i.e. substantially less than the 24-hr duration associated with the TTS effect criteria).
	J-IC installation and pre-commissioning/ commissioning	1 x MSV under DP, with a supply vessel alongside for 8 hours.				
		1 x HLV and 2 x HTVs, all under DP.				
	GS3 drilling	Drillship under DP and drilling, with 1 x MSV under DP, and 1 x PSV on standby.				
	GS3 pipelay	1 x pipelay vessel, 1 x construction support vessel, 2 x pipe supply vessels, and 1 x supply vessel alongside for 8 hours.				

8.5.4 Environmental impact and risk evaluation

Non-impulsive underwater sound emissions may result in a:

- Localised and temporary change in ambient underwater sound.
- Potential behavioural disturbance of marine fauna
- Potential auditory impairment or injury to marine fauna.

8.5.4.1 Consequence evaluation

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. 342).

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. 343). Low frequency ambient sound levels (20–500 Hz) are frequently dominated by distant shipping and some great whale species. Above the 300–400 Hz range weather-related sounds exceed shipping sounds, with wind, wave action, and rainfall dominating the 500–50,000 Hz range (Ref. 343). Soundscape monitoring in the Jansz area undertaken during 2021–2023 (Ref. 43) identified that the dominant sources of sound at low frequencies (<100 Hz) were shipping and baleen whales, and wind in the mid-frequencies (0.1–1 kHz).

Non-impulsive underwater sound can be generated from multiple sources (Sections 8.5.1 and 8.5.2) associated with the petroleum activity. All sources are temporary, with durations varying in the order of weeks for each geophysical survey and up to ~4–6 months for general vessel operations.

Acoustic modelling of underwater sound levels associated with vessel-based activities for the petroleum activity found the largest distance to effect criteria (marine mammal behavioural effect) was ~5.61 km (Table 8-20). Potential concurrent CAPL petroleum activities may result in multiple discrete ensonified areas (Section 8.5.3; Table 8-23).

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.

Risk: Potential behavioural disturbance of marine fauna

Marine mammals

Acoustic modelling indicated that the R_{max} from the source to SPL behavioural effect criteria for marine mammals was ~5.61 km for survey activities in shallower waters on the continental shelf and ~3.44 km for or survey activities in deeper waters on the continental slope (Table 8-20). The difference in the predicted distances between the two modelled scenarios demonstrate the effects that topography and oceanography can have on acoustic propagation.

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 OAs. The threatened and/or migratory cetaceans that may be present within the OAs 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 OAs; 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
- Migration BIA for humpback 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). The presence of humpback whales within the Jansz region has been recorded from July to October (Ref. 42; Ref. 43) encompassing both their northern and southern migrations. No other known BIAs, HCTS of marine mammal species, or aggregation areas intersect with the OAs; 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. 344). However, given the largest predicted R_{max} of ~5.61 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 8.5.2.1). For the modelled scenarios, the maximum exposure range ($ER_{95\%}$) to reach the behavioural effect criteria for marine mammals was ~3.82 km or survey activities in shallower waters on the continental shelf and ~0.65 km for or survey activities in deeper waters on the continental slope (Table 8-21); this is a reduction of ~32–81% in predicted ensonified area for pygmy blue whales.

For survey activities on the continental shelf (i.e. the shallow parts of the C&D OA) this represents ~7.0% (5.6–8.0%)[137] of the width the pygmy blue whale BIA[138]. For survey activities on the continental slope (i.e. the Chandon OA and the deeper parts of the C&D OA) this represents ~1.2% (1.0–1.4%) 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

[137] 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).

[138] Note: Not all activities on the continental shelf for C&D occur within the pygmy blue whale BIA; however, as a conservative approach to risk assessment the width of the ensonified area has been assumed to occur within the BIA.

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 Conservation Management Plan for the Blue Whale (Ref. 45), 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 Areas' or 'Known Foraging Areas' within northwest WA. The closest of these types of areas to the OAs are described as 'Possible Foraging Areas' (Ref. 45) and are >175 km southwest (around Ningaloo/North West Cape) and >890 km northeast (around Scott Reef) of the OAs. Thums et al. (Ref. 53) 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 and associated with opportunistic foraging by pygmy blue whales during migration periods. The OAs do not intersect with these 'most important areas' for foraging (Figure 5-6); the predicted ensonifed areas above the behavioural effect criteria also do not extend into these 'most important 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. 57). Habitat suitability analysis describes the northwest 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. 55; Section 5.3.3.1.1). Opportunistic foraging areas are also known to be dynamic given their dependence on presence of prey (Ref. 53; Ref. 58). Tagging studies suggest a reliance on more ephemeral prey in northwest Australia compared to southwest Australia where whales have high residency (Ref. 57).

A review by Pattiaratchi (Ref. 61) demonstrated that there were no clear oceanographic drivers (including seabed features, currents and eddies, or upwellings) 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 (Ref. 62). 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. 62). Therefore, the Jansz field and surrounding areas (including the OAs), 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. 57).

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 OAs 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.

Humpback whales

The humpback whale migration BIA is ~1.5 km southeast of the C&D OA (Table 5-6). Based on the predicted R_{max} for behavioural effect criteria of ~5.61 km for survey activities in shallower waters on the continental shelf (Table 8-20), then the maximum this would extend into the migration BIA is ~4.1 km. The width of the BIA at this location is ~117 km, and so this ensonified area represents ~4% of the BIA width. 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 humpback whales migrating between Antarctic feeding grounds and Kimberley calving grounds. Therefore, the spatial extent of the area ensonified above the behavioural effect criteria and the potential degree of disturbance (e.g. deviation in path, avoidance, etc.) within the humpback whale migration BIA is highly unlikely to alter the overall energy budget of migrating whales.

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 or humpback 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 OAs, 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 or humpback 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 8.5.3). 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 C&D or Chandon site survey activities 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 8.5.3, the cumulative ensonified area above the marine mammal behavioural effect criteria may represent ~23–43% (or ~18–49% based on the narrower and broader sections) of the width of the migration BIA for the pygmy blue whale (Table 8-23). 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 ~5.3–5.9 hours during northern migration or ~2.5–3.5 hours during southern migration (Table 8-23).

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 conditions 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. 330). Based on qualitative guidelines from Popper et al. (Ref. 330; Table 8-19) 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 OAs. The internesting buffer BIA and internesting HCTS of flatback turtles also intersect with the C&D OA (Table 5-8; Table 5-9).

The Recovery Plan for Marine Turtles in Australia (Ref. 73) 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. 345); whereas their use geomagnetic, water movement (including wave direction), or light cues to navigate has been observed (e.g. Ref. 345; Ref. 346; Ref. 347). The Recovery Plan for Marine Turtles in Australia (Ref. 73) 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. 330).

The EPBC Act listed threatened short-nosed sea snake or leaf-scaled sea snake are not expected to be present within the OAs given known habitat preferences for

shallow water and reef habitat; sound emissions have also not been identified as a threat for either species (Ref. 71; Ref. 70). Other 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. 348). 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. 348).

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 8.5.3). 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 OAs, 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. 330). Based on qualitative guidelines from Popper et al. (Ref. 330;Table 8-19) 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 OAs. The foraging BIA for whale sharks intersects the C&D OA (Table 5-12). HCTS of some sawfish species may also be present within the C&D OA (Table 5-11). However, underwater sound has not been identified as a threat for the whale shark (Ref. 289) or sawfish species (Ref. 99; Ref. 310; Ref. 311; Ref. 288).

The fish assemblages observed during surveys (Ref. 31) were predominantly pelagic fishes (Ref. 31). Pelagic fishes are generally considered mobile and/or transient in nature (Ref. 98). The demersal fishes observed throughout soft sediment habitats (Ref. 31) are also generally mobile taxa without any site attachment (Ref. 98). Based on the types of species observed, fishes with and without swim bladders may be present within the OAs.

As noted above, underwater sound has not been identified as a threat to whale sharks (Ref. 289). Elasmobranchs are known to use electroreception for orientation and navigation, detection of prey, detection of conspecifics, and potential predators (Ref. 349 as cited in Ref. 350). It is expected that the potential effects to whale sharks associated with underwater sound will be the same as for other pelagic fish with no swim bladders (i.e. limited to within tens to hundreds of metres from the sound source).

The whale shark BIA is associated with foraging behaviours during northward migration from the Ningaloo Reef seasonal aggregation area, along the 200 m isobath during July to November (Ref. 289). The spatial intersect between the

C&D OA and the whale shark BIA represents ~0.03% of the entire BIA. Recent habitat use analysis (based on satellite tagging 2005–2019) demonstrated that the most common movement pathway from away from Ningaloo Reef was north towards pinnacle features and south to Shark Bay (Ref. 103; Section 5.3.3.3.1). These pinnacle features occur to the northeast and north of Montebello Islands and are outside of the OAs (see inset of Figure 5-10). The are no geomorphic features within the OAs that would have an effect on habitat use for whale sharks (Section 5.3.3.3.1); therefore any whale shark presence within or adjacent to the OA is expected to be of a transitory nature only.

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 8.5.3). 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.

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. 326) and may or may not reduce fitness (Ref. 330). However, with respect to pygmy blue whales, guidance from the Australian Government has defined both TTS and PTS as an auditory injury (Ref. 331).

Acoustic modelling predicted the R_{max} to the AINJ onset effect criteria for all cetacean hearing groups was ≤70 m (Table 8-20). In addition, the animat modelling indicated that no pygmy blue whales were exposed above the AINJ effect criteria (Table 8-21). 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 OAs, 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 ~1.41 km for survey activities on the continental shelf and ~0.68 km for survey activities on the continental slope (Table 8-20). The animat modelling for pygmy blue whales predicted $ER_{95\%}$ distances of just 20 m from the source for TTS onset (Table 8-21). 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 up to ~0.73 km, ~0.11 km, and ~0.29 km respectively for

survey activities (Table 8-20). 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 OAs, 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. 351; Ref. 352). Quantitatively, masking refers to the number of decibels by which an auditory detection threshold is raised in the presence of another (masking) sound (Ref. 351). 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. 351). As such, masking is a complex and masking levels are difficult to predict for any particular combination of sender, environment, and receiver characteristics (Ref. 351). 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. 352). 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. 352). Masking may also result in changes in behaviour or re-locating to quieter environments (Ref. 353; Ref. 354). Given that the source spectra of the vessels within the OAs would overlap with the hearing frequency ranges of the marine mammals that may be transiting through the OAs, 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 or humpback 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 OAs, 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 or humpback 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 8.5.3). 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 C&D or Chandon site survey 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 ~0.6–1.4 hours (Table 8-23); 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 OAs, 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 OAs, 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. 330). The qualitative effect criteria from Popper et al. (Ref. 330) 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. 40).

Based on the qualitative guidelines from Popper et al. (Ref. 330; Table 8-19) 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. 330) 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. 330; Table 8-19). 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. 330).

Results from acoustic modelling against the quantitative AINJ onset effect criteria predicted an R_{max} of ~50–60 m for survey activities on the continental shelf and slope (Table 8-20). Given that marine turtles (if present) are expected to be transitory within the vicinity of the OAs, 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 ~1.12 km for survey activities on the continental shelf, and ~0.55 km for survey activities on the continental slope (Table 8-20). 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. 355 and Ref. 356 as cited in Ref. 40).

Although the southern section of the C&D OA intersects with the internesting buffer BIA and internesting HCTS of flatback turtles, it is considered highly unlikely that the C&D OA would be utilised during internesting periods by flatback turtles due to the unsuitability of the habitat (i.e. deeper waters and further offshore than where previous studies have recorded internesting behaviour occurring; Section 5.3.3.2.1). Flatback turtle nesting is also more common on the east coast beaches of Barrow Island (i.e. opposite side of the island to the offshore activities). Further, while flatback turtles may feed in soft-bottom habitats for epibenthic fauna (e.g. soft corals, sea cucumbers), the benthic surveys within the C&D OA on the continental shelf indicate the BCH is predominantly smooth seabed with bare substrate and no epibenthic biota was observed in ground-truthing transects (Section 5.3.1.1). As such, any presence of flatback turtles within or adjacent to the C&D OA is expected to be of a transitory nature, and the risk of accumulated sound exposure for TTS onset to occur is not considered credible and has not been evaluated 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 8.5.3). 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 OAs, 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. PTS 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 PTS is not expected to occur (Ref. 330; Ref. 357). Quantitative effect criteria for mortality or auditory impairment to most fishes do not currently exist (Ref. 330).

Based on the qualitative guidelines from Popper et al. (Ref. 330; Table 8-19) 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. 330) 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. 330; Table 8-19) 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 OAs 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. 330; Table 8-19) 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. 330; Table 8-19). Popper and Hawkins (Ref. 358) 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 OAs 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 ~40 m from the survey activities for a 12 hour period may be at risk of the onset of TTS, and within ~30–40 m from the survey activities for an extended 48 hours period may be at risk of a recoverable injury (Table 8-20). 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. 330; Table 8-19) 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. 330; Table 8-19). 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. 330).

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 8.5.3). 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 OAs, 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.

8.5.4.2 Control measures

Table 8-24 and Table 8-25 describe the CMs relevant to this aspect.

Table 8-24: Good practice control measures for non-impulsive underwater sound emissions

CM	Description
CM-10: Vessels under transit or on standby within the OA (cetaceans)	For vessels under transit or on standby within the OAs, the following cetacean interaction mitigation will be implemented:

CM	Description
	• 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-12**.
CM-11: 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 8-25: Additional control measures for non-impulsive underwater sound emissions

CM	Benefit	Cost
Schedule survey activities 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-12: Vessels under transit or on standby within the OA—extended caution zone for pygmy blue whales	Action A.2.3 of the Conservation Management Plan for the Blue Whale (Ref. 45) 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 OAs are 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 migrating pygmy blue whale to underwater sound at 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 OAs is likely to be small (see Section 8.5.4.1). Animat modelling for vessels operating under DP in the shallower waters of the continental shelf predicted an $ER_{95\%}$ radial distance of ~3.82 km, and for vessels operating	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
	under DP in the deeper waters of the continental slope predicted an $ER_{95\%}$ radial distance of ~0.65 km (Table 8-21). 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 an Extended Caution Zone for vessels transiting or on standby within the OAs. 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-10**.	
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 OAs. The closest BIA is a migration BIA for the humpback whale, ~1.5 km from the C&D 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 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	N/A

CM	Benefit	Cost
	behavioural disturbance is considered minimal (see Section 8.5.4.1). 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-13: Vessels under transit or on standby within the OA—separation distance for whale sharks	The Conservation Advice for whale sharks (Ref. 289) does not identify underwater sound as a threat and as such no management actions are described. A foraging BIA for whale sharks does intersect with the C&D OA; presence within this BIA is expected from July to November. However, it is noted that: • The spatial intersect between the C&D OA and the whale shark BIA represents ~0.03% of the entire BIA • Habitat use studies indicate that the most common movement pathway from Ningaloo Reef was towards geomorphic features (e.g. pinnacles) outside of the OA (Ref. 103; Section 5.3.3.3.1). As such, the likelihood of whale shark presence and foraging within or directly adjacent to the OA is expected to be low. Based on qualitative effect criteria from Popper et al. (Ref. 330) there is a moderate risk of a behavioural effect in sharks (fish with and no swim bladders) within the tens to hundreds of metres from the source (Table 8-19); this risk reduces to low at thousands of metres from the source. Implementing a separation distance for vessels under transit or on standby may reduce the likelihood of exposure of a migrating or transiting whale shark to underwater sound at levels that may elicit a behavioural response which may also subsequently interrupt a foraging event (if one was occurring at the time). Given the low likelihood of whale shark presence and foraging within or directly adjacent to the OA, the environmental benefit of implementing this type of control measure is limited; however, it is being considered as a precautionary approach given the presence of the foraging BIA.	The detection of whale sharks 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 foraging whale sharks 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
	A minimum separation distance of 30 m for whale sharks is described within the Biodiversity Conservation Regulations 2018 (WA). However, an extended separation distance of 500 m has been selected for implementation to incorporate consideration of the qualitative effect criteria and potential foraging activities of whale sharks.	
Vessels under transit or on standby within the OA—separation distance for marine turtles	An internesting buffer BIA and internesting HCTS of flatback turtles intersects with the C&D OA. However, as described in Section 5.3.3.2.1, it is considered highly unlikely that the C&D OA would be utilised during internesting periods by flatback turtles due to the unsuitability of the habitat (i.e. deeper waters and further offshore than where previous studies have recorded internesting behaviour occurring). As such, any presence of marine turtles is expected to be of a transitory nature only and not associated with a biologically important behaviour (e.g. foraging). Based on qualitative effect criteria there is a high risk of behavioural effects in marine turtles within tens of metres, and a moderate risk within hundreds of metres of the sound source (Table 8-19). This risk reduces to low at thousands of metres from the source. While implementing a separation distance for vessels under transit or on standby may reduce the likelihood of exposure of a transiting marine turtle to underwater sound at levels that may elicit a behavioural response, the environmental benefit is considered of negligible and would not significantly reduce the residual risk. As such, no further evaluation has been undertaken.	N/A
CM-14a: 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. 328). During survey operations, certain activities will require vessels to hold station, such as the deployment or retrieval of equipment, geotechnical sampling and testing, or resupply activities. In these situations, the DP system is a critical safety device.	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
	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 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. 45), 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-14b: 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	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

CM	Benefit	Cost
	detected. Technology (e.g. night vision camera or binoculars) will 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.	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.
Pre Start-up Visual Observations for other whale species prior to station holding on DP	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 OAs, 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, ~1.5 km from the C&D 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 OAs 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 8.5.4.1). 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
CM-15: Pre Start-up Visual Observations for whale sharks prior to station holding on DP	A foraging BIA for whale sharks does intersect with the C&D OA; presence within this BIA is expected from July to November. However, it is noted that:	No additional personnel costs. The detection of whale sharks may lead to increased activity duration and overall costs due to delayed start-ups. However, the environmental benefit of reducing potential impacts to foraging whale sharks is

CM	Benefit	Cost
	• The spatial intersect between the C&D OA and the whale shark BIA represents ~0.03% of the entire BIA • Habitat use studies indicate that the most common movement pathway from Ningaloo Reef was towards geomorphic features (e.g. pinnacles) outside of the OA (Ref. 103; Section 5.3.3.3.1). As such, the likelihood of whale shark presence and foraging within or directly adjacent to the OA is expected to be low. The Conservation Advice for whale sharks (Ref. 289) does not identify underwater sound as a threat and as such no management actions are described. Implementing 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 which may also subsequently interrupt a foraging event (if one was occurring at the time). Given the low likelihood of whale shark presence and foraging within or directly adjacent to the OA, the environmental benefit of implementing this type of control measure is limited; however, it is being considered as a precautionary approach given the presence of the foraging BIA. Vessel bridge-watch crew will undertake 30 minutes of Pre Start-Up Visual Observations before commencing activities that require holding station on DP. If no whale shark has been observed within a 500 m radius[139] of the vessel during the observation period, station holding activities can commence. Technology (e.g. night vision camera or binoculars) will 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.).	considered to outweigh the operational and financial costs from not implementing this control. Therefore, control measure has been adopted for use.
Pre Start-up Visual Observations for marine turtles	An internesting buffer BIA and internesting HCTS of flatback turtles intersects with the C&D OA. However, as described in	N/A

[139] This 500 m radius is consistent with the extended separation distance for whale sharks in CM-13 (which was based on a consideration of the Biodiversity Conservation Regulations 2018 (WA) and the qualitative effect criteria for behavioural effect from Popper et al. (Ref. 330).

CM	Benefit	Cost
prior to station holding on DP	Section 5.3.3.2.1, it is considered highly unlikely that the C&D OA would be utilised during internesting periods by flatback turtles due to the unsuitability of the habitat (i.e. deeper waters and further offshore than where previous studies have recorded internesting behaviour occurring). As such, any presence of marine turtles is expected to be of a transitory nature only and not associated with a biologically important behaviour (e.g. foraging). While implementing a pre start-up visual observation period before commencing activities requiring the vessel/s to hold station on DP may reduce the likelihood of exposure of a transiting marine turtle to underwater sound at levels that may elicit a behavioural response, the environmental benefit is considered of negligible and would not significantly reduce the residual risk. As such, no further evaluation has been undertaken.	
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, the use of Dedicated MFOs during the site surveys is considered to provide negligible environmental benefit given the lack of additional mitigative control measures that the vessel/s could implement to reduce underwater sound emissions; i.e. there would be no reduction in residual risk that would be realised from having Dedicated MFOs onboard the vessels during the site surveys.	Costs for engaging a Dedicated MFO are expected to be in the order of ~$1,200 per day per person. For an ~4–6 month campaign, this would result in up to ~$439,200 in additional personnel costs (allowing for two MFOs on the main survey vessel for 6 months). Given the negligible environmental benefit, this financial cost is considered grossly disproportionate and as such this control has not been adopted for use.
CM-16: Communication Protocol	As identified in Section 8.5.3 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.

8.5.4.3 ALARP justification

Vessel operations, helicopter operations, and geophysical 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 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 underwater sound emissions from the petroleum activity by relevant persons during consultation in preparing this EP.

Underwater sound modelling has been used to inform the spatial extent of ensonified areas at different effect criteria, and this is considered an appropriate basis to inform environmental impact and risk assessments.

Based on the environmental impact and risk evaluation and application of relevant assessment tools as commensurate with the predicted level of impact and risk (e.g. higher-order impacts and risks), CAPL considers the adopted good practice and additional control measures (Section 8.5.4.2) are appropriate to manage the potential impacts and risks from non-impulsive underwater sound emissions. No further reasonably practicable control measures were identified that would provide a meaningful reduction in environmental impact or risk without incurring grossly disproportionate costs. CAPL also considers that the control measures that have been identified and evaluated are aligned with the adaptive management framework for pygmy blue whales within the Backfill Fields Development OPP (Ref. 3). Accordingly, CAPL considers the potential environmental impacts and risks associated with this aspect to be reduced to ALARP.

8.5.4.4 Likelihood and risk level summary

With the application of the above control measures CAPL has assessed the likelihood and residual risk to the receptors as shown in Table 8-26.

Table 8-26: Impact and risk summary for non-impulsive underwater sound emissions

Impacts and risks	Consequence	Likelihood	Residual risk
Impacts			
Localised and temporary change in ambient underwater sound.	Incidental (6)	N/A	
Risks			
Potential behavioural disturbance of marine fauna—marine mammals	Minor (5)	Unlikely (4)	Low (8)
Potential behavioural disturbance of marine fauna—marine reptiles	Incidental (6)	Rare (6)	Very Low (10)
Potential behavioural disturbance of marine fauna—fishes	Incidental (6)	Rare (6)	Very Low (10)
Potential auditory impairment or injury to marine fauna—marine mammals	Minor (5)	Rare (6)	Very Low (10)
Potential auditory impairment or injury to marine fauna—marine reptiles	Incidental (6)	Rare (6)	Very Low (10)

Impacts and risks	Consequence	Likelihood	Residual risk
Potential auditory impairment or injury to marine fauna—fishes	Incidental (6)	Rare (6)	Very Low (10)

8.5.5 Demonstration of acceptability

Table 8-27 describes the demonstration of acceptability relevant to this aspect.

Table 8-27: Demonstration of acceptability for non-impulsive underwater sound emissions

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 8.5.4.1). 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. While the predicted ensonified areas from non-impulsive sound sources may extend into an internesting BIA and internesting HCTS of flatback turtles, studies on internesting habitat preferences indicate that it is unlikely that a flatback turtle would use these areas during an internesting period. As such, no disruption of these behaviours is expected. Therefore, the predicted level of impact is consistent with the acceptable level AL-13.
Principles of ESD
Precautionary Principle In accordance with Table 6-4, 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 6-4, 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* 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 • Conservation Management Plan for the Blue Whale *(*Ref. 45) • Conservation Advice for fin whale (Ref. 282) • Conservation Advice for sei whale (Ref. 283) • Conservation Advice for Australian humpback dolphin (Ref. 285) • Conservation Advice for Australian snubfin dolphin (Ref. 286) • Recovery Plan for Marine Turtles in Australia (Ref. 73) • Marine Bioregional Plan for the NWMR (Ref. 19). 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. 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 8.5.4 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 >175 km southwest of the C&D 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.	
Conservation Advice for Australian humpback dolphin No specific action identified.	
Conservation Advice for Australian snubfin dolphin No specific action identified.	
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.	Section 8.5.4 provides a risk assessment for underwater sound emissions from the petroleum activity to marine turtles. This assessment included identifying control measures so that the risks are managed to ALARP and acceptable levels. While the predicted ensonified areas from non-impulsive sound sources may extend into an internesting BIA and internesting HCTS of flatback turtles, studies on internesting habitat preferences indicate that it is unlikely that a flatback turtle would use these areas during an internesting period. As such, no disruption of these behaviours is expected. The petroleum activity is not considered to be inconsistent with the Recovery Plan for Marine Turtles in Australia.

Marine Bioregional Plan for the NWMR No specific action identified.	N/A
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.	

8.5.6 Environmental performance

Table 8-28 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-28: Environmental performance for underwater sound (non-impulsive) emissions

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[140]. **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[141], and is not	**CM-10:** Vessels under transit or on standby within the OA (cetaceans)	**EPS-10**: Vessels under transit[145] or on standby within the OAs 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	**MC-10.1:** Induction materials include relevant cetacean caution and no approach zone requirements. **MC-10.2:** Training records (or equivalent) verify offshore personnel involved in the petroleum activity have completed the induction. **MC-10.3:** Vessel marine fauna sighting records (or equivalent) show if cetacean interaction occurred within caution or approach zones and what mitigation (e.g. divert or slow vessel) measure was implemented.

[140] Where biologically important behaviours are defined as behaviour associated with critical life functions (e.g. reproduction, foraging, migration, and resting) (Ref. 325).

[141] For the purpose of Action A.2.3 from the Conservation Management Plan for the Blue Whale (Ref. 45) '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. 331).

[145] 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
displaced from a foraging area[142,143]. **EPO-20:** Any marine turtle is not displaced from identified HCTS of the species[144]. **EPO-21:** Any marine turtle continues to undertake biologically important behaviour within BIAs.		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: Extended Caution Zones for pygmy blue whales are described in **EPS-12**.	
	CM-12: Vessels under transit or on standby within the OA—extended caution zone for pygmy blue whales	**EPS-12:** Vessels under transit[145] or on standby within the OAs will implement an Extended Caution Zone for pygmy blue whales[146] in accordance with Section 10.4 and Table 10-14. All other requirements (speed, no approach zone etc.) remain as per requirements of EPS-10.	**MC-12.1:** Induction materials include relevant pygmy blue whale caution zone requirements. See also **MC-10.2** and **MC-10.3**.
	CM-11: Helicopters under transit within the OA	**EPS-11**: Helicopters under transit within the Operational Area will operate in alignment with section 8.07 of the	**MC-12:** Helicopter records show if marine fauna interaction occurred, and what mitigation

[142] For the purpose of Action A.2.3 from the Conservation Management Plan for the Blue Whale (Ref. 45) 'displaced from a foraging area' applies in relation to BIAs (Ref. 331); 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. 45; Ref. 331). There are no Foraging Area BIAs within or adjacent to the OAs.

[143] 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. 331). EPO-17 incorporates foraging as one of the biologically important behaviours of marine fauna.

[144] Where HCTS of marine turtle species is defined in Table 6 of the Recovery Plan for Marine Turtles in Australia (Ref. 73).

[146] Where the vessel bridge-watch 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. If species identification is uncertain a precautionary approach is adopted and the whale sighting will be treated as if it were a pygmy blue whale. Note: Vessel bridge-watch crew are provided with marine fauna observer inductions as described in Section 10.2.1.3.

EPO	CM	EPS	MC
		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.	(e.g. divert) measure was implemented
	CM-13: Vessels under transit or on standby within the OA—separation distance for whale sharks	**EPO-13:** Vessels under transit[145] or on standby within the OAs will implement a separation zone for whale sharks of 500 m.	**MC-13.1:** Induction materials include relevant whale shark separation distances. See also **MC-10.2** and **MC-10.3**.
	CM-14a: Pre Start-up Visual Observations for pygmy blue whales prior to station holding on DP (daytime) **CM-14b:** Pre Start-up Visual Observations for pygmy blue whales prior to station holding on DP (nighttime)	**EPS-14:** Prior to a vessel commencing station holding on DP, the vessel bridge-watch crew will undertake Pre Start-up Visual Observations for pygmy blue whales[146] within the Potential Behavioural Effect Zone in accordance with Section 10.4, Table 10-14, and Figure 10-8. Where Pre Start-up Visual Observations occur at night, technology (e.g. night vision camera/binoculars) will be used to support observations.	**MC-14:** Vessel marine fauna sighting records (or equivalent) verify that Pre Start-up Visual Observations were undertaken prior to station holding on DP.
	CM-15: Pre Start-up Visual Observations for whale sharks prior to station holding on DP (daytime and nighttime)	**EPS-15:** Prior to a vessel commencing station holding on DP, the vessel bridge-watch crew will: • Undertake Pre Start-up Visual Observations for whale sharks[147] over a 30 minute period within a 500 m zone	See **MC-14**.

[147] Where the vessel bridge-watch observation is of a positively identified whale shark. If species identification is uncertain a precautionary approach is adopted and the shark sighting will be treated as if it were a whale shark. Note: Vessel bridge-watch crew are provided with marine fauna observer inductions as described in Section 10.2.1.3.

EPO	CM	EPS	MC
		• Station holding activities can commence if no whale shark has been observed within the 500 m zone during the observation period. Where Pre Start-up Visual Observations occur at night, technology (e.g. night vision camera/binoculars) will be used to support observations.	
	CM-16: Communication Protocol	**EPS-16:** Where concurrent CAPL petroleum activities are occurring within proximity[148] of each other, a Communications Protocol will be implemented to share pygmy blue whale[146] sightings data.	**MC-16:** Records confirm the communications protocol was implemented as required.

8.6 Planned emissions—Underwater sound (impulsive)

8.6.1 Aspect source

Activities identified as having the potential to generate impulsive[149] underwater sound are:

- Acoustic survey equipment (SBP) during geophysical survey activities
- Use of acoustic position equipment (e.g. USBL).

8.6.2 Underwater sound modelling

JASCO undertook an estimation study (Ref. 334) 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 8-29) 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. 326) for the onset of AINJ and TTS in cetaceans

[148] Where proximity refers to the Potential Behavioural Effect Zone for pygmy blue whales as defined in Section 10.4.

[149] 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. 326; Ref. 327).

- Un-weighted PK and frequency-weighted SEL_{24h} from the US Navy (Ref. 40) for the onset of AINJ and TTS in marine turtles
- Un-weighted SPL from the US NOAA for marine mammal behavioural disruption (Ref. 329)
- Un-weighted SPL from McCauley et al. (Ref. 359) 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. 330)[150].

Research is ongoing into the relationship between sound and its effects on benthic invertebrates, including the relevant metrics for both effect and impact (Ref. 334). Marine invertebrates lack a gas-filled bladder and are unable to detect the pressure component of sound waves (Ref. 360; Ref. 361) 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. 334). 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. 362), and PK-PK of 209–213 dB re 1 µPa (Ref. 363; Ref. 364; Ref. 365; Ref. 366) for sound levels related to different levels of potential impairment.

[150] Only quantitative effect criteria were modelled; qualitative effect criteria were applied directly in the risk assessment.

Table 8-29: Effect criteria for impulsive sound for different types of impacts and species groups

Receptor	Mortality and potential mortal injury	Recoverable injury[151]	AINJ onset	TTS onset[151]	Masking[151]	Behaviour[151]
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)[152]	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 ^{2}s	(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 ^{2}s	(N) Low (I) Low (F) Low	(N) High (I) Moderate (F) Low

[151] 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. 330).

[152] Also appropriate for sharks.

Receptor	Mortality and potential mortal injury	Recoverable injury[151]	AINJ onset	TTS onset[151]	Masking[151]	Behaviour[151]
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

8.6.2.1 Acoustic positioning equipment

USBL 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. 333; Ref. 334; Ref. 367; Ref. 368; Ref. 369).

JASCO undertook spherical spreading modelling for a USBL system with a source level of 204 db re 1 µPa @ 1 m (Ref. 334). 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. 334). JASCO also noted that the sounds produced by the USBL are outside the hearing frequency range for turtles (Ref. 334). As such, any effect to marine turtles from the use of acoustic positioning equipment are not evaluated further within this risk assessment.

8.6.2.2 Geophysical survey equipment (SBP)

Geophysical (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 (Table 8-30; Ref. 334).

Table 8-30: SBP equipment source levels

Equipment type	Operational frequency (kHz)	Source level (dB re 1 µPa m)
Chirp SBP	8.5–12.4	178
	5.7–9	179
	3.3–5.7	209
Boomer SBP	0.2–6.2	205

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. 334). 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. 334).

JASCO's assessment also noted that based on comparison to the available Popper et al. (Ref. 330) 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. 334).

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. 334).

As such, any effect to marine turtles, fish, or benthic invertebrates from the use of SBP are not evaluated further within this risk assessment.

8.6.3 Environmental impact and risk evaluation

Impulsive underwater sound emissions may result in a:

- Localised and temporary change in ambient underwater sound.
- Potential behavioural disturbance of marine fauna
- Potential auditory impairment or injury to marine fauna.

8.6.3.1 Consequence evaluation

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 the surveys and up to weeks for each geophysical 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 8.6.2.2).

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.

Risk: Potential behavioural disturbance in marine fauna

Marine mammals

A spreading loss model was used to estimate sound propagation from acoustic positioning and geophysical survey (SBP) equipment (Section 8.6.2). 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 OAs. The threatened and/or migratory cetaceans that may be present within the OAs are predominantly LF[153] or HF cetaceans. VHF cetaceans were also identified within the PMST report as species or species habitat that may occur within the OAs; 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 OAs; 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).

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. 326) and may or may not reduce fitness (Ref. 330). However, with respect to

[153] Includes VLF cetaceans.

pygmy blue whales, guidance from the Australian Government has defined both TTS and PTS as an auditory injury (Ref. 331).

A spreading loss model was used to estimate sound propagation from acoustic positioning and geophysical survey (SBP) equipment (Section 8.6.2). The PK effect criteria for all marine mammal hearing groups may be exceeded at very short 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 8.6.2.2). 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 8.6.2.2). 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 duration that would be required for AINJ onset to occur at this received level within a 24 hour period. Additionally, the SBP is not a stationary sound source during surveys, and would be moving along survey lines. Therefore, given that cetaceans (if present) are expected to be transitory within the vicinity of the OAs, 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 8.6.2.2). 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 duration that would be required for TTS onset to occur within the SEL_{24h} ensonified area. Additionally, the SBP is not a stationary sound source during surveys, and would be moving along survey lines. Therefore, given that cetaceans (if present) are expected to be transitory within the vicinity of the OAs, 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. 351; Ref. 352). Quantitatively, masking refers to the number of decibels by which an auditory detection threshold is raised in the presence of another (masking) sound (Ref. 351). 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. 351). As such, masking is a complex and masking levels are difficult to predict for any particular combination of sender, environment, and receiver characteristics (Ref. 351). 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. 352). 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. 352). Masking may also result in changes in behaviour or re-locating to quieter environments (Ref. 353; Ref. 354). 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).

8.6.3.2 Control measures

Table 8-31 and Table 8-32 describe the CMs relevant to this aspect.

Table 8-31: Good practice control measures for impulsive underwater sound emissions

CM	Description
CM-17a: 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 observations required under EPBC Act Policy Statement 2.1 – Interaction between offshore seismic exploration and whales (Ref. 370); noting that this Policy itself is not applicable to the use of SBP equipment.

Table 8-32: Additional control measures considered for impulsive underwater sound emissions

CM	Benefit	Cost
CM-17b: Pre start-up visual observation for	Implementation of a Pre Start-up Visual Observation period for whales during nighttime operations may afford similar protection from	The detection of whales during nighttime is likely to be challenging even with the assistance of technology. There will be some small

CM	Benefit	Cost
SBP surveys (nighttime)	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) will 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.).	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 8.6.2.2 and 8.6.3.1). 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

8.6.3.3 ALARP justification

Geophysical 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/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 underwater sound emissions from the petroleum activity by relevant persons during consultation in preparing this EP.

Underwater sound modelling has been used to inform the spatial extent of ensonified areas at different effect criteria, and this is considered an appropriate basis to inform environmental impact and risk assessments.

Based on the environmental impact and risk evaluation and application of relevant assessment tools as commensurate with the predicted level of impact and risk (e.g. higher-order impacts and risks), CAPL considers the adopted good practice and additional control measures (Section 8.6.3.2) are appropriate to manage the potential impacts and risks from impulsive underwater sound emissions. No

further reasonably practicable control measures were identified that would provide a meaningful reduction in environmental impact or risk without incurring grossly disproportionate costs. CAPL also considers that the control measures that have been identified and evaluated are aligned with the adaptive management framework for pygmy blue whales within the Backfill Fields Development OPP (Ref. 3). Accordingly, CAPL considers the potential environmental impacts and risks associated with this aspect to be reduced to ALARP.

8.6.3.4 Likelihood and risk level summary

With the application of the above control measures CAPL has assessed the likelihood and residual risk to the receptors as shown in Table 8-33.

Table 8-33: Impact and risk summary for impulsive underwater sound emissions

Impacts and risks	Consequence	Likelihood	Residual risk
Impacts			
Localised and temporary change in ambient underwater sound.	Incidental (6)	N/A	
Risks			
Potential behavioural disturbance of marine fauna—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)

8.6.4 Demonstration of acceptability

Table 8-34 describes the demonstration of acceptability relevant to this aspect.

Table 8-34: Demonstration of acceptability for impulsive underwater sound emissions

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 8.5.4.1). Subsequent potential impacts to marine fauna were predicted to be highly localised behavioural disturbances or auditory masking to transient marine mammal 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 (TTS, AINJ) to a blue whale from impulsive sound was not considered credible. The predicted ensonified areas 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.
Principles of ESD
Precautionary Principle In accordance with Table 6-4, 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 6-4, 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:

- Conservation Management Plan for the Blue Whale (Ref. 45)
- Conservation Advice for fin whale (Ref. 282)
- Conservation Advice for sei whale (Ref. 283)
- Conservation Advice for Australian humpback dolphin (Ref. 285)
- Conservation Advice for Australian snubfin dolphin (Ref. 286)
- Recovery Plan for Marine Turtles in Australia (Ref. 73)
- Marine Bioregional Plan for the NWMR (Ref. 19).

CAPL considers that impact 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 8.6.3 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 >175 km southwest of the C&D 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.	
Conservation Advice for Australian humpback dolphin No specific action identified.	
Conservation Advice for Australian snubfin dolphin No specific action identified.	
Recovery Plan for Marine Turtles in Australia Action A1.5: Manage anthropogenic activities to ensure marine turtles are not	The predicted ensonified areas from impulsive sound sources do not extend into BIAs or HCTS of marine turtle species.

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 petroleum activity is not considered to be inconsistent with the Recovery Plan for Marine Turtles in Australia.
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 impact and risk evaluation (including control measures) were made in response to the relevant persons consultation undertaken during the preparation of this EP.	

8.6.5 Environmental performance

Table 8-35 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-35: Environmental performance for impulsive underwater sound emissions

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[154]. **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[155], and is not displaced from a foraging area[156,157].	**CM-17a:** Pre start-up visual observation for whales prior to SBP surveys (daytime) **CM-17b**: Pre start-up visual observation for SBP surveys (nighttime)	**EPS-17**: Prior to commencing a SBP survey, the vessel bridge-watch crew will undertake Pre Start-up Visual Observations for whales 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) will be used to support observations.	**MC-17:** Vessel marine fauna sighting records (or equivalent) verify that Pre Start-up Visual Observations were undertaken prior to the commencing a SBP survey.

[154] Where biologically important behaviours are defined as behaviour associated with critical life functions (e.g. reproduction, foraging, migration, and resting) (Ref. 325).

[155] For the purpose of Action A.2.3 from the Conservation Management Plan for the Blue Whale (Ref. 45) '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. 331).

[156] For the purpose of Action A.2.3 from the Conservation Management Plan for the Blue Whale (Ref. 45) 'displaced from a foraging area' applies in relation to BIAs (Ref. 331); 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. 45; Ref. 331). There are no Foraging Area BIAs within or adjacent to the OAs.

[157] 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

8.7 Planned discharges—Vessel operations

8.7.1 Aspect source

Activities identified as having the potential to generate planned discharges include:

- General vessels operations.

The types of discharges that may occur during typical vessel operations include sewage and greywater, food waste, cooling and brine water, deck drainage and treated bilge, fire extinguishing media, etc. These discharges are intermittent and would occur to surface or near-surface waters.

8.7.2 Environmental impact and risk evaluation

Planned discharges from vessels may result in a:

- Localised and temporary reduction in water quality
- Potential change in behaviour of marine fauna.

8.7.2.1 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 vessel operations. As this petroleum activity forms part of the Backfill Fields Development (the offshore project), the planned discharges are of a similar nature and smaller scale, and the relevant receptors are the same as those previously assessed, the consequence evaluation for this EP is considered covered by the consequence evaluation within Section 8.6.2 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[158] it is not repeated here.

Impact: Localised and temporary reduction in water quality

The worst-case consequence of planned discharges from typical vessel operations causing a localised and temporary reduction in water quality has been assessed as Incidental (6).

Risk: Potential change in behaviour of marine fauna

The worst-case consequence of planned discharges from typical vessel operations causing a temporary change in fauna behaviour[159] has been assessed as Incidental (6).

8.7.2.2 Control measures

Table 8-36 and Table 8-37 describe the CMs relevant to this aspect.

whale foraging are evident to ensure that impacts are not unacceptable (e.g. no injury or biologically significant disturbance) (Ref. 331). EPO-17 incorporates foraging as one of the biologically important behaviours of marine fauna.

[158] The Gorgon Backfill Fields Development OPP is available online at: https://docs.nopsema.gov.au/A1265361.

[159] This risk is described as potential changes to predator-prey dynamics in the Gorgon Backfill Fields Development OPP.

Table 8-36: Good practice control measures for planned discharges from vessel operations

CM	Description
CM-18: 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-19: 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.
CM-20: 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-21: 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 PFOS.
CM-22: Hazardous Materials Selection	Planned discharges to the marine environment are subject to selection and environmental assessment as per CAPL's Hazardous Materials Management Procedure (Ref. 6; see also Section 10.3.1.3). The environmental assessment process: • Identifies the Chemical Hazard and Risk Management (CHARM) colour banding or the OCNS group for non-CHARM 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.

Table 8-37: Additional control measures considered for planned discharges from vessel operations

CM	Benefit	Cost
Storage, transport, and disposal of sewage, greywater, putrescible and bilge wastes onshore.	The storage, transport, and disposal or sewage, greywater, putrescible and bilge wastes onshore would avoid these types of discharges being released to the environment. However, as described in the impact and risk evaluation, the consequence associated with these types of intermittent discharges is considered localised and temporary with a very low residual risk to marine fauna. It is also noted that these types of discharges are permitted and managed under existing legislation.	The implementation of this control would introduce new safety and health risks, environmental risks, and increased costs (e.g. from the storage of wastes onboard, requirement for appropriate storage facilities, additional vessels for transfers, onshore treatment and/or disposal, etc.). Therefore the cost of implementing this control is considered grossly disproportionate to the limited environmental benefit (and no change in residual risk) it may provide for marine fauna in an offshore open ocean environment.

CM	Benefit	Cost
		Therefore, this control measure has not been adopted for use.

8.7.2.3 ALARP justification

Vessel operations are routinely undertaken across the offshore petroleum industry, both nationally and internationally. The potential impacts and risks associated with planned discharges from these types of activities are managed through established 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 planned discharges from vessel operations during the petroleum activity by relevant persons during consultation in preparing this EP.

Based on the environmental impact and risk evaluation and application of relevant assessment tools as commensurate with the predicted level of impact and risk (e.g. lower-order impacts and risks), CAPL considers the adopted good practice control measures (Section 8.7.2.2) are appropriate to manage the potential impacts and risks from planned discharges from vessel operations. No further reasonably practicable control measures were identified that would provide a meaningful reduction in environmental impact or risk without incurring grossly disproportionate costs. Accordingly, CAPL considers the potential environmental impacts and risks associated with this aspect to be reduced to ALARP.

8.7.2.4 Likelihood and risk level summary

With the application of the above control measures CAPL has assessed the likelihood and residual risk to the receptors as shown in Table 8-38.

Table 8-38: Impact and risk summary for planned discharges from vessel operations

Impacts and risks	Consequence	Likelihood	Residual risk
Impacts			
Localised and temporary reduction in water quality	Incidental (6)	N/A	
Risks			
Potential change in behaviour of marine fauna	Incidental (6)	Rare (6)	Very Low (10)

8.7.3 Demonstration of acceptability

Table 8-39 describes the demonstration of acceptability relevant to this aspect.

Table 8-39: Demonstration of acceptability for unplanned release of solid waste

Comparison with acceptable level
The acceptable levels for this aspect are **AL-01 AL-12**, **AL-13**, **AL-14**, and **AL-15** (see Section 6.6 for definitions). Planned intermittent discharges from general vessel operations are predicted to result in highly localised and temporary reduction in water quality (Section 8.7.2). 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 change in behaviour were also predicted to be localised to the immediate vicinity of the discharge and temporary (i.e. during and immediately following an

intermittent discharge). 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 for these receptors is better than AL-12, AL-13, AL-14, and AL-15.

Principles of ESD

Precautionary Principle

In accordance with Table 6-4, 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 6-4, 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 management is consistent with these requirements, as demonstrated below:

Requirement	Demonstration
Marine Order 91 Gives effect to Annex I of MARPOL 73/78.	Requirements related to the 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 related to the offshore discharge of food waste from vessels have been incorporated into the **Marine Order 95** control measure.
Marine Order 96 Gives effect to Annex IV of MARPOL 73/78.	Requirements related to the 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 related to the selection of fire extinguishing media for vessels 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 chemical selection have been incorporated into the **Hazardous Materials Selection** control measure.

Internal context

These management processes or procedures were deemed relevant for this aspect:

- Hazardous Materials Management Procedure (Ref. 6)
- Chevron Marine Standard (Ref. 211).

Control measures related to the above management processes or procedures 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.

8.7.4 Environmental performance

Table 8-40 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-40: Environmental performance for planned discharges from vessel operations

EPO	CM	EPS	MC
EPO-24: Planned discharges from general vessels operations within the OAs 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 OAs 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-18:** Marine Order 91	**EPS-18.1:** Relevant vessels (as appropriate to vessel class) will hold a valid IOPP Certificate.	**MC-18.1:** OVIS report, ABU Marine OE Inspection Checklist, or equivalent record confirms relevant vessels hold a valid IOPP Certificate.
		EPS-18.2: Offshore discharge of oily bilge water from vessels will be undertaken in accordance with requirements of Annex I of MARPOL 73/78: • Vessel to be actively proceeding *en route* • Treated via an IMO approved OWS, and • Oil concentration to be <15 ppm.	**MC-18.2:** Inspection records (or equivalent) show oily bilge water is discharged in accordance with Annex I MARPOL 73/78.
	CM-19: Marine Order 95	**EPS-19:** Offshore discharge of food waste from vessels will be undertaken in accordance with Annex V of MARPOL 73/78: • 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	**MC-19:** Inspection records (or equivalent) show food waste is discharged in accordance with Annex V of MARPOL 73/78.

EPO	CM	EPS	MC
		12 nm from the nearest land.	
	CM-20: Marine Order 96	**EPS-20.1:** Relevant vessels (as appropriate to vessel class) will hold a valid ISPP Certificate.	**MC-20.1:** OVIS report, ABU Marine OE Inspection Checklist, or equivalent record confirms relevant vessels hold a valid ISPP Certificate.
		EPS-20.2: Offshore discharge of sewage from vessels will be undertaken in accordance with Annex IV of MARPOL 73/78: • 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.	**MC-20.2:** Inspection records (or equivalent) show sewage is discharged in accordance with Annex IV of MARPOL 73/78.
	CM-21: Marine Order 15	**EPS-21:** Vessels operating within the OAs will comply with the requirements within Marine Order 15 regarding the use and disposal of PFOS within fire extinguishing media.	**MC-21:** Records verify fire extinguishing media meets the requirements of Marine Order 15 and Chapter II-2 of SOLAS.
	CM-22: Hazardous Materials Selection	**EPS-22:** Planned discharges to the marine environment are subject to selection and environmental assessment as per CAPL's Hazardous Materials Management Procedure (Ref. 6). The environmental assessment process:	**MC-22:** Hazardous materials selection process assessment records (or equivalent).

EPO	CM	EPS	MC
		• Identifies the CHARM colour banding or the OCNS group for non-CHARM 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 Physical presence—Vessels and equipment

8.8.1 Aspect source

Activities identified as having the potential to interact with other marine users are the:

- Temporary presence of vessels and survey equipment within the OAs.

8.8.2 Environmental impact and risk evaluation

The interaction with other marine users may result in a:

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

8.8.2.1 Consequence evaluation

Risk: Potential change to the functions, interests, and activities

During the petroleum activity, vessel/s and associated equipment (e.g. ROVs/AUVs, geotechnical equipment, etc.) will be present within the OAs. During the surveys, there will also be a request to other marine users for a 500 m SNA around the survey vessel and any deployed equipment (Section 4.1.1). The surveys are estimated to have a combined duration of ~4–6 months, and may be undertaken as a single campaign or occur over multiple campaigns (Section 4.1.2).

The physical presence of vessels and equipment within the OAs has the potential to result in a change to the functions, interests, and activities of other marine users such as commercial fisheries, commercial shipping, or other petroleum or marine industries.

Commercial fisheries

As identified in Section 5.4.1, one Commonwealth-managed and two State-managed commercial fisheries have recorded fishing effort within one or both of the OAs over a 10-year period between 2015 and 2024. Although these fisheries

have had a presence in the area, the level of fishing effort within the OAs is typically low. During the 10-year period:

- The Commonwealth NWSTF recorded fishing effort within the 60 nm graticular block that intersects the C&D OA only during 2020, and within the 60 nm graticular block that intersects the Chandon OA only during 2015.
- Both the State-managed Pilbara Line Fishery and Pilbara Trap Managed Fishery recorded fishing effort within the 60 nm graticular block that intersects the C&D OA during all years. However, within the 60 nm graticular block that intersects with the Chandon OA, the Pilbara Line Fishery only recorded effort in July and November 2015 and March 2016, and no effort was recorded for the Pilbara Trap Managed Fishery.

Where fishing effort was recorded this is generally report as ≤3 vessels (the lowest reportable number of vessels).

Any temporary exclusion to commercial fishing vessels around the survey vessel and the requested SNA would represent a very small proportion of the fishery management areas. Given the historically low fishing effort, the relatively short duration of the surveys (~4–6 months), and the small and temporary exclusion area, any potential effects to commercial fisheries functions, interests and activities due to physical presence of vessels and equipment are expected to be negligible.

The traps used by fishers within Pilbara Trap Managed Fishery are ~700 mm in height (Section 5.4.1.1). While the operating depth of geophysical equipment will vary with the deployment method (e.g. ~5–35 m above the seabed for AUV/ROV or towfish; Section 4.2), no direct interaction with the fish traps is expected to occur. However, the traps may be marked with ropes attached to surface floats, and there is potential for interaction to occur with this fishing equipment within the water column. For example, towed geophysical equipment or vessel propellors may become entangled or cut float lines resulting in the potential loss of traps. It is noted that trap fishing generally occurs in water depths of <200 m (Section 5.4.1.1) and therefore any potential interaction is spatially restricted to the shallower areas of the C&D OA on the continental shelf.

Therefore, the worst-case consequence of the physical presence of vessels and equipment causing a temporary exclusion to a small area of a commercial fishery, or causing damage to an individual fish trap, has been assessed as Incidental (6).

Commercial shipping

As described in Section 5.4.4, AMSA has established a network of shipping fairways off the northwest coast of Australia intended to direct large vessels trading to the major ports into pre-defined routes. The OAs are not located within any of the established shipping fairways.

Any temporary exclusion to commercial shipping vessels around the survey vessel and the requested SNA would represent a very small deviation in route. Given the OAs are located outside of designated fairways, the relatively short duration of the surveys (~4–6 months), and the small and temporary exclusion area, any potential effects to commercial shipping functions, interests and activities are expected to be negligible.

Therefore, the worst-case consequence of the physical presence of vessels and equipment causing a small deviation to a commercial shipping vessel's route has been assessed as Incidental (6).

Other petroleum and marine industries

As described in Sections 5.4.6 and 5.4.7, there is third-party subsea infrastructure present within the Chandon OA: the Highclere Cable (Vocus), and Scarborough Trunkline (Woodside). No interaction with the seabed, and therefore with existing cables or trunklines, is expected from geophysical surveys. Indicative geotechnical sample sites do not occur adjacent to the Highclere Cable, but do for the Scarbrough Trunkline (Figure 4-3; Section 4.3). The final survey sites are subject to change due to ongoing engineering and survey design optimisation; however, a minimum 100 m separation distance will be maintained to third-party subsea infrastructure. As such, there is no interaction expected between survey activities and existing third-party subsea infrastructure, and no further evaluation is presented.

Note: Should survey activities be required within this 100 m offset, the activities shall be assessed on a case-by-case basis and undertaken in consultation with, and subject to agreement from, the relevant asset owner.

8.8.2.2 Control measures

Table 8-41 and Table 8-42 describe the CMs relevant to this aspect.

Table 8-41: Good practice control measures relevant to the physical presence of vessels and equipment

CM	Description
CM-23: 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-24: 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 10-7.

Table 8-42: Additional control measures considered for the physical presence of vessels and equipment

CM	Benefit	Cost
Vessel Lookahead Report	The provision of vessel lookahead reports for survey activities under this EP may assist commercial fishers and/or fishing industry organisations in understanding the specific locations of the survey vessel within the next 48-hour period. This may assist fishers in	N/A

CM	Benefit	Cost
	targeting grounds away from proposed survey activities, thereby reducing the potential for interaction and/or damage to fishing equipment. However, similar outcomes would be achieved through existing related controls: • Under **CM-23** marine safety information would be issued, including a request for a 500 m SNA around the survey vessel and deployed equipment • Under **CM-24** specific activity commencement and completion notifications would issued to those that requested these notifications during relevant persons consultation. Further, it is noted that no objections or claims were raised by WAFIC during relevant persons consultation (Section 7; Appendix E), including no request for activity notifications. However, CAPL has added WAFIC to Table 10-7 and they will be included in notifications under **CM-24**. Given the nature and scale of the proposed survey activities, the small spatial extent of the OA that may overlap with potential trap fishing areas and the limited fishing effort recorded in the area, the use of vessel lookahead reports is considered to provide negligible environmental benefit and would not significantly reduce the residual risk. This control has not been adopted for use, and no further evaluation has been undertaken.	
CM-25: Separation Distance to Third-Party Subsea Infrastructure	Implementing a separation distance between seabed sampling (geotechnical, environmental) sites and third-party subsea infrastructure (e.g. Highclere Cable and Scarborough Trunkline) avoids any interaction with this infrastructure and any potential environmental risks. As such, a minimum 100 m separation distance will be maintained to third-party infrastructure. This distance is considered appropriate given the nature and scale of the proposed activity. Note: In the event that survey activities are required within this 100 m offset, the activities shall be assessed on a case-by-case basis and undertaken in consultation with,	Negligible. Seabed sampling activities are designed to be undertaken without interaction with third-party subsea infrastructure, and the implementation of this control measure does not result in a material increase in cost or operational complexity. Therefore the costs associated with implementing this control measure are not considered grossly disproportionate to the environmental benefit gained, and has been adopted for use.

CM	Benefit	Cost
	and subject to agreement from, the relevant asset owner.	
CM-26: Activity Notifications to Third-Party Asset Owners	Provide activity commencement and completion notifications to third-party asset owners (e.g. Vocus and Woodside) if/when there is planned activities that may interact with the seabed within 500 m of the third-party asset (e.g. Highclere Cable and Scarborough Trunkline respectively). The provision of these notifications provide awareness to the operators of seabed activities occurring within the vicinity of their operational infrastructure. However, it is noted that no objections or claims were raised during relevant persons consultation (Section 7; Appendix E), including no request for activity notifications.	Negligible. While no specific request for notifications was received during the relevant persons consultation period for this EP, this control measure has been adopted for use.

8.8.2.3 ALARP justification

Vessel operations, geophysical surveys, and geotechnical surveys 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.

No material information or concerns were raised regarding the physical presence of vessels and equipment during the petroleum activity by relevant persons during consultation in preparing this EP.

Based on the environmental risk evaluation and application of relevant assessment tools as commensurate with the predicted level of risk (e.g. lower-order risks), CAPL considers the adopted good practice and additional control measures (Section 8.8.2.2) are appropriate to manage the potential risks from the physical presence of vessels and equipment. No further reasonably practicable control measures were identified that would provide a meaningful reduction in environmental risk without incurring grossly disproportionate costs. Accordingly, CAPL considers the potential environmental risks associated with this aspect to be reduced to ALARP.

8.8.2.4 Likelihood and risk level summary

With the application of the above control measures CAPL has assessed the likelihood and residual risk to the receptors as shown in Table 8-43.

Table 8-43: Risk summary for the physical presence of vessels and equipment

Risks	Consequence	Likelihood	Residual risk
Potential change to the functions, interests, and activities—commercial fishing	Incidental (6)	Remote (5)	Very Low (10)
Potential change to the functions, interests, and activities—commercial shipping	Incidental (6)	Remote (5)	Very Low (10)

Risks	Consequence	Likelihood	Residual risk
Potential change to the functions, interests, and activities—other petroleum and marine industries	N/A	N/A	N/A

8.8.3 Demonstration of acceptability

Table 8-44 describes the demonstration of acceptability relevant to this aspect.

Table 8-44: Demonstration of acceptability for the physical presence of vessels and equipment

Comparison with acceptable level
The acceptable level for this aspect is **AL-18** (see Section 6.6 for definitions). The physical presence of the vessels and/or equipment are predicted to result in negligible effects to the functions, interests and activities of other marine users (Section 8.8.2.1). Therefore, the predicted level of impact for the relevant receptors is equivalent or better than AL-18.
Principles of ESD
Precautionary Principle In accordance with Table 6-4, 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 6-4, 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 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). 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 8-45 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-45: Environmental performance for the physical presence of vessels and equipment

EPO	CM	EPS	MC
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.	**CM-23:** Maritime Safety Information	**EPS-23:** Vessels operating within the OAs will comply with any Notice to Mariners requirements under the *Navigation Act 2012* (Cth).	**MC-23:** Records of lodgement of notification to relevant agency.
	CM-24: Ongoing Consultation	**EPS-24:** Relevant persons that have requested notifications will be advised of the commencement and/or completion of the petroleum activity as per Table 10-7.	**MC-24:** Relevant persons consultation records.
	CM-25: Separation Distance to Third-Party Subsea Infrastructure	**EPS-25.1:** Seabed sampling sites (geotechnical, environmental) will be located a minimum of 100 m from third-party subsea infrastructure, unless otherwise agreed with the relevant asset owner.	**MC-25.1:** Records verify that seabed sampling sites were a minimum of 100 m away from third-party subsea infrastructure.
		EPS-25.2: In the event that seabed sampling is required within the 100 m separation distance, CAPL will only undertake these activities following consultation with, and subject to agreement from, the relevant asset owner.	**MC-25.2:** Records verify that where seabed sampling sites were <100 m from third-party subsea infrastructure that consultation with and agreements from the relevant asset owner was received.
	CM-26: Activity Notifications to Third-Party Asset Owners	**EPS-26:** If seabed activities are planned to occur within 500 m of third-party subsea infrastructure (Highclere Cable or Scarborough Trunkline), then activity notifications will be issued to the relevant asset owner (Vocus and Woodside respectively) for : • Pre-start notification at least two weeks prior to activity commencing	**MC-26:** Consultation records.

EPO	CM	EPS	MC
		• Completion notification with two weeks of activity ceasing.	

8.9 Unplanned disturbance—Fauna interaction

8.9.1 Aspect source

Activities identified as having the potential to result in an unplanned fauna interaction include the:

- Temporary presence of vessels and helicopters within the OAs.

8.9.2 Environmental impact and risk evaluation

An unplanned interaction with marine fauna may result in:

- Potential injury or mortality of marine fauna.

8.9.2.1 Consequence evaluation

Section 8.10.2 of the NOPSEMA-accepted Gorgon Backfill Fields Development OPP provides an evaluation of potential risks from unplanned fauna interactions due to vessel and helicopter operations[160]. As this petroleum activity forms part of the Backfill Fields Development (the offshore project), the risk of unplanned fauna interactions are of a similar nature and smaller scale, and the relevant receptors are the same as those previously assessed, the consequence evaluation for this EP is considered covered by the consequence evaluation within Section 8.10.2 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[161] it is not repeated here.

Risk: Potential injury or mortality of marine fauna

The worst-case consequence of an unplanned interaction with marine fauna resulting in the death of an individual EPBC-listed protected species due to vessel or helicopter strike has been assessed as Incidental (6) and with no long-term effect on population viability.

8.9.2.2 Control measures

Table 8-46 and Table 8-47 describe the CMs relevant to this aspect.

Table 8-46: Good practice control measures relevant to unplanned interactions with marine fauna

CM	Description
CM-10: Vessels under transit or on standby within the OA (cetaceans)	For vessels under transit or on standby within the OAs, 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

[160] The Gorgon Backfill Fields Development OPP also includes consideration of potential entrainment or impingement risks to marine fauna during flowline flooding activities. This is not relevant to the activities within scope of this EP.

[161] The Gorgon Backfill Fields Development OPP is available online at: https://docs.nopsema.gov.au/A1265361.

CM	Description
	• Vessels must operate at ≤6 knots within caution zones or when moving away to maintain a no-approach zone distance.

Table 8-47: Additional control measures considered for unplanned interactions with marine fauna

CM	Benefit	Cost
CM-27: Vessels under transit or on standby within the OA (whale sharks)	Implementing a separation distance and speed limits for vessels under transit or on standby may reduce the likelihood of an unplanned vessel interaction with a whale shark. The Conservation Advice for whale sharks (Ref. 289) identifies boat strike as a threat within Australian waters; however, no management actions are described. The EPBC Regulations 2025 do not specify interaction requirements between vessels and whale sharks. However, the Biodiversity Conservation Regulations 2018 (WA) specifies the following: • A minimum separation distance of 30 m between a vessel and a whale shark • Vessel speed is to be ≤6 knots within 250 m (the approach zone) of a whale shark. The WA requirements have been adopted for use within the OAs.	The detection of whale sharks 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 vessel strike impacts to whale sharks is considered to outweigh the operational and financial costs from not implementing this control. Therefore, this control measure has been adopted for use.
Vessels under transit or on standby within the OA (marine turtles)	The Recovery Plan for Marine Turtles (Ref. 73) identifies vessel disturbance (which includes boat strike) as a threat; however, no management actions are described. The Recovery Plan also describes that vessel interactions with turtles is generally a concern in shallow coastal areas and where high vessel activity occurs. In addition, the Recovery Plan notes that boat strike (as a standalone threat) has not been shown to cause stock level declines (Ref. 73). Considering the low number of vessels present within the OAs for this petroleum activity, the offshore location of the petroleum activity (i.e. the C&D and Chandon OAs are located ~55 km and ~120 km northwest from Barrow Island, and in water depths of ~125–1,230 m and ~1,145–1,370 m respectively), and as described in Section 5.3.3.2.1, given the water depths and offshore locations, any presence of marine turtles within the OAs (if it occurs) is expected to be of a transitory nature only, the environmental benefit of	N/A

CM	Benefit	Cost
	implementing a separation distance and speed limits for vessels under transit or on standby in proximity to marine turtles is considered of negligible and would not significantly reduce the residual risk. As such, no further evaluation has been undertaken.	

8.9.2.3 ALARP 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/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 interactions with marine fauna from the petroleum activity by relevant persons during consultation in preparing this EP.

Based on the environmental risk evaluation and application of relevant assessment tools as commensurate with the predicted level of risk (e.g. lower-order risks), CAPL considers the adopted good practice and additional control measures (Section 8.9.2.2) are appropriate to manage the potential risks from unplanned interactions with marine fauna. No further reasonably practicable control measures were identified that would provide a meaningful reduction in environmental risk without incurring grossly disproportionate costs. Accordingly, CAPL considers the potential environmental risks associated with this aspect to be reduced to ALARP.

8.9.2.4 Likelihood and risk level summary

With the application of the above control measures CAPL has assessed the likelihood and residual risk to the receptors as shown in Table 8-48.

Table 8-48: Risk summary for unplanned interactions with marine fauna

Risks	Consequence	Likelihood	Residual risk
Potential injury or mortality of marine fauna —marine mammals	Incidental (6)	Seldom (3)	Low (8)
Potential injury or mortality of marine fauna —marine reptiles	Incidental (6)	Seldom (3)	Low (8)
Potential injury or mortality of marine fauna —fishes	Incidental (6)	Seldom (3)	Low (8)
Potential injury or mortality of marine fauna —seabirds and migratory shorebirds	Incidental (6)	Seldom (3)	Low (8)

8.9.3 Demonstration of acceptability

Table 8-49 describes the demonstration of acceptability relevant to this aspect.

Table 8-49: Demonstration of acceptability for unplanned interactions with marine fauna

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 8.9.2.2) 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 incidental with no effects at population level.
Principles of ESD
Precautionary Principle In accordance with Table 6-4, 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 6-4, 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* 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. 14) • Conservation Management Plan for the Blue Whale (Ref. 45) • Conservation Advice for fin whale (Ref. 282) • Conservation Advice for sei whale (Ref. 283) • Conservation Advice for Australian humpback dolphin (Ref. 285) • Conservation Advice for Australian snubfin dolphin (Ref. 286) • Recovery Plan for Marine Turtles in Australia (Ref. 73) • Conservation Advice for leatherback turtle (Ref. 371) • Conservation Advice for whale shark (Ref. 289) • Wildlife Conservation Plan for Seabirds (Ref. 280). 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.	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	Section 8.9.2 provides a risk assessment for unplanned interactions with marine fauna from

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.	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.	
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 8.9.2 provides a risk assessment for unplanned interactions with marine fauna from the petroleum activity. The southern extent of the C&D OA intersects with the foraging BIA for whale sharks that extends northward from Ningaloo along the 200 m isobath. However, habitat use studies indicate that high-use areas for whale sharks transiting north from Ningaloo were pinnacle features to the northeast and north of Montebello Islands (Section 5.3.3.3.1). These pinnacle features are outside of the OAs. The largest vessel associated with the petroleum activity is the survey vessel. Based on both

	environmental and economic considerations, vessel activities are minimised to the smallest practicable extent. 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
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.	

8.9.4 Environmental performance

Table 8-50 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-50: Environmental performance for unplanned interactions with marine fauna

EPO	CM	EPS	MC
EPO-34: No death or injury of an EPBC Act listed threatened, migratory, or cetacean species from the petroleum activity within the OAs.	**CM-10:** Vessels under transit or on standby within the OA (cetaceans)	**EPS-10**: Vessels under transit[162] or on standby within the OAs 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	**MC-10.1:** Induction materials include relevant cetacean caution and no approach zone requirements. **MC-10.2:** Training records (or equivalent) verify offshore personnel involved in the petroleum activity have completed the induction. **MC-10.3:** Vessel marine fauna sighting records (or equivalent) show if cetacean interaction occurred within caution or approach zones and what mitigation (e.g. divert or slow vessel) measure was implemented.

[162] 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
		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.	
	CM-27: Vessels under transit or on standby within the OA (whale sharks)	**EPS-27**: Vessels under transit[162] or on standby within the OAs will implement : • A minimum separation distance of 30 m to whale sharks • Operate at ≤6 knots within 250 m (the approach zone) of a whale shark.	**MC-27.1:** Induction materials include relevant whale shark separation distances and speed limit requirements.
			MC-27.2: Training records (or equivalent) verify offshore personnel involved in the petroleum activity have completed the induction.
			MC-27.3: Vessel marine fauna sighting records (or equivalent) show if whale shark interaction occurred within separation distances or approach zones and what mitigation (e.g. divert or slow vessel) measure was implemented.

8.10 Non-indigenous species—Introduction of invasive marine pests

8.10.1 Aspect source

Activities identified as having the potential to result in the introduction of invasive marine pests (IMP) include:

- Planned discharged of ballast water
- Presence of biofouling on vessels or subsea equipment used within the OA.

8.10.2 Environmental impact and risk evaluation

An unplanned introduction and establishment of an IMP may result in a:

- Potential alteration to BCH
- Potential change to values and sensitivities of KEFs.

8.10.2.1 Consequence evaluation

Section 8.11.2 of the NOPSEMA-accepted Gorgon Backfill Fields Development OPP provides an evaluation of potential risks from unplanned introduction of an IMP. As this petroleum activity forms part of the Backfill Fields Development (the offshore project), the risk of unplanned introduction of an IMP are of similar nature and smaller scale, and the relevant receptors are the same as those previously assessed, the consequence evaluation for this EP is considered covered by the 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[163] it is not repeated here.

Risk: Potential alternation to BCH

The worst-case consequence of an unplanned introduction of an IMP resulting in a long-term change to BCH within the OAs has been assessed as Major (3).

Risk: Potential change to values and sensitivities of KEFs

The worst-case consequence of an unplanned introduction of an IMP resulting in a long-term change to BCH within the OAs, and any subsequent change to the values and sensitivity of KEFs, has been assessed as Major (3).

8.10.2.2 Control measures

Table 8-51 and Table 8-52 describe the CMs relevant to this aspect.

Table 8-51: Good practice control measures for the unplanned introduction of invasive marine pests

CM	Description
CM-28: Quarantine Procedure	CAPL's Quarantine Procedure Marine Vessels (Ref. 12) 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. 9) • All vessels must adhere to the Australian Biofouling Management Requirements (Ref. 10). The Quarantine Procedure Marine Vessels (Ref. 12) 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.
CM-29: 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.

[163] The Gorgon Backfill Fields Development OPP is available online at: https://docs.nopsema.gov.au/A1265361.

CM	Description
	In accordance with the Australian Biofouling Management Requirements (Ref. 10) 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 8-52: Additional control measures considered for the unplanned introduction of invasive marine pests

CM	Benefit	Cost
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.

8.10.2.3 ALARP 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/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 an unplanned introduction of an IMP from the petroleum activity by relevant persons during consultation in preparing this EP.

Based on the environmental risk evaluation and application of relevant assessment tools as commensurate with the predicted level of risk (e.g. lower-order risks), CAPL considers the adopted good practice control measures (Section 8.10.2.2) are appropriate to manage the potential risks from an unplanned introduction of an IMP. No further reasonably practicable control measures were identified that would provide a meaningful reduction in environmental risk without incurring grossly disproportionate costs. Accordingly, CAPL considers the potential environmental risks associated with this aspect to be reduced to ALARP.

8.10.2.4 Likelihood and risk level summary

With the application of the above control measures CAPL has assessed the likelihood and residual risk to the receptors as shown in Table 8-53.

Table 8-53: Risk summary for unplanned introduction of invasive marine pests

Risks	Consequence	Likelihood	Residual risk
Potential alteration to BCH	Major (3)	Rare (6)	Low (8)
Potential change to values and sensitivities of KEFs	Major (3)	Rare (6)	Low (8)

8.10.3 Demonstration of acceptability

Table 8-54 describes the demonstration of acceptability relevant to this aspect.

Table 8-54: Demonstration of acceptability for unplanned 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 8.10.2.2) is to prevent the occurrence of an unplanned introduction of an IMP. This preventative approach ensures that AL-20 is met.
Principles of ESD
Precautionary Principle In accordance with Table 6-4, a consequence level of Major (3) 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 6-4, a consequence level of Major (3) 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 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 (~55 km and ~120 km northwest from Barrow Island), water depths (~125–1,230 m and ~1,145–1,370 m), and predominant BCH within the C&D and Chandon OAs (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 and KEFs 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. 9) • Australian Biofouling Management Requirements (Ref. 10) • North-west Marine Parks Network Management Plan (Ref. 174) • Marine Bioregional Plan for the NWMR (Ref. 19). CAPL considers that impact 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 No specific action identified.	N/A
Marine Bioregional Plan for the NWMR No specific action identified.	
Internal context	
This management process or procedure was deemed relevant for this aspect: • Quarantine Procedure Marine Vessels (Ref. 12). 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.	

8.10.4 Environmental performance

Table 8-55 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-55: Environmental performance for unplanned introduction of invasive marine pests

EPO	CM	EPS	MC
EPO-35: No introduction of an IMP attributable to the petroleum activity.	**CM-28:** Quarantine Procedure	**EPS-28:** Vessels undertaking activities in the OAs must meet the relevant requirements of CAPL's Quarantine Procedure Marine Vessels (Ref. 12), including that a Marine Vessel Questionnaire has been completed and submitted to CAPL.	**MC-28:** The Vessel Mobilisation Certificate issued by CAPL confirms that relevant vessels meet requirements of the Quarantine Procedure Marine Vessels.

EPO	CM	EPS	MC
	CM-29: Maritime Arrivals Reporting System (MARS)	**EPS-29:** 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-29:** Records verify that relevant vessels completed PAR (or can demonstrate meeting conditions for an exception).

8.11 Unplanned disturbance—Seabed disturbance

8.11.1 Aspect source

Activities identified as having the potential to cause an unplanned seabed disturbance are:

- Dropped objects from the vessels
- Geotechnical equipment drag due to unplanned and temporary vessel movement off station (e.g. due to extreme weather conditions).

8.11.2 Environmental impact and risk evaluation

Unplanned seabed disturbance may result in a:

- Potential localised alteration of BCH
- Potential change to values and sensitivities of KEFs
- Potential adverse effect to unknown UCH sites and/or artefacts.

8.11.2.1 Consequence evaluation

Risk: Potential localised alteration of BCH

Objects accidentally dropped overboard from a vessel during the petroleum activity may result in a physical interaction with the seabed. Based on the types of survey equipment in Sections 4.2 and 4.3, the largest footprint of an individual piece of equipment is ~25 m^2. The C&D OA is ~172.5 km^2 and the Chandon OA ~346.6 km^2; the estimated footprint from a dropped object of ~25 m^2 (~0.000025 km^2) is ~0.000005% of the area of the combined OAs.

In the unlikely event that the survey vessel temporarily moves off station, a deployed piece of geotechnical survey equipment could be dragged along the seabed. Assuming the same largest footprint of an individual piece of equipment and a drag length of ~100 m, provides an indicative disturbance area of ~2,500 m^2. This represents ~0.0005% of the area of the combined OAs.

The BCH within the both the C&D OA and Chandon OA are predominantly smooth or irregular seabed with either bare substrate or bioturbation. Smaller areas of other mixed BCH (e.g. on the continental slope) also occur within the OAs (Figure 5-2; Figure 5-3; Section 5.3.1.1). The BCH within the OAs were not considered to be of regional significance (Section 5.3.1.1).

The potential impacts from dropped objects or dragged equipment on the seabed are expected to be localised and short-term disturbance of BCH. Soft sediment communities and habitats have been shown to recover from physical disturbance within days to months (Ref. 210). Therefore, the worst-case consequence of a short-term and recoverable change to BCH from dropped objects or dragged equipment has been evaluated as Incidental (6).

Risk: Potential change to values and sensitivities of KEFs

A localised and short-term alteration to BCH has the potential to change the values and sensitivities of KEFs.

The OAs extend into parts of three KEFs:

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

The proportion of each KEF that occurs within the OA is small (~0.03%, ~0.14%, and ~0.21% respectively). Of these KEFs, the ancient coastline and the Exmouth Plateau are recognised as unique sea floor features with ecological properties of regional significance (Table 5-18).

The ancient coastline KEF is considered to provide areas of hard substrate within the broader predominantly soft sediment habitat; with hard substrate providing the potential for higher abundance and diversity of biota. However, based on benthic surveys undertaken within the area where the KEF and C&D OA overlap, the BCH are comprised of smooth seabed with bioturbation and bare substrate and appeared to be devoid of epibenthic biota (Section 5.3.1.1; Table 5-18).

Similarly, benthic surveys within the area where the Exmouth Plateau KEF and Chandon OA overlap indicate that BCH are predominantly irregular seabed with bioturbation or bare substrate and have a low likelihood of providing epibiota with significant habitat (Section 5.3.1.1; Table 5-18). The scarps that are present within this area also recorded no epibiotic presence (Section 5.3.1.1; Table 5-18).

As per the previous consequence evaluation, alteration to BCH is expected to be highly localised and recoverable over the short-term. As such, any subsequent change to the values and sensitivities of KEFs is also considered be short-term and recoverable and has been evaluated as Incidental (6).

Risk: Potential adverse effect to unknown UCH sites and/or artefacts

No known UCH has been identified within the OAs (Section 5.6.2). However, the 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 C&D and Chandon OAs are located in water depths of ~125–1,230 m and ~1,145–1,370 m respectively. Consequently, the Chandon OA and most of the C&D OA would not have been emergent land during the history of First Nations occupation and the potential for unknown First Nations UCH in these areas is not considered credible. Further, the probability encountering any historic UCH within either OA is low (Section 5.6.2).

Given the highly localised nature of seabed disturbance and the low probability of encountering historic or First Nations UCH, the discovery of, and unintended disturbance to, unknown UCH is not expected. However, should such an event

occur, the worst-case consequence of an adverse effect to unknown UCH has been evaluated as Minor (5).

8.11.2.2 Control measures

Table 8-56 describes the good practice CMs relevant to this aspect.

Table 8-56: Good practice control measures for unplanned seabed disturbance

CM	Description
CM-30: Lift Plan	All vessels undertaking complicated, complex, or heavy lifts have a Lift Plan (or equivalent) in place that complies with the requirements of the Control of Work (CoW) Process (Ref. 372).
CM-31: Marine Order 28	Marine Order 28 (Operations standards and procedures) 2025 sets out requirements and responsibilities for vessel owners, including watchkeeping standards.
CM-32: Recover Dropped Equipment	In the event of an unplanned loss of equipment, this equipment will be recovered where considered safe and practicable to do so prior to the completion of the petroleum activity. Considerations for determining if equipment retrieval is safe and practicable include: • Risk to personnel • Whether the equipment is in recoverable water depths • Equipment's proximity to subsea infrastructure • Ability to recover the equipment (e.g. nature of equipment, lifting requirements, suitable weather, etc.)
CM-03: Inadvertent UCH Discovery Procedure	CAPL's Inadvertent UCH Discovery Procedure (Ref. 8) has been developed in alignment with the Australian Government's guidelines for Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters (Ref. 7). 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 identified and responded to with adequate conservation and management actions.

8.11.2.3 ALARP justification

Vessel operations, geophysical surveys, and geotechnical surveys 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 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 seabed disturbance from the petroleum activity by relevant persons during consultation in preparing this EP.

Based on the environmental risk evaluation and application of relevant assessment tools as commensurate with the predicted level of risk (e.g. lower-order risks), CAPL considers the adopted good practice control measures (Section 8.11.2.2) are appropriate to manage the potential risks from unplanned seabed disturbance. No additional reasonably practicable control measures were identified that would provide a meaningful reduction in environmental risk. Accordingly, CAPL considers the potential environmental risks associated with this aspect to be reduced to ALARP.

8.11.2.4 Likelihood and 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 as shown in Table 8-57.

Table 8-57: Risk summary for unplanned seabed disturbance

Risks	Consequence	Likelihood	Residual risk
Potential localised alteration of BCH	Incidental (6)	Remote (5)	Very Low (10)
Potential change to values and sensitivities of KEFs	Incidental (6)	Remote (5)	Very Low (10)
Potential adverse effect to unknown UCH sites and/or artefacts	Minor (5)	Remote (5)	Very Low (9)

8.11.3 Demonstration of acceptability

Table 8-58 describes the demonstration of acceptability relevant to this aspect.

Table 8-58: Demonstration of acceptability for unplanned 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 8.11.2.2) 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 incidental to minor.
Principles of ESD
Precautionary Principle In accordance with Table 6-4, 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 6-4, 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* Unplanned 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: • 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 requirements consistent with section 40 of the UCH Act have been

Notifications of the discovery of suspected UCH as per section 40 of the UCH Act.	incorporated into the **Inadvertent UCH Discovery Procedure** control measure.

Internal context

This management process or procedure was deemed relevant for this aspect:

- CoW Process (Ref. 372)
- Inadvertent UCH Discovery Procedure (Ref. 8).

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 impact and 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 8-59 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-59: Environmental performance for unplanned seabed disturbance

EPO	MC	EPS	MC
EPO-36: No unplanned release of solid objects to the environment attributable to the petroleum activity.	**CM-30:** Lift Plan	**EPS-30:**Where required under the CoW process, develop and implement a Lift Plan (or equivalent) for the petroleum activity.	**MC-30:** Records verify that a Lift Plan (or equivalent) is in place prior to complicated, complex, or heavy lifts being undertaken.
	CM-31: Marine Order 28	**EPS-31:** Vessels will implement watchkeeping standards in accordance with Marine Order 28.	**MC-31:** Records verify that watchkeeping was undertaken in accordance with the requirements of Marine Order 28 during the petroleum activity.
	CM-32: Recover Dropped Equipment	**EPS-32:** Dropped equipment will be retrieved wherever practicable within operational and safety constraints.	**MC-32:** Records show that, where assessed as safe and practicable, the lost equipment has been retrieved
	CM-03: Inadvertent UCH Discovery Procedure	**EPS-03.2:** Discovery of suspected UCH is reported to the Minister within 21 days of discovery as per section 40 of UCH Act.	**MC-03.2:** Record of lodgement of the notification to relevant agency.
		EPS-03.3: If First Nations UCH (or potential UCH) is identified during the petroleum activity, the finding will be shared with the relevant First Nations representative bodies.	**MC-03.3:** Relevant persons consultation records confirm that information has been shared with First Nations representative bodies

8.12 Unplanned releases—Solid waste

8.12.1 Aspect source

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

- Inappropriately handled or stored solid waste onboard vessels.

8.12.2 Environmental impact and risk evaluation

An unplanned release of solid waste to the environment may result in a potential:

- Potential localised alteration of BCH
- Potential change to values and sensitivities of KEFs
- Potential injury or mortality of marine fauna.

8.12.2.1 Consequence evaluation

Section 8.12.2 of the NOPSEMA-accepted Gorgon Backfill Fields Development OPP provides an evaluation of potential risks from the unplanned release of solid waste[164]. As this petroleum activity forms part of the Backfill Fields Development (the offshore project), the risk of an unplanned release of solid waste is of a similar nature and smaller scale, and the relevant receptors are the same as those previously assessed, the consequence evaluation for this EP is considered covered by the 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[165] it is not repeated here.

Risk: Potential localised alteration to BCH

The worst-case consequence of an unplanned release of solid waste causing a localised alteration to BCH has been assessed as Incidental (6).

Risk: Potential change to values and sensitivities of KEFs

The worst-case consequence of an unplanned release of solid waste causing a localised alteration to BCH which subsequently adversely effects the values and sensitivities of KEFs has been assessed as Incidental (6).

Risk: Potential injury or mortality to marine fauna

The worst-case consequence of an unplanned release of solid waste causing the death of an individual EPBC Act listed species has been assessed as Minor (5)[166].

8.12.2.2 Control measures

Table 8-60 describes the good practice CMs relevant to this aspect.

[164] Note: The Gorgon Backfill Fields Development OPP defined 'solid objects' as an aspect and presented a risk assessment for combined sources of solid waste and dropped objects. Within this EP these aspects and potential risks are presented separately: this section covers solid waste and Section 8.11 covers dropped objects.

[165] The Gorgon Backfill Fields Development OPP is available online at: https://docs.nopsema.gov.au/A1265361.

[166] Note: This consequence was evaluated as Incidental (6) within the OPP; however, has been re-evaluated to align with updates to the Integrated Risk Prioritisation Matrix (Table 6-2).

Table 8-60: Good practice control measures for unplanned release of solid waste

CM	Description
CM-33: 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, 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.

8.12.2.3 ALARP 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. 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.

Based on the environmental risk evaluation and application of relevant assessment tools as commensurate with the predicted level of risk (e.g. lower-order risks), CAPL considers the adopted good practice control measures (Section 8.12.2.2) are appropriate to manage the potential risks from an unplanned releases of solid waste. No additional reasonably practicable control measures were identified that would provide a meaningful reduction in environmental risk. Accordingly, CAPL considers the potential environmental risks associated with this aspect to be reduced to ALARP.

8.12.2.4 Likelihood and 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 to the receptors as shown in Table 8-61.

Table 8-61: Risk summary for unplanned release of solid waste

Risks	Consequence	Likelihood	Residual risk
Potential localised alteration to BCH	Incidental (6)	Rare (6)	Very Low (10)
Potential change to values and sensitivities of KEFs	Incidental (6)	Rare (6)	Very Low (10)
Potential injury or mortality of marine fauna	Minor (5)	Remote (5)	Very Low (9)

8.12.3 Demonstration of acceptability

Table 8-62 describes the demonstration of acceptability relevant to this aspect.

Table 8-62: Demonstration of acceptability for unplanned release of 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 8.12.2.2) 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 to incidental.
Principles of ESD
Precautionary Principle In accordance with Table 6-4, 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 6-4, 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 to 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: • Marine Order 95 • Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (Ref. 373) • Conservation Management Plan for the Blue Whale *(*Ref. 45) • Recovery Plan for Marine Turtles in Australia (Ref. 73) • Conservation Advice for leatherback turtle (Ref. 371) • Sawfish and River Sharks Multispecies Recovery Plan (Ref. 99) • Conservation Advice for the whale shark (Ref. 289) • National Recovery Plan for Albatrosses and Petrels (Ref. 291) • Wildlife Conservation Plan for Seabirds (Ref. 280) • Marine Bioregional Plan for the NWMR (Ref. 19). CAPL considers that 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 related to the prevention of pollution from garbage have been incorporated into the **Marine Order 95** control measures.
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
Conservation Management Plan for the Blue Whale No specific action identified.	

Recovery Plan for Marine Turtles in Australia No specific action identified.	
Conservation Advice for leatherback turtle No specific action identified.	
Sawfish and River Sharks Multispecies Recovery Plan No specific action identified.	
Conservation advice for whale shark No specific action identified.	
National Recovery Plan for Albatrosses and Petrels No specific action identified.	
Wildlife Conservation Plan for Seabirds No specific action identified.	
Marine Bioregional Plan for the NWMR No specific action identified.	
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.	

8.12.4 Environmental performance

Table 8-63 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-63: Environmental performance for unplanned release of solid waste

EPO	CM	EPS	MC
EPO-36: No unplanned release of solid objects to the environment attributable to the petroleum activity.	**CM-33:** Marine Order 95	**EPS-33.1:** Ships ≥100 GT or certified to carry ≥15 persons must carry a Garbage Management Plan.	**MC-33.1:** OVIS report, ABU Marine OE Inspection Checklist, or equivalent record verifies that a Garbage Management Plan is on board for relevant ships.
		EPS-33.2: Ships ≥400 GT must carry and maintain a Garbage Record Book.	**MC-33.2:** OVIS report, ABU Marine OE Inspection Checklist, or equivalent record verifies that a Garbage Record Book is on board for relevant ships.
		EPS-33.3: Any waste incinerated on board must be done using an IMO-approved	**MC-33.3.1:** OVIS report, ABU Marine OE Inspection Checklist, or

EPO	CM	EPS	MC
		incinerator, and all incineration operations must be recorded in accordance with MARPOL regulations.	equivalent record verifies that IMO Type Approval Certificate is available for onboard incinerators.
			MC-33.3.1: Inspection report or equivalent record verifies that incinerated waste is recorded within the Garbage Record Book (as relevant to ship class).

8.13 Unplanned releases—Leaks and spills

8.13.1 Aspect source

Activities identified as having the potential to result in an unplanned minor loss of containment (leaks and spills) to the environment include:

- Use, handling, and transferring hazardous materials and chemicals on board a vessel (~1 m^3)[167]
- Bunkering of marine fuel between a supply vessel and the main survey vessel (~50 m3)[168]
- Hydraulic line failure from an ROV (~0.05 m^3)[169]

8.13.2 Environmental impact and risk evaluation

An unplanned leak or spill to the marine environment may result in a:

- Localised and temporary change in water quality
- Potential adverse effects to marine fauna.

8.13.2.1 Consequence evaluation

Section 8.13.2 of the NOPSEMA-accepted Gorgon Backfill Fields Development OPP provides an evaluation of potential risks from an unplanned leak or spill to the marine environment due to vessel and equipment operations. As this petroleum activity forms part of the Backfill Fields Development (the offshore project), the risk of an unplanned leak or spill to the environment are of similar[170] nature and scale, and the relevant receptors are the same as those previously assessed, the consequence evaluation for this EP is considered covered by the consequence evaluation within Section 8.13.2 of the OPP. In accordance with

[167] Various hazardous materials/chemicals may be used or stored onboard the vessels. 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.

[168] AMSA (Ref. 374) suggests the maximum credible spill volume from a refuelling incident with continuous supervision is the transfer rate × 15 minutes. Assuming failure of dry-break couplings and a ~200 m^3/h transfer rate, this equates to an instantaneous spill volume of ~50 m^3.

[169] Fluid volumes on the ROV units are limited (typically <50 L) with shutdown systems designed to limit the loss of fluid if a leak occurs in the hydraulic system.

[170] The Gorgon Backfill Fields Development OPP also includes consideration of other potential leaks and spills associated with activities (e.g. drilling, installation, commissioning, operations) that are not relevant to the scope of this EP.

regulation 56(1) of the OPGGS(E)R, as this information has been previously supplied and is publicly available[171] it is not repeated here.

Risk: Localised and temporary change in water quality

The worst-case consequence of an unplanned leak or spill to the marine environment resulting in a highly localised and temporary reduction in water quality has been evaluated as Incidental (5).

Risk: Potential injury or mortality of marine fauna

The worst-case consequence of an unplanned leak or spill to the marine environment resulting in sub-lethal physiological effects to a small number of transient marine fauna, has been assessed as Minor (5). The individuals are expected to recover in the short-term and with no long-term effect on population viability.

8.13.2.2 Control measures

Table 8-64 describes the good practice CMs relevant to this aspect.

Table 8-64: Good practice control measures for an unplanned leak or spill to the marine environment

CM	Description
CM-34: Bunkering Procedure	Develop and implement a Bunkering Procedure (or equivalent) for any fuel bunkering activities within the OAs. Bunkering procedures will be aligned with the requirements of CAPL's Offshore Cargo Handling Procedure (Ref. 375) 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-35: Marine Standard	Prior to commencement of the petroleum activity, the OVIS requirements within the Chevron Marine Standard (Ref. 211) 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-36: Marine Order 91 (SOPEP)	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.

[171] The Gorgon Backfill Fields Development OPP is available online at: https://docs.nopsema.gov.au/A1265361.

8.13.2.3 ALARP justification

Vessel operations 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.

Based on the environmental risk evaluation and application of relevant assessment tools as commensurate with the predicted level of risk (e.g. lower-order risks), CAPL considers the adopted good practice control measures (Section 8.13.2.2) are appropriate to manage the potential risks from an unplanned leak or spill to the marine environment. No additional reasonably practicable control measures were identified that would provide a meaningful reduction in environmental risk. Accordingly, CAPL considers the potential environmental risks associated with this aspect to be reduced to ALARP.

8.13.2.4 Likelihood and 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 as shown in Table 8-65.

Table 8-65: Risk summary for an unplanned leak or spill to the marine environment

Risks	Consequence	Likelihood	Residual risk
Localised and temporary change in water quality	Incidental (6)	Remote (5)	Very Low (10)
Potential adverse effects to marine fauna	Minor (5)	Remote (5)	Very Low (9)

8.13.3 Demonstration of acceptability

Table 8-66 describes the demonstration of acceptability relevant to this aspect.

Table 8-66: Demonstration of acceptability for an unplanned leak or spill to the marine environment

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 8.13.2.2) 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.
Principles of ESD
Precautionary Principle In accordance with Table 6-4, 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 6-4, 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
- Conservation Management Plan for the Blue Whale (Ref. 45)
- Conservation Advice for fin whale (Ref. 282)
- Conservation Advice for sei whale (Ref. 283)
- Conservation Advice for Australian humpback dolphin (Ref. 285)
- Conservation Advice for Australian snubfin dolphin (Ref. 286)
- Recovery Plan for Marine Turtles in Australia (Ref. 73)
- Sawfish and River Sharks Multispecies Recovery Plan (Ref. 99)
- Recovery Plan for the Grey Nurse Shark (Ref. 287)
- Recovery Plan for the White Shark (Ref. 290)
- National Recovery Plan for Albatrosses and Petrels (Ref. 291)
- National Recovery Plan for the Australian Fairy Tern (Ref. 293)
- Conservation Advice for red knot (Ref. 302)
- Conservation Advice for sharp-tailed sandpiper (Ref. 304)
- Wildlife Conservation Plan for Seabirds (Ref. 280)
- Wildlife Conservation Plan for Migratory Shorebirds (Ref. 281)
- Marine Bioregional Plan for the NWMR (Ref. 19).

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.	
Conservation Advice for sei whale No specific action identified.	
Conservation Advice for Australian humpback dolphin No specific action identified.	
Conservation Advice for Australian snubfin dolphin No specific action identified.	
Recovery Plan for Marine Turtles in Australia No specific action identified.	

Sawfish and River Sharks Multispecies Recovery Plan No specific action identified.	
Recovery Plan for the Grey Nurse Shark No specific action identified.	
Recovery Plan for the White Shark No specific action identified.	
National Recovery Plan for Albatrosses and Petrels No specific action identified.	
National Recovery Plan for the Australian Fairy Tern No specific action identified.	
Conservation Advice for red knot No specific action identified.	
Conservation Advice for sharp-tailed sandpiper) No specific action identified.	
Wildlife Conservation Plan for Seabirds No specific action identified.	
Wildlife Conservation Plan for Migratory Shorebirds No specific action identified.	
Marine Bioregional Plan for the NWMR No specific action identified.	

Internal context

These management processes or procedures were deemed relevant for this aspect:

- OPEP (Ref. 2)
- OSM-BIP (Ref. 4)

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 impact and 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 8-67 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-67: Environmental performance for an unplanned leak or spill to the marine environment

EPO	CM	EPS	MC
EPO-37: No unplanned release of hydrocarbons or chemicals to the environment	**CM-34:** Bunkering Procedure	**EPS-34:** Develop and implement a Bunkering Procedure (or equivalent) for the petroleum activity.	**MC-34:** Records verify that refuelling was undertaken in accordance with the

EPO	CM	EPS	MC
attributable to 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.	Bunkering Procedure (or equivalent).
	CM-35: Marine Standard	**EPS-35:** 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 vessels that are refuelled at sea • Secondary containment is available for hydrocarbons and chemicals stored on the deck of marine vessels.	**MC-35:** 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 on the deck of the marine vessel.
	CM-36: Marine Order 91 (SOPEP)	**EPS-36.1:** Relevant vessels (as appropriate to class) will hold a valid SOPEP (or equivalent).	**MC-36.1.1:** OVIS report, ABU Marine OE Inspection Checklist, or equivalent record, confirms an approved SOPEP is on board marine vessels >400 GT.
			MC-36.1.2: Inspection records (or equivalent) show drills conducted in accordance with SOPEP.
		EPS-36.2: In the event of a vessel-based spill event, emergency response activities will be implemented in accordance with the vessel SOPEP (or equivalent).	**MC-36.2:** Records verify that emergency response activities were implemented in accordance with the vessel SOPEP in the event of a vessel-based spill.

8.14 Unplanned releases—Loss of containment (vessel collision event)

8.14.1 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 likely to occur under exceptional circumstances (e.g. loss of DP, navigational error, floundering due to inclement weather conditions). A collision could potentially occur between 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 evaluated further.

Worst case credible spill scenario

Based upon the types of vessel/s and marine fuels likely to be used during the petroleum activity, CAPL has identified the worst-case credible spill scenario as a:

- Surface release of ~350 m^3 of MDO over ~6 hours.

The estimate of spill volume is aligned with AMSA's guidance for maximum credible spill volumes for vessel collisions (Ref. 374). The spill duration is based on industry experience and guidance from RPS.

8.14.2 Oil spill modelling

RPS undertook stochastic and deterministic oil spill modelling to inform this risk assessment (Ref. 376). Table 8-68 provides a summary of the oil spill model settings.

Oil spill modelling was performed using a three-dimensional (3D) 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 scenarios were selected based on 'worst-case' spatial extents above exposure values and used to inform the risk assessment.

Table 8-68: Oil spill model settings for vessel collision scenario

Parameter	Detail	
Release location	Gorgon MPTS	Chandon DC2-NW1
Latitude	-20°29'11.2" S	19°33'4.4" S

Parameter	Detail	
Longitude	114°53'53.3" E	114°6'59.5" E
Approximate water depth	130 m	1,200 m
Oil type	MDO	
Release type	Surface	
Spill volume	350 m^3	
Spill duration	6 hours	
Simulation duration	30 days	
Seasons modelled	Summer (September to the following March) Transitional (April and August) Winter (May to July)	
Number of randomly selected spill simulation start times	100 per season (300 total)	

8.14.2.1 Hydrocarbon properties

The physical properties and boiling point (BP) distributions for the MDO are presented in Table 8-69.

The low viscosity indicates that the MDO will spread quickly when released and will form a thin to low thickness film on the sea surface, increasing its rate of evaporation (Ref. 376).

Generally, ~6% (by mass) of MDO should evaporate within the first 12 hours (BP <180°C); a further ~34.6% should evaporate within the first 24 hours (BP 180–265°C); and an additional ~54.4% should evaporate over several days (BP 265–380°C) (Ref. 376). Approximately 5% (by mass) of MDO will not evaporate, though will decay slowly over time (Ref. 376).

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. 376).

Table 8-69: Physical properties and boiling point ranges for MDO

Parameter	Detail			
Density	829.1 kg/m^3 at 25°C			
API gravity	37.6			
Dynamic viscosity	4.0 cP at 25°C			
Wax content	1%			
Pour point	-14°C			
Hydrocarbon classification	Group II, light persistent oil			
Boiling point ranges	**Volatiles <180°C**	**Semi-volatiles 180–265°C**	**Low volatiles 265–380°C**	**Residual >380°C**
	Non-persistent			**Persistent**
	6.0%	34.6%	54.4%	5.0%

8.14.2.2 Exposure values

NOPSEMA's information paper on the application of oil spill modelling in EPs (Ref. 16) 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 8-70 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 8.14.3.1). These exposure values are based on the recommended values in Table 1 of NOPSEMA's information paper (Ref. 16).

Note: For exposure values related to oil spill response and operational and scientific monitoring planning refer to Section 9.1.

Table 8-70: Exposure values to identify the Hydrocarbon EMBA and inform consequence evaluation

Oil component	Exposure value		Purpose of exposure value[172]
Surface oil (Floating oil)	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 surface 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 EMBVA 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 oil	High	≥300 ppb PAH[173]	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.

[172] Source: Table 1 from NOPSEMA's information paper on the application of oil spill modelling in EPs (Ref. 16).

[173] In-water exposure values are expressed as total hydrocarbons (THC) for entrained oil and PAHs for dissolved oil (Ref. 16).

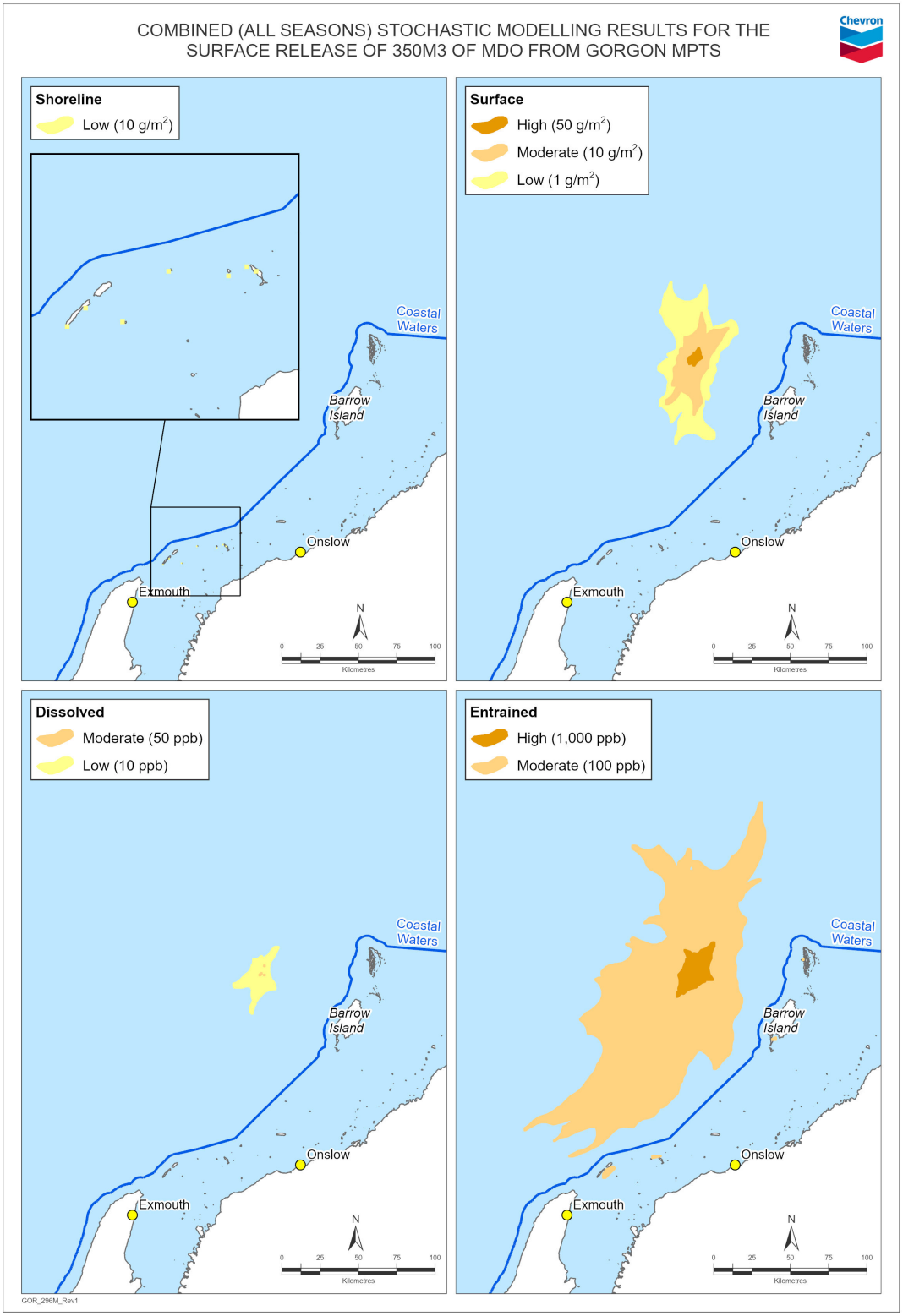
Oil component	Exposure value		Purpose of exposure value[172]
	Low	≥10 ppb PAH	It represents a lower concentration for identifying ecological, social, economic, or cultural features of the EMBA by dissolved oil, and for assessing the potential consequences on these features.
Entrained oil	High	≥1,000 ppb 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.
Shoreline oil	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.
	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).

8.14.2.3 Modelling results

Outcomes of the stochastic modelling undertaken by RPS (Ref. 376) are provided in the following:

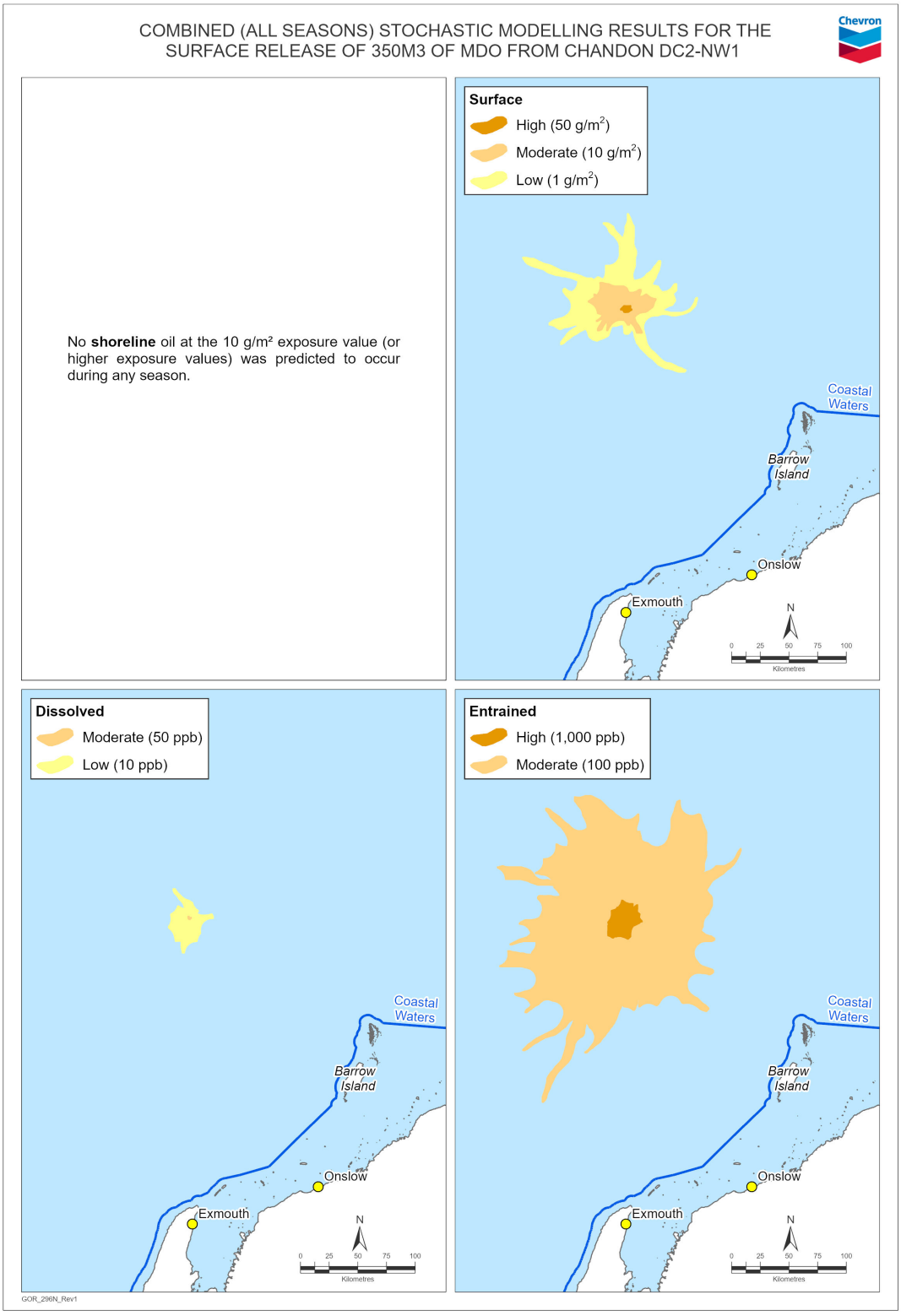
- Visual representation of areas at risk of exposure to surface, dissolved, entrained, and shoreline accumulated oil at each of the relevant exposure values (Figure 8-1; Figure 8-2)
- An overall summary of stochastic modelling results (Table 8-71) and a summary of the maximum predicted exposures and/or concentrations to key individual receptors (Table 8-72; 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 and Table 8-75.



Note: No shoreline accumulation at the moderate (≥100 g/m^2) or high (≥1,000 g/m^2) exposure values, or dissolved oil at the high (≥300 ppb) exposure values, was predicted to occur during any season.

Figure 8-1: Zones of potential exposure to surface, dissolved, entrained, and shoreline accumulated oil based on 300 simulations for a 350 m^3 surface release of MDO from Gorgon MPTS



Note: No shoreline accumulation above any exposure value (≥10 g/m², ≥100 g/m, or ≥1,000 g/m²) was predicted to occur during any season. No dissolved oil at the high (≥300 ppb) exposure value was predicted to occur during any season.

Figure 8-2: Zones of potential exposure to surface, dissolved, entrained, and shoreline accumulated oil based on 300 simulations for a 350 m³ surface release of MDO from Chandon DC2-NW1

Table 8-71: Summary of stochastic modelling results for a 350 m^3 surface release of MDO at Gorgon MTPS and Chandon DC2-NW1

Oil component	C&D (Gorgon MPTS release)	Chandon (Chandon DC2-NW1 release)
Surface oil	• The maximum distances from the release location to the low (≥1 g/m²) exposure value across all seasons ranged between 46 km (transitional) and 58.5 km (summer). • For the moderate (≥10 g/m²) exposure value, the maximum distances ranged between 24.6 km (transitional) and 38 km (summer). • For the high (≥50 g/m²) exposure value, the maximum distances ranged between 3.5 km (summer) and 7.3 km (transitional). • No surface oil at the modelled exposure values was predicted in State waters during any season.	• The maximum distances from the release location to the low (≥1 g/m²) exposure value across all seasons ranged between 75.9 km (winter) and 94.2 km (summer). • For the moderate (≥10 g/m²) exposure value, the maximum distances ranged between 27.4 km (winter) and 29.9 km (transitional). • For the high (≥50 g/m²) exposure value, the maximum distances ranged between 2.9 km (winter) and 5.8 km (transitional). • No surface oil at the modelled exposure values was predicted in State waters during any season.
Dissolved oil	• Dissolved oil at the low (≥10 ppb) and moderate (≥50 ppb) exposure values was predicted to occur during all three seasons. • No dissolved oil above the high (≥300 ppb) exposure value was predicted during any season. • The probability of exposure to BIAs for protected marine fauna at the low exposure value ranged 2–52% depending on the season and the BIA. The probability of exposure to BIAs for protected marine fauna at the moderate exposure value ranged 0–1%. • No AMPs or State marine protected areas were predicted to be exposed to dissolved oil at the modelled exposure values during any season. • No dissolved oil at the modelled exposure values was predicted in State waters during any season.	• Dissolved oil at the low (≥10 ppb) exposure value was predicted to occur during all three seasons; and at the moderate (≥50 ppb) exposure value during summer and transitional seasons only. • No dissolved oil above the high (≥300 ppb) exposure value was predicted during any season. • The probability of exposure to the pygmy blue whale migration BIA at the low exposure value ranged 9–17% depending on the season. No other BIAs were predicted to be exposed to dissolved oil. • No BIAs were predicted to be exposed to dissolved oil at the moderate or high exposure values during any season. • No AMPs or State marine protected areas were predicted to be exposed to dissolved oil at the modelled exposure values during any season. • No dissolved oil at the modelled exposure values was predicted in State waters during any season.
Entrained oil	• 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 exposure to BIAs for protected marine fauna at the moderate exposure value ranged 0–100% depending on the season and the BIA. The probability of exposure to BIAs for protected marine fauna at the high exposure value ranged 0–85%.	• 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 exposure to BIAs for protected marine fauna at the moderate exposure value ranged 0–58% depending on the season and the BIA. The probability of exposure to BIAs for protected marine fauna at the high exposure value ranged 0–24%.

Oil component	C&D (Gorgon MPTS release)	Chandon (Chandon DC2-NW1 release)
	• No AMPs were predicted to be exposed to entrained oil at the moderate or high exposure values during any season. • The probability of exposure to State marine protected areas at the moderate (≥100 ppb) exposure value was low: – 1% probability of exposure to the Montebello Marine Park and Barrow Island Marine Management Area during summer – 1% probability of exposure to the Murion Islands Marine Management Area during winter. • No entrained oil above the high (≥1,000 ppb) exposure value was predicted in State marine protected areas during any season. • The probability of entrained oil at the moderate (≥100 ppb) exposure value reaching State waters was low at 1% during summer and 2% during winter. No exposure to State waters was predicted to occur during transitional season. • No entrained oil above the high (≥1,000 ppb) exposure value was predicted in State waters during any season.	• The probability of exposure to AMPs at the moderate (≥100 ppb) exposure value was low: – 1% probability of exposure to the Gascoyne Marine Park during winter. • No entrained oil above the high (≥1,000 ppb) exposure value was predicted in AMPs during any season. • No State marine protected areas were predicted to be exposed to entrained oil at the modelled exposure values during any season. • No entrained oil at the modelled exposure values was predicted in State waters during any season.
Shoreline accumulated oil	• The probability of accumulation to any shoreline at the low (≥10 g/m^2) exposure value ranged between 1% (transitional) and 4% (winter). No shoreline accumulation at the low exposure value was predicted to occur during summer. – No mainland coast was predicted to be exposed. Discrete areas of exposure did occur on some Pilbara inshore islands, specifically South Muiron Island, Sunday Island, Peak Island, Flat Island, and Serrurier Island. – The minimum time before oil accumulation to any shoreline at the low exposure value was 5 days and 18 hours (transitional). – The maximum cumulative volume of oil accumulation on any shoreline at the low exposure value for a single spill was 0.4 m^3 (winter). – The maximum length of all shorelines with accumulation at the low exposure value was 2.9 km (winter). • No accumulation to any shoreline at the moderate (≥100 g/m^2) or high (≥1,000 g/m^2) exposure value was predicted for any season.	• No accumulation to any shoreline at the low (≥10 g/m^2), moderate (≥100 g/m^2) or high (≥1,000 g/m^2) exposure value was predicted for any season.

Table 8-72: Maximum predicted probability of exposure[174] and/or concentrations (from any season) to individual receptors based on stochastic modelling of 350 m³ release of MDO from Gorgon MPTS

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														
No AMPs are predicted to be exposed to oil above the relevant Hydrocarbon EMBA exposure values (see Table 8-70)[175].											N/A			
State marine protected areas														
Barrow Island Marine Park	–	–	–	–	–	–	–	133.5	1	–	N/A			
Montebello Island Marine Park	–	–	–	–	–	–	–	768.2	1	–	N/A			
Muiron Islands Marine Management Area	–	–	–	–	–	–	–	145.2	1	–	N/A			
KEFs														
Ancient coastline at 125 m depth contour	NIE (SB)	NIE (SB)	NIE (SB)	62.1	NIE (SB)	NIE (SB)	–	7,168.2	NIE (SB)	NIE (SB)	N/A			
Canyons linking the Cuvier Abyssal Plan and the Cape Range Peninsula	–	–	–	–	–	–	–	137.1	NIE (SB)	–	N/A			
Continental slope demersal fish communities	NIE (NSB)	NIE (NSB)	–	33	NIE (NSB)	–	–	2,243.6	NIE (NSB)	NIE (NSB)	N/A			
Reefs, banks, and shoals														
No reef, banks or shoal features are predicted to be exposed to oil above the relevant Hydrocarbon EMBA exposure values (see Table 8-70)[176].											N/A			
BIAs for protected marine fauna														
Humpback whale	47	31	2	54.2	23	1	–	3,381.3	85	42	N/A			
Pygmy blue whale	37	14	1	46.5	4	–	–	2,618.5	74	17	N/A			
Flatback turtle	100	100	43	62.1	52	1	–	7,168.2	100	85	N/A			
Green turtle	–	–	–	–	–	–	–	768.2	3	–	N/A			
Hawksbill turtle	–	–	–	–	–	–	–	768.2	3	–	N/A			
Loggerhead turtle	–	–	–	–	–	–	–	768.2	2	–	N/A			
Whale shark	100	100	43	62.1	52	1	–	7,168.2	100	85	N/A			
Fairy tern	–	–	–	–	–	–	–	768.2	1	–	N/A			
Lesser crested tern	–	–	–	–	–	–	–	768.2	1	–	N/A			
Roseate tern	–	–	–	–	–	–	–	768.2	2	–	N/A			
Wedge-tailed shearwater	100	100	43	62.1	52	1	–	7,168.2	100	85	N/A			

[174] 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.

[175] The Hydrocarbon EMBA defined in Section 5.1 is based on a smoothed outer boundary to provide a conservative approach to identifying and describing environmental values and sensitivities. Section 5.5.1 and Figure 5-18 show the Hydrocarbon EMBA extending into the Gascoyne and Montebello Marine Parks. The stochastic modelling for this spill scenario (350 m³ surface release of MDO from the Gorgon MPTS) does not predict exposure to either AMP occurring at or above the relevant exposure values for the Hydrocarbon EMBA (Table 8-70). The stochastic modelling did predict exposure at the low (≥10 ppb) entrained exposure value; this exposure value is associated with the planning area for operational and scientific monitoring as described in Section 9.

[176] There are reef, banks, and shoal features present within the spatial extent exposed to low (≥10 ppb) entrained oil; this exposure value is associated with the planning area for operational and scientific monitoring as described in Section 9. Note: No interaction is expected as these are submerged features and the oil is expected to remain in the upper water column.

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
HCTS of marine turtles														
Flatback turtle	100	100	43	62.1	52	1	–	7,168.2	100	85	N/A			
Green turtle	–	–	–	–	–	–	–	768.2	2	–	N/A			
Hawksbill turtle	–	–	–	–	–	–	–	768.2	2	–	N/A			
Loggerhead turtle	–	–	–	–	–	–	–	123.7	1	–	N/A			
World Heritage property														
The Ningaloo Coast	–	–	–	–	–	–	–	145.2	1	–	N/A			
National Heritage place														
The Ningaloo Coast	–	–	–	–	–	–	–	145.2	1	–	N/A			
Commonwealth Heritage place														
No Commonwealth Heritage listed places identified within the Hydrocarbon EMBA (Section 5.6).											N/A			
State waters														
WA State waters	–	–	–	–	–	–	–	768.2	2	–	N/A			
Shorelines														
WAMOPRA Shoreline Cell 326 (includes Bessieres Island, Serrurier Island, Round Island, Flat Island, and Peak Island)	N/A										19.5	2	–	–
WAMOPRA Shoreline Cell 329 (includes Muiron Islands and Sunday Island)	N/A										17.4	2	–	–

Table 8-73: Maximum predicted probability of exposure[177] and/or concentrations (from any season) to individual receptors based on stochastic modelling of 350 m^3 release of MDO from Chandon DC2-NW1

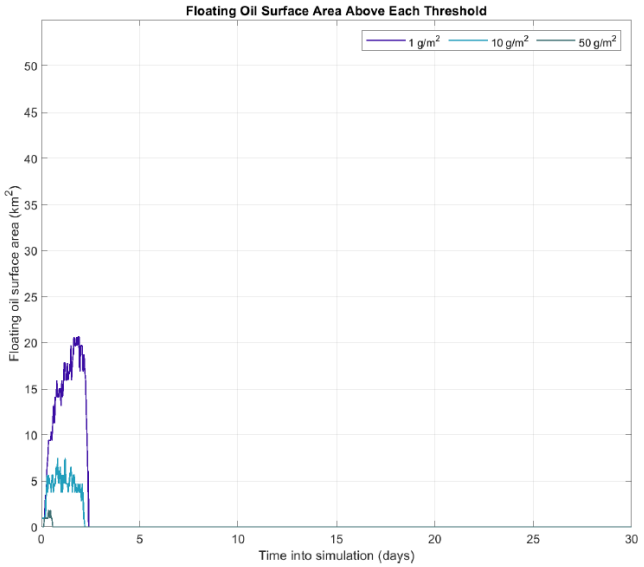
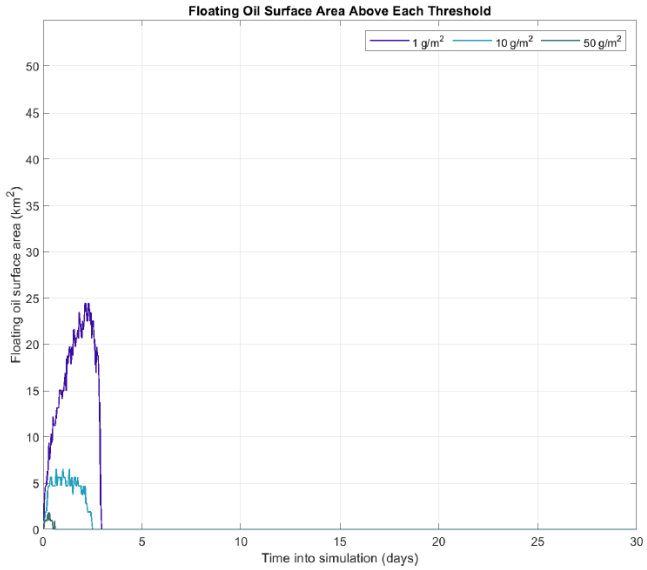
Value or sensitivity (Receptor)	Surface oil			Dissolved oil				Entrained oil			Shoreline accumulated oil			
	Maximum probability (%) of exposure			Maximum concentration (ppb)	Maximum probability (%) of exposure			Maximum concentration (ppb)	Maximum probability (%) of exposure		Maximum accumulated concentration (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
Australian Marine Parks														
Gascoyne	–	–	–	–	–	–	–	118.7	1	–	N/A			
State marine protected areas														
No State marine protected areas within the spatial extents predicted to potentially be exposed to oil above the relevant Hydrocarbon EMBA exposure values (see Table 8-70).											N/A			
KEFs														
Continental slope demersal fish communities	–	–	–	–	–	–	–	119.5	NIE (NSB)	–	N/A			
Exmouth Plateau	NIE (SB)	NIE (SB)	NIE (SB)	63.4	NIE (SB)	NIE (SB)	–	7,308.6	NIE (SB)	NIE (SB)	N/A			

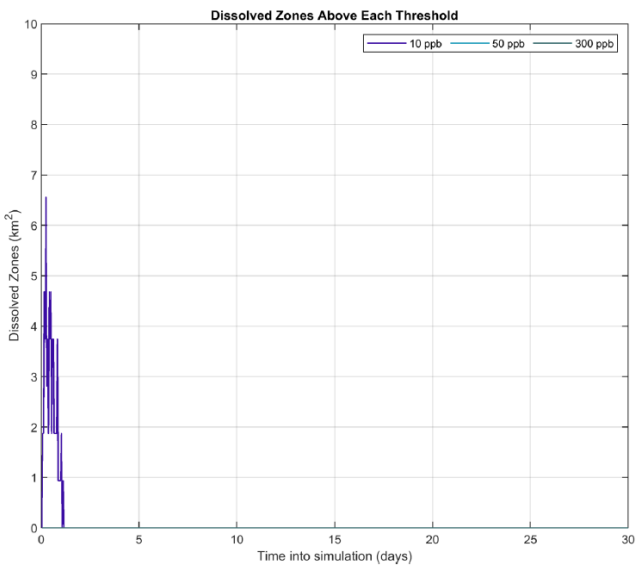
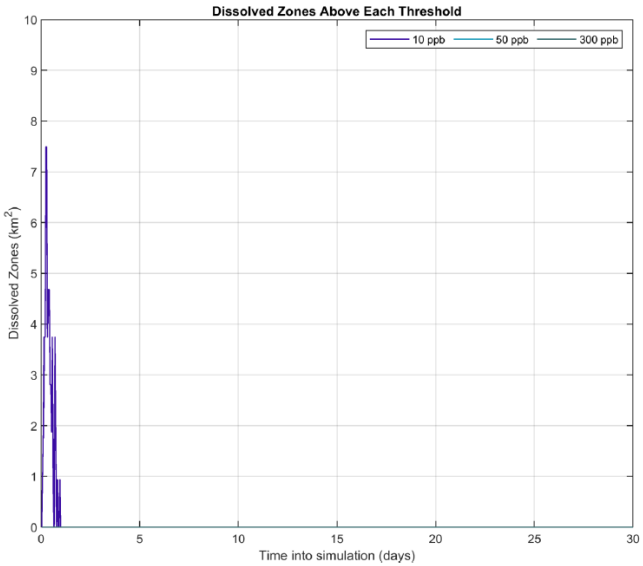
[177] Where – = no contact predicted, NIE (SB) = spatial overlap based on plan view, but no interaction expected as value or sensitivity is a seabed based receptor; NIE (NSB) = spatial overlap based on plan view, but no interaction expected as value or sensitivity is a near-seabed based receptor), N/A = not applicable.

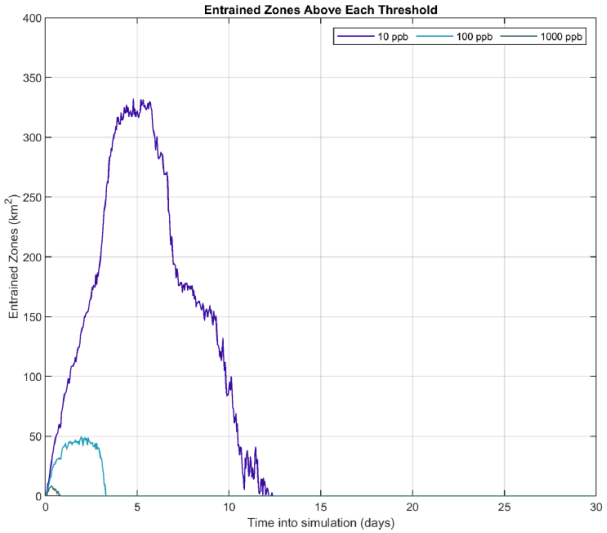
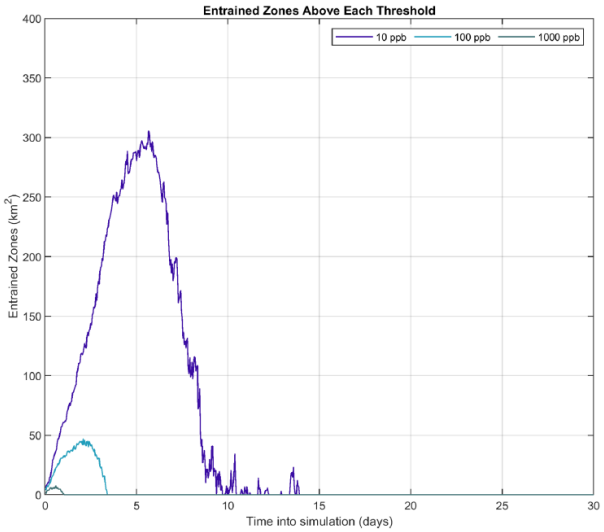
Value or sensitivity (Receptor)	Surface oil			Dissolved oil				Entrained oil			Shoreline accumulated oil			
	Maximum probability (%) of exposure			Maximum concentration (ppb)	Maximum probability (%) of exposure			Maximum concentration (ppb)	Maximum probability (%) of exposure		Maximum accumulated concentration (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
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 (see Table 8-70).											N/A			
BIAs for protected marine fauna														
Pygmy blue whale	24	13	2	31.7	17	–	–	3,521.7	58	24	N/A			
Wedge-tailed shearwater	–	–	–	–	–	–	–	150.1	1	–	N/A			
HCTS of marine turtles														
No HCTS of marine turtle species within the spatial extents predicted to potentially be exposed to oil above the relevant Hydrocarbon EMBA exposure values (see Table 8-70).											N/A			
World Heritage property														
No World Heritage listed properties within the spatial extents predicted to potentially be exposed to oil above the relevant Hydrocarbon EMBA exposure values (see Table 8-70).											N/A			
National Heritage place														
No National Heritage listed places within the spatial extents predicted to potentially be exposed to oil above the relevant Hydrocarbon EMBA exposure values (see Table 8-70).											N/A			
Commonwealth Heritage place														
No Commonwealth Heritage listed places identified within the Hydrocarbon EMBA (Section 5.6).											N/A			
State waters														
WA State waters are not within the spatial extents predicted to potentially be exposed to oil above the relevant Hydrocarbon EMBA exposure values (see Table 8-70).											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 350 m³ release of MDO from Gorgon MPTS

Variable	Deterministic scenario	
Surface oil	**Largest swept area of surface oil ≥10 g/m²**	**Largest swept area of surface oil ≥50 g/m²**
Season	Winter	Transitional
Peak volume (m^3) of surface oil and day of occurrence	215.0 (Day 1)	214.3 (Day 1)
Volume (m^3) of surface oil at end of simulation (Day 30)	0.3	0.2
Predicted area of surface oil above each exposure value *Image source: RPS (Ref. 376)*		
Dissolved oil	**Largest area of dissolved oil ≥10 ppb**	**Largest area of dissolved oil ≥50 ppb**
Season	Summer	Transitional
Peak volume (m^3) of dissolved oil and day of occurrence	2.9 (Day 1)	2.9 (Day 1)

Variable	Deterministic scenario	
Volume (m^3) of dissolved oil at end of simulation (Day 30)	0.1	0.1
Predicted area of dissolved oil above each exposure value *Image source: RPS (Ref. 376)*		
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	267.6 (Day 1)	277.6 (Day 1)
Volume (m^3) of entrained oil at end of simulation (Day 30)	55.2	52.8

Variable	Deterministic scenario	
Predicted area of entrained oil at each exposure value *Image source: RPS (Ref. 376)*		
Shoreline accumulated oil	**Largest (total) volume of shoreline oil accumulation**	**Longest length of shoreline oil accumulation ≥100 g/m²**
Season	Winter	N/A (No shoreline accumulation ≥100 g/m² during any season).
Peak volume (m^3) of shoreline oil and day of occurrence	0.8 (Day 9)	
Volume (m^3) of shoreline oil at end of simulation (Day 30)	0.2	

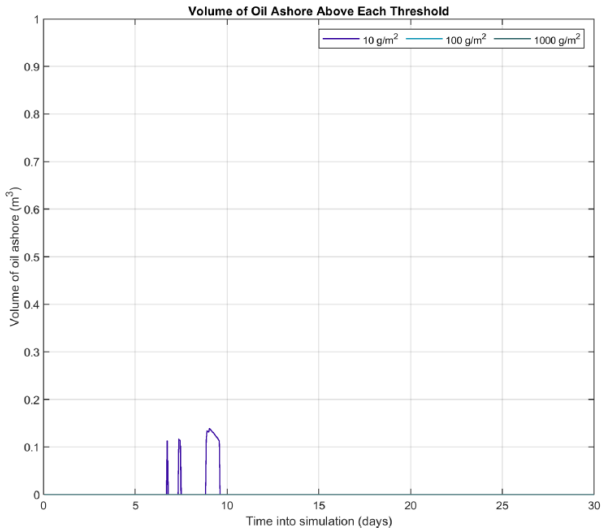
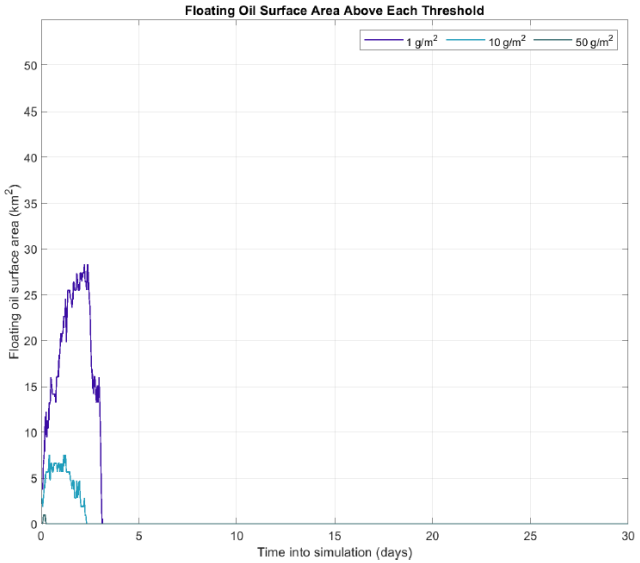
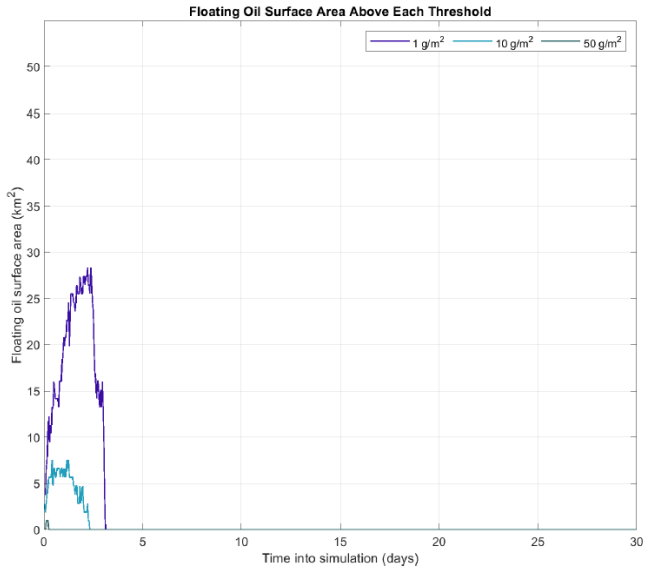
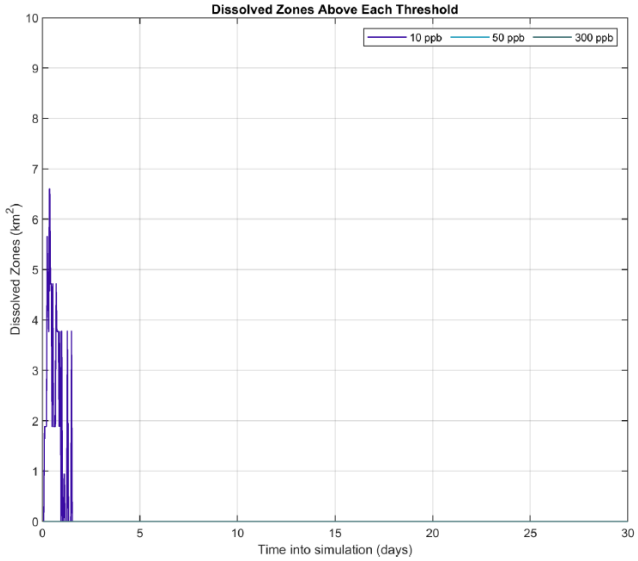
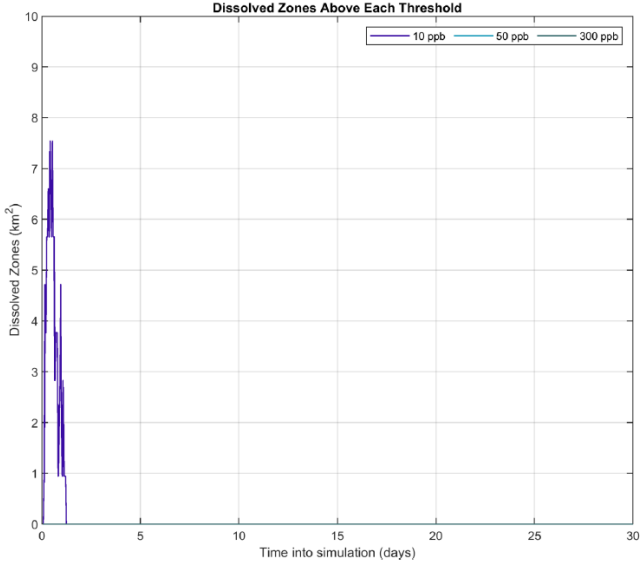
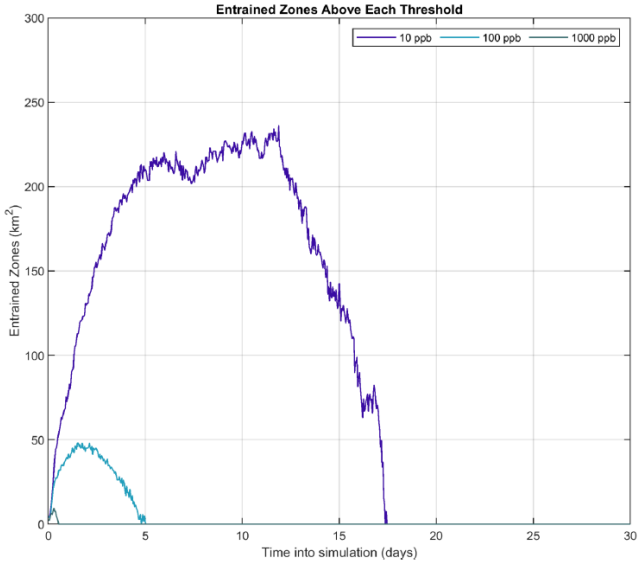
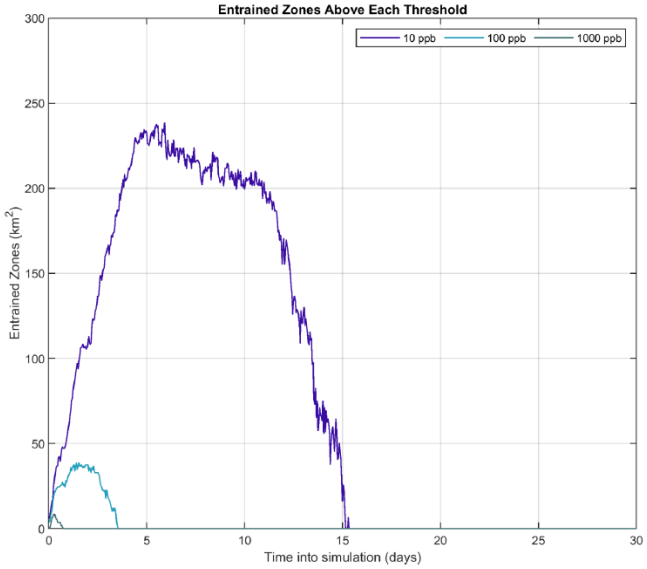
Variable	Deterministic scenario	
Predicted volume of shoreline accumulation above each exposure value *Image source: RPS (Ref. 376)*		

Table 8-75: Summary of deterministic modelling analyses for surface, dissolved, entrained, and shoreline accumulated oil based on a 350 m³ release of MDO from Chandon DC2-NW1

Variable	Deterministic scenario	
Surface oil	**Largest swept area of surface oil ≥10 g/m²**	**Largest swept area of surface oil ≥50 g/m²**
Season	Transitional	Summer
Peak volume (m^3) of surface oil and day of occurrence	217.6 (Day 1)	211.2 (Day 1)
Volume (m^3) of surface oil at end of simulation (Day 30)	0.4	0.0

Variable	Deterministic scenario	
Predicted area of surface oil above each exposure value *Image source: RPS (Ref. 376)*		
Dissolved oil	**Largest area of dissolved oil ≥10 ppb**	**Largest area of dissolved oil ≥50 ppb**
Season	Transitional	Summer
Peak volume (m^3) of dissolved oil and day of occurrence	2.2 (Day 1)	2.7 (Day 1)
Volume (m^3) of dissolved oil at end of simulation (Day 30)	0.1	0.1

Variable	Deterministic scenario	
Predicted area of dissolved oil above each exposure value *Image source: RPS (Ref. 376)*		
Entrained oil	**Largest area of entrained oil ≥100 ppb**	**Largest area of entrained oil ≥1,000 ppb**
Season	Winter	Summer
Peak volume (m^3) of entrained oil and day of occurrence	251.7 (Day 1)	247.1 (Day 1)
Volume (m^3) of entrained oil at end of simulation (Day 30)	62.0	50.7

Variable	Deterministic scenario	
Predicted area of entrained oil at each exposure value *Image source: RPS (Ref. 376)*		
Shoreline accumulated oil	**Largest (total) volume of shoreline oil accumulation**	**Longest length of shoreline oil accumulation ≥100 g/m²**
N/A (No shoreline accumulation above any exposure thresholds during any season).		

8.14.3 Environmental impact and risk evaluation

An unplanned release of MDO due to a vessel collision may result in a:

- Change in water quality
- Change in sediment quality
- Potential adverse effects to BCH
- Potential adverse effects to coastal communities and habitats
- Potential adverse effects to marine fauna
- Potential change to the functions, interests and activities of other marine users
- Potential changes to values and sensitivities of protected areas
- Potential changes to values and sensitivities of cultural heritage sites and/or artefacts.

8.14.3.1 Consequence evaluation

Risk: Change in water quality

An unplanned surface release of MDO from a vessel collision event may result in a reduction in water quality in offshore waters extending from the release location.

Following release, MDO would be subject to evaporation (when exposed to air), dispersion, dilution, and physical and biological degradation. Given its low viscosity and high proportion of volatiles, MDO typically spreads quickly and evaporates rapidly when exposed to air with up ~95% expected to evaporate over several days depending on wind and wave conditions affecting how much is entrained into the water column (Section 8.14.2.1; Ref. 376). Any potential impacts to water quality are expected to be short-term, consistent with the typical weathering properties of MDO.

Results from deterministic modelling scenarios (Ref. 376; Table 8-74; Table 8-75) indicate:

- Largest swept area of surface oil ≥10 g/m^2—Predicted that surface oil at this concentration may be present for less than ~3 days following the spill event, with a peak area of coverage of ~7.5 km^2
- Largest area of entrained oil ≥100 ppb—Predicted that entrained oil at this concentration may be present for up to ~5 days following the spill event, with a peak area of coverage of ~50 km^2
- Largest area of dissolved oil ≥10 ppb—Predicted that dissolved oil at this concentration may be present for less than ~3 days following the spill event, with a peak area of coverage of ~6.5 km^2.

Based on the magnitude and duration of the spill, predicted spatial and temporal exposures, and the weathering characteristics of MDO, the worst-case consequence of a short-term and recoverable change to water quality has been evaluated as Minor (5).

Risk: Change in sediment quality

An unplanned surface release of MDO from a vessel collision event is not anticipated to expose the seabed (and therefore affect sediment quality) in offshore waters as the oil is expected to either remain on the surface or within the

upper water column. However, for shallow nearshore waters or shorelines that are predicted to be exposed, there is the potential for a reduction in sediment quality to occur.

Entrained oil above ecologically relevant exposure values (≥100 ppb) are generally not predicted to occur within State waters; and as such for most of the Hydrocarbon EMBA (which is in deeper offshore waters), no impact to sediment quality from entrained oil is predicted. The exception to this is discrete areas of entrained oil exposure near some islands (e.g. Barrow, Montebello, Muiron, and Serrurier islands; Figure 5-1). No accumulation of shoreline oil above ecologically relevant exposure values (≥100 g/m^2) was predicted to occur; however, some discrete areas of exposure to the lower socioeconomic and cultural exposure value (≥10 g/m^2) were predicted to occur on some islands (South Muiron Island, Sunday Island, Peak Island, Flat Island, and Serrurier Island). Entrained oil exposure in shallow nearshore waters and/or shoreline oil exposure may lead to reduced marine sediment quality by adherence of the oil to benthic of shoreline sediments.

Based on the magnitude and duration of the spill, predicted spatial and temporal exposures, and the weathering characteristics of MDO, the worst-case consequence of a short-term and recoverable change to sediment quality has been evaluated as Minor (5).

Risk: Potential adverse effects to BCH

An unplanned surface release of MDO from a vessel collision event is not anticipated to expose the seabed (and therefore affect BCH) in offshore waters as the oil is expected to either remain on the surface or within the upper water column. However, for shallow nearshore waters that are predicted to be exposed, there is the potential to interact with BCH.

No surface oil or dissolved oil is predicted to occur within State waters. Entrained oil above ecologically relevant exposure values (≥100 ppb) are also generally not predicted to occur within State waters; the exception to this is discrete areas of entrained oil exposure near some islands (e.g. Barrow, Montebello, Muiron, and Serrurier islands; Figure 5-1). Coral, seagrass, and/or macroalgae habitats are known to occur around these islands (Section 5.3.2). Stochastic modelling predicted a very low probability of entrained oil occurring within these nearshore areas with residence times in the order of hours to days (Ref. 376).

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. 377; Ref. 378), act as a barrier to diffusion of CO_2 across cell walls in macroalgae (Ref. 379), and a decline in metabolic rate, bleaching or partial mortality in corals (Ref. 380; Ref. 381) and impair respiration and photosynthesis by symbiotic zooxanthellae (Ref. 382; Ref. 383). However, the effect of hydrocarbons largely depends on the degree of direct exposure and how much of the hydrocarbon adheres to the biota, which will vary depending on the oil's physical state and relative 'stickiness'. Additionally, given the distance from a potential spill to nearshore habitats, the entrained oil would have been subject to weathering processes before reaching nearshore waters.

It is expected that BCH will recover from exposure to oil; the duration of recovery may vary depending on extent and duration of exposure. For example, the recovery of benthic habitats following the Deepwater Horizon (DWH) incident indicated long-term non-acute effects of the spill on coral colonies seven years

after the event (Ref. 384). Note: The DWH incident was a light crude oil, not a MDO.

Based on the magnitude and duration of the spill, predicted spatial and temporal exposures, and the weathering characteristics of MDO, the worst-case consequence of a short-term and recoverable change to BCH has been evaluated as Minor (5).

Risk: Potential adverse effects to coastal communities and habitats

An unplanned surface release of MDO from a vessel collision event may result in shoreline accumulation of oil which may subsequently affect the coastal communities had habitats.

Stochastic modelling indicated that no accumulation of shoreline oil above ecologically relevant exposure values (≥100 g/m^2) was predicted to occur. As such ecological impacts to shorelines are not considered credible and this risk has not been evaluated further.

Risk: Potential adverse effects to marine fauna

Marine mammals

Marine mammals may be exposed to hydrocarbons from an oil spill at the water surface or from within the water column. Exposure may occur via direct contact, inhalation, and/or ingestion (Ref. 385; Ref. 386).

Marine mammals are highly vulnerable to oil spills, although the effects at both individual and population levels are not fully understood (Ref. 387). 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. 387). 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. 387; Ref. 386). 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. 386).

Baleen whales are vulnerable due to blowhole breathing, surface filter feeding, and invertebrate prey (Ref. 386); killer whales may also be at risk due to population sizes, complex social structure, slow reproductive turnover, and dietary specialisation (Ref. 386). 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. 388). 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. 389). 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. 390; Ref. 391; Ref. 392; Ref. 393).

Following the DWH oil spill, a population of bottlenose dolphins experienced increased mortality, reproductive failure, and a rise in disease incidence (Ref. 387; Ref. 394). 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. 394). 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 a potential MDO vessel 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. 395). 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. 395). 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. 395).

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:

- Migration BIA for humpback whales
- Migration BIA for pygmy blue whales.

Deterministic modelling for the largest swept area of surface oil ≥10 g/m^2 predicted that surface oil at this concentration may be present for less than~3 days following the spill event, with a peak area of coverage of ~7.5 km^2 (Ref. 376). Based on the spatial extent of the pygmy blue whale migration BIA (~309,342 km^2), this extent of surface oil above the exposure value is ~0.002% of the BIA. Similarly, based on the spatial extent of the humpback whale migration BIA (~159,386 km^2), this extent of surface oil above the exposure value is ~0.005% of the BIA.

Deterministic modelling for the largest area of entrained oil ≥100 ppb predicted that entrained oil at this concentration may be present for up to ~5 days following the spill event, with a peak area of coverage of ~50 km^2 (Ref. 376). This spatial extent of entrained oil above the exposure value is ~0.02% of the pygmy blue whale migration BIA, and ~0.03% of the humpback whale migration BIA. Based on stochastic modelling, the maximum residence time of entrained oil exposure ≥100 ppb within these BIA was predicted to be up to ~3 days and ~4 days for the pygmy blue whale and humpback whale respectively (Ref. 376).

Based on the magnitude and duration of the spill, predicted spatial and temporal exposures, the weathering characteristics of MDO, and the mobile and transitory nature of marine mammals within the Hydrocarbon EMBA, the worst-case consequence of sub-lethal physiological effects to a small proportion of a population, or lethal effects to a small number of individuals, of an EPBC Act listed species, has been evaluated as Moderate (4). No long-term effects on population viability are expected.

Marine reptiles

Marine reptiles may be exposed to hydrocarbons from oil spills at the water surface, within the water column, or along shorelines.

Turtles are vulnerable at all life stages, with exposure occurring through direct contact or contamination of their habitats (Ref. 396). 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. 397; Ref. 398; Ref. 399). Oil contact may also result in skin lesions (e.g. inflammation, elevated skin temperature, and chemical burns) (Ref. 398; Ref. 400; Ref. 401; Ref. 402; Ref. 403) and impar movements, leading to exhaustion and increased vulnerability to predators (Ref. 404). Ingested oil can lead to bioaccumulation of PAHs and reduces the assimilation of food (Ref. 399).

Oil spills in shallow coastal foraging areas have been linked to increased marine turtle strandings. Yaghmour (Ref. 398) 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. 399).

As identified in Section 5.3.3.2, marine reptiles listed as threatened and/or migratory under the EPBC Act have the potential to occur within the Hydrocarbon EMBA. Several BIAs for marine turtles intersect the Hydrocarbon EMBA (Table 5-9). The following HCTS of marine reptile species also intersect the Hydrocarbon EMBA: internesting buffer for flatback, green, hawksbill and loggerhead turtles (Table 5-8).

Stochastic modelling indicated that no accumulation of shoreline oil above ecologically relevant exposure values (≥100 g/m^2) was predicted to occur. As such ecological impacts to nesting adult turtles and emerging hatchlings are not considered credible and no further evaluation has been undertaken.

Deterministic modelling for the largest swept area of surface oil ≥10 g/m^2 predicted that surface oil at this concentration may be present for less than ~3 days following the spill event, with a peak area of coverage of ~7.5 km^2 (Ref. 376). Based on the spatial extent of the flatback turtle internesting buffer BIAs[178] (~38,727 km^2), this extent of surface oil above the exposure value is ~0.02% of the BIAs.

Deterministic modelling for the largest area of entrained oil ≥100 ppb predicted that entrained oil at this concentration may be present for up to ~5 days following the spill event, with a peak area of coverage of ~50 km^2 (Ref. 376). This spatial extent of entrained oil above the exposure value is ~0.1% of the flatback turtle internesting BIAs that intersect with the Hydrocarbon EMBA. Based on stochastic modelling, the maximum residence time of entrained oil exposure ≥100 ppb within these BIAs was predicted to be up to ~4 days (Ref. 376).

Other EPBC Act listed marine reptile species that may be present within the Hydrocarbon EMBA include sea snakes. Oil pollution has been identified as a pressure 'of potential concern' for sea snakes[179] (Ref. 307). These species are susceptible to oil on the sea surface (Ref. 307; Ref. 405; Ref. 406). As air-breathing and obligate bottom feeders, sea snakes may inhale or ingest oil (Ref. 307; Ref. 407). Potential impacts to sea snakes from direct contact with hydrocarbons are likely to result in similar physical effects to those recorded for

[178] There are two internesting buffer BIAs that intersect the Hydrocarbon EMBA (Table 5-9). There are more internesting buffer BIAs for flatback turtles in the NWS region.

[179] The pressure analysis distinguished between oil pollution from shipping ('of less concern') and oil rigs ('of potential concern') (Ref. 307). Although the aspect source for this risk assessment is a spill from a vessel, the higher pressure concern has been adopted.

marine turtles and may include potential damage to the dermis and irritation to mucus membranes of the eyes, nose and throat (Ref. 408).

Both the threatened short-nosed sea snake and leaf-scaled sea snake occur primarily on reef flats or in shallow waters of the outer reef edges to depths of 10 m (Ref. 71; Ref. 70). As such exposure to these species is generally not expected unless present within the discrete nearshore areas of some islands (e.g. Barrow, Montebello, Muiron, and Serrurier islands) which may be exposed to entrained oil ≥100 ppb. There are also some sea snake species (e.g. yellow-bellied sea snake) which are known to be pelagic and live in the open ocean. Although sea snakes may be present in offshore waters, their abundance is not expected to be high.

Based on the magnitude and duration of the spill, predicted spatial and temporal exposures, the weathering characteristics of MDO, and the mobile and transitory nature of marine reptiles within the Hydrocarbon EMBA, the worst-case consequence of sub-lethal physiological effects to a small proportion of a population, or lethal effects to a small number of individuals, of an EPBC Act listed species, has been evaluated as Moderate (4). No long-term effects on population viability are expected.

Fishes, including sharks and rays

Fishes, including sharks and rays, may be exposed to hydrocarbons from an oil spill from 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. 409). Light oils and petroleum products may cause acute toxicity, although the toxic event is generally over quickly (Ref. 410). Chronic or long-term damage is less likely, as dissolved or entrained hydrocarbons are usually insufficient to harm free-swimming fish and sharks (Ref. 411).

Potential effects on fish can include liver damage, irritation of the stomach and intestinal lining, reduced oxygen absorption, decreased reproductive output, and toxic effects on embryos (Ref. 409; Ref. 412). Fish are most vulnerable to oil during embryonic and larval stages (Ref. 413; Ref. 414; Ref. 415). In contrast, juvenile and adult fish are generally more mobile, selective in their feeding, and possess enzymes that help detoxify many oil compounds (Ref. 410), which can limit 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 deeper offshore waters of the Hydrocarbon EMBA are not anticipated.

Pelagic free-swimming fish and sharks are not expected to suffer long-term damage from oil spill exposure because in-water hydrocarbons are typically insufficient to cause harm (Ref. 416). Pelagic species are also generally highly mobile and as such are not likely to suffer extended exposure (e.g. >48–96 hours) at concentrations that would lead to chronic effects due to their patterns of movement. Near the sea surface, fish can detect and avoid contact with surface slicks meaning fish mortalities rarely occur in the event of a hydrocarbon spill in open waters (Ref. 417).

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 Hydrocarbon EMBA. The foraging BIA for whale sharks intersect the Hydrocarbon EMBA (Table 5-12). HCTS of some sawfish species may also be present within the Hydrocarbon EMBA (Table 5-11).

Deterministic modelling for the largest area of entrained oil ≥100 ppb predicted that entrained oil at this concentration may be present for up to ~5 days following the spill event, with a peak area of coverage of ~50 km^2 (Ref. 376). Based on the spatial extent of the whale shark foraging BIA (~220,051 km^2), this extent of entrained oil above the exposure value is ~0.02% of the BIA. Based on stochastic modelling, the maximum residence time of entrained oil exposure ≥100 ppb within this BIA was predicted to be up to ~3 days (Ref. 376).

Based on the magnitude and duration of the spill, predicted spatial and temporal exposures, the weathering characteristics of MDO, and the mobile and transitory nature of fishes within the Hydrocarbon EMBA, the worst-case consequence of sub-lethal physiological effects to a small proportion of population, or lethal effects to a small number of individuals, of an EPBC Act listed species, has been evaluated as Moderate (4). No long-term effects on population viability are expected.

Seabirds and shorebirds

Birds may be exposed to hydrocarbons from an oil spill at the water surface (e.g. when foraging, resting or roosting) or on the shoreline (e.g. when roosting or 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. 418; Ref. 419).

Damage to external tissues, including skin and eyes, can occur, along with internal tissue irritation in lungs and stomachs (Ref. 420). Birds may also be at risk from the ingestion of oil, often through preening contaminated feathers resulting in suffocation (Ref. 421) or acute and chronic toxic effects (Ref. 420). 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. 419). Cardiac impairment may also contribute to embryotoxicity, which can occur when eggs are exposed to small amounts of oil (Ref. 419). Additionally, direct contact with oil can interfere with key physiological and behavioural functions such as thermoregulation, flight, diving, swimming, and buoyancy (Ref. 421; Ref. 422).

As identified in Section 5.3.3.4, seabirds and shorebirds listed as threatened and/or migratory under the EPBC Act have the potential to occur within the Hydrocarbon EMBA. Breeding BIAs for the fairy tern, lesser crested tern, roseate tern, and wedge-tailed shearwater intersect the Hydrocarbon EMBA (Table 5-15). HCTS of the Australian fairy tern may also be present within the Hydrocarbon EMBA (Table 5-14).

Stochastic modelling indicated that no accumulation of shoreline oil above ecologically relevant exposure values (≥100 g/m^2) was predicted to occur. As such ecological impacts to nesting or roosting adult birds or fledglings are not considered credible and no further evaluation has been undertaken.

Stochastic modelling also did not predict any surface oil exposure within State waters (Table 8-71). 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 ≥10 g/m^2 predicted that surface oil at this concentration may be present for less than ~3 days following the spill event, with a peak area of coverage of ~7.5 km^2 (Ref. 376). Based on the spatial extent of the wedge-tailed shearwater breeding BIA[180] (~64,557 km^2), this extent of surface oil above the exposure value is ~0.01% of the BIA.

Based on the magnitude and duration of the spill, predicted spatial and temporal exposures, the weathering characteristics of MDO, and the mobile and transitory nature of seabirds and shorebirds within the Hydrocarbon EMBA, the worst-case consequence of sub-lethal physiological effects to a small proportion of a population, or lethal effects to a small number of individuals, of an EPBC Act listed species, has been evaluated as Moderate (4). No long-term effects on population viability are expected.

Risk: Potential change to the functions, interests and activities of other marine users

Commercial fisheries

As identified in Section 5.4.1, 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.

Potential direct impacts to pelagic commercially targeted adult fish or commercially important migratory juvenile fish (e.g. southern bluefin and yellowfin tuna) species that may be present within the Hydrocarbon EMBA would be the same as those evaluated above for pelagic fishes. As above, impacts to demersal fish (and therefore any commercially targeted demersal fish) within the Hydrocarbon EMBA are not anticipated.

Any potential impact of an oil spill on fish stocks is not simple and can vary based on multiple factors such as duration and extent of oil exposure, oceanography, stock structure and spawning distributions, fishery closures, temporal lags, etc. (Ref. 423; Ref. 424). Commercial fish stocks may be vulnerable to oil spills if they occur close to spawning grounds or egg and larval drift areas. Fish eggs and larvae are typically more 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. 425; Ref. 426; Ref. 427). If there are impacts to fish stocks associated with impacts to the larval life phase of fish, there is the potential for a longer term effect to commercial fisheries (e.g. reduced fishing quotas). However, despite the potential mortality of eggs and larvae following a spill, subsequent depletion of adult wild fish stocks is rarely recorded (Ref. 416) and there are few reported cases in which oil spills have conclusively had a significant impact on fish stocks (Ref. 428; Ref. 429).

Deterministic modelling for the largest area of entrained oil ≥100 ppb predicted that entrained oil at this concentration may be present for up to ~5 days following the spill event, with a peak area of coverage of ~50 km^2 (Ref. 376). Based on the spatial extent of the indicative southern bluefin tuna spawning ground (~1,876,822 km^2), this extent of entrained oil above the exposure value is ~0.003% of the entire spawning ground. Similarly, deterministic modelling for the largest area of dissolved oil ≥10 ppb predicted that dissolved oil at this concentration may be present for less than ~3 days following the spill event, with a

[180] There are multiple breeding BIAs (buffers around islands) for wedge-tailed shearwaters in the NWS region; this is an estimated area of one only.

peak area of coverage of ~6.5 km^2 (Ref. 376). This extent of dissolved oil above the exposure value is ~0.0003% 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.

Oil spill events also have the potential to impact commercial fisheries through indirect impacts. Commercial fisheries may be impacted by temporary exclusion zones set-up by DPIRD or AFMA (or voluntarily by the fishers themselves) in response to an oil spill event. A temporary fisheries closure, combined with oil tainting (actual or perceived) of target species, may lead to financial losses to commercial fisheries and individual licence holders. Fishing vessels (hulls) or equipment (e.g. nets and lines) may become oiled if used in exposed waters. The impacts to commercial fisheries from a public perception may be more significant and longer term than the actual spill itself.

Fishing areas may be temporarily closed for fishing because of the actual (or perceived) 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 consumption. Toxicity in adult fish has been reported in response to diesel exposure (Ref. 430; Ref. 431). 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. 432) 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 oil spills) found evidence of elimination of PAHs in fish, with tissues returning to reference levels within two months of exposure (Ref. 432; Ref. 433; Ref. 434; Ref. 435; Ref. 436; Ref. 437; Ref. 438).

The Montara spill of a light condensate (the most recent [August to November 2009] example of a large oil spill in Australian waters) occurred over an area fished by the WA Northern Demersal Scalefish Managed Fishery, with targeted key species including goldband snapper, red emperor, saddletail snapper, and yellow spotted rockcod (Ref. 439). 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 adverse effects were only detected in a small number of individual fish (Ref. 439). 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. 439) found negligible ongoing environmental impacts from the spill.

Based on the magnitude and duration of the spill, predicted spatial and temporal exposures, the weathering characteristics of MDO, and the negligible effects predicted to commercial stocks, the worst-case consequence of a short-term minor loss in revenue due to a temporary exclusion zone (for perceived or actual tainting effects) to commercial fishers and fisheries has been evaluated as Minor (5).

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 around some of the Pilbara inshore islands (e.g. Muiron and Serrurier 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 visual impacts to these places may subsequently 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 any surface oil exposure within State waters (Table 8-71). Therefore, no further evaluation of visual amenity affects to water-based tourism or recreational activities in State waters has been undertaken.

Stochastic modelling predicted a very low probability (0–4% depending on season; Table 8-71) of shoreline accumulation at the lower socioeconomic and cultural exposure value (≥10 g/m^2). This concentration is equivalent to ~10 L/m^2 or ~2 teaspoons/m^2 and may be visible. No mainland coast was predicted to be exposed. Discrete areas of exposure were predicted on South Muiron Island, Sunday Island, Peak Island, Flat Island, and Serrurier Island. Deterministic modelling for the largest volume of shoreline oil accumulation predicted a peak volume of ~0.8 m^3 occurring ~9 days following the spill event (Ref. 376). While shoreline loading can adversely impact the visual amenity of coastal areas and potentially restrict access for users to these area; given the low probability and low volume of oil, any impacts from this MDO spill are expected to be highly localised and temporary.

Based on the magnitude and duration of the spill, predicted spatial and temporal exposures, the weathering characteristics of MDO, the worst-case consequence of a temporary visual sheen of oil interrupting tourism or recreational activities has been evaluated as Negligible (6).

Risk: Potential changes to values and sensitivities of protected areas

As described in Section 5.5 there are some Commonwealth and State marine protected areas that intersect with the Hydrocarbon EMBA.

Stochastic modelling indicated that no accumulation of shoreline oil above ecologically relevant exposure values (≥100 g/m^2) was predicted to occur. As such ecological impacts to adjacent terrestrial protected areas are not considered credible and no further evaluation has been undertaken.

Stochastic modelling predicted a very low probability (0–1% depending on season; Table 8-71) of entrained oil exposure within the Commonwealth Gascoyne Marine Park. Similarly there was also very low probabilities (0–1% depending on season; Table 8-71) of entrained oil exposure to State marine protected areas. No dissolved oil or surface oil was predicted within any AMP or State marine protected areas.

The natural values of these marine protected areas 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 include fishing and tourism and recreation. The consequence evaluations to marine fauna, commercial fisheries, and tourism and recreation are provided above.

Based on the magnitude and duration of the spill, predicted spatial and temporal exposures, the weathering characteristics of MDO, the worst-case consequence

of a short-term and recoverable change to the values and sensitivities of marine protected areas has been evaluated as Minor (5).

Risk: Potential changes to values and sensitivities of cultural heritage sites and/or artefacts

As described in Section 5.6, the Ningaloo Coast World Heritage and National Heritage listed place intersects with the Hydrocarbon EMBA. There are also historic shipwrecks known to occur within the Hydrocarbon EMBA. Based on consultation, no First Nations UCH has been identified within the Hydrocarbon EMBA.

The intersection between the Ningaloo Coast are the Hydrocarbon EMBA occurs at Muiron Islands. As described previously there is a very low probability (0–1% depending on season; Table 8-71) of entrained oil exposure to this area; and a similarly very low probability (0–1% depending on season) of shoreline accumulation at the socioeconomic and cultural exposure value (≥10 g/m^2).

An unplanned surface release of MDO from a vessel collision event is not anticipated to expose the seabed (and therefore affect any seabed-based UCH) in offshore waters as the oil is expected to either remain on the surface or within the upper water column. While the Hydrocarbon EMBA does include some small discreate areas of nearshore waters (Figure 5-1), shipwrecks are not known to occur within these areas. As such, no further evaluation to seabed-based UCH has been undertaken.

Based on the magnitude and duration of the spill, predicted spatial and temporal exposures, the weathering characteristics of MDO, the worst-case consequence of a short-term and recoverable change to the values and sensitivities of heritage protected areas has been evaluated as Minor (5).

8.14.3.2 Control measures

Table 8-76 and Table 8-77 describe the CMs relevant to this aspect.

Table 8-76: Good practice control measures for loss of containment (vessel collision event)

CM	Description
CM-23: 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-37: STCW Certifications	Crew members on regulated vessels operating under the *Navigation Act 2012* (Cth) must hold valid Standards of Training, Certification and Watchkeeping for Seafarers (STCW) certifications (or equivalent) as appropriate to their duties. AMSA is responsible for administering these requirements to ensure compliance with international maritime obligations.
CM-38: Marine Order 27	Marine Order 27 (Safety of navigation and radio equipment) 2023 sets out requirements for navigation equipment, radio equipment, and communications.

CM	Description
	The 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-31: Marine Order 28	Marine Order 28 (Operations standards and procedures) 2025 sets out requirements and responsibilities for seafarers and vessel owners, including watchkeeping standards.
CM-39: 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-36: Marine Order 91 (SOPEP)	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-40: 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-41a: 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. 440) and supporting operational and scientific monitoring plans. CAPL have developed an OSM-BIP (Ref. 4) 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-42: 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 8-77: Additional control measures considered for loss of containment (vessel collision event)

CM	Benefit	Cost
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.
OPEP—Shoreline clean-up (preparedness)	By having appropriate resourcing and capability in place for a potential Shoreline Clean-up (SHC) response, CAPL is able to call on these resources in the event of an oil spill to ensure that equipment and personnel can be provided efficiently, thereby reducing the overall response time and potential environmental impacts. Resourcing and capability for CAPL's oil spill response is described in Section 10.3.9.6, and includes maintaining contractual arrangements with oil spill response organisations (OSROs) such as AMOSC and OSRL. An activity-specific oil spill response capability assessment is described in Section 9.4.2.2, and confirms that CAPL has the arrangements in place to implement.	Maintaining contractual arrangements with OSROs does introduce an ongoing financial cost; however, the environmental benefit gained from being able to efficiently response to an oil spill event is considered to outweigh this cost. Therefore this control measure has been adopted. Note: Resourcing and capability is considered a standard element of the EMT control measure (**CM-42**) and associated EPSs (e.g. **EPS-42.3** and **EPS-42.5**).
OPEP—Shoreline clean-up (pre-oiled shoreline response planning)	Pre-oiled shoreline assessments can support SHC activities by evaluating shoreline conditions before impact, establishing shoreline segments, setting clean-up priorities and identifying suitable response tactics. Additional pre-shoreline response planning may also assist in directing resources to high-value receptors (see Section 9.2.2) where there is a	Implementation would require additional personnel time and effort to undertake shoreline assessments and develop planning products beyond the existing PPP and TRG framework. Given the low probability of shoreline exposure, the absence of shoreline accumulation associated with a concentration of shoreline oil that is likely to require clean-up effort (i.e. at or above the moderate

CM	Benefit	Cost
	benefit in reducing receptor exposure. No shoreline oil accumulation was predicted to occur for the Chandon OA (Chandon DC2-NW1) oil spill scenario (Section 8.14.2.3). For the C&D OA (Gorgon MPTS) oil spill scenario: • No shoreline oil accumulation at or above the 100 g/m^2 moderate exposure value (i.e. the exposure value that represents the concentration of shoreline oil that is likely to require clean-up effort; Table 9-1) was predicted to occur. • Shoreline oil accumulation at or above the 10 g/m^2 low exposure value (i.e. the exposure value where available oil spill response options may have limited effectiveness; Table 9-1) was predicted to have a very low probability of occurring during transitional and winter months (1% and 4% respectively). No shoreline contact at this low exposure value was predicted to occur during summer. The minimum time before oil accumulation to any shoreline at the low exposure value was 5 days and 18 hours during transitional months, and 5 days and 20 hours during winter months. CAPL has also established a Protection Prioritisation Process (PPP) and Tactical Response Guides (TRGs) for priority shoreline receptors (Section 9.2.2). The PPP includes pre-prepared Strategic TRGs for locations where shoreline contact is predicted within four days and preparing Operational TRGs for receptors where contact is predicted after four days. The four day window has been selected as ample time to understand spill trajectories and operational response requirements and fits within the 14-day OSM-BIP prioritisation window. Consequently, the environmental benefit associated with implementing additional pre-oiled shoreline response planning is considered limited.	exposure value), and the predicted minimum shoreline oil arrival time of greater than four days, the existing PPP and TRG framework provides sufficient opportunity to undertake shoreline response planning if required. Consequently, the current process for tactical pre-oiled shoreline response planning is considered appropriate and additional pre-oiled shoreline response planning has not been adopted.
OSM-BIP—Pre-contracted dedicated OSM sampling vessel,	Chartering and equipping vessels on standby for OSM would reduce mobilisation time for water quality monitoring by an estimated 12 to	Implementation of this control would require a dedicated standby vessel for the duration of the activity, resulting in additional vessel charter

CM	Benefit	Cost
with trained OSM personnel, on standby for the duration of the petroleum activity	24 hours following a Level 2 or Level 3 spill event, providing earlier data on hydrocarbon exposure.	costs of approximately $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, 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-41b: 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-41c: OSM-BIP—Conduct periodical review	This ensures that receptors with deficient baseline data are identified. This a consideration for initial	Understanding the presence or absence, suitability and quality of baseline data for priority receptors is

CM	Benefit	Cost
of existing baseline data sources across receptors within the CAPL OSM Planning Area.	monitoring prioritisation and the finalisation of each SMP design.	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 cost for implementing this control measure are negligible in comparison with the environmental gained This control measure is considered reasonably practicable to implement and has been adopted.

8.14.3.3 ALARP 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/or 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.

No material information or concerns were raised regarding an unplanned loss of containment from a vessel collision event during the petroleum activity by relevant persons during consultation in preparing this EP.

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.

Based on the environmental risk evaluation and application of relevant assessment tools as commensurate with the predicted level of risk (e.g. higher-order risks), CAPL considers the adopted good practice and additional control measures (Section 8.14.3.2) are appropriate to manage the potential risks from a loss of containment from a vessel collision event. No further reasonably practicable control measures were identified that would provide a meaningful reduction in environmental risk without incurring grossly disproportionate costs. Accordingly, CAPL considers the potential environmental risks associated with this aspect to be reduced to ALARP.

8.14.3.4 Likelihood and 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 to the receptors as shown in Table 8-78.

Table 8-78: Risk summary for loss of containment (vessel collision event)

Risks	Consequence	Likelihood	Residual risk
Change in water quality	Minor (5)	Remote (5)	Very Low (9)
Change in sediment quality	Minor (5)	Remote (5)	Very Low (9)
Potential adverse effects to BCH	Minor (5)	Remote (5)	Very Low (9)
Potential adverse effects to coastal communities and habitats	N/A		
Potential adverse effects to marine fauna	Moderate (4)	Remote (5)	Low (8)
Potential change to the functions, interests and activities of other marine users	Negligible (6)	Remote (5)	Very Low (10)
Potential changes to values and sensitivities of protected areas	Minor (5)	Remote (5)	Very Low (9)
Potential changes to values and sensitivities of cultural heritage sites and/or artefacts	Minor (5)	Remote (5)	Very Low (9)

8.14.4 Demonstration of acceptability

Table 8-79 describes the demonstration of acceptability relevant to this aspect.

Table 8-79: Demonstration of acceptability for loss of containment (vessel collision event)

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 8.14.3.2) 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.
Principles of ESD
Precautionary Principle In accordance with Table 6-4, 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 6-4, 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* 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. 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 • Conservation Management Plan for the Blue Whale (Ref. 45)

- Conservation Advice for fin whale (Ref. 282)
- Conservation Advice for sei whale (Ref. 283)
- National Recovery Plan for the Southern Right Whale *(*Ref. 284)
- Conservation Advice for Australian humpback dolphin (Ref. 285)
- Conservation Advice for Australian snubfin dolphin (Ref. 286)
- Recovery Plan for Marine Turtles in Australia (Ref. 73)
- Conservation Advice for leatherback turtle (Ref. 371)
- Conservation Advice for leaf-scaled sea snake (Ref. 70)
- Conservation Advice for short-nosed sea snake (Ref. 71)
- Sawfish and River Sharks Multispecies Recovery Plan *(*Ref. 99*)*
- Recovery Plan for the Grey Nurse Shark (Ref. 287)
- Conservation Advice for largetooth sawfish (Ref. 288)
- Recovery Plan for the White Shark *(*Ref. 290)
- National Recovery Plan for Albatrosses and Petrels (Ref. 291)
- Conservation Advice for Asian dowitcher (Ref. 292)
- National Recovery Plan for the Australian Fairy Tern (Ref. 293)
- Conservation Advice for Australian fairy tern (Ref. 444)
- Conservation Advice for common greenshank (Ref. 296)
- Conservation Advice for curlew sandpiper (Ref. 297)
- Conservation Advice for eastern curlew (far eastern curlew) (Ref. 298)
- Conservation Advice for greater sand plover (Ref. 299)
- Conservation Advice for Northern Siberian bar-tailed godwit (Yakutian bar-tailed godwit) (Ref. 301)
- Conservation Advice for red knot (Ref. 302)
- Conservation Advice for sharp-tailed sandpiper (Ref. 304)
- Wildlife Conservation Plan for Seabirds (Ref. 280)
- Wildlife Conservation Plan for Migratory Shorebirds (Ref. 281)
- North-west Marine Parks Network Management Plan (Ref. 174)
- Marine Bioregional Plan for the NWMR (Ref. 19).

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
Conservation Advice for fin whale No specific action identified.	
Conservation Advice for sei whale No specific action identified.	
National Recovery Plan for the Southern Right Whale No specific action identified.	
Conservation Advice for Australian humpback dolphin No specific action identified.	
Conservation Advice for Australian snubfin dolphin No specific action identified.	
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 flatback turtle Pilbara (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. 4). 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.	
Conservation Advice for short-nosed sea snake No specific action identified.	
Sawfish and River Sharks Multispecies Recovery Plan No specific action identified.	
Recovery Plan for the Grey Nurse Shark No specific action identified.	
Conservation advice for largetooth sawfish No specific action identified.	
Recovery Plan for the White Shark No specific action identified.	
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). Response and recovery of habitats and marine fauna is within the scope of the OSM-BIP (Ref. 4).

	The petroleum activity is not considered to be inconsistent with the National Recovery Plan for Albatrosses and Petrels.
Conservation Advice for Asian dowitcher No specific action identified.	N/A
National Recovery Plan for the Australian Fairy Tern No specific action identified.	
Conservation Advice for Australian fairy tern Ensure appropriate oil-spill contingency plans are in place for the subspecies' breeding sites which are vulnerable to oil spills, such as the breeding colonies in Victoria.	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. 4). The petroleum activity is not considered to be inconsistent with the Conservation Advice for Australian fairy tern.
Conservation Advice for common greenshank No specific action identified.	N/A
Conservation Advice for curlew sandpiper No specific action identified.	
Conservation Advice for eastern curlew No specific action identified.	
Conservation Advice for greater sand plover No specific action identified.	
Conservation Advice for Northern Siberian bar-tailed godwit No specific action identified.	
Conservation Advice for red knot No specific action identified.	
Conservation Advice for sharp-tailed sandpiper) No specific action identified.	
Wildlife Conservation Plan for Seabirds No specific action identified.	
Wildlife Conservation Plan for Migratory Shorebirds No specific action identified.	
North-west Marine Parks Network Management Plan 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.	The Gascoyne and Montebello Marine Parks are multiple use zone (IUCN VI). The control measures identified (Section 8.15.2.2) for managing an unplanned release provide for the response to, and environmental monitoring and remediation of, an oil pollution incident. Requirements to report oil pollution incidents that occur within, or may impact upon, an AMP is included in Section 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. 4) 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 impact and risk evaluation (including control measures) were made in response to the relevant persons consultation undertaken during the preparation of this EP.	

8.14.5 Environmental performance

Table 8-80 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-80: Environmental performance for loss of containment (vessel collision event)

EPO	CM	EPS	MC
EPO-38: No unplanned release of hydrocarbons to the environment attributable to the petroleum activity.	**CM-23:** Maritime Safety Information	**EPS-23:** Vessels operating within the OAs will comply with any Notice to Mariners requirements under the *Navigation Act 2012* (Cth).	**MC-23:** Records of lodgement of notification to relevant agency.
	CM-37: STCW Certifications	**EPS-37:** Vessel crew must hold valid STCW Certifications (or equivalent) as appropriate to duties.	**MC-37:** Records verify that vessel crew held valid STCW certifications (or equivalent) as appropriate to duties during the petroleum activity.
	CM-38: Marine Order 27	**EPS-38:** Vessels operating within the OAs will use shipborne AIS during the petroleum activity.	**MC-38:** Records verify that shipborne AIS was used by the vessels during the petroleum activity.
	CM-31: Marine Order 28	**EPS-31:** Vessels will implement watchkeeping standards in accordance with Marine Order 28.	**MC-31:** Records verify that watchkeeping was undertaken in accordance with the requirements of Marine Order 28 during the petroleum activity.
	CM-39: Marine Order 30	**EPS-39:** Vessels will implement light and signals appropriate to	**MC-39:** Records verify that vessel lights and signals were consistent with

EPO	CM	EPS	MC
		the nature of their operations.	the requirements of COLREGS and the *Navigation Act 2012* (Cth) during the petroleum activity.
	CM-36: Marine Order 91 (SOPEP)	**EPS-36.1:** Relevant vessels (as appropriate to class) will hold a valid SOPEP (or equivalent).	**MC-36.1.1:** OVIS report, ABU Marine OE Inspection Checklist, or equivalent record, confirms an approved SOPEP is on board marine vessels >400 GT.
			MC-36.1.2: Inspection records (or equivalent) show drills conducted in accordance with SOPEP.
		EPS-36.2: In the event of a vessel-based spill event, emergency response activities will be implemented in accordance with the vessel SOPEP (or equivalent).	**MC-36.2:** Records verify that emergency response activities were implemented in accordance with the vessel SOPEP in the event of a vessel-based spill.
	CM-40: OPEP	**EPS-40:** In the event of a Level 2 (or above) oil spill occurring, response activities are implemented in accordance with CAPL's Consolidated OPEP (Ref. 2).	**MC-40:** Records verify the OPEP has been activated and response activities implemented.
		Refer to the OPEP (Ref. 2) for EPOs, EPSs, and MC related to emergency management, emergency preparedness, and each response tactic.	
	CM-41a: OSM-BIP	**EPS-41.1:** 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	**MC-41.1.1:** Records verify the OSM-BIP has been activated.
			MC-41.1.2: Records verify that once initiation criteria have been met, operational and scientific monitoring programs were initiated.
			MC-41.1.3: Records verify that operational and scientific monitoring programs were implemented within the timeframes

EPO	CM	EPS	MC
		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.	outlined in the OSM-BIP.
			MC-41.1.4: 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-41.1.5: 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-41.1.6: 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-41.1.7: Records confirm that once termination criteria have been met, operational and scientific monitoring programs were ceased.
		EPS-41.2: Capability required to implement all operational and scientific monitoring programs are in place to meet the requirements outlined in the OSM-BIP.	**MC-41.2.1:** 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-41b: OSM-BIP—Maintain initial water quality / hydrocarbon sampling kits for pre-		**MC-41.2.2:** Water quality / hydrocarbon sample kits are maintained at Barrow

EPO	CM	EPS	MC
	positioning on Barrow Island and selected vessels, and develop technical procedure for sample collection.		Island and selected vessels, and a technical procedure for sample collection was developed.
	CM-41c: OSM-BIP—Conduct periodical review of existing baseline data sources across receptors within the CAPL OSM Planning Area.	**EPS-41.3:** 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-41.3:** Records show that CAPL maintains marine baseline data via the joint-industry marine baseline data assessment project.
	CM-42: EMT	**EPS-42.1:** 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-42.1:** Records verify training has been conducted.
		EPS-42.2: CAPL shall maintain an EMT duty roster with a minimum of 10 qualified EMT personnel to fulfil core CAPL EMT positions.	**MC-42.2:** EMT Duty Roster records.
		EPS-42.3: CAPL shall maintain the minimum required trained personnel to fulfil core EMT functions, including source control roles, as per Appendix F of the OPEP.	**MC-42.3:** Records verify the minimum required personnel are trained.
		EPS-42.4: 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-42.4:** Training/induction records.
		EPS-42.5: CAPL shall maintain service agreements with oil spill response organisations and membership to mutual aid frameworks (as per Section 10.3.9.6)	**MC-42.5:** Records verify that service agreements and memberships to mutual aid frameworks are in place.

EPO	CM	EPS	MC
		that have capabilities to support a response to an oil spill event.	

8.15 Oil spill response—Shoreline clean-up

8.15.1 Aspect source

In the event an oil spill event, SHC has been identified as one of the response options that may be deployed (Section 9.3).

SHC occurs after oil spill event resulting in shoreline accumulation has occurred. The objective of SHC is to remove as much oil as possible. Tactics that may be used alone or in combination to clean-up oiled shorelines include shoreline assessment, natural recovery, manual and mechanical removal, washing, flooding, and flushing, and sediment reworking and surf washing.

8.15.2 Environmental impact and risk evaluation

Conducting SHC as part of an oil spill response may result in:

- Potential adverse effects to coastal communities and habitats and/or marine fauna.

8.15.2.1 Consequence evaluation

Risk: Potential adverse effects to coastal communities and habitats and/or marine fauna

The potential risks from implementing SHC will vary depending on the shoreline habitat and the tactics used. General risks include the physical disturbance from personnel, vehicles, and equipment.

Values and sensitivities in the Hydrocarbon EMBA include sensitive shoreline habitats (such as mangroves) and nesting or foraging habitat for fauna species (such as turtles and birds). The use of vehicles, personnel, and equipment during SHC has the potential to damage coastal habitats (e.g. dune structure, coastal vegetation, etc.) and interrupt or damage fauna (e.g. damage to nests).

The potential risks associated with undertaking SHC may be greater than if the oil was left in situ and remediated through natural processes. Leaving the oil in situ is a commonly selected response tactic if the continual human and vessel/vehicle traffic has the potential to generate greater risks than the presence of the oil itself. Natural recovery has been implemented previously, including for the Montara oil spill in Australian/Indonesian waters (where persistent components of the oil were left to naturally break down in dense coastal mangroves) and the Macondo oil spill in the Gulf of America (where marshes and wetlands that had been exposed to weathered oil were allowed to recover naturally). If a smaller extent of shoreline is exposed, the risks from a SHC response may be lessened and more localised.

The worst-case consequence of implementing a SHC response has been evaluated as localised and recoverable effects to coastal communities and habitats, and/or the temporary disturbance of a small proportion of the population of a protected marine fauna species, and as such has been ranked as Minor (5).

8.15.2.2 Control measures

Table 8-81 describes the good practice CMs relevant to this aspect.

Table 8-81: Good practice control measures for shoreline clean-up

CM	Description
CM-40: 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-41a: 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. 440) and supporting operational and scientific monitoring plans. CAPL have developed an OSM-BIP (Ref. 4) to describe how the OSM Framework aligns with their activities, oil spill risks, and internal management systems.

8.15.2.3 ALARP justification

Oil spill response options, including SHC, are well understood and have been successfully applied during previous oil spill events. The potential risks associated with the implementation of a SHC response during an oil spill event are managed through established 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.

It is acknowledged that some uncertainty regarding the specific location at which a SHC may be deployed and the types of SHC 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 shoreline oil 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 SHC are linked to net environmental benefit analysis (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.

Based on the environmental risk evaluation and application of relevant assessment tools as commensurate with the predicted level of risk (e.g. lower-order risks), CAPL considers the adopted good practice control measures (Section 8.15.2.2) are appropriate to manage the potential risks from implementation of a SHC response during an oil spill event. No additional reasonably practicable control measures were identified that would provide a meaningful reduction in environmental risk. Accordingly, CAPL considers the potential environmental risks associated with this aspect to be reduced to ALARP.

8.15.2.4 Likelihood and risk level summary

With the application of the above control measures CAPL has assessed the likelihood and residual risk to the receptors as shown in Table 8-82.

Table 8-82: Risk summary for shoreline clean-up

Risks	Consequence	Likelihood	Residual risk
Potential adverse effects to coastal communities and habitats and/or marine fauna	Minor (5)	Remote (5)	Very Low (9)

8.15.3 Demonstration of acceptability

Table 8-83 describes the demonstration of acceptability relevant to this aspect.

Table 8-83: Demonstration of acceptability for shoreline clean-up

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 8.14), and consequently also reduce the likelihood that an oil spill response, including SHC, would be required. As such, this preventative approach ensures the acceptable level AL-23 is met. In the event that SHC is required to be implemented, the above risk evaluation demonstrates that the predicted consequence is expected to be minor.
Principles of ESD
Precautionary Principle In accordance with Table 6-4, 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 6-4, 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 SCH is required to be implemented the predicted impacts are localised and recoverable effects to coastal communities and habitats, and the temporary disturbance of a small proportion of the population of a protected marine fauna species. 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.
Internal context
These management processes or procedures were deemed relevant for this aspect: • OPEP (Ref. 2) • OSM-BIP (Ref. 4). 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 impact and risk evaluation (including control measures) were made in response to the relevant persons consultation undertaken during the preparation of this EP.

8.15.4 Environmental performance

Table 8-84 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-84: Environmental performance for shoreline clean-up

EPO	CM	EPS	MC
EPO-38: No unplanned release of hydrocarbons to the environment	**CM-40:** OPEP	**EPS-40:** In the event of a Level 2 (or above) oil spill occurring, response activities are	**MC-40:** Records verify the OPEP has been activated and response activities implemented.

EPO	CM	EPS	MC
attributable to the petroleum activity.		implemented in accordance with CAPL's Consolidated OPEP (Ref. 2).	
		Refer to the OPEP (Ref. 2) for EPOs, EPSs, and MC related to the SHC response tactic.	
	CM-41a: OSM-BIP	**EPS-41.1:** In the event of a Level 2 (or above) oil spill occurring, the OSM-BIP (Ref. 4) 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-41.1.1:** Records verify the OSM-BIP has been activated.
			MC-41.1.2: Records verify that once initiation criteria have been met, operational and scientific monitoring programs were initiated.
			MC-41.1.3: Records verify that operational and scientific monitoring programs were implemented within the timeframes outlined in the OSM-BIP.
			MC-41.1.4: 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-41.1.5: 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-41.1.6: 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).

EPO	CM	EPS	MC
			MC-41.1.7: Records confirm that once termination criteria have been met, operational and scientific monitoring programs were ceased.

8.16 Oil spill response—Oiled wildlife

8.16.1 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.

8.16.2 Environmental impact and risk evaluation

Conducting OWR as part of an oil spill response may result in:

- Potential adverse effects to marine fauna.

8.16.2.1 Consequence evaluation

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).

8.16.2.2 Control measures

Table 8-85 describes the good practice CMs relevant to this aspect.

Table 8-85: Good practice control measures for oiled wildlife response

CM	Description
CM-40: 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-41a: 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. 440) and supporting operational and scientific monitoring plans. CAPL have developed an OSM-BIP (Ref. 4) to describe how the OSM Framework aligns with their activities, oil spill risks, and internal management systems.

8.16.2.3 ALARP 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 OWR during an oil spill event are managed through established 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.

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 and shoreline 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.

Based on the environmental risk evaluation and application of relevant assessment tools as commensurate with the predicted level of risk (e.g. lower-order risks), CAPL considers the adopted good practice control measures (Section 8.16.2.2) are appropriate to manage the potential risks from implementation of OWR during an oil spill event. No additional reasonably practicable control measures were identified that would provide a meaningful reduction in environmental risk. Accordingly, CAPL considers the potential environmental risks associated with this aspect to be reduced to ALARP.

8.16.2.4 Likelihood and risk level summary

With the application of the above control measures CAPL has assessed the likelihood and residual risk to the receptors as shown in Table 8-86.

Table 8-86: Risk summary for oiled wildlife response

Risks	Consequence	Likelihood	Residual risk
Potential adverse effects to marine fauna	Minor (5)	Remote (5)	Very Low (9)

8.16.3 Demonstration of acceptability

Table 8 67 describes the demonstration of acceptability relevant to this aspect.

Table 8-87: Demonstration of acceptability for oiled wildlife response

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 8.14), 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.
Principles of ESD
Precautionary Principle In accordance with Table 6-4, 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 6-4, 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.
Internal context
These management processes or procedures were deemed relevant for this aspect: • OPEP (Ref. 2) • OSM-BIP (Ref. 4). 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 impact and risk evaluation (including control measures) were made in response to the relevant persons consultation undertaken during the preparation of this EP.

8.16.4 Environmental performance

Table 8-88 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-88: Environmental performance for oiled wildlife response

EPO	CM	EPS	MC
EPO-38: No unplanned release of hydrocarbons to the environment	**CM-40:** OPEP	**EPS-40:** In the event of a Level 2 (or above) oil spill occurring, response activities are	**MC-40:** Records verify the OPEP has been activated and

EPO	CM	EPS	MC
attributable to the petroleum activity.		implemented in accordance with CAPL's Consolidated OPEP (Ref. 2).	response activities implemented.
		Refer to the OPEP (Ref. 2) for EPOs, EPSs, and MC related to the OWR support function.	
	CM-41a: OSM-BIP	**EPS-41.1:** 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-41.1.1:** Records verify the OSM-BIP has been activated.
			MC-41.1.2: Records verify that once initiation criteria have been met, operational and scientific monitoring programs were initiated.
			MC-41.1.3: Records verify that operational and scientific monitoring programs were implemented within the timeframes outlined in the OSM-BIP.
			MC-41.1.4: 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-41.1.5: 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-41.1.6: 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).

EPO	CM	EPS	MC
			MC-41.1.7: Records confirm that once termination criteria have been met, operational and scientific monitoring programs were ceased.

8.17 Cultural heritage—Intangible values

8.17.1 Aspect source

All activities generating the environmental aspects described in Sections 8.1 to 8.16 have been identified as having the potential to interact with intangible cultural heritage values.

8.17.2 Environmental impact and risk evaluation

Offshore petroleum activities may result in a:

- Potential interference with Sea Country values.

8.17.2.1 Consequence evaluation

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. 441).

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. 135). Songlines are living tools that embed and mediate history, ecological knowledge, relationships, ancestral beings, and cultural belonging on Country (Ref. 135). Certain songlines may be referred to as ‘Dreaming Pathways’ because of the tracks forged by Creator Spirits during the Dreaming (Ref. 442). Kearney et al. (Ref. 136) 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. 137).

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. 443). Songlines rely on the continued health of Country, and people’s continued access and connection to it (Ref. 135). When Country is damaged or altered, so too are songlines and the knowledge they embody and enact (Ref. 135).

All the potential environmental impacts and risks from the petroleum activity evaluated in Sections 8.1 to 8.16 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).

8.17.2.2 Control measures

Table 8-89 details the good practice CMs relevant to this aspect.

Table 8-89: Good practice control measures for intangible cultural heritage values

CM	Description
CM-43: 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 OAs 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.

8.17.2.3 ALARP justification

Vessel operations, geophysical surveys, and geotechnical surveys 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.

Based on the environmental risk evaluation and application of relevant assessment tools as commensurate with the predicted level of risk (e.g. lower-order risks), CAPL considers the adopted good practice control measures (Section 8.17.2.2) are appropriate to manage the potential risks associated with the interference with Sea Country values. No additional reasonably practicable control measures were identified that would provide a meaningful reduction in environmental risk. Accordingly, CAPL considers the potential environmental risks associated with this aspect to be reduced to ALARP.

8.17.2.4 Likelihood and risk level summary

With the application of the above control measures CAPL has assessed the likelihood and residual risk to the receptors as shown in Table 8-90.

Table 8-90: Risk summary for intangible cultural heritage values

Risks	Consequence	Likelihood	Residual risk
Potential interference with Sea Country values	Moderate (4)	Unlikely (4)	Low (7)

8.17.3 Demonstration of acceptability

Table 8-91 describes the demonstration of acceptability relevant to this aspect.

Table 8-91: Demonstration of acceptability for intangible cultural heritage 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 8.17.2.2) 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.
Principles of ESD
Precautionary Principle In accordance with Table 6-4, 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 6-4, 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.
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.

8.17.4 Environmental performance

Table 8-92 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-92: Environmental performance for intangible cultural heritage values

EPO	CM	EPS	MC
EPO-09: No interference with First Nations cultural heritage values from	**CM-43:** Ongoing Consultation (First Nations)	**EPS-43.1:** Ongoing consultation with First Nations people and/or representative bodies	**MC-43.1:** Relevant persons consultation records.

EPO	CM	EPS	MC
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.		is undertaken as per the respective engagement plan and/or consultation protocols.	
		EPS-43.2: If new information on First Nations cultural values or features within the OAs 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-43.2:** Records verify that the MoC Process was undertaken in response to new information on First Nations cultural values or features within the OAs 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[181] (Ref. 440) 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. 4) 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. 16) 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. 16).

[181] 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[182]	
			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. 445 as cited in Ref. 16).	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. 445 as cited in Ref. 16).	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 oil 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. 446 as cited in Ref. 16).
	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. 374 as cited in Ref. 16), 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. 446 as cited in Ref. 16).
	Low	≥1 g/m^2	Not applicable.	It represents a lower concentration for defining the planning area for operational and scientific monitoring,

[182] Source: Table 1 from NOPSEMA's information paper on the application of oil spill modelling in EPs (Ref. 16).

Oil component	Exposure value		Purpose of exposure value[182]	
			Oil spill response	Operational and scientific monitoring
			At this concentration, available oil 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.	within which further analysis can be done to inform monitoring priorities. At this concentration, hydrocarbons may appear as a silver to rainbow sheen under calm conditions (Ref. 446 as cited in Ref. 16).
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. 129).

9.2 Response option selection

9.2.1 Strategic net environmental benefit analysis

CAPL has developed a series of strategic NEBAs (Ref. 447) 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. 447). 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 PPP (Ref. 448) 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. 448) 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. 448) aligns with DTMI's protection priority process (Ref. 449) 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. 448) considers all High (4) and Very High (5) ranked shoreline cells where contact at or above the 100 g/m^2 exposure value (based on stochastic modelling across all seasons) is predicted within four days (96 hours). As described in the PPP (Ref. 448), the four-day contact timeframe is based on the expected time it would take CAPL to develop and implement a 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 moderate exposure value was predicted to occur for either of the oil spill scenarios (see Section 8.14.2.3). Even at the lower 10 g/m^2 exposure value, no shoreline accumulation was predicted to occur within a four day timeframe. 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)
- 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.

Results from stochastic spill modelling predicted no shoreline accumulation from the spill event within the Chandon OA (Section 8.14.2). For the spill event within the C&D OA, there was some shoreline accumulation predicted at the low exposure value (≥10 g/m^2); at this concentration oil spill response options may have limited effect (Table 9-1). No shoreline accumulation at the ≥100 g/m^2 exposure value (i.e. at the exposure value representative of shoreline oil that is likely to require clean-up; Table 9-1) was predicted to occur. As such SHC is likely to be inefficient and resource intensive; however, it has been carried through as a response option in this EP in the event that it is selected for implementation.

These response options are carried out alongside OWR and Waste Management 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. 447) 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. 447), the response strategies proposed to be used for this spill scenario and response package calculations are described below.

9.4.2.1 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.

9.4.2.2 Implement SHC response

Of the two scenarios modelled, only the oil spill from within the C&D OA was predicted to have shoreline contact. The following assessment is therefore based on the C&D oil spill modelling.

Deterministic analysis for the largest volume of shoreline oil accumulation indicated that oil may wash ashore between six to nine days after the spill commenced and deposit a peak volume ashore of ~0.8 m^3 (Ref. 376; Table 8-74; Table 8-75). This deterministic scenario predicted shoreline exposure to discrete parts of Serrurier and Flat islands.

These islands are within a high-energy wave environment, have shallow fringing reefs, and no vehicle access. From a tactical planning perspective, the relative isolation and environmental sensitivity of these islands may make SHC difficult to implement. However, CAPL would attempt to clean up oil washed ashore, where practicable and where selected as a response option based on NEBA.

Based on Appendix C of the OPEP (Ref. 2), each SHC team is expected to recover 1.6 m^3 of oil per day. If one clean-up team was mobilised on the 10th day and used for one day, the shoreline oil could be recovered. If required, these efforts could be ramped up as directed and informed by MES activities. Confirmation that CAPL has the arrangements in place to implement the required number of packages is provided in Table 9-2.

Table 9-2: Vessel collision response package deployment timeline

Response technique	Days following spill event							Weeks following spill event		
	1	2	3	4	5	6	7	2	3	4
No. packages – planned MES	1	1	1	1	1	1	1	1	1	1
Does CAPL have the required capability?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
No. packages – planned SHC	0	0	0	0	0	0	0	1	0	0
Does CAPL have the required capability?								Y		

9.5 Operational and scientific monitoring capability assessment

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. 4), 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. 16) 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-BIP (Ref. 4) 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 health, safety and environment (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 14001:2026 Environmental management system – Requirements with guidance for use (Ref. 450) 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.

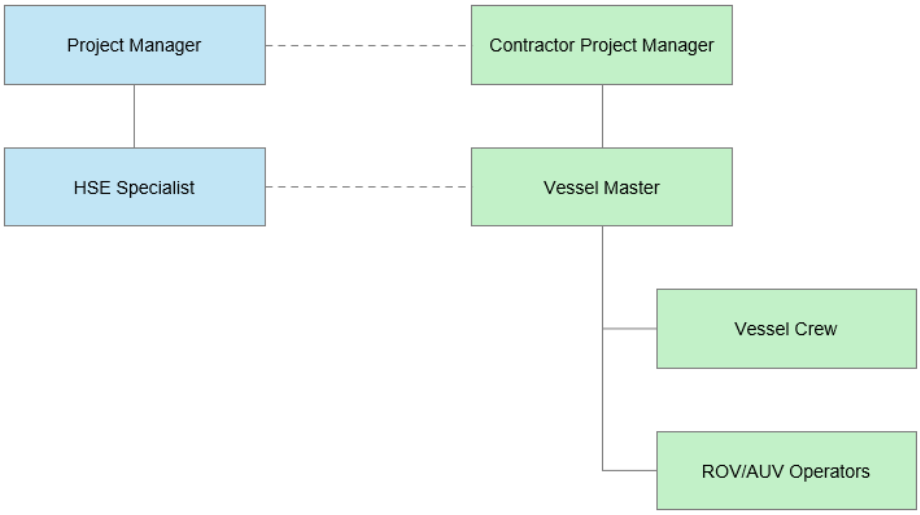


Figure 10-2: Chain of command for the petroleum activity

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 for the petroleum activity

Role	Responsibilities
CAPL personnel	
Project Manager	• Overall responsibility for implementing, managing, and adhering to this EP. 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 • Ongoing consultation is conducted in accordance with Section 10.3.4.1 • Any MoC is conducted in accordance with Section 10.3.2.2 • Environmental incident reporting is completed in accordance with Section 10.7.2 • Routine environmental reporting is undertaken in accordance with Section 10.7.3.
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 personnel	
Contractor Project Manager	• Overall responsibility for contractors implementing and adhering to this EP. Ensure that: • All vessel and contractor personnel are made aware of their requirements under this EP, and have completed inductions as per Section 10.2.1.3 • Confirm vessels comply with relevant legislative requirements and requirements under this EP • Corrective actions identified during environmental inspections are implemented (as required)

Role	Responsibilities
	• Assist with review, investigation, and reporting of environmental incidents (as required).
Vessel Master	Ensure that: • Environmental impacts and risks are continually reduced to ALARP and acceptable levels by implementing this EP in accordance with Sections 8 and 10 • All necessary vessel-related documentation (e.g. SOPEPs, certificates, etc.) is 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 – 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 Operators	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 (for the 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	
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 OAs, 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.
First Nations UCH	
ROV/AUV operators	Before commencing a petroleum activity within water depths of <130 m, ROV/AUV operators will be provided with a UCH-specific induction. This induction will include an overview of the identification of potential historic and First Nations UCH sites or artefacts, and the specific management requirements of the Inadvertent UCH Discovery Procedure.
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 OAs • 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 Sections 8 and 10 of this EP, including pre-start visual observations where relevant • Marine fauna observation record requirements including:

Required personnel	Scope
	– 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	• ABU Operations Process: Control of Work Manual (Ref. 372). • Chevron Marine Standard Non Tankers: Corporate OE Standard (Ref. 211). • ABU Hazardous Materials Management Procedure: ABU Standardised OE Procedure (Ref. 6).
Process safety, reliability and integrity	• OE Information Management: ABU Standardised OE Process (Ref. 451). • ABU Management of Change for Facilities and Operations: Upstream and Gas Standardised OE Process (Ref. 452).

Focus area or common expectation	Key processes
Environment	• Environment Risk Management Process (Ref. 183). • Quarantine Procedure Marine Vessels (Ref. 12).
Stakeholders	• Stakeholder Engagement: ABU Standardised OE Process (Ref. 197).
Common expectation	
Risk management	• ABU OE Risk Management Process (Ref. 453). • ABU OE Risk Management: RiskMan Procedure (Ref. 185).
Assurance	• OE Compliance and Assurance Standard (Ref. 454). • OE Corporate Standard Incident Investigation (Ref. 455). • OE Data Reporting Standard (Ref. 456.)
Contractor operational excellence management (COEM)	• ABU Contractor Operational Excellence Management: ABU OE Process (Ref. 457).
Incident investigation and reporting (II&R)	• II&R Execution Manual: Chevron Australia Incident Investigation and Reporting (Ref. 458).
Emergency management	• OPEP (Ref. 2). • OSM-BIP (Ref. 4). • Emergency Management: OE Execution Manual (Ref. 459).

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. 372) 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. 211) 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. 6) 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 Offshore Chemical Notification Scheme (OCNS) and Chemical Hazard Assessment and Risk Management (CHARM). Table 10-4 summarises the key assessment criteria applied within the HMEAT to support chemical selection and approval decisions, including the criteria used to determine when a chemical may

be accepted, requires further assessment and justification, or is not accepted without additional justification and approval.

Table 10-4: Chemical assessment criteria

Classification	Criteria
CHARM Gold or Silver; OCNS Group D or E; no substitution warning	Accepted for use and discharge, provided the product is technically suitable for the intended application and does not contain CAPL-prohibited ingredients.
CHARM White, Blue, Orange or Purple; OCNS Group A, B or C; or product with a substitution warning	Subject to further environmental assessment and justification. Where technically suitable alternatives are available, substitution will be considered as part of the chemical selection process. Where substitution is not practicable, additional justification is required to demonstrate that environmental risks are reduced to levels that are ALARP and acceptable.
Products not listed under OCNS or CHARM	Subject to a detailed HMEAT assessment using available persistence, bioaccumulation and toxicity data. Chemical hazard is considered together with application and environmental sensitivity to determine the final Environmental Hazard Category. The HMEAT methodology is aligned with the environmental hazard principles of the OCNS non-CHARM framework.
Products containing CAPL-prohibited ingredients	Not approved for use or discharge. Note: CAPL-prohibited ingredients and uses are identified in the Hazardous Materials Management Procedure (Ref. 6).
Chemical mixtures and fluid systems (e.g. WBF, NADF, treated water)	Assessment will be undertaken at both the product and constituent level. Individual components will be assessed for toxicity, persistence and bioaccumulation using available OCNS, Harmonised Offshore Chemical Notification Format, supplier and published environmental data. In accordance with the HMEAT methodology, the chemical properties ranking is based on the relevant worst-case constituent hazard characteristics together with application-specific factors including dosage, discharge quantity and frequency, and environmental sensitivity to determine the final Environmental Hazard Category. Where OCNS-registered products or components are available, their published OCNS classifications will be used to support the assessment. Opportunities to substitute individual formulation components with less environmentally hazardous alternatives will also be considered where technically suitable.
Products with expired OCNS registration or equivalent chemical registration	Not approved for selection or use during the petroleum activity unless current registration or equivalent environmental information to support assessment through the HMEAT is available and the product has been reassessed and accepted prior to use.

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 10-5. 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.

Table 10-5: 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. 460).
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.

Where detailed assessment is required, the HMEAT determines a final Environmental Hazard Category based on the chemical properties assessment and consideration of the proposed application and environmental sensitivity. The final Environmental Hazard Category informs the chemical approval decision as identified in Table 10-6.

Table 10-6: HMEAT environmental hazard category and approval

HMEAT environmental hazard category	Approval outcome
Low—Category 5 or 6	Accepted for use and discharge, subject to completion of the applicable HMEAT approval requirements.
Medium—Category 3 or 4	May be accepted subject to the additional justification and approval requirements specified by the HMEAT, including consideration of substitution where applicable.
High—Category 1 or 2	Not accepted unless additional case-specific justification is provided and the applicable escalation and approval requirements specified by the HMEAT are satisfied. The justification must demonstrate why a less environmentally hazardous technically suitable alternative is not reasonably practicable and that the associated environmental impacts and risks are reduced to ALARP and acceptable levels.

Chemical selection is undertaken prior to use. Where there is a change to the chemical composition, intended application, dosage, discharge volume, discharge pathway, or environmental approval requirements, that may affect the existing assessment, the product will be reassessed through the HMEAT process. In addition, an annual review of chemicals discharged to the marine environment is undertaken, including verification of current OCNS rankings, substitution warning status, and product registration status. Where the review identifies an expired registration, revised OCNS ranking, new or revised substitution warning, availability of a less environmentally hazardous technically suitable alternative, or other information that may materially affect the existing assessment, the product will be reassessed through the HMEAT prior to further use or discharge.

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.

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. 451) 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. 452) 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. 4]) is reviewed annually. This review incorporates changes to knowledge of the receiving environment (e.g. EPBC listed species, Part 3 statutory instruments [recovery plans, conservation advices, wildlife conservation plans, or threat abatement plans], management 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. 183) 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. 12) 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. 12), 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 sea water 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. 12), 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. 197) 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 10-7.

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 10-7: 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 24 to 48 hours before commencing activities, or as otherwise agreed with AMSA.	Once, prior to activities commencing.
Relevant persons (that have requested	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.

Relevant person	Notification or ongoing consultation requirement	Timing	Frequency
ongoing notifications) including: • AFMA • Santos • Tuna Australia • WAFIC.	CAPL will provide notification following completion of the petroleum activity.	Within two weeks of completion of activities.	Once post activity completion.
Relevant persons (that have requested ongoing notifications) including: • Tuna Australia.	CAPL will provide a pre-start notification confirming the start date of the petroleum activity.	At least 48 hours before commencing activities.	Once, prior to activities commencing.
Potentially affected relevant persons and/or relevant persons that have requested emergency event notifications, including: • DBCA's Pilbara regional office • WAFIC • 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 values or features that may be present within the Hydrocarbon EMBA (refer to Section 10.3.4.3).	Ongoing.	Ongoing.
	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.

Relevant person	Notification or ongoing consultation requirement	Timing	Frequency
	CAPL to advise of any new or significant changes to activities or impacts/risks within the scope of the EP, following an evaluation as per Section 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 10.3.4.1), plus any others identified from the oil spill trajectory modelling. This engagement will include WAFIC and any potentially affected commercial fisheries as required. The process for reaching out to these relevant persons includes direct contact (phone or email) or indirect contact via the CAPL website.

In the event of other emergency events (e.g. potential reportable incident), CAPL will commence any emergency management as required (and in accordance with Section 10.3.9), and consultation with required departments or agencies will occur as per regulatory requirements (e.g. refer to Table 10-15 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 10-7).

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
- 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 10-8 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 10-9.

Table 10-8: 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 10-9: 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. 453) 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. 450) and ISO 31000:2018 Risk Management (Ref. 186).

The Risk Management Process (Ref. 453), ERMP (Ref. 183), and the MoC Process (Ref. 452) 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. 454) 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. 461) 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. 454), 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.

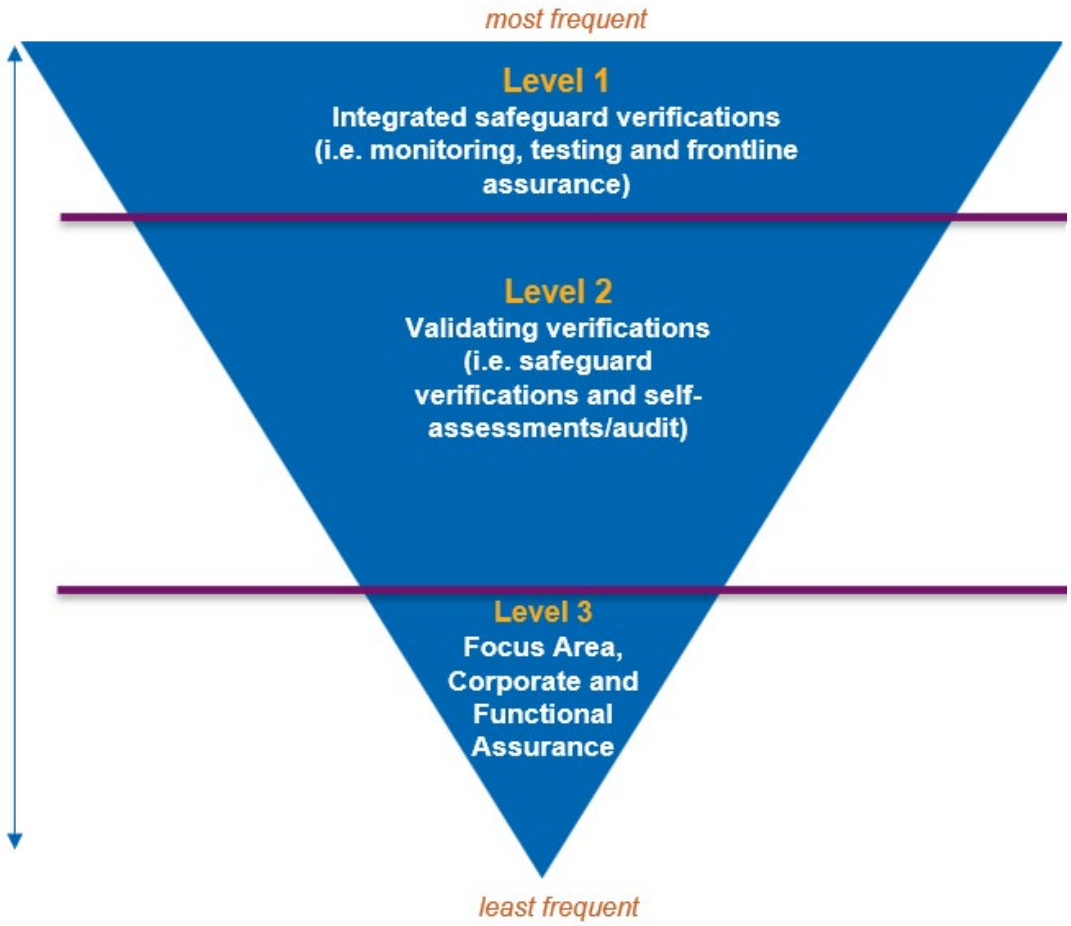


Figure 10-4: Integrated assurance system

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 Compliance and Assurance Standard (Ref. 454). 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. 455) and OE Data Reporting Standard (Ref. 456). 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. 457) 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. 458) 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 8.13 and 8.14, 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. 462) and is consistent with the core aspects presented in the IMO equivalent courses.

The ERO comprises the groups listed in Table 10-10; 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. 463).

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 10-10: Emergency management teams

Team	Description
Tier 1 (CAPL)	
On-site Response Team (ORT)	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).
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
Perth Emergence Management Team (PEMT)	The PEMT is led by an IC and operates out of a Perth-based emergency command centre. The PEMT may be activated in a support role to assist IEMTs with the emergency response to major incidents that require coordination of further resources, personnel, and support. If required, incident control may also be transferred from the 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. 459) 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. 459) 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. 464).

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.

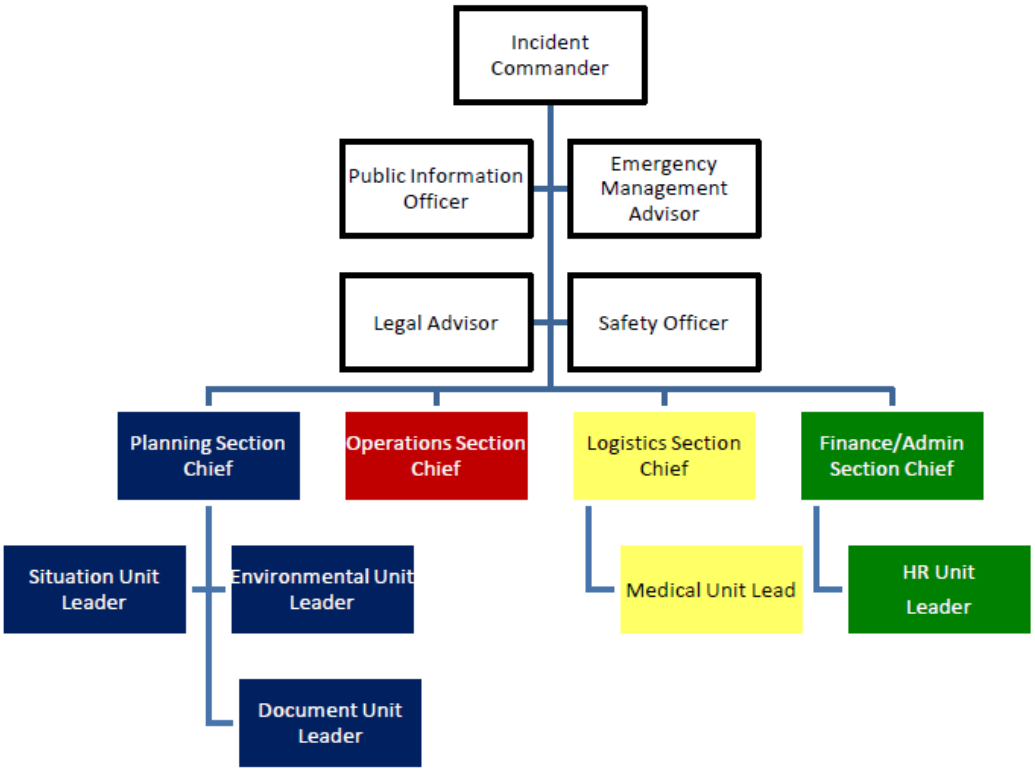


Figure 10-5: Basic IEMT organisation chart



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 10-12 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. 459).

Table 10-11: Key roles and responsibilities for 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

Role	Responsibilities
	• Disseminates information to the IC and other members of the IEMT.
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 Australian Energy Producers (AEP) guidance on knowledge requirements for incident management teams (Ref. 465), specifically the general knowledge requirements for all EMT members and the EMT function specific knowledge requirements.

Specific details on the oil spill training packages, including their content and alignment with the AEP guidance, and role specific training requirements are provided in the Training and Exercise Procedure (Appendix G of the OPEP).

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, 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. 466) provides a real 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 8.14 of this EP), the tool can demonstrate that sufficient capability is in place.

The PEMT Oil Spill Response Resource Assessment Tool (Ref. 466) 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. 459).

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. 466). 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. 467) 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. 468) 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. 468) outlines the proposed testing arrangements to be completed, including the exercise types (Table 10-12) and proposed level of response to be tested (Table 10-13) that may be used to meet the defined objectives.

Table 10-12: 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 10-13: 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	Details
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 • 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. 45).

Control measure **CM-12** 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[183] (see Section 8.5). Table 10-14 describes the Extended Caution Zones for respective vessel types and activities.

Control measures **CM-14a and CM-14b** have been developed for vessels using DP to hold station (see Section 8.5) and requires adoption of a Pre Start-up Observation Period for pygmy blue whales within the Potential Behavioural Disturbance Zone. For **CM-14a and CM-14b**, Figure 10-8 shows the process

[183] Note: As described in Table 8-25 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.

followed by bridge-watch on the vessel and Table 10-14 describes the relevant Potential Behavioural Effect Zones. The Potential Behavioural Effect Zones are based on the results of animat modelling presented in Section 8.5.

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 zones may be reviewed and revised in accordance with the MoC process (Section 10.3.2.2).

Table 10-14: Caution zones and potential behaviour effect zones based on vessel and activity type

Vessel and activity	Extended Caution Zone[184]	Potential Behavioural Effect Zone[184]
Vessels[185] operating on the continental shelf[186]	3.82 km	3.82 km
Vessels operating on the continental slope	0.65 km	0.65 km

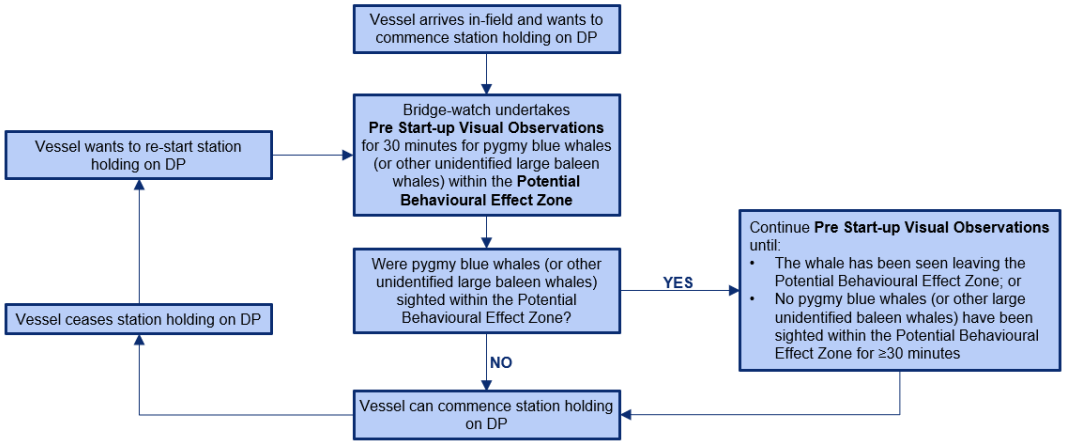


Figure 10-8: Pre start-up visual observations action flow chart for commencing station holding on DP

10.5 Management framework for acoustic (SBP) surveys

Control measures **CM-17a and CM-17b** have been developed for vessels undertaking SBP surveys (see Section 8.6) and requires the use of a Pre Start-up Observation Period. For **CM-17a and CM-17b**, 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.

[184] 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.

[185] The source levels used for acoustic and animat modelling are shown in Table 8-18. The acoustic and animat modelling was based on the presence of both a survey vessel and a support vessel; and as such the use of these results is a conservative representation of caution zone/predicted behavioural effect zone.

[186] Where the change between 'continental shelf' and 'continental slope' is defined as the 200 m water depth contour.

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).

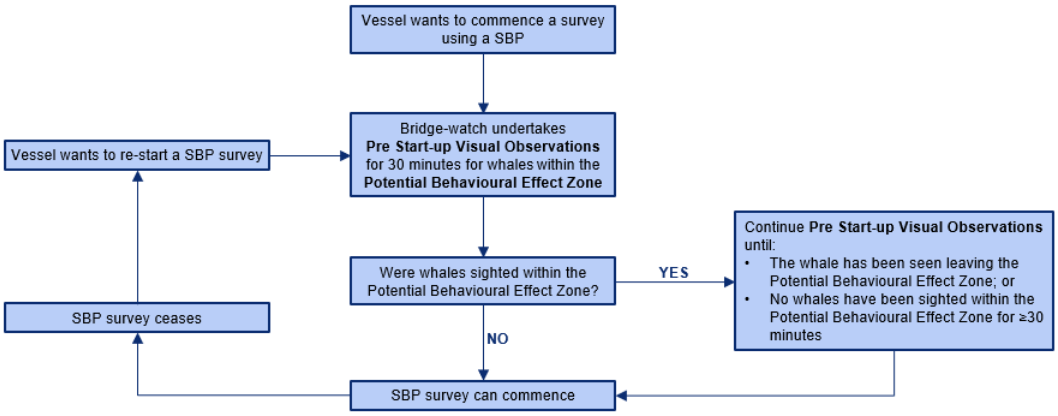


Figure 10-9: Pre start-up visual observations action flow chart for commencing SBP surveys

10.6 Seabird management procedure

The National Light Pollution Guidelines for Wildlife (Ref. 13) 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. 13) and migratory shorebirds (Table 11 of Appendix H; Ref. 13). 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. 324) 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. 324) 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. 4), which is identified as a control measure in Section 8.14. 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 10-15. Additional incident reporting as required by other legislation or guidelines are also included Table 10-15.

Table 10-15: 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 and 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. 469), 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 8.10) • Loss of containment (vessel collission event) (Section 8.14). 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: • 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.	Report verbally to **NOPSEMA** as soon as practicable and no later than two hours after the first occurrence of the incident or the time 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. 199). 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
Marine oil pollution incidents that are or have the potential to impact land or water within Western Australian State jurisdiction	Reported as soon as practicable: 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 10-16. Routine notifications required by regulation 54 of the OPGGS(E)R, and additional notifications as required by other legislation are also included in Table 10-16.

Table 10-16: 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 described 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. 470).
Notification of start and end of activity—Regulation 54			
Notification of start of activity	CAPL must complete Form FM1405 (Ref. 471) 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 (Ref. 471) 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	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.

Reporting requirement	Description	Reporting to	Timing
	sufficient to enable the article to be located.		

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 in particular 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 and Sciences
ABF	Australian Border Force
ABU	Australian Business Unit
ACMA	Australian Communications and Media Authority
ACN	Australian Company Number
AEP	Australian Energy Producers
AFMA	Australian Fisheries Management Authority
AHO	Australian Hydrographic Office
AIMS	Australian Institute of Marine Science
AINJ	Auditory injury
AIS	Automated identification system
AL	Acceptable level
ALARP	As low as reasonably practicable
AMOSC	Australian Marine Oil Spill Response Centre
AMP / AMPs	Australian Marine Park(s)
AMSA	Australian Maritime Safety Authority
AMSIS	Australian Marine Spatial Information System
ANZG	Australian and New Zealand Guidelines
ART	Advisory and Resource Team
AUV / AUVs	Autonomous underwater vehicle(s)
BAC	Baiyungu Aboriginal Corporation
Ballast Water Convention	International Convention for the Control and Management of Ships' Ballast Water and Sediments 2004
BCH	Benthic communities and habitats
BIA / BIAs	Biologically important area(s)
BPT	Ball penetrometer test
BTAC	Buurabalayji Thalanyji Aboriginal Corporation
BTEX	Benzene, toluene, ethylbenzene, xylene
BWMS	Ballast Water Management System
C&D	Chrysaor and Dionysus
CALM Act	*Conservation and Land Management Act 1984* (WA)
CAPL	Chevron Australia Pty Ltd
Cefas	Centre for Environment, Fisheries and Aquaculture Science
CER	Clean Energy Regulator
CHARM	Chemical Hazard Assessment and Risk Management

Acronym / Abbreviation	Definition
Chirp	Compressed high-intensity radar pulse
CI	Confidence interval
CM	Control measure
CMT	Crisis Management Team
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2-e	Carbon dioxide equivalent
COEM	Contractor operational excellence management
COLREGS	Convention on the International Regulations for Preventing Collisions at Sea
CoW	Control of work
CSIRO	Commonwealth Scientific and Industrial Research Organisation
Cth	Commonwealth
DAFF	Department of Agriculture, Fisheries and Forestry
DBCA	(Western Australian) Department of Biodiversity, Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, Environment and Water
DEED	(Western Australian) Department of Energy and Economic Diversification
DFAT	Department of Foreign Affairs and Trade
DGV / DGVs	Default guideline value(s)
DISR	Department of Industry, Science and Resources
DMPE	(Western Australian) Department of Mines, Petroleum and Exploration
DNP	Director of National Parks
DoD	Department of Defence
DP	Dynamic positioning
DPIRD	(Western Australian) Department of Primary Industries and Regional Development
DPLH	(Western Australian) Department of Planning, Lands and Heritage
DTMI	(Western Australian) Department of Transport and Major Infrastructure
DWER	(Western Australian) Department of Water and Environment
ECCI	Exmouth Chamber of Commerce and Industry
EEZ	Exclusive Economic Zone
EMBA	Environment that may be affected
EMT	Emergency management team
ENGO / ENGOs	Environmental non–government organisation(s)
EP / EPs	Environment Plan(s)
EPA	(Western Australian) Environmental Protection Authority

Acronym / Abbreviation	Definition
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
EPBC Regulations	Environment Protection and Biodiversity Conservation Regulations 2025 (Cth)
EPO / EPOs	Environmental performance outcome(s)
EPS / EPSs	Environmental performance standard(s)
ERAM	Environmental Risk Assessment Management
ERMP	Environment Risk Management Process
ERO	Emergency Response Organisation
ERT	Emergency Response Team
ESD	Ecologically sustainable development
FCA	Federal Court of Australia
FCAFC	Full Court of the Federal Court of Australia
FT / FTs	Function Team(s)
GDC	Gascoyne Development Commission
GFP	Gorgon Foundation Project
GHG	Greenhouse gas
GJCRC	Gascoyne Junction Community Resource Centre
Gorgon Backfill Fields Development OPP	Gorgon Gas Development: Backfill Fields Offshore Project Proposal
GS2	Gorgon Stage 2
GS3	Gorgon Stage 3
GTP	Gas Treatment Plant
HCTS	Habitat critical to the survival
HF	High frequency (cetaceans)
HFO	Heavy fuel oil
HMEAT	Hazardous Material Environment Assessment Tool
HSE	Health, safety and environment
HWM	High water mark
IC	Incident Commander
IChEMS	Industrial Chemicals Environmental Management Standard
ICM	Incident Command System
IEMT	Installation Emergency Management Team
II&R	Incident investigation and reporting
IMCRA	Integrated Marine and Coastal Regionalisation of Australia
IMO	International Maritime Organization
IMP / IMPs	Invasive marine pest(s)
IMR	Inspection, maintenance, and repairs
IMS	Incident Management System

Acronym / Abbreviation	Definition
IPCC	Intergovernmental Panel on Climate Change
IPIECA	International Petroleum Industry Environmental Conservation Association
ISO	International Organization for Standardization
ISQG	Interim Sediment Quality Guideline
ITOPF	International Tanker Owners Pollution Federation Ltd
IUCN	International Union for Conservation of Nature
JASCO	JASCO Applied Sciences
JASMINE	ASCO Animal Simulation Model Including Noise Exposure
J-IC	Jansz-Io Compression
JRCC	Joint Rescue Coordination Centre
KDCCI	Karratha and Districts Chamber of Commerce and Industry
KEF / KEFs	Key ecological feature(s)
LF	Low frequency (cetaceans)
LGM	Last glacial maximum
LNG	Liquefied natural gas
LoR	Limit of reporting
MARPOL 73/78	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 Pty Ltd
MDO	Marine diesel oil
MEER	Maritime Environmental Emergency Response
MEG	Monoethylene glycol
MES	Monitoring, evaluation, and surveillance
MNES	Matters of national environmental significance
MoC	Management of change
MoU	Memorandum of Understanding
MPTS	Midline pipeline termination structure
MS	Ministerial Statement
mS/cm	Millisiemens per centimetre
MSC	Management system cycle
MSV	Multi-purpose survey vessel
MTWA	Marine Tourism Western Australia
NCG	Nhuwala Claimant Group
NDC / NDCs	Nationally Determined Contribution(s)
NEBA	Net environmental benefit analysis
NEPM	National Environment Protection Measure

Acronym / Abbreviation	Definition
NGER Act	*National Greenhouse and Energy Reporting Act 2007* (Cth)
nm	Nautical mile
NO_2	Nitrogen dioxide
NOAA	(United States) National Oceanic and Atmospheric Administration
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NOPTA	National Offshore Petroleum Titles Administrator
NT	Northern Territory
NTGAC	Nganhurra Thanardi Garrbu Aboriginal Corporation
NWMR	North-west Marine Region
NWS	North West Shelf
NWSTF	North West Slope Trawl Fishery
O_3	Ozone
OA / OAs	Operational Area(s)
OC	On-scene Commander
OCCI	Onslow Chamber of Commerce and Industry
OCNS	Offshore Chemical Notification Scheme
OE	Operational Excellence
OEMS	Operational Excellence Management System
OEUK	Offshore Energies UK
OMP / OMPs	Operational monitoring plan(s)
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
ORT	On-site Response Team
OSC	Operations Section Chief
OSM	Operational and scientific monitoring
OSM-BIP	Operational and Scientific Monitoring Bridging Implementation Plan
OSRL	Oil Spill Response Limited
OSRO / OSROs	Oil spill response organisation(s)
OWR	Oiled wildlife response
PAH / PAHs	Polycyclic aromatic hydrocarbon(s)
PAR	Pre-arrival reporting
PCPT	Piezocone penetration test
PEMT	Perth Emergence Management Team
PFOS	Perfluorooctanesulfonic acid
PK	Peak pressure level

Acronym / Abbreviation	Definition
PM_{10}	Particulate matter 10 micrometers or less in diameter
PMST	Protected Matters Search Tool
PPP	Protection Prioritisation Process
psu	Practical salinity unit
PTS	Permanent threshold shift
PTW	Permit to work
rms	Root mean square
RNTBC	Registered Native Title Body Corporate
ROV / ROVs	Remotely operated vehicle(s)
RRT / RRTs	Regional Response Team(s)
Safeguard Rule	National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015 (Cth)
SBP	Sub-bottom profiler
SBTF	Southern Bluefin Tuna Fishery
SC	Source control
SCSt	Subsea compression station
SEL	Sound exposure level
SHC	Shoreline clean-up
SIMOPS	Simultaneous operations
SMP / SMPs	Scientific monitoring plan(s)
SNA	Safe navigation area
SO_2	Sulfur dioxide
SOLAS	International Convention for the Safety of Life at Sea
SOPEP	Shipboard Oil Pollution Emergency Plan
SPL	Sound pressure level
SSS	Side-scan sonar
STCW	Standards of Training, Certification and Watchkeeping for Seafarers
t	Tonne
TBT	T-bar penetration test
TDS	Total dissolved solids
TEC / TECs	Threatened ecological community (communities)
THC	Total hydrocarbons
TN	Total nitrogen
TP	Total phosphorus
TPH	Total petroleum hydrocarbon
TRG	Tactical Response Guide
TRH	Total recoverable hydrocarbon
TTS	Temporary threshold shift
UCH	Underwater cultural heritage

Acronym / Abbreviation	Definition
UCH Act	*Underwater Cultural Heritage Act 2018* (Cth)
UK	United Kingdom
US	United States
USBL	Ultra-short baseline
VHF	Very high frequency (cetaceans)
VLF	Very low frequency (cetaceans)
WA	Western Australia
WAC	Wirrawandi Aboriginal Corporation
WAFIC	Western Australian Fishing Industry Council
WAMSI	Western Australian Marine Science Institute
WTBF	Western Tuna and Billfish Fishery
WWERT	World-Wide Emergency Response Team

12 References

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

Table 12-1: References

Ref No.	Description	Document ID
1.	NOPSEMA. 2024. *Form: Environment Plan Summary Statement*. National Offshore Petroleum Safety and Environmental Management Authority, Perth, Western Australia. Available from: https://www.nopsema.gov.au/document-hub/forms-and-templates [Accessed December 2025].	N-04750-FM1848 A662605
2.	CAPL. 2026. *Chevron ABU: Consolidated Oil Pollution Emergency Plan (OPEP)*. Chevron Australia, Perth, Western Australia.	ABU-COP-02788
3.	CAPL. 2025. *Gorgon Gas Development: Backfill Fields Offshore Project Proposal.* Revision 6.0. Chevron Australia, Perth, Western Australia. Available from: https://docs.nopsema.gov.au/A1265361 [Accessed December 2025].	ACP-0000-RGL-PLN-CVX-000-00001-00
4.	CAPL. 2026. *Operational and Scientific Monitoring Bridging Implementation Plan*. Chevron Australia, Perth, Western Australia.	ABU2502001 69
5.	Australian Government. 2014. *Streamlining Offshore Petroleum Environmental Approvals: Program Report*. Australian Government, Canberra, Australian Capital Territory. Available from: https://www.nopsema.gov.au/sites/default/files/documents/2021-03/Program-report-Streamlining-offshore-petroleum-environmental-approvals-February-2014.pdf [Accessed February 2026].	
6.	CAPL. 2026. *ABU Hazardous Materials Management Procedure: ABU Standardised OE Procedure*. Revision 4.0. Chevron Australia, Perth, Western Australia.	OE-03.11.1045
7.	DCCEEW. 2024. *Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters: Guidelines on the application of the Underwater Cultural Heritage Act 2018*. Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/sites/default/files/documents/guidelines-assessing-managing-impacts-underwater-cultural-heritage.pdf [Accessed April 2026].	
8.	CAPL. 2023. *Inadvertent Underwater Cultural Heritage Discovery Procedure: Chevron Australasian Business Unit*. Chevron Australia, Perth, Western Australia.	ABU-MST-00005
9.	DAWE. 2020. *Australian Ballast Water Management Requirements*. Version 8. Department of Agriculture, Water and the Environment, Canberra, Australian Capital Territory. Available from: https://www.agriculture.gov.au/sites/default/files/documents/australian-ballast-water-management-requirements.pdf [Accessed April 2026].	
10.	DAFF. 2023. *Australian biofouling management requirements for commercial vessels*. Version 4. Department of Agriculture, Fisheries and Forestry, Canberra, Australian Capital Territory. Available from: https://www.agriculture.gov.au/sites/default/files/documents/australian-biofouling-management-requirements-cv.pdf [Accessed April 2026].	
11.	Marine Pest Sectoral Committee. 2018. *National biofouling management guidelines for the petroleum production and exploration industry.* Version 1.0. Department of Agriculture and Water Resources, Canberra, Australian Capital Territory. Available from:	

Ref No.	Description	Document ID
	https://www.marinepests.gov.au/sites/default/files/Documents/petroleum-exploration-biofouling-guidelines.pdf [Accessed April 2026].	
12.	CAPL. 2020. *Quarantine Procedure: Marine Vessels*. Revision 2. Chevron Australia, Perth, Western Australia.	OE-07.08.1010
13.	DCCEEW. 2023. *National Light Pollution Guidelines for Wildlife.* Version 2.0. Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/sites/default/files/documents/national-light-pollution-guidelines-wildlife.pdf [Accessed April 2026].	
14.	CoA. 2017. National Strategy for Reducing Vessel Strike on Cetaceans and other Marine Megafauna. Commonwealth of Australia, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/sites/default/files/documents/vessel-strike-strategy.pdf [Accessed April 2026].	
15.	NOPSEMA. 2025. *Guidance note: Environment plan content requirements*. National Offshore Petroleum Safety and Environmental Management Authority, Perth, Western Australia. Available from: https://www.nopsema.gov.au/sites/default/files/documents/Environment%20Plan%20Content%20Requirements%20Guidance%20Note.pdf [Accessed December 2025].	N-04750-GN1344 A339814
16.	NOPSEMA. 2025. *Information Paper: Application of oil spill modelling in Environment Plans*. National Offshore Petroleum Safety and Environmental Management Authority, Perth, Western Australia. Available from: https://www.nopsema.gov.au/sites/default/files/documents/N-04750-IP2376%20-%20Application%20of%20oil%20spill%20modelling%20in%20Environment%20Plans%20%28A1289237%29.pdf [Accessed December 2025].	N-04750-IP2376, A1289237
17.	DCCEEW. 2025. *Protected Matters Search Tool.* Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/environment/epbc/protected-matters-search-tool [Accessed February 2026].	
18.	EPA. 2016. *Technical Guidance: Protection of Benthic Communities and Habitats.* Environmental Protection Authority, Government of Western Australia. Available from: https://www.epa.wa.gov.au/policies-guidance/technical-guidance-protection-benthic-communities-and-habitats [Accessed January 2026].	
19.	DSEWPC. 2012. *Marine bioregional plan for the North-west Marine Region, prepared under the Environment Protection and Biodiversity Conservation Act 1999*. Australian Government, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/sites/default/files/env/pages/1670366b-988b-4201-94a1-1f29175a4d65/files/north-west-marine-plan.pdf [Accessed January 2026].	
20.	DEWHA. 2008. *The North-west Marine Bioregional Plan – Bioregional Profile.* Department of the Environment, Water, Heritage and the Arts, Canberra, Australian Capital Territory. Available from: https://library.dbca.wa.gov.au/FullTextFiles/079395.pdf [Accessed January 2026].	
21.	Harris, P., Heap, A., Passlow, V., Sbaffi, L., Fellows, M., Porter-Smith, R., Buchanan, C. and Daniell, J. 2005. *Geomorphic Features of the Continental Margin of Australia.* Record 2003/30. Geoscience Australia, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/sites/default/files/documents/nmb-geomorphic-report.pdf [Accessed May 2026].	

Ref No.	Description	Document ID
22.	Baker, C., Potter, A., Tran, M., and Heap, A. 2008. *Sedimentology and Geomorphology of the North West Marine Region of Australia: A Spatial Analysis*. Record 2008/07. Geoscience Australia, Canberra, Australian Capital Territory. Available from: https://library.dbca.wa.gov.au/FullTextFiles/070992.pdf [Accessed May 2026].	
23.	Brewer, D., Vincent, L., Skewes, T., and Rothlisberg, P. 2007. *Trophic systems of the North-west Marine Region*. CSIRO Marine and Atmospheric Research, Cleveland, Queensland. Available from: https://www.agriculture.gov.au/sites/default/files/documents/nw-trophic-systems.pdf [Accessed May 2026].	
24.	CSIRO. 2015. *Marine Benthic Substrate Database – CAMRIS – Marsed – V.1*. CSIRO. Data Collection. Available from: https://data.csiro.au/collection/csiro:12843v1 [Accessed: January 2026].	
25.	Advisian. 2019. *Scarborough Offshore Benthic Marine Habitat Assessment*. Prepared for Woodside Energy Limited by Advisian, Perth, Western Australia.	
26.	RPS. 2012. *Sediment quality surveys March-April 2011. Greater Western Flank Marine Environmental Baseline Studies*. RPS Environment and Planning Pty Ltd, Perth.	
27.	IRC Environment. 2005. *Jansz Pipeline Benthic Fauna Survey*. Rev 0. Unpublished report prepared for Chevron Australia by IRC Environment, Perth, Western Australia.	
28.	Chevron Australia. 2019. *Jansz Io Compression Benthic Video Footage Review.* Chevron Australia, Perth, Western Australia.	G7-NTREPX 0000239
29.	Heyward, A., Rees, M., Wolff, C., Smith, L. 2001. *Exploration of Biodiversity – Data Report on Benthic Habitats and Biological Collections from an Initial Benthic Survey Conducted in the Region of WA-271-P*. Draft Report prepared for Woodside Energy Limited by Australin Institute of Marine Science.	
30.	DEH. 2006. *A Guide to the Integrated Marine and Coastal Regionalisation of Australia – (IMCRA) Version 4.0*. Department of the Environment and Energy and Heritage, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/sites/default/files/env/resources/2660e2d2-7623-459d-bcab-1110265d2c86/files/imcra4.pdf [Accessed May 2026].	
31.	Advisian. 2025. *Gorgon Backfill Fields Benthic Survey 2022: Survey Report*. Report prepared for Chevron Australia by Advisian Pty Ltd, Perth, Western Australia.	ABU2301000 68
32.	Sharplies, C., Mount, R., Pedersen, R., Lacey, M., Newton, J., Jaskierniak, D., and Wallace, L. 2009. *The Australian Coastal Smartline Geomorphic and Stability Map Version 1: Project Report*. Prepared by University of Tasmania, for Geoscience Australia and Department of Climate Change, Australian Government.	
33.	Geoscience Australia. 2017. *Geomorphology Smartline Geopackage*. Geoscience Australia, Canberra, Australian Capital Territory. Available from: https://ecat.ga.gov.au/geonetwork/srv/eng/catalog.search#/metadata/104160 [Accessed May 2026].	
34.	Lucieer, V., Walsh, P., Monk, J., and Flukes, E. 2026. *Seamap Australia National Benthic Habitat Layer (NBHL)*. Institute for Marine and Antarctic Studies, University of Tasmania. Available from: https://metadata.imas.utas.edu.au/geonetwork/srv/api/records/4739e4b0-4dba-4ec5-b658-02c09f27ab9a?language=eng#:~:text=The%20Seamap%20Australia%20	

Ref No.	Description	Document ID
	NBHL%20is,Australia%27s%20state%20and%20territory%20providers [Accessed May 2026].	
35.	DEC. 2007. *Management Plan for the Montebello/Barrow Islands Marine Conservation Reserves 2007-2017*. Management Plan No 55. Department of Environment and Conservation, Western Australian Government. Available from: https://library.dbca.wa.gov.au/FullTextFiles/024318.pdf [Accessed May 2026].	
36.	Geoscience Australia. 2023. *Australian Marine Spatial Information System (AMSIS) Map Viewer*. Geoscience Australia, Canberra, Australian Capital Territory. Available from: https://experience.arcgis.com/experience/ddbe3c0f2f6448f3a594a54833fcf9a9/page/Homepage?dlg=dialog_7 [Accessed May 2026].	
37.	DCCEEW. [no date]. *Find Environmental Data*. Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://fed.dcceew.gov.au/ [Accessed May 2026].	
38.	DCCEEW. 2026. *Biologically Important Areas for protected marine species (BIAs)*. Department of Climate Change, Energy, the Environment and Water, Australian Government, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/environment/marine/bias [Accessed May 2026].	
39.	DoE. 2013. *Matters of National Environmental Significance: Significant impact guidelines 1.1, Environment Protection and Biodiversity Conservation Act 1999*. Department of the Environment, Australian Government, Canberra, Australian Capital Territory. Available from https://www.dcceew.gov.au/environment/epbc/publications/significant-impact-guidelines-11-matters-national-environmental-significance [Accessed May 2026].	
40.	Accomando, A., Finneran, J., Henderson, E., Jenkins, K., Kotecki, S., Martin, C., Mulsow, J., and Zapetis, M. 2025. *Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase 4)*. Revision 2025.1. Report by NIWC Pacific and National Marine Mammal Foundation for the US Navy. Available from: https://www.nepa.navy.mil/Portals/20/Documents/Phase%204%20Acoustic%20and%20Explosive%20Criteria%20Final%20APR2025.1.pdf [Accessed May 2026].	
41.	NOPSEMA. 2026. *Environment Bulletin: Underwater sound impact evaluation – Auditory effects criteria for marine mammals and turtles*. National Offshore Petroleum Safety and Environmental Management Authority, Perth, Western Australia. Available from: Environment Bulletin - Underwater sound impact evaluation - Auditory effects criteria for marine mammals and turtles (A1301427).pdf [Accessed May 2026].	A1301427
42.	Chevron Australia. 2019. *Jansz-Io Soundscape Monitoring: Marine fauna acoustic detections 1 Jan to 31 Dec 2019.* Chevron Australia, Perth, Western Australia.	ABU-220200056
43.	Erbe, C., Sidenko, E., Figueroa, M.L., Gavrilov, A., Wei, C., and McCauley, R. 2023. *Soundscape Monitoring at the Jansz-Io Compression (JIC) Site 2021–2023.* Report by Centre for Marine Science and Technology for Chevron Australia. CMST 1537 / Report 2023-13.	G7-TE-H-UG00-STYX001
44.	McCauley R.D. and Jenner C. 2010. *Migratory patterns and estimated population size of pygmy blue whales (Balaenoptera musculus brevicauda) traversing the Western Australian coast based on passive acoustics*. Paper SC/62/SH26 presented to the IWC Scientific Committee.	

Ref No.	Description	Document ID
45.	Commonwealth of Australia. 2015. C*onservation Management Plan for the Blue Whale (2015-2025), A Recovery Plan under the Environment Protection and Biodiversity Conservation Act 1999.* Department of the Environment, Commonwealth of Australia, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/sites/default/files/documents/blue-whale-conservation-management-plan.pdf [Accessed January 2026].	
46.	McCauley, R., Erbe, C., Jenner, C., Jenner, M-N., Browne, C. and Gavrilov, A. 2025 [Draft]. *Pygmy Blue and Omura's Whale Acoustic Detections, JIC and surrounding regions, 2019–2023.* CMST 1537 / Report 2025-02. Report prepared by CMST for Chevron Australia.	
47.	Gavrilov A. N., McCauley R. D., Paskos G. and Alexey G. 2018. Southbound migration corridor of Pygmy Blue Whales off the northwest coast of Australia based on data from ocean bottom seismographs. *The Journal of the Acoustical Society of America*, 144, EL281–EL285.	
48.	Double, M.C. Jenner, K.C.S., Jenner, M-N., Ball, I., Laverick, S. and Gales, N., 2012. *Satellite tracking of pygmy blue whales (Balaenoptera musculus brevicauda) off Western Australia.* Final Report – May 2012. Australian Marine Mammal Centre	
49.	Gales, N., Double, M. C., Robinson, S., Jenner, C., Jenner, M, King, E. & Paton, D. 2010. Satellite tracking of Australian humpback (Megaptera novaeangliae) and Pygmy Blue Whales (Balaenoptera musculus brevicauda). *62nd Scientific Committee of the International Whaling Commission (IWC62).* Available from: https://www.marinemammals.gov.au/site/assets/files/1080/sc-62-sh21.pdf [Accessed January 2026].	
50.	Branch, T. A., Matsuoka, K. and Miyashita, T. 2004. Evidence for increases in Antarctic blue whales based on Bayesian modelling. *Marine Mammal Science* 20(4), 726-754.	
51.	Double, M. C., Andrews-Goff, V., Jenner, K. C. S., Jenner, M-N., Laverick, S. M., et al. 2014. Migratory Movements of Pygmy Blue Whales (Balaenoptera musculus brevicauda) between Australia and Indonesia as Revealed by Satellite Telemetry. *PLoS ONE*, 9(4), e93578.	
52.	Kahn, B., 2007. *Blue whales of the Savu Sea, Indonesia. In: Biannual Marine Mammal Conference –– Blue Whale Workshop.* Cape Town, South Africa. 28 Nov–3 Dec 2007.	
53.	Thums, M., Ferreira, L.C., Jenner, C., Jenner, M., Harris, D., Davenport, A., Andrews-Goff, V., Double, M., Moller, L., Attard, C.R.M., Bilgmann, K., Thomson, P.G., and McCauley, R. 2022. Pygmy blue whale movement, distribution and important areas in the Eastern Indian Ocean. *Global Ecology and Conservation*, 35, e02054.	
54.	McCauley, R. D., Gavrilov, A. N., Jolliffe, C. D., Ward. R., and Gill P. C. 2018. Pygmy blue and Antarctic blue whale presence, distribution and population parameters in southern Australia based on passive acoustics. Deep Sea Research Part II: Topical Studies in *Oceanography*. Volumes 157–158, November–December 2018, Pages 154-168. https://doi.org/10.1016/j.dsr2.2018.09.006.	
55.	Ferreira, L., Jenner, C., Jenner, M., Udyawer, V., Radford, B., Davenport, A., Moller, L., Andres-Goff, V., Double, M., and Thums, M. 2024. Predicting suitable habitats for foraging and migration in Eastern Indian Ocean pygmy blue whales from satellite tracking data. *Movement Ecology*, 12(42). https://doi.org/10.1186/s40462-024-00481-x.	
56.	Gill, P.C., Morrice, M.G., Page, B., Pirzl, R., Levings, A.H., Coyne, M. 2011. Blue whale habitat selection and within-season distribution in a	

Ref No.	Description	Document ID
	regional upwelling system off southern Australia. *Marine Ecology Progress Series*, 421, 243–263.	
57.	Thums, M., Ferreira, L.C., Davenport, A., Jenner, M., Möller, L., Russell, G., McCauley, R.D. and Jenner, C. 2025. Tracking pygmy blue whale diving behaviour and validation of foraging areas defined from horizontal movement data. *Global Ecology and Conservation*, Volume 57, 2025, e03362. doi.org/10.1016/j.gecco.2024.e03362.	
58.	Pendleton, D.E., Holmes, E.E., Redfern, J., Zhang, J., 2020. Using modelled prey to predict the distribution of a highly mobile marine mammal. *Diversity and Distributions*. 26, 1612–1626. https://doi.org/10.1111/ddi.13149	
59.	Rennie, S., Hanson, C.E., McCauley, R.D., Pattiaratchi, C., Burton, C., Bannister, J., Jenner, C., and Jenner, M-N. 2009. Physical properties and processes in the Perth Canyon, Western Australia: Links to water column production and seasonal pygmy blue whale abundance. *Journal of Marine Systems*. 77 (1-2): pp. 21-44. https://doi.org/10.1016/j.jmarsys.2008.11.008.	
60.	Truong, G. and Rogers, T.L. 2023. La Niña conditions influence interannual call detections of pygmy blue whales in the eastern Indian Ocean. *Frontiers in Marine Science*. 9(2022). doi:10.3389/fmars.2022.850162.	
61.	Pattiaratchi, C. 2023. *Environmental factors supporting probable foraging habitat of cetaceans in an area surrounding the proposed JIC subsea compression facility*. Report prepared by the University of Western Australia for Chevron Australia.	G7-TE-HUG00TCNX002
62.	McCauley, R.D. and Erbe, C. 2025. *Sonar Biomass Surveys at JIC.* CMST 1537 / Report 2025-03. Report prepared by Centre for Marine Science and Technology, Curtin University for Chevron Australia.	G7-NT-REPX0000618
63.	Owen, K., Jenner, C., Jenner, M., and Andrews, R. 2016. A week in the life of a pygmy blue whale: migratory dive depth overlaps with large vessel drafts. *Animal Biotelemetry* 4:17. https://doi.org/10.1186/s40317-016-0109-4.	
64.	Torres, L., Barlow, D., Chandler, T., Burnett, J. 2020. Insight into the kinematics of blue whale surface foraging through drone observations and prey data. *Peer J* 8:e8906 https://doi.org/10.7717/peerj.8906.	
65.	Gill, P. 2002. A blue whale (*Balaenoptera musculus*) feeding ground in a southern Australian coastal upwelling zone. *The Journal of Cetacean Research and Management* 4(2) 179-184. https://doi.org/10.47536/jcrm.v4i2.854.	
66.	Schoenherr, J.R. 1991. Blue whales feeding on high concentrations of euphausiids around Monterey Submarine Canyon. *Canadian Journal of Zoology*. 69(3). https://doi.org/10.1139/z91-088.	
67.	Doniol-Valcroze, T., Lesage, V., Giard, J. and Michaud, R. 2011.Optimal foraging theory predicts diving and feeding strategies of the largest marine predator. *Behavioral Ecology*. 22(4): 880–888. https://doi.org/10.1093/beheco/arr038	
68.	Buchan, S.J. and Quinones, R.A. 2016. First insights into the oceanographic characteristics of a blue whale feeding ground in northern Patagonia, Chile. *Marine Ecological Progress Series*. 554: 183-199. doi: 10.3354/meps11762.	
69.	Silk, J.R.D., Thorpe, S.E., Fielding, S., Murphy, E.J., Trathan, P.N., Watkins, J.L. and Hill, S.L. 2016. Environmental correlates of Antarctic krill distribution in the Scotia Sea and southern Drake Passage. *ICES*	

Ref No.	Description	Document ID
	Journal of Marine Science. 73(9): 2288–2301. https://doi.org/10.1093/icesjms/fsw097.	
70.	DSEWPaC. 2011. *Approved Conservation Advice for Aipysurus foliosquama (Leaf-scaled Sea Snake).* Department of Sustainability, Environment, Water, Population and Communities, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/biodiversity/threatened/species/pubs/1118-conservation-advice.pdf [Accessed May 2026].	
71.	DSEWPaC. 2011. *Approved Conservation Advice for Aipysurus apraefrontalis (Short-nosed Sea Snake).* Department of Sustainability, Environment, Water, Population and Communities, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/biodiversity/threatened/species/pubs/1115-conservation-advice.pdf [Accessed May 2026].	
72.	Webb, G.J.W. & H. Messel. 1978. Movement and dispersal patterns of Crocodylus porosus in some rivers of Arnhem Land, northern Australia. *Australian Wildlife Research*. 5:263-283.	
73.	Commonwealth of Australia. 2017. *Recovery Plan for Marine Turtles in Australia, 2017-2027*. Department of the Environment and Energy, Commonwealth of Australia, Canberra, Australian Capital Territory. Available from: https://www.agriculture.gov.au/sites/default/files/documents/recovery-plan-marine-turtles-2017.pdf [Accessed February 2026].	
74.	Miller, J.D. 1996. *Reproduction in Sea Turtles. In: The Biology of Sea Turtles* (eds P.L. Lutz & J.A. Musick), Vol. 1, pp. 51-81. CRC Press, Boca Raton.	
75.	BMT. 2021. *Predicting the dispersal of flatback turtle hatchlings from the eastern beaches of Barrow Island. Rev. 1.* Unpublished report prepared for Chevron, Perth, Western Australia.	ABU2007000 72
76.	Chevron Australia. 2018. *Gorgon Gas Development and Jansz Feed Gas Pipeline: Long-term Marine Turtle Management Plan*. Chevron Australia, Perth, Western Australia.	GOR-COP01728
77.	Pendoley, K. L. 2005. *Sea turtles and the environmental management of industrial activities in north-west Western Australia*. PhD Thesis, Murdoch University, Perth, Western Australia.	
78.	Pendoley, K., Bell, C., McCracken, R., Ball, K., Sherborne, J., Oates, J., Becker, P., Vitenbergs, A. and Whittock, P. 2014. Reproductive biology of the Flatback Turtle Natator depressus in Western Australia. *Endangered Species Research*, 23: 115–123.	
79.	Pendoley Environmental. 2010. *Barrow Island Marine Turtle Track Census Monitoring 2004/05–2009/2010.* Unpublished report for Chevron Australia, Perth, Western Australia.	
80.	DCCEEW. [no date]. *Natator depressus in Species Profile and Threats Database.* Department of Climate Change, Energy, the Environment and Water, Canberra. Available from: https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=59257 [Accessed February 2026].	
81.	Hodge, W., Limpus, C.J. and Smissen, P. 2007. *Queensland turtle conservation project: Hummock Hill Island Nesting Turtle Study December 2006.* Conservation Technical and Data Report. Volume 2006 Number 9. ISSN 1449-194X. Environmental Protection Agency, Queensland.	
82.	Whittock, P., Pendoley, K., Hamann, M., 2014. Inter-nesting distribution of Flatback Turtles Natator depressus and industrial development in	

Ref No.	Description	Document ID
	Western Australia. *Endangered Species Research* 26, 25–38. doi:10.3354/esr00628.	
83.	Whittock, P. A., K. L. Pendoley, and M. Hamann. 2016. Using habitat suitability models in an industrial setting: the case for internesting flatback turtles. *Ecosphere* 7(11):e01551. 10.1002/ecs2.1551.	
84.	Thums, M., Waayers, D., Huang, Z., Pattiaratchi, C., Bernus, J. and Meekan, M., 2017. Environmental predictors of foraging and transit behaviour of Flatback Turtles Natator depressus. *Endangered Species Research*, 32: 333-349.	
85.	Dobbs, K. 2007. *Marine turtle and dugong habitats in the Great Barrier Reef Marine Park used to implement biophysical operational principles for the Representative Areas Program*. Great Barrier Reer Marine Parks Authority, Australian Government.	
86.	Guinea, M., Sperling J.B., and Whiting S.D. 2006. *Flatback sea turtle inter-nesting habitat in Fog Bay Northern Territory,* Australia. In Proceedings of the 23rd Annual Sea Turtle Symposium on Sea Turtle Biology and Conservation 2003 Kuala Lumpur. 2006. Kuala Lumpur, Malaysia.	
87.	Pendoley Environmental. 2010. *Proposed Outer Harbour Development Port Hedland: Satellite Tracking of Flatback Turtles from Cemetery Beach 2009/2010 - Internesting Habitat.* Report prepared by Pendoley Environmental Pty Ltd for SKM/BHP Billiton Iron Ore.	
88.	Pendoley, K., Kamrowski, R.L., 2015. Influence of horizon elevation on the sea-finding behaviour of hatchling flatback turtles exposed to artificial light glow. *Marine Ecology Progress Series*, 529: 279-288 https://doi.org/10.3354/meps11305.	
89.	Gomez Isaza, D., Jones, R., Wilson, P., Pendoley, K., Fossette, S., Thums, M. 2025. The effect of artificial light at night on sea turtle hatchling early dispersal: A systematic review of methods, impacts and findings, *Biological Conservation*, Volume 309, ISSN 0006-3207, https://doi.org/10.1016/j.biocon.2025.111327.	
90.	Lohmann, K., Swartz, A., Lohmann, C. 1995. Perception of ocean wave direction by sea turtles. *J Exp Biol*. 98(Pt 5):1079-85. http://doi.og/10.1242/jeb.198.5.1079.	
91.	Wyneken J, Salmon M. 1992 Frenzy and postfrenzy swimming activity in loggerhead, green and leatherback hatchling sea turtles. *Copeia 2*, 478484. DOI: 10.2307/1446208	
92.	Musick, J.A., Limpus, C.J. 1997. Habitat utilization and migration in juvenile sea turtles. *The Biology of Sea* Turtles, 1: 137–163.	
93.	Oceana. [no date]. *Sea Turtles & Reptiles, Flatback Turtle Natator depressus.* Available from: https://oceana.org/marine-life/flatback-turtle/ [Accessed February 2026].	
94.	Turner Tomaszewicz, C.N., Avens, L., Seminoff. J.A., Limpus, C.J., FitzSimmons, N.N., Guinea, M.L., Pendoley, K.L., Whittock, P.A., Vitenbergs, A., Whiting, S.D., Tucker, A.D. 2022. Age-specific growth and maturity estimates for the flatback sea turtle (Natator depressus) by skeletochronology. *PLoS One,* 17(7):e0271048. doi: 10.1371/journal.pone.0271048.	
95.	DCCEEW. 2021. *Flatback turtle (Natator depressus).* Department of Climate Change, Energy, the Environment and Water. Available from: https://www.dcceew.gov.au/environment/marine/marine-species/marine-turtles/flatback [Accessed May 2026].	

Ref No.	Description	Document ID
96.	SWOT. [no date]. *Flatback Turtle*. The State of the World's Sea Turtles. Available from: https://www.seaturtlestatus.org/flatback [Accessed May 2026].	
97.	Sea Turtle Preservation Society. 2021. *What do sea turtles eat?*. Sea Turtle Preservation Society. Available from: https://seaturtlespacecoast.org/what-do-sea-turtles-eat/ [Accessed May 2026].	
98.	Bradley, D., Caughman, A.M., Fogg, S.A., Cabral, Reniel B., Mayorga., Goodell, W., Millage, KD., White TD. 2024. Marine Fish Movement: home range sizes for commercially relevant species. *Sci Data* 11, 865. https://doi.org/10.1038/s41597-024-03728-9.	
99.	Commonwealth of Australia. 2015. *Sawfish and River Sharks Multispecies Recovery Plan*. Department of the Environment, Australian Government, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/sites/default/files/documents/sawfish-river-sharks-multispecies-recovery-plan.pdf [Accessed May 2026].	
100.	DCCEEW. 2026. *Species of National Environmental Significance and selected marine and cetacean species – GDB*. Department of Climate Change, Energy, the Environment and Water. Available from: https://fed.dcceew.gov.au/datasets/9d313bb078b9421ebebc835b3a69c470/about [Accessed April 2026].	
101.	Last, P.R., Stevens, J.D. 2009. *Sharks and rays of Australia*. CSIRO Publishing, Collingwood. ISBN-13: 9780674 034112.	
102.	Sequeira, A.M.M., Mellin, C., Meekan, M.G., Sims, D.W. and Bradshaw, C.J.A. 2013. Inferred Global Connectivity of Whale Shark Rhincodon typus Populations. *Journal of Fish Biology* 82: 367–389. https://doi.org/10.1111/jfb.12017.	
103.	D'Antonio, B., Ferreira, L.C., Fisher, R., Thums, M., Pattiaratchi, C.B., Sequeira, A.M.M., Faubel, C., Reynolds, S., Norman, B., Meekan, M. 2025. Natural and Artificial Structures Influence the Movement and Habitat Connectivity of Whale Sharks (Rhincodon typus) Across Seascapes. *Diversity and Distributions*, 31(1): e13950. https://doi.org/10.1111/ddi.13950.	
104.	Norman, B.M., Reynolds, S., and Morgan, D.L. 2016. Does the whale shark aggregate along the Western Australian coastline beyond Ningaloo Reef? *Pacific Conservation Biology*, 22, pp. 72-80. http://dx.doi.org/10.1071/PC15045.	
105.	TSSC. 2015. *Conservation Advice Rhincodon typus whale shark*. Threatened Species Scientific Committee, Australian Government, Canberra, Australian Capital Territory. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/66680-conservation-advice-01102015.pdf [Accessed May 2026].	
106.	Gleiss, A., Wright, S., Liebsch, N. & Wilson, R. 2013. Contrasting diel patterns in vertical movement and locomotor activity of Whale sharks at Ningaloo Reef. *Marine Biology*. 160, 2981–2992.	
107.	DCCEEW. [no date]. *Rhincodon typus in Species Profile and Threats Database*. Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=66680 [Accessed February 2026].	
108.	Sleeman, J.C., Meekan, M.G., Fitzpatrick, B.J., Steinberg, C.R., Ancel, R. and Bradshaw, C.J.A. 2010. Oceanographic and atmospheric phenomena influence the abundance of whale sharks at Ningaloo Reef,	

Ref No.	Description	Document ID
	Western Australia. *Journal of Experimental Marine Biology and Ecology* 382. 77–81.	
109.	Meekan, M.G., Speed, C.W., Planes, S., McLean, C., Bradshaw, C.J.A. 2008. *Population monitoring for whale sharks (Rhincodon typus)*. Report prepared for the Australian Government Department of the Environment, Water, Heritage and the Arts. Australian Institute of Marine Science, Townsville. 195 pp. Available from: https://ningaloo-atlas.org.au/sites/default/files/WAMSI%203.1.4%20final%20report.pdf [Accessed February 2026].	
110.	AIMS. 2017. *Migration Patterns of Whale Sharks 2005–2008*. Australian Institute of Marine Science. Available from: https://apps.aims.gov.au/metadata/view/6c763a30-1603-4be2-b38f-a18c7eb283cf [Accessed February 2026].	
111.	AIMS. 2012. "*Whale shark monitoring at Ningaloo*": Ningaloo Atlas. Available from: https://ningaloo-atlas.org.au/content/whale-shark-monitoring-ningaloo#:%7E:text=A%20total%20of%2019%20SPLASH,waters%20of%20South%20East%20Asia [Accessed February 2026].	
112.	Bignell, C.J., Patterson, T.A., Donovan, A., Vanderklift, M.A., Rochester, W., Semmens, J.M., Pillans, R.D. 2025. Satellite tracking reveals sexspecific differences in the geographical and vertical habitat use of Whale sharks, Rhincodon typus, in the Eastern Indian ocean. *Marine Biology,* 172:105. https://doi.org/10.1007/s00227-025-04616-5.	
113.	Taylor. 2007. Ram filter-feeding and nocturnal feeding of whale sharks (Rhincodon typus) at Ningaloo Reef, Western Australia. *Fisheries Research*, 84(1): 65–70. DOI: 10.1016/j.fishres.2006.11.014.	
114.	Wilson, S.G., Polovina, J.J., Stewart, B.S. & Meekan, M.G. 2006. Movements of Whale sharks (Rhincodon typus) tagged at Ningaloo Reef, Western Australia. *Marine Biology*, 148,1157-1166.	
115.	Commonwealth of Australia. 2020. *National Recovery Plan for the Australian Fairy Tern*. Australian Government, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/sites/default/files/documents/national-recovery-plan-australian-fairy-tern.pdf [Accessed May 2026].	
116.	DBCA. [no date]. *Pilbara Inshore Islands Nature Reserves.* Department of Biodiversity, Conservation and Attractions. Government of Western Australia. Available from: https://exploreparks.dbca.wa.gov.au/park/pilbara-islands-nature-reserves [Accessed February 2026].	
117.	DSEWPaC. 2012. *Species group report card –seabirds and migratory shorebirds - Supporting the marine bioregional plan for the North-west Marine Region.* Department of Sustainability, Environment, Water, Population and Communities, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/sites/default/files/env/pages/1670366b-988b-4201-94a1-1f29175a4d65/files/north-west-report-card-seabirds.pdf [Accessed February 2026].	
118.	Marchant, S. and Higgins, P.J. (eds) 1990, *Handbook of Australian, New Zealand and Antarctic birds, volume 1: ratites to ducks, part A: ratites to petrels*. Oxford University Press, Melbourne.	
119.	Cannell, B., Hamilton, S. and Driessen, J. 2019. *Wedge-tailed shearwater foraging behaviour in the Exmouth region.* Report for Woodside Energy Ltd by University of Western Australia and Birdlife Australia.	

Ref No.	Description	Document ID
120.	Surman, C.A. and Nicholson, L.W. 2008. A survey of the breeding seabirds and migratory shorebirds of the Houtman Abrolhos, Western Australia. *Corella* 33(4): 81-98.	
121.	Surman, C. 1998. *Seabird breeding schedules at the Pelsaert Group of islands, Houtman Abrolhos, Western Australia between 1993 and 1998*. Records of the Western Australian Museum 19: 209-215.	
122.	Chevron Australia. 2005. *Draft Gorgon Environmental Impact Statement/Environmental Review and Management Programme for the Proposed Gorgon Development*. Chevron Australia, Perth, Western Australia.	
123.	Chevron Australia. 2014. G*orgon Gas Development and Jansz Feed Gas Pipeline: Terrestrial and Subterranean Baseline State and Environmental Impact Report.* Chevron Australia, Perth, Western Australia	G1-TE-H-0000-REPX027
124.	DCCEEW. [no date]. *Ardenna pacifica in Species Profile and Threats Database,* Department of Climate Change, Energy, the Environment and Water. Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=84292 [Accessed April 2026].	
125.	Surman, C. A., Nicholson, L. W., and Phillips, R. A. 2018. Distribution and patterns of migration of a tropical seabird community in the Eastern Indian Ocean. *Journal of Ornithology*. Vol 159(3), 867-877.	
126.	EPA. 2016. *Environmental Factor Guideline – Marine Environmental Quality.* Environmental Protection Authority, Government of Western Australia. Available from: https://www.epa.wa.gov.au/policies-guidance/environmental-factor-guideline-marine-environmental-quality [Accessed February 2026].	
127.	Chevron Australia. 2010. *Draft Environmental Impact Statement/Environmental Review and Management Programme for the Proposed Wheatstone Project.* Chevron Australia, Perth, Western Australia. Available from: https://australia.chevron.com/what-we-do/wheatstone-project/environmental-approvals [Accessed February 2026].	
128.	CAPL. 2015. *Coastal and Marine Baseline State and Environmental Impact Report: Offshore Feed Gas Pipeline System and the Marine Component of the Shore Crossing*. Chevron Australia, Perth, Western Australia.	G1-NT-REPX0002749
129.	ANZG. 2018. *Australian and New Zealand Guidelines for Fresh and Marine Water Quality.* Australian and New Zealand Governments and Australian state and territory governments, Canberra, Australian Capital Territory. Available from: https://www.waterquality.gov.au/anz-guidelines [Accessed February 2026].	
130.	CAPL. 2018. *Gorgon Gas Development: Marine Environmental Quality Management Plan.* Chevron Australia, Perth, Western Australia.	GOR-COP-01110
131.	Chevron Australia. 2025. *Gorgon Gas Development and Jansz Feed Gas Pipeline Five-year Environmental Performance Report 2020–2025*. Chevron Australia	ABU-250800077
132.	DBCA. 2022. *Islands in the Pilbara – Visitor Guide.* Parks and Wildlife Service, Department of Biodiversity, Conservation and Attractions, Western Australian Government. Available from: https://exploreparks.dbca.wa.gov.au/sites/default/files/2021-10/islands-in-the-pilbara-visitor-guide.pdf [Accessed February 2026].	
133.	DCCEW. 2023. About Australia's heritage. Available from: https://www.dcceew.gov.au/parks-heritage/heritage/about [Accessed February 2026].	

Ref No.	Description	Document ID
134.	AIATSIS. 2025. *The Marlaloo Songline*. Australian Institute of Aboriginal and Torres Strait Islander Studies. Available from: https://aiatsis.gov.au/explore/marlaloo-songline [Accessed December 2025].	
135.	Janke, T., Cumpston, Z., Hill, R., Woodward, E., von Gavel, S., and Harkness, P. 2021. *Australia State of the Environment 2021: Indigenous*. Independent report to the Australian Government Minister for the Environment, Commonwealth of Australia, Canberra. https://doi.org/10.26194/3JDV-NH67.	
136.	Kearney, A., O'Leary, M. and Platten, S. 2023. Sea Country: Plurality and knowledge of saltwater territories in Indigenous Australian contexts. *The Geographical Journal* 189(1): 104-116. https://doi.org/10.1111/geoj.12466	
137.	Common Ground. 2022. *Connection to Animals and Country*. Common Ground First Nations. Available from: https://www.commonground.org.au/article/connection-to-animals-and-country [Accessed March 2026].	
138.	Nunn, P. and Reid, N. 2015. Aboriginal Memories of Inundation of the Australian Coast Dating from More than 7000 Years Ago. *Australian Geographer* 47(1):11-47. https://doi.org/10.1080/00049182.2015.1077539.	
139.	Zeanah D., Veth, P., Basgall, M., Glover, D., Bradshaw, R., Ditchfield, K., Hook, F., Seah, I., Buurabalayji Thalanyji Aboriginal Corporation 2024 Barrow Island lithic scatters: A unique record of occupation patterns on the North West Shelf before insularisation. *Quaternary Science Reviews*, 329: 108547. https://doi.org/10.1016/j.quascirev.2024.108547.	
140.	DCCEEW. 2024. *National Recovery Plan for the Southern Right Whale (Eubalaena australis)*. Department of Climate Change, Energy, the Environment and Water, Canberra, Australia. Available from: https://www.dcceew.gov.au/sites/default/files/documents/national-recovery-plan-southern-right-whale.pdf [Accessed March 2026].	
141.	Dermot, S. 2007. *Sea Countries of the North-West: Literature review on Indigenous connection to and uses of the North West Marine Region*. Available from: https://www.dcceew.gov.au/sites/default/files/documents/nw-sea-countries.pdf [Accessed: March 2026].	
142.	DCCEEW. 2023. *Marine Key Ecological Features*. Department of Climate Change, Energy, the Environment and Water, Canberra, Australia. Available from: https://fed.dcceew.gov.au/datasets/erin::marine-key-ecological-features/about [Accessed February 2026].	
143.	Last, P., Lyne, V., Yearsley, G., Gledhill, D., Gomon, M., Rees, T. and White, W. 2005. *Validation of national demersal fish datasets for the regionalisation of the Australian continental slope and outer shelf (>40 metres depth)*. Department of the Environment and Heritage, CSIRO Marine and Atmospheric Research, Hobart. Available from: https://www.dcceew.gov.au/sites/default/files/documents/nmb-fish-report.pdf [Accessed February 2026].	
144.	ABARES. 2025. *Fishery status reports map data*. Australian Bureau of Agricultural and Resource Economics and Sciences from data collected by the Australian Fisheries Management Authority. Available from: https://www.agriculture.gov.au/abares/research-topics/fisheries/fishery-status/fsr-map-data [Accessed February 2026].	
145.	Woodhams, J., Butler, I., Timmiss, T., Bromhead, D., Cottrell, R., Dylewski, M., Curtotti, R., Galeano, D. 2025, *Fishery status reports 2025*, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra, Available from:	

Ref No.	Description	Document ID
	https://daff.ent.sirsidynix.net.au/client/en_AU/search/asset/1037281/0 [Accessed February 2026].	
146.	DCCEEW. 2024. *Listing Advice Thunnus maccoyii Southern Bluefin Tuna*. Department of Climate Change, Energy, the Environment and Water, Canberra, Australia. Available from: https://www.environment.gov.au/biodiversity/threatened/species/pubs/69402-listing-advice-11072024.pdf [Accessed February 2026].	
147.	CCSBT. 2009. *Report of the Sixteenth Annual Meeting of the Commission, 20-23 October 2009*. Commission for the Conservation of Southern Bluefin Tuna.	
148.	Buenafe, K.C.V., Neubert, S., Scales, K.L. et al. Near-global spawning strategies of large pelagic fish. *Nat Commun* 16, 8146 (2025). https://doi.org/10.1038/s41467-025-63106-w.	
149.	O'Hara, T. 2023. *An assessment of the offshore natural values of Australia's Indian Ocean Territories*. Museums Victoria and Parks Australia, Melbourne, Victoria.	
150.	Evans, K., Patterson, T., Reid, H., and Harley, S. 2012. Reproductive Schedules in Southern Bluefin Tuna: Are Current Assumptions Appropriate? *PLOS One* 7(4): e34550. doi: 10.1371/journal.pone.0034550.	
151.	Collette Bruce, Nauen Cornelia. 1983. *FAO species catalogue. Vol. 2. Scombrids of the world. An annotated and illustrated catalogue of tunas, mackerels, bonitos and related species known to date*, pp. 87-88. FAO Fish. Synop., (125).	
152.	Farley, J., Davis, T., Bravington, M., Andamari, R., Davies, C. 2015. Spawning Dynamics and Size Related Trends in Reproductive Parameters of Southern Bluefin Tuna, Thunnus maccoyii. PLOS One 10(5): e0125744 doi: 10.1371/journal.pone.0125744.	
153.	Zhu, Guoping & Xu, Liuxiong & Zhou, Yingqi & Song, Liming. 2008. Reproductive biology of yellowfin tuna *T. albacares* in the west-central Indian Ocean. *Journal of Ocean University of China*. 7. 327-332. 10.1007/s11802-008-0327-3.	
154.	Nootmorn Praulai; Yakoh Anchalee; Kannokwan Kawises. 2005. *Reproductive biology of yellowfin tuna in the eastern Indian Ocean*. 7th Working party on Tropical Tunus, IOTC. IOTC-2005-WPTT-14. Available from: https://openknowledge.fao.org/server/api/core/bitstreams/def35d72-e86d-40f8-a017-90faed510f1c/content [Accessed March 2026].	
155.	Iraide Artetxe-Arrate; Igaratza Fraile; Patricia Lastra-Luque; Jessica Farley; Naomi Clear; Umair Shahid; Shoaib Abdul Razzaque; Mohamed Ahusan; Annie Vidot; Denham Parker; Francis Marsac; Hilario Murua; Gorka Merino; Iker Zudaire; 2025. Otolith stable isotopes highlight the importance of local nursery areas as the origin of recruits to yellowfin tuna (*Thunnus albacares*) fisheries in the western Indian Ocean, *Fisheries Research,* Volume 281. 107241. ISSN 0165-7836. https://doi.org/10.1016/j.fishres.2024.107241.	
156.	Fonteneau, A., & Pallares-Soubrier, P. 1995. *Interactions between tuna fisheries: A global review with specific examples from the Atlantic Ocean*. In R. S. . Shomura, J. Majkowski, & R. F. Harman (Eds.), Status of Interactions of Pacific Tuna Fisheries. in 1995. Proceedings of the second FAO Expert Consultation Interactions of Pacific Tuna Fisheries. Shimizu, Japan, 23-31 January 1995. FAO Fisheries Technical Paper. FAO.	
157.	DPIRD. 2026. *Fish Cube WA Data Extract for 2015–2024*. Available by request from DPIRD.	
158.	DPIRD 2023. *Background Information for the Ecological Risk Assessment for the Pilbara Trap Managed Fishery*. Department of	

Ref No.	Description	Document ID
	Primary Industries and Regional Development. Available from: https://www.dcceew.gov.au/sites/default/files/documents/wa-pilbara-trap-managed-fishery-background-information-2023.pdf [Accessed February 2026].	
159.	Newman, S J, Moore, J, and Gaughan, D J. 2024. *State of the fisheries: Status reports of the fisheries and aquatic resources of Western Australia 2023/24*. Department of Primary Industries and Regional Development, Western Australia, Perth. Book. Available from: https://library.dpird.wa.gov.au/an_sofar/17 [Accessed February 2026].	
160.	DPIRD. 2023. *Background Information for the Ecological Risk Assessment for the Pilbara Trap Managed Fishery*. Department of Primary Industries and Regional Development, Government of Western Australia. Available from: https://www.dcceew.gov.au/sites/default/files/documents/wa-pilbara-trap-managed-fishery-background-information-2023.pdf [Accessed August 2026].	
161.	DPIRD. 2025. *Recreational fishing guide 2026*. Department of Primary Industries and Regional Development Available from: https://www.dpird.wa.gov.au/siteassets/documents/fisheries/recreational/guides-and-infographics/recreational-fishing-guide.pdf [Accessed February 2026].	
162.	Ryan KL, Lai Eva K., Smallwood Claire, Tate Alissa. 2025. *Boat-based recreational fishing in Western Australia 2023/24*. Fisheries Research Report No. 352 Department of Primary Industries and Regional Development, Western Australia. 205pp. Available from: https://library.dpird.wa.gov.au/cgi/viewcontent.cgi?article=1326&context=fr_rr [Accessed: February 2026].	
163.	DPIRD. n.d. *Customary fishing*. Department of Primary Industries and Regional Development Available from: https://www.dpird.wa.gov.au/regional-communities/customary-fishing/ [Accessed March 2026].	
164.	HydroWA. [no date]. *Australia - Western Australia - North West Coast - Shipping fairways*. Available from: https://www.hydro.gov.au/n2m/2012/n2m/719_2012.pdf [Accessed: March 2026].	
165.	Tourism Research Australia. 2025. *State Tourism Satellite Account*. Available from: https://www.tra.gov.au/en/economic-analysis/tourism-satellite-accounts/state-tourism-satellite-account#ref6 [Accessed: February 2026].	
166.	Schianetz Karin, Jones Tod, Kavanagh Lydia, Walker Paul, Lockington David, Wood David. 2009. *The practicalities of a Learning Tourism Destination: a case study of the Ningaloo Coast*. International Journal of Tourism Research.	
167.	Geoscience Australia. 2022. *Regional Geology of the Northern Carnarvon Basin*. Report by Geoscience Australia, Australian Government. Available from: https://www.ga.gov.au/scientific-topics/energy/province-sedimentary-basin-geology/petroleum/acreagerelease/northerncarnarvon [Accessed April 2026].	
168.	Geoscience Australia. 2025. *Australia's Energy Commodity Resources, 2025 Edition*. Geoscience Australia, Canberra. Available from: https://www.ga.gov.au/aecr2025 [Accessed April 2026].	
169.	NOPSEMA. 2026. *Environment plan submissions for offshore energy activities*. National Offshore Petroleum Safety and Environmental Management Authority. Available from: https://info.nopsema.gov.au/ [Accessed May 2026].	

Ref No.	Description	Document ID
170.	Chevron Australia. [no date]. *Upcoming activities - consultation hub*. Chevron Australia Available from: https://australia.chevron.com/what-we-do/upcoming-activities [Accessed May 2026].	
171.	AHO. [no date]. *Firing Practice and Exercise Areas*. Australian Hydrographic Office, Department of Defence, Australian Government. Available from: https://www.hydro.gov.au/n2m/2010/annual/n2m/9.pdf [Accessed February 2026].	
172.	Department of Defence. 2024. *Defence UXO Mapping Application Version 1.0.2.21*. Available from: https://uxo-map.defence.gov.au/ [Accessed February 2026].	
173.	Australian Marine Parks. [no date]. *Australian Marine Parks*. Available from: https://australianmarineparks.gov.au/ [Accessed February 2026].	
174.	DNP. 2018. *North-west Marine Parks Network Management Plan 2018*, Director of National Parks, Canberra, Australian Capital Territory. Available from: https://australianmarineparks.gov.au/parks/north-west-marine-parks-network/north-west-network-management-plan/ [Accessed May 2026].	
175.	DCCEEW. [no date]. *Australian Heritage Database – The Ningaloo Coast*. Department of Climate Change, Energy, the Environment and Water. Available from: https://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=105881 [Accessed May 2026].	
176.	UNESCO. [no date]. *Ningaloo Coast*. UNESCO World Heritage Convention. Available from: https://whc.unesco.org/en/list/1369/ [Accessed May 2026].	
177.	DCCEEW. 2026. *The Ningaloo Coast*. Department of Climate Change, Energy, the Environment and Water. Available from: https://www.dcceew.gov.au/parks-heritage/heritage/places/national/ningaloo [Accessed May 2026].	
178.	Everick Heritage. 2026. *WA25008 Barrow Island and Onslow Sea Country Historical Underwater Cultural Heritage - Desktop Assessment*. Unpublished report prepared for Chevron Australia by Everick Heritage Pty Ltd.	
179.	Benjamin, J., O'Leary, M., McDonald, J, Wiseman, C., McCarthy, J., Beckett, E., Morrison, P., Stankiewicz, F., Leach, J., Hacker, J., Baggaley, P., Jerbic, K., Fowler, M., Fairweather, J., Jeffries, P., Ulm, S., and Bailey, G. 2020. Aboriginal artefacts on the continental shelf reveal ancient drowned cultural landscapes in northwest Australia. *PLoS ONE* 15(7): e0233912. https://doi.org/10.1371/journal.pone.0233912.	
180.	Deckker, P., Moros, M., Perner, K., Blanz, T., Wacker, L., Schneider, R., Barrows, T., O'Loingsigh, T., and Jansen, E. 2020. Climatic evolution in the Australian region over the last 94 ka – spanning human occupancy - and unvieling the Last Glacial Maximum. *Quaternary Science Reviews* 249: 106593. https://doi.org/10.1016/j.quascirev.2020.106593.	
181.	Benjamin, J., O'Leary, M., McCarthy, J., Reynen, W., Wiseman, C., Leach, J., Bobeldyk, S., Buchler, J., Kermeen, P., Langley, M., Black, A., Yoshida, H., Parnum, I., Stevens, A., Ulm, S., McDonald, J., Veth, P. and Bailey, G. 2023. Stone artefacts on the seabed at a submerged freshwater spring confirm a drowned cultural landscape in Murujuga, Western Australia. *Quaternary Science Reviews* 313: 108190. https://doi.org/10.1016/j.quascirev.2023.108190.	
182.	O'Leary, M. J., Paumard, V. and Ward, I. 2020. Exploring Sea Country through high-resolution 3D seismic imaging of Australia's NW shelf: Resolving early coastal landscapes and preservation of underwater	

Ref No.	Description	Document ID
	cultural heritage. *Quaternary Science Reviews* 239: 106353. https://doi.org/10.1016/j.quascirev.2020.106353.	
183.	Chevron Corporation. 2025. *Environment Risk Management Process*. Chevron Corporation, Houston, Texas, United States of America.	
184.	Chevron Corporation. 2025. *Environment Risk Assessment and Management Procedure*. Chevron Corporation, Houston, Texas, United States of America.	
185.	Chevron Australia. 2024. *ABU OE Risk Management: RiskMan Procedure*. Revision 4.1. Chevron Australia, Perth, Western Australia.	OE-03.01.1013
186.	Standards Australia. 2018. *AS ISO 31000:2018 Risk management – Guidelines*. Sydney, New South Wales.	
187.	OEUK. 2025. *Guidance on Risk Related Decision Making, Issue 3.1*. Offshore Energies United Kingdom, London, England.	
188.	IPIECA. 2015. *A cross-sector guide for implementing the Mitigation Hierarchy*. Prepared by The Biodiversity Consultancy for the Cross Sector Biodiversity Initiative (a partnership between the International Petroleum Industry Environmental Conservation Association [IPIECA], the International Council on Mining and Metals, and the Equator Principles Association, London, United Kingdom. Available from: https://www.ipieca.org/resources/a-cross-sector-guide-for-implementing-the-mitigation-hierarchy#:~:text=It%20clearly%20defines%20the%20four,or%20gain%20as%20a%20result [Accessed January 2026].	
189.	NOPSEMA. 2024. *Guideline: Environment Plan decision making*. National Offshore Petroleum Safety and Environmental Management Authority, Perth, Western Australia. Available from: https://www.nopsema.gov.au/sites/default/files/documents/Environment%20plan%20decision%20making%20guideline.pdf [Accessed January 2026].	N-04750-GL1721 A524696
190.	NOPSEMA. 2025. *Guidance Note: ALARP*. National Offshore Petroleum Safety and Environmental Management Authority, Perth, Western Australia. Available from: https://www.nopsema.gov.au/sites/default/files/documents/2025-10/N-04300-GN0166%20-%20ALARP%20%28A138249%29.pdf [Accessed January 2026].	N-04300-GN0166 A138249
191.	DotE. 2013. *Matters of National Environmental Significance: Significant impact guidelines 1.1, Environment Protection and Biodiversity Conservation Act 1999*. Department of the Environment, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/sites/default/files/documents/nes-guidelines_1.pdf [Accessed May 2026].	
192.	NOPSEMA. 2024. *Guidance Note: Offshore project proposal content requirements*. National Offshore Petroleum Safety and Environmental Management Authority, Perth, Western Australia. Available from: https://www.nopsema.gov.au/sites/default/files/documents/Offshore%20project%20proposal%20content%20requirements%20guidance%20note.pdf [Accessed March 2026].	N-04790-GN1663 A473026
193.	Full Court of the Federal Court of Australia. 2022. *Santos NA Barossa Pty Ltd vs Tipakalippa [2022] FCAFC 193*. Available from: https://www.judgments.fedcourt.gov.au/judgments/Judgments/fca/full/2022/2022fcafc0193 [Accessed May 2026].	
194.	NOPSEMA. 2024. *Guideline: Consultation in the course of preparing an environment plan*. National Offshore Petroleum Safety and Environmental Management Authority, Perth, Western Australia. Available from: https://www.nopsema.gov.au/sites/default/files/documents/Consultation%	N-04750-GL2086 A900179

Ref No.	Description	Document ID
	20in%20the%20course%20of%20preparing%20an%20Environment%20Plan.pdf [Accessed May 2026].	
195.	Federal Court of Australia. 2023. *Cooper v National Offshore Petroleum Safety and Environmental Management Authority [2023] FCA 1112*. Available from: https://www.judgments.fedcourt.gov.au/judgments/Judgments/fca/single/2023/2023fca1112 [Accessed May 2026].	
196.	Federal Court of Australia. 2023. *Cooper v National Offshore Petroleum and Safety Management Authority (No 2) [2023] FCA 1158*. Available from: https://www.judgments.fedcourt.gov.au/judgments/Judgments/fca/single/2023/2023fca1158 [Accessed May 2026].	
197.	CAPL. 2015. *Stakeholder Engagement - ABU Standardised OE Process*. Chevron Australia, Perth, Western Australia.	OE-10.00.01
198.	NOPSEMA. 2024. *Consultation with Commonwealth agencies with responsibilities in the marine area*. National Offshore Petroleum Safety and Environmental Management Authority, Perth, Western Australia. Available from: https://www.nopsema.gov.au/sites/default/files/documents/Consultation%20with%20agencies%20with%20responsibilities%20in%20the%20Commonwealth%20marine%20area%20%28A705589%29.pdf [Accessed May 2026].	N-04750-GL1887 A705589
199.	NOPSEMA. 2025. *Petroleum activities and Australian Marine Parks: A guidance note to support environmental protection and effective consultation*. National Offshore Petroleum Safety and Environmental Management Authority, Perth, Western Australia. Available from: https://www.nopsema.gov.au/sites/default/files/documents/N-04750-GN1785%20-%20Petroleum%20activities%20and%20Australian%20marine%20parks%20%28A620236%29.pdf [Accessed May 2026].	N-04750-GN1785 A620236
200.	DCCEEW. 2023. *Interim Engaging with First Nations People and Communities on Assessments and Approvals Under the Environment Protection and Biodiversity Conservation Act 1999*. Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/sites/default/files/documents/interim-engaging-with-first-nations-people-and-communities-assessments-and-approvals-under-epbc-act.pdf [Accessed May 2026].	
201.	DPLH. 2023. *Consultation policy for section 18 applications*. Department of Planning, Lands and Heritage, Perth, Western Australia. Available from: https://www.wa.gov.au/system/files/2024-11/consultation_policy_section_18.pdf [Accessed May 2026].	
202.	DEMIRS. 2024. *Guideline for the development of Petroleum, Geothermal and Pipeline Environment Plans in Western Australia*. Revision 3. Department of Energy, Mines, Industry Regulation and Safety, Perth, Western Australia. Available from: https://www.wa.gov.au/system/files/2025-02/env-peb-177.pdf [Accessed May 2026].	
203.	AFMA. 2025. *Offshore energy industry consultation with the commercial fishing industry*. Australian Fisheries Management Authority, Australian Government. Available from: https://www.afma.gov.au/afmas-research/petroleum-industry-consultation-commercial-fishing-industry [Accessed May 2026].	
204.	WAFIC. 2026. *Oil & Gas: Consultation Approach for Unplanned Events*. Western Australian Fishing Industry Council, Perth, Western Australia. Available from: https://www.wafic.org.au/what-we-do/access-	

Ref No.	Description	Document ID
	sustainability/oil-gas/consultation-approach-for-unplanned-events/ [Accessed May 2026].	
205.	DoF. 2013. *Guidance statement for oil and gas industry consultation with the Department of Fisheries*. Department of Fisheries, Perth, Western Australia. Available from: https://library.dpird.wa.gov.au/cgi/viewcontent.cgi?article=1030&context=fr_fop [Accessed May 2026].	
206.	DoT. 2020. *Offshore Petroleum Industry Guidance Note Marine Oil Pollution: Response and Consultation Arrangements*. Version 5. Department of Transport, Perth, Western Australia. Available from: https://www.transport.wa.gov.au/getmedia/470D6F3B-B38A-49C3-8A00-3C949740D9F6/MAC_P_Westplan_MOP_OffshorePetroleumIndGuidance.pdf [Accessed May 2026].	
207.	Government of Western Australia. 2023. *Aboriginal Cultural Heritage Act 2021: Consultation Guidelines*. Perth, Western Australia.	
208.	Parks Australia. 2026. *Australian Marine Parks – Access & use – Authorisations*. Parks Australia, Canberra, Australian Capital Territory. Available from: https://australianmarineparks.gov.au/access-use/authorisations/ [Accessed May 2026].	
209.	NERA. 2018. *Environment Plan Reference Case: Anchoring of Vessels and Floating Facilities*. National Energy Resources Australia, Perth, Western Australia.	
210.	Dernie, K., Kaiser, M., Richardson, E., Warwick, R. 2003. Recovery of soft sediment communities and habitats following physical disturbance. *Journal of Experimental Marine Biology and Ecology*, 285–286, pp. 415–434. https://doi.org/10.1016/S0022-0981(02)00541-5.	
211.	Chevron Shipping. 2024. *Chevron Marine Standard Non Tankers: Corporate OE Standard*. Version 3.2. Chevron Shipping, Houston, Texas, United States of America.	
212.	WRI and WBCSD. 2013. *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)*. World Resources Institute and World Business Council for Sustainable Development. Available from: https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf [Accessed May 2026].	
213.	DSWEPaC. 2013. *EPBC Act Policy Statement: 'Indirect consequences' of an action: Section 527E of the EPBC Act*. Department of Sustainability, Environment, Water, Population and Communities, Australian Government, Canberra, Australia. Available from: https://www.dcceew.gov.au/environment/epbc/publications/epbc-act-policy-statement-indirect-consequences-action-section-527e-epbc-act [Accessed May 2026].	
214.	UN Climate Change. [no date]. *The Paris Agreement: What is the Paris Agreement?*. United Nations Framework Convention on Climate Change secretariat, Bonn, Germany. Available from: https://unfccc.int/process-and-meetings/the-paris-agreement [Accessed May 2026].	
215.	UN Climate Change. 2016. *Paris Agreement*. United Nations Framework Convention on Climate Change, Bonn, Germany. Available from: https://unfccc.int/files/meetings/paris_nov_2015/application/pdf/paris_agreement_english_.pdf [Accessed May 2026].	
216.	DISER. 2022. *Australia's Nationally Determined Contribution Communication 2022*. Department of Industry, Science, Energy and Resources, Australian Government, Canberra, Australia. Available from: https://unfccc.int/sites/default/files/NDC/2022-	

Ref No.	Description	Document ID
	06/Australias%20NDC%20June%202022%20Update%20%283%29.pdf [Accessed May 2026].	
217.	DCCEEW. 2025. *Quarterly Update of Australia's National Greenhouse Gas Inventory: June 2025*. Australian Government Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/sites/default/files/documents/National%20Greenhouse%20Gas%20Inventory%20Quarterly%20Update%20June%202025.pdf [Accessed May 2026].	
218.	DCCEEW. 2025. *Australia's 2035 Nationally Determined Contribution*. Department of Climate Change, Energy, the Environment and Water, Australian Government, Canberra, Australia. Available from: https://unfccc.int/sites/default/files/2025-09/Australias%20Second%20NDC.pdf [Accessed May 2026].	
219.	DCCEEW. 2024. *Factsheet: Safeguard Mechanism*. Department of Climate Change, Energy, the Environment and Water, Australian Government, Canberra, Australia. Available from: https://www.dcceew.gov.au/sites/default/files/documents/safeguard-mechanism-reforms-factsheet-2023.pdf [Accessed May 2026].	
220.	NOPSEMA. 2025. *Statement of Reasons: Acceptance of the Gorgon Gas Development Backfill Fields Offshore Project Proposal*. National Offshore Petroleum Safety and Environmental Management Authority, Perth, Western Australia. Available from: https://docs.nopsema.gov.au/A1268619 [Accessed May 2026].	
221.	DCCEEW. 2026. *Australia's World Heritage*. Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/parks-heritage/heritage/about/world-heritage [Accessed May 2026].	
222.	UNESCO. 2025. *World Heritage List*. United Nations Educational, Scientific and Cultural Organization. Available from: https://whc.unesco.org/en/list/ [Accessed May 2026].	
223.	UNESCO. 2026. *Tentative Lists*. United Nations Educational, Scientific and Cultural Organization. Available from: https://whc.unesco.org/en/tentativelists/?action=listtentative&state=au&order=states [Accessed May 2026].	
224.	DCCEEW. 2026. *National Heritage*. Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/parks-heritage/heritage/about/national [Accessed May 2026].	
225.	DCCEEW. [no date]. *Australian Heritage Database*. Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/cgi-bin/ahdb/search.pl [Accessed May 2026].	
226.	DCCEEW. 2026. *The Ramsar Convention on Wetlands*. Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/water/wetlands/ramsar [Accessed May 2026].	
227.	Ramsar Convention Secretariat. 2026. *Wetlands of International Importance*. Ramsar Convention, Gland, Switzerland. Available from: https://www.ramsar.org/about/our-mission/wetlands-international-importance [Accessed May 2026].	

Ref No.	Description	Document ID
228.	Ramsar Convention Secretariat. 2026. *Australia* Ramsar Convention, Gland, Switzerland. Available from: https://www.ramsar.org/country-profile/australia [Accessed May 2026].	
229.	DCCEEW. 2026. *Internationally important wetlands*. Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/water/wetlands/australian-ramsar-wetlands [Accessed May 2026].	
230.	DCCEEW. 2026. *Threatened species & ecological communities*. Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/environment/biodiversity/threatened [Accessed May 2026].	
231.	DCCEEW. [no date]. *Species Profile and Threats Database: EPBC Act List of Threatened Fauna*. Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/cgi-bin/sprat/public/publicthreatenedlist.pl?wanted=fauna [Accessed May 2026].	
232.	DCCEEW. [no date]. *Species Profile and Threats Database: EPBC Act List of Threatened Flora*. Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/cgi-bin/sprat/public/publicthreatenedlist.pl?wanted=flora [Accessed May 2026].	
233.	DCCEEW. [no date]. *Species Profile and Threats Database: EPBC Act List of Threatened Ecological Communities*. Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/cgi-bin/sprat/public/publiclookupcommunities.pl [Accessed May 2026].	
234.	DCCEEW. [no date]. *Species Profile and Threats Database: EPBC Act Migratory Species List*. Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/cgi-bin/sprat/public/publicshowmigratory.pl [Accessed May 2026].	
235.	DCCEEW. [no date]. *Species Profile and Threats Database*. Department of Climate Change, Energy, the Environment and Water, Australian Government, Canberra, Australia. Available from: https://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl [Accessed May 2026].	
236.	DSEWPC. 2012. *Marine bioregional plan for the South-west Marine Region*. Department of Sustainability, Environment, Water, Population and Communities, Australian Government, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/environment/marine/marine-bioregional-plans/south-west [Accessed May 2026].	
237.	DSEWPC. 2012. *Marine bioregional plan for the North Marine Region*. Department of Sustainability, Environment, Water, Population and Communities, Australian Government, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/environment/marine/marine-bioregional-plans/north [Accessed May 2026].	
238.	DSEWPC. 2012. *Marine bioregional plan for the Temperate East Marine Region*. Department of Sustainability, Environment, Water, Population and Communities, Australian Government, Canberra, Australian Capital Territory. Available from:	

Ref No.	Description	Document ID
	https://www.dcceew.gov.au/environment/marine/marine-bioregional-plans/temperate-east [Accessed May 2026].	
239.	DoE. 2015. *South-east marine region profile: A description of the ecosystems, conservation values and uses of the South-east Marine Region.* Department of Environment, Australian Government, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/environment/marine/marine-bioregional-plans/south-east [Accessed May 2026].	
240.	Parks Australia. 2026. *Marine Parks. Parks Australia*, Australian Government, Canberra, Australian Capital Territory. Available from: https://australianmarineparks.gov.au/marine-parks/ [Accessed May 2026].	
241.	DNP. 2018. *Coral Sea Marine Park Management Plan 2018*. Director of National Parks, Canberra, Australian Capital Territory. Available from: https://australianmarineparks.gov.au/parks/coral-sea/plans/ [Accessed May 2026].	
242.	DNP. 2018. *South-west Marine Parks Network Management Plan 2018*. Director of National Parks, Canberra, Australian Capital Territory. Available from: https://australianmarineparks.gov.au/parks/south-west-marine-parks-network/south-west-network-management-plan/ [Accessed May 2026].	
243.	DNP. 2018. *Temperate East Marine Parks Network Management Plan 2018*. Director of National Parks, Canberra, Australian Capital Territory. Available from: https://australianmarineparks.gov.au/parks/temperate-east-marine-parks-network/temperate-east-network-management-plan/ [Accessed May 2026].	
244.	DNP. 2018. *North Marine Parks Network Management Plan 2018*. Director of National Parks, Canberra, Australian Capital Territory. Available from: https://australianmarineparks.gov.au/parks/north-marine-parks-network/north-network-management-plan/ [Accessed May 2026].	
245.	DNP. 2025. *South-east Marine Parks Network Management Plan 2025*. Director of National Parks, Canberra, Australian Capital Territory. Available from: https://australianmarineparks.gov.au/parks/south-east-marine-parks-network/south-east-network-management-plan/ [Accessed May 2026].	
246.	DNP. 2025. *Cocos (Keeling) Islands Marine Park Management Plan 2025*. Director of National Parks, Canberra, Australian Capital Territory. Available from: https://australianmarineparks.gov.au/parks/indian-ocean-territories-marine-parks/indian-ocean-territories-marine-parks-management-plans/ [Accessed May 2026].	
247.	DNP. 2025. *Christmas Island Marine Park Management Plan 2025*. Director of National Parks, Canberra, Australian Capital Territory. Available from: https://australianmarineparks.gov.au/parks/indian-ocean-territories-marine-parks/indian-ocean-territories-marine-parks-management-plans/ [Accessed May 2026].	
248.	Commonwealth of Australia. 2023. *Reef 2050 Long-Term Sustainability Plan 2021–2025*. Australian and Queensland Governments. Available from: https://www.dcceew.gov.au/sites/default/files/documents/reef-2050-long-term-sustainability-plan-2021-2025.pdf [Accessed May 2026].	
249.	Cresswell, I.D., Janke, T., and Johnston, E.L. 2021. *Australia State of the Environment 2021: Overview.* Independent report to the Australian Government Minister for the Environment, Commonwealth of Australia, Canberra. https://doi.org/10.26194/f1rh-7r05.	
250.	DCCEEW. 2025. *Biodiversity conservation*. Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from:	

Ref No.	Description	Document ID
	https://www.dcceew.gov.au/environment/biodiversity/conservation [Accessed May 2026].	
251.	Murphy, H. and van Leeuwen, S. 2021. *Australia State of the Environment 2021: Biodiversity*. Independent report to the Australian Government Minister for the Environment, Commonwealth of Australia, Canberra. https://doi.org/10.26194/ren9-3639.	
252.	DCCEEW. 2024. *Australia's Strategy for Nation 2024-2023: Australia's National Biodiversity Strategy and Action Plan*. Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/environment/biodiversity/conservation/publications/australias-strategy-for-nature [Accessed May 2026].	
253.	DCCEEW. 2025. *Australia's bioregions (IBRA)*. Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/environment/land/nrs/science/ibra [Accessed May 2026].	
254.	Williams, K., Hunter, B., Schmidt, B., Woodward, E., Cresswell, I. 2021. *Australia State of the Environment 2021: Land*. Independent report to the Australian Government Minister for the Environment, Commonwealth of Australia, Canberra. https://doi.org/10.26194/6EAM-6G50.	
255.	Green, J. and Moggridge, B. 2021. *Australia State of the Environment 2021: Inland water.* Independent report to the Australian Government Minister for the Environment, Commonwealth of Australia, Canberra. https://doi.org/10.26194/0P6K-MS94.	
256.	DCCEEW. 2026. *Achieving 30 by 30*. Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/environment/land/achieving-30-by-30 [Accessed May 2026].	
257.	Clark, G., Fischer, M., Hunter, C. 2021. *Australia State of the Environment 2021: Coasts*. Independent report to the Australian Government Minister for the Environment, Commonwealth of Australia, Canberra. https://doi.org/10.26194/AANZ-RF46.	
258.	Trebilco, R., Fischer, M., Hunter, C., Hobday, A., Thomas, L., Evans, K. 2021. *Australia State of the Environment 2021: Marine.* Independent report to the Australian Government Minister for the Environment, Commonwealth of Australia, Canberra. https://doi.org/10.26194/nvaa-rf92.	
259.	Federal Court of Australia. 2025. *Doctors for the Environment (Australia) Incorporated v National Offshore Petroleum Safety and Environmental Management Authority (No 2) [2025] FCA 989*. Available from: https://www.judgments.fedcourt.gov.au/judgments/Judgments/fca/single/2025/2025fca0989 [Accessed May 2026].	
260.	IPCC. 2021: Summary for Policymakers. In: *Climate Change 2021: The Physical Science Basis, Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [MassonDelmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)].Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. https://doi.org/10.1017/9781009157896.001.	
261.	Friedlingstein, P., O'Sullivan, M., Jones, M. W., Andrew, R. M., Bakker, D. C. E., Hauck, J., Landschützer, P., Le Quéré, C., Li, H., Luijkx, I. T.,	

Ref No.	Description	Document ID
	Peters, G. P., Peters, W., Pongratz, J., Schwingshackl, C., Sitch, S., Canadell, J. G., Ciais, P., Aas, K., Alin, S. R., Anthoni, P., Barbero, L., Bates, N. R., Bellouin, N., Benoit-Cattin, A., Berghoff, C. F., Bernardello, R., Bopp, L., Brasika, I. B. M., Chamberlain, M. A., Chandra, N., Chevallier, F., Chini, L. P., Collier, N. O., Colligan, T. H., Cronin, M., Djeutchouang, L., Dou, X., Enright, M. P., Enyo, K., Erb, M., Evans, W., Feely, R. A., Feng, L., Ford, D. J., Foster, A., Fransner, F., Gasser, T., Gehlen, M., Gkritzalis, T., Goncalves De Souza, J., Grassi, G., Gregor, L., Gruber, N., Guenet, B., Gürses, Ö., Harrington, K., Harris, I., Heinke, J., Hurtt, G. C., Iida, Y., Ilyina, T., Ito, A., Jacobson, A. R., Jain, A. K., Jarníková, T., Jersild, A., Jiang, F., Jones, S. D., Kato, E., Keeling, R. F., Klein Goldewijk, K., Knauer, J., Kong, Y., Korsbakken, J. I., Koven, C., Kunimitsu, T., Lan, X., Liu, J., Liu, Z., Liu, Z., Lo Monaco, C., Ma, L., Marland, G., McGuire, P. C., McKinley, G. A., Melton, J., Monacci, N., Monier, E., Morgan, E. J., Munro, D. R., Müller, J. D., Nakaoka, S.-I., Nayagam, L. R., Niwa, Y., Nutzel, T., Olsen, A., Omar, A. M., Pan, N., Pandey, S., Pierrot, D., Qin, Z., Regnier, P. A. G., Rehder, G., Resplandy, L., Roobaert, A., Rosan, T. M., Rödenbeck, C., Schwinger, J., Skjelvan, I., Smallman, T. L., Spada, V., Sreeush, M. G., Sun, Q., Sutton, A. J., Sweeney, C., Swingedouw, D., Séférian, R., Takao, S., Tatebe, H., Tian, H., Tian, X., Tilbrook, B., Tsujino, H., Tubiello, F., van Ooijen, E., van der Werf, G., van de Velde, S. J., Walker, A., Wanninkhof, R., Yang, X., Yuan, W., Yue, X., and Zeng, J.: Global Carbon Budget 2025. *Earth Syst. Sci. Data Discuss.* [preprint], https://doi.org/10.5194/essd-2025-659 , in review, 2025.	
262.	IPCC. 2023. Summary for Policymakers. In: *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland. https://doi.org/10.59327/IPCC/AR6-9789291691647.001.	
263.	Arias, P. A., N. Bellouin, E. Coppola, R. G. Jones, G. Krinner, J. Marotzke, V. Naik, M. D. Palmer, G-K. Plattner, J. Rogelj, M. Rojas, J. Sillmann, T. Storelvmo, P. W. Thorne, B. Trewin, K. Achuta Rao, B. Adhikary, R. P. Allan, K. Armour, G. Bala, R. Barimalala, S. Berger, J. G. Canadell, C. Cassou, A. Cherchi, W. Collins, W. D. Collins, S. L. Connors, S. Corti, F. Cruz, F. J. Dentener, C. Dereczynski, A. Di Luca, A. Diongue Niang, F. J. Doblas-Reyes, A. Dosio, H. Douville, F. Engelbrecht, V. Eyring, E. Fischer, P. Forster, B. Fox-Kemper, J. S. Fuglestvedt, J. C. Fyfe, N. P. Gillett, L. Goldfarb, I. Gorodetskaya, J. M. Gutierrez, R. Hamdi, E. Hawkins, H. T. Hewitt, P. Hope, A. S. Islam, C. Jones, D. S. Kaufman, R. E. Kopp, Y. Kosaka, J. Kossin, S. Krakovska, J-Y. Lee, J. Li, T. Mauritsen, T. K. Maycock, M. Meinshausen, S-K. Min, P. M. S. Monteiro, T. Ngo-Duc, F. Otto, I. Pinto, A. Pirani, K. Raghavan, R. Ranasinghe, A. C. Ruane, L. Ruiz, J-B. Sallée, B. H. Samset, S. Sathyendranath, S. I. Seneviratne, A. A. Sörensson, S. Szopa, I. Takayabu, A-M. Treguier, B. van den Hurk, R. Vautard, K. von Schuckmann, S. Zaehle, X. Zhang, K. Zickfeld, 2021, Technical Summary. In: *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J. B. R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 33−144. https://doi.org/10.1017/9781009157896.002.	
264.	Lüthi, D., Le Floch, M., Bereiter, B. et al. 2008. High-resolution carbon dioxide concentration record 650,000–800,000 years before present. *Nature,* 453, 379–382 https://doi.org/10.1038/nature06949.	

Ref No.	Description	Document ID
265.	BoM and CSIRO. 2024. *State of the Climate 2024*. Bureau of Meteorology and Commonwealth Scientific and Industrial Research Organisation. Available from: http://www.bom.gov.au/state-of-the-climate/2024/documents/2024-state-of-the-climate.pdf [Accessed May 2026].	
266.	IPCC. 2023. *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, 184 pp. https://doi.org/10.59327/IPCC/AR6-9789291691647.	
267.	Chevron. 2024. *2023 Climate Change Resilience Report – Advancing Energy Progress*. Chevron Corporation, Houston, Texas. Available from: https://www.chevron.com/-/media/chevron/sustainability/documents/climate-change-resilience-report.pdf [Accessed May 2026].	
268.	IPCC. 2021. *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.* [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 2391 pp.	
269.	Chiew, F., Costello M.J., Hennessy K., Lansbury N., Bhaskar Nidumolu U., Peci, G., Rickards L., Tapper N., Woodward A., Wreford A. 2022. Chapter 11: Australasia. In: *Climate Change 2022: Impacts, Adaptation, and Vulnerability*. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.	
270.	IPCC. 2022. *Fact Sheet – Australasia, Climate Change Impacts and Risks. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. Available from: https://www.ipcc.ch/report/ar6/wg2/downloads/outreach/IPCC_AR6_WGII_FactSheet_Australasia.pdf [Accessed May 2026].	
271.	Steffen, W., Burbidge, A., Hughes, L., Kitching, R., Lindenmayer, D., Musgrave, W., Stafford Smith, M. and Werner, P. 2009. *Australia's Biodiversity and Climate Change: Summary for Policy Makers 2009*. Prepared for the Australian Government by the Biodiversity and Climate Change Expert Advisory Group. Available from: https://library.dbca.wa.gov.au/FullTextFiles/628433.pdf [Accessed May 2026].	
272.	Trewin, B., Morgan-Bulled, D. Cooper, S. 2021. *Australia State of the Environment 2021: Climate*. Independent report to the Australian Government Minister for the Environment, Commonwealth of Australia, Canberra. https://doi.org/10.26194/rdze-5d59.	
273.	DCCEEW. 2024. *National Climate Risk Assessment: First pass assessment report.* Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/sites/default/files/documents/national-climate-risk-assessment-first-pass-assessment-report-2024.pdf [Accessed May 2026].	

Ref No.	Description	Document ID
274.	Australian Climate Service. [no date] *Australia's first National Climate Risk Assessment*. Available from: https://www.acs.gov.au/pages/national-climate-risk-assessment [Accessed May 2026].	
275.	IUCN World Heritage Outlook, Ningaloo Coast - 2025 *Conservation Outlook*. International Union for Conservation of Nature. Available from: https://worldheritageoutlook.iucn.org/explore-sites/ningaloo-coast [Accessed May 2026].	
276.	DCCEEW. 2025. *Key threatening processes under the EPBC Act*. Department of Climate Change, Energy, the Environment and Water, Australian Government, Canberra, Australia. Available from: https://www.dcceew.gov.au/environment/biodiversity/threatened/key-threatening-processes [Accessed May 2026].	
277.	DCCEEW. 2024. *Loss of terrestrial climatic habitat caused by anthropogenic emissions of greenhouse gases*. Department of Climate Change, Energy, the Environment and Water, Australian Government, Canberra, Australia. Available from: https://www.dcceew.gov.au/environment/biodiversity/threatened/key-threatening-processes/loss-of-habitat-caused-by-greenhouse-gases#:~:text=The%20'Loss%20of%20climatic%20habitat,human%20activities%20of%20greenhouse%20gases [Accessed May 2026].	
278.	DCCEEW.2022. *Threatened Species Action Plan 2022-2032*. Department of Climate Change, Energy, the Environment and Water, Australian Government, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/environment/biodiversity/threatened/publications/action-plan-2022-2032 [Accessed May 2026].	
279.	DCCEEW. 2024. *Priority Places*. Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/environment/biodiversity/threatened/strategy/priority-places [Accessed May 2026].	
280.	Commonwealth of Australia. 2020. *Wildlife Conservation Plan for Seabirds.* Australian Government, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/sites/default/files/documents/wildlife-conservation-plan-for-seabirds.pdf [Accessed May 2026].	
281.	Commonwealth of Australia. 2015. *Wildlife Conservation Plan for Migratory Shorebirds*. Australian Government, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/environment/biodiversity/publications/wildlife-conservation-plan-migratory-shorebirds-2016 [Accessed May 2026].	
282.	Threatened Species Scientific Committee.2015. *Conservation Advice Balaenoptera physalus fin whale*. Department of the Environment, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/biodiversity/threatened/species/pubs/37-conservation-advice-01102015.pdf [Accessed May 2026].	
283.	Threatened Species Scientific Committee. 2015. Conservation Advice Balaenoptera borealis sei whale. Department of the Environment, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/biodiversity/threatened/species/pubs/34-conservation-advice-01102015.pdf [Accessed May 2026].	
284.	DCCEEW. 2024. *National Recovery Plan for the Southern Right Whale Eubalaena australis*. Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/sites/default/files/documents/national-recovery-plan-southern-right-whale.pdf [Accessed May 2026].	

Ref No.	Description	Document ID
285.	DCCEEW. 2025. *Conservation Advice for Sousa sahulensis (Australian humpback dolphin)*. Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/biodiversity/threatened/species/pubs/87942-conservation-advice-05032025.pdf [Accessed May 2026].	
286.	DCCEEW. 2025. *Conservation Advice for Orcaella heinsohni (Australian snubfin dolphin).* Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/biodiversity/threatened/species/pubs/81322-conservation-advice-05032025.pdf [Accessed May 2026].	
287.	DotE. 2014. *Recovery Plan for the Grey Nurse Shark (Carcharias taurus).* Department of the Environment, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/sites/default/files/documents/recovery-plan-grey-nurse-shark-carcharias-taurus.pdf [Accessed May 2026].	
288.	DCCEEW. 2025. *Conservation Advice for Pristis pristis (largetooth sawfish).* Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/biodiversity/threatened/species/pubs/60756-conservation-advice-20082025.pdf [Accessed May 2026].	
289.	Threatened Species Scientific Committee. 2015. *Conservation Advice Rhincodon typus whale shark*. Department of the Environment, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/biodiversity/threatened/species/pubs/66680-conservation-advice-01102015.pdf [Accessed May 2026].	
290.	DSEWPaC. 2013. *Recovery Plan for the White Shark (Carcharodon carcharias).* Department of Sustainability, Environment, Water, Population and Communities, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/sites/default/files/documents/white-shark.pdf [Accessed May 2026].	
291.	Commonwealth of Australia. 2022. *National Recovery Plan for albatrosses and petrels (2022).* Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/sites/default/files/documents/national-recovery-plan-albatrosses-and-petrels-2022.pdf [Accessed May 2026].	
292.	DCCEEW. 2024. *Conservation Advice for* Limnodromus semipalmatus *(Asian dowitcher)*. Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/biodiversity/threatened/species/pubs/843-conservation-advice-05012024.pdf [Accessed May 2026].	
293.	Commonwealth of Australia. 2020. *National Recovery Plan for the Australian Fairy Tern Sternula nereis nereis.* Australian Government, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/sites/default/files/documents/national-recovery-plan-australian-fairy-tern.pdf [Accessed May 2026].	
294.	Commonwealth of Australia. 2022. *National Recovery Plan for the Australian Painted Snipe Rostratula australis.* Australian Government, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/sites/default/files/documents/national-recovery-plan-australian-painted-snipe-2022.pdf [Accessed May 2026].	

Ref No.	Description	Document ID
295.	DCCEEW. 2026. *Conservation Advice for Phaethon lepturus fulvus (golden bosun).* Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/biodiversity/threatened/species/pubs/26021-conservation-advice-28012026.pdf [Accessed May 2026].	
296.	DCCEEW. 2024. *Conservation Advice for Tringa nebularia (common greenshank).* Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/biodiversity/threatened/species/pubs/832-conservation-advice-05012024.pdf [Accessed May 2026].	
297.	DCCEEW. 2023. *Conservation Advice for Calidris ferruginea (curlew sandpiper).* Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/biodiversity/threatened/species/pubs/856-conservation-advice-18122023.pdf [Accessed May 2026].	
298.	DCCEEW. 2023. *Conservation Advice for Numenius madagascariensis (far eastern curlew).* Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/biodiversity/threatened/species/pubs/847-conservation-advice-18122023.pdf [Accessed May 2026].	
299.	DCCEEW. 2023. *Conservation Advice for Charadrius leschenaultii (greater sand plover).* Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/biodiversity/threatened/species/pubs/877-conservation-advice-18122023.pdf [Accessed May 2026].	
300.	DCCEEW. 2025. *Conservation Advice for Sternula albifrons (little tern).* Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/biodiversity/threatened/species/pubs/82849-conservation-advice-05032025.pdf [Accessed May 2026].	
301.	DCCEEW. 2024. *Conservation Advice for Limosa lapponica menzbieri (Yakutian bar-tailed Godwit).* Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/biodiversity/threatened/species/pubs/86432-conservation-advice-05012024.pdf [Accessed May 2026].	
302.	DCCEEW. 2024. *Conservation Advice for Calidris canutus (red knot).* Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/biodiversity/threatened/species/pubs/855-conservation-advice-05012024.pdf [Accessed May 2026].	
303.	DCCEEW. 2023. *Conservation Advice for Phaethon rubricauda westralis (Indian Ocean red-tailed tropicbird).* Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/biodiversity/threatened/species/pubs/91824-conservation-advice-21122023.pdf [Accessed May 2026].	
304.	DCCEEW. 2024. *Conservation Advice for Calidris acuminata (sharp-tailed sandpiper).* Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/biodiversity/threatened/species/pubs/874-conservation-advice-05012024.pdf [Accessed May 2026].	

Ref No.	Description	Document ID
305.	Nocterra. 2026. *Technical Report: Gorgon Stage 3 Pipelay – Artificial light Modelling*. Report prepared by Nocterra for Chevron Australia. Perth, Western Australia.	GS3-US00-RGL-RPT-CVX-000-00002-00
306.	Nocterra. 2026. *Technical Report: Gorgon Stage 3 Drilling– Artificial light Modelling*. Report prepared by Nocterra for Chevron Australia. Perth, Western Australia.	GS3-UD00-RGL-RPT-CVX-000-00010-00
307.	DSEWPaC. 2012. *Species group report card – marine reptiles: supporting the marine bioregional plan for the North-west Marine Region*. Department of Sustainability, Environment, Water, Population and Communities, Canberra, ACT. Available from: https://www.dcceew.gov.au/sites/default/files/env/pages/1670366b-988b-4201-94a1-1f29175a4d65/files/north-west-report-card-reptiles.pdf [Accessed May 2026].	
308.	Peel, Lauren R., Scott D. Whiting, Kellie Pendoley, Paul A. Whittock, Luciana C. Ferreira, Michele Thums, Andrea U. Whiting, et al. 2024. I Still Call Australia Home: Satellite Telemetry Informs the Protection of Flatback Turtles in Western Australian Waters. *Ecosphere* 15(5): e4847. https://doi.org/10.1002/ecs2.4847.	
309.	Robson, N. A., Hetzel, Y., Whiting, S., Wijeratne, S., Pattiaratchi, C. B., Withers, P., & Thums, M. 2017. Use of particle tracking to determine optimal release dates and locations for rehabilitated neonate sea turtles. *Frontiers in Marine Science*, 4(173). https://doi.org/10.3389/fmars.2017.00173.	
310.	DEWHA. 2009. *Approved Conservation Advice for Pristis clavata (Dwarf Sawfish).* Department of the Environment, Water, Heritage and the Arts, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/biodiversity/threatened/species/pubs/68447-conservation-advice.pdf [Accessed May 2026].	
311.	DEWHA. 2009. *Approved Conservation Advice for Green Sawfish.* Department of the Environment, Water, Heritage and the Arts, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/biodiversity/threatened/species/pubs/68442-conservation-advice.pdf [Accessed May 2026].	
312.	Bolton, D., Mayer-Pinto, M., Clark, G.F., Dafforn, K.A., Brassil, W.A., Becker, A., and Johnston, E.L. 2017. Coastal urban lighting has ecological consequences for multiple tropic levels under the sea, *Science of the Total Environment*, 576.	
313.	Marangoni, L.F.B., Davies, T., Smyth, T., Rodriguez, A., Hamann, M., Duarte, C., Pendoley, K., Berge, J., Maggi, E., and Levy, O. 2022. *Impacts of artificial light at night in marine ecosystems – a review*. Global Change Biology.	
314.	Fobert, E.K., Burke da Silva, K., and Swearer, S.E. 2019. Artificial light at night causes reproductive failure in clownfish. *Biology Letters*, 15: 20190272.	
315.	Keenan, S., Benfield, M. C., and Blackburn, J. 2007. Importance of the artificial light field around offshore petroleum platforms for the associated fish community. *Marine Ecological Progress Series*, 331, 219–231.	
316.	Ueki, N. and Wakabayshi, K-I. 2018. 12 – Dynein-mediated photobehavioral responses in Chlamydomonas. In: *Dyneins: Structure, Biology and Disease (Second Edition) Volume One: The Biology of Dynein Motors,* Academic Press, pp 368–385. ISBN 9780128094716.	

Ref No.	Description	Document ID
317.	Cabrera-Cruz, S.A., Smolinsky, J.A., Buler, J.J. 2018. Light pollution is greatest within migration passage areas for nocturnally-migrating birds around the world. *Nature Scientific Reports*, vol. 8, e3261, DOI: 10.1038/s41598-018-21577-6.	
318.	Rodríguez, A, Holmes, ND, Ryan, PG, Wilson, K-J, Faulquier, L, Murillo, Y, Raine, AF, Penniman, J, Neves, V, Rodríguez, B, Negro, JJ, Chiaradia, A, Dann, P, Anderson, T, Metzger, B, Shirai, M, Deppe L, Wheeler J, Hodum P, Gouveia C, Carmo V, Carreira GP, Delgado-Alburqueque L, Guerra-Correa C, Couzi F-X, Travers M & Le Corre M 2017a, A global review of seabird mortality caused by land-based artificial lights, *Conservation Biology*, vol. 31, pp. 986–1001, DOI: 10.1111/cobi.12900.	
319.	Marquenie, J., Donners, M., Poot, H., Steckel, W. and de Wit, B. 2008. Adapting the spectral composition of artificial lighting to safeguard the environment. *Petroleum and Chemical Industry Conference Europe – Electrical and Instrumentation Applications*, pp 1–6.	
320.	Wiese, F.K., Montevecci, W.A., Davoren, G.K., Huettmann, F., Diamond, A.W. and Linke, J. 2001. Seabirds at risk around offshore oil platforms in the northwest Atlantic. *Marine Pollution Bulletin*. 42:1285–1290.	
321.	Imber M. 1975. *Behaviour of petrels in relation to the moon and artificial lights.* Notornis 22: 302- 306.	
322.	Ravache, A., Bourgeois, K., Thibault, M., Dromzée, S., Weimerskirch, H., de Grissac, S., Prudor, A., Lorrain, A., Menkes, C., Allain, V., Bustamante, P., Letourneur, Y., Vidal, E. 2020. Flying to the moon: Lunar cycle influences trip duration and nocturnal foraging behavior of the wedge-tailed shearwater Ardenna pacifica, *Journal of Experimental Marine Biology and Ecology*.	
323.	Gauthreaux, S.A. and Belser, C.G. 2006. Effects of artificial night lighting on migrating birds. In: Ec*ological Consequences of Artificial Night Lighting*, Rich C and Longcore T, Editors. Island Press: Washington, D.C., USA, p:67–93.	
324.	CAPL. 2026. *Seabird Management Procedure.* Chevron Australia, Perth, Western Australia.	ABU-COP-03572
325.	DCCEEW. 2023. *The Protocol for Designation of Biologically Important Areas for Protected Marine Species (The BIA Protocol).* Department of Climate Change, Energy, the Environment and Water, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/sites/default/files/documents/protocol-designation-bia-marine-species.pdf [Accessed May 2026].	
326.	National Marine Fisheries Service. 2024. *2024 Update to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 3.0), Underwater and In Air Criteria for Onset of Auditory Injury and Temporary Threshold Shifts.* NOAA Technical Memorandum NMFS-OPR-71. United States Department of Commerce, National Oceanic and Atmospheric Administration. Available from: https://repository.library.noaa.gov/view/noaa/66184 [Accessed May 2026].	
327.	National Marine Fisheries Service. 2023. *Summary of Endangered Species Act Acoustic Thresholds (Marine Mammals, Fishes, and Sea Turtles).* National Oceanic and Atmospheric Administration, United States Department of Commerce. Available from: https://www.fisheries.noaa.gov/s3/2023-02/ESA%20all%20species%20threshold%20summary_508_OPR1.pdf [Accessed May 2026].	

Ref No.	Description	Document ID
328.	Liu, J., Frankel, A., Connell, S., and Koessler, M. 2026. *Chevron Backfill Investigation Survey Report: Acoustic Modelling for Assessing Marine Fauna Sound Exposures*. Document 04238. Technical report by JASCO Applied Sciences for Chevron Australia.	SSF-US00-RGL-RPT-CVX-000-00002-00
329.	NOAA Fisheries. 2024. *ESA Section 7 Consultation Tools for Marine Mammals on the West Coast*. US National Oceanic and Atmospheric Administration. Available from: https://www.fisheries.noaa.gov/west-coast/endangered-species-conservation/esa-section-7-consultation-tools-marine-mammals-west [Accessed May 2026].	
330.	Popper, A., Hawkins, A., Fay, R., Mann, D., Bartol, S., Carlson, T., Coombs, S., Ellison, W., Gentry, R., Halvorsen, M., Løkkeborg, S., Rogers, P., Southall, B., Zeddies, D., and Tavolga, W. 2014. *Sound Exposure Guidelines for Fishes and Sea Turtles: A Technical Report prepared by ANSI Accredited Standards Committee S3/SC1 and registered with ANSI*. ASA S3/SC1.4 TR-2014. SpringerBriefs in Oceanography. ASA Press and Springer. https://doi.org/10.1007/978-3-319-06659-2.	
331.	DAWE and NOPSEMA. 2021. *Guidance on key terms within the Blue Whale Conservation Management Plan*. Department of Agriculture, Water and the Environment and the National Offshore Petroleum Safety and Environmental Management Authority. Available from: https://www.dcceew.gov.au/sites/default/files/documents/guidance-key-terms-blue-whale-conservation-management-plan-2021.pdf [Accessed May 2026].	
332.	Richardson, W.J., Greene, C.R., Malme, C.I and Thomson, D.H. 1995. *Marine Mammals and Noise*. Academic Press, San Diego ISBN: 978-008-057303-8.	
333.	Jiménez-Arranz, G., Banda, N., Cook, S. and Wyatt, R. 2020. *Review on Existing Data on Underwater Sounds Produced by the Oil and Gas Industry. A report prepared by Seiche Ltd for the IOGP Joint Industry Programme on E&P Sound and Marine Life*. Available from: https://www.soundandmarinelife.org/wp-content/uploads/2025/02/Review-on-Existing-Data-on-Underwater-Sounds-Produced-by-the-Oil-and-Gas-Industry.pdf [Accessed May 2026].	
334.	JASCO Applied Sciences. 2025. *Memo: Geophysical Survey Investigation Sources: Acoustic Effect Estimation*. Version 2.0. Unpublished report for Chevron Australia, Perth, Western Australia.	ABU241102090
335.	Griffiths, G., Enoch, P., Millard, N. 2001. On the radiated noise of the autosub autonomous underwater vehicle. *ICES Journal of Marine Science*, 58(6):119-1200. https://doi.org/10.1006/jmsc.2001.1120.	
336.	Warren, V.E., J. Quijano, F. Campo and C. Jolliffe. 2026. *Gorgon Stage 3 Drilling Activities: Acoustic Modelling for Assessing Marine Fauna Sound Exposures*. Document 04088, Version 2.1. Technical report by JASCO Applied Sciences for Chevron Australia.	GS3-UD00-RGL-RPT-CVX-000-00001-00
337.	Warren, V.E., M.W. Koessler, and A. McDonald. 2026. *Chevron Gorgon Stage 3, Concurrent Activities: Acoustic Modelling for Assessing Marine Fauna Sound Exposures*. Document 04237, Version 1.0. Technical report by JASCO Applied Sciences for Chevron Australia.	GS3-UD00-RGL-RPT-CVX-000-00011-00
338.	Warren, V.E., S.C. Connell, and A. McDonald. 2026. *Chevron Gorgon Stage 3 – Pipelay and Subsea Installation: Acoustic Modelling for Assessing Marine Fauna Sound Exposures*. Document 04236, Version 1.0. Technical report by JASCO Applied Sciences for Chevron Australia.	GS3-US00-RGL-RPT-CVX-000-00003-00
339.	Warren, V.E., Connell, S.C., and McDonald, A. 2026. *Technical Memo: Gorgon Stage 3, Concurrent Activities, Additional Acoustic Modelling for*	GS3-UD00-RGL-RPT-

Ref No.	Description	Document ID
	Assessing Marine Fauna Sound Exposures. Document 04357, Version 1.3. JASCO Applied Sciences, Brisbane, Queensland.	CVX-000-00012-00
340.	Chevron Australia. 2025. *Gorgon Gas Development: Pipeline and Subsea Infrastructure Installation and Pre-commissioning Environment Plan*. Rev 8.0. Chevron Australia, Perth, Western Australia. [Accepted by NOPSEMA on 05 August 2025].	GOR-COP-02908
341.	Chevron Australia. 2026. *Gorgon Gas Development: Gorgon and Jansz feed gas pipeline and wells operations (Commonwealth waters) environment plan*. Rev 10.0. Chevron Australia, Perth, Western Australia. [Accepted by NOPSEMA on 26 March 2026].	GOR-COP-0902
342.	Erbe, C., Schoeman, R.P., Peel, D. and Smith, J.N. 2021.It Often Howls More than It Chugs: Wind versus Ship Noise Under Water in Australia's Maritime Regions. *Journal of Marine Science and Engineering*, 9, 47. https://doi.org/10.3390/jmse9050472.	
343.	NPEX. 2009. *Ichthys Gas Filed Development Project: Appendix 15, Review of Literature on Sound in the Ocean and Effects of Noise on Marine Fauna*. Report prepared by URS for INPEX Browse Ltd. Available from: https://www.inpex.com.au/media/ywfp1jpx/draft-eis-technical-appendices-appendix-15-review-of-literature-on-sound-in-the-ocean-and-on-the-effects-of-noise-on-marine-fauna.pdf [Accessed: April 2025].	
344.	Sprogis, K.R., Videsen, S. and Madsen, P.T. 2020. *Vessel noise levels drive behavioural responses of humpback whales with implications for whale-watching. eLife*, 9, e56760.	
345.	Lohmann, C. 2007. The Mystery of Turtle Senses: How do sea turtles sense their environment? In: *The State of the World's Sea Turtles*, Volume II. Available from: https://www.seaturtlestatus.org/swot-report-vol-2 [Accessed May 2026].	
346.	Holtz, B., Stewart, K.R., Pinjak, W.E.D. 2021. Influence of environmental and anthropogenic acoustic cues in sea-finding of hatchling leatherback (Dermochelys coriacea) sea turtles. *PLoS One*, 16(7):e0253770. doi: 10.1371/journal.pone.0253770.	
347.	Gomez Isaza, Daniel F., Jones, Ross, Wilson, Phillipa, Pendoley, Kellie, Fossette, Sabrina, Thums, Michele. 2025. The effect of artificial light at night on sea turtle hatchling early dispersal: A systematic review of methods, impacts and findings, *Biological Conservation*, Volume 309, ISSN 0006-3207, https://doi.org/10.1016/j.biocon.2025.111327	
348.	Chapuis, L., Kerr, C., Collin, S., Hart, N., and Sanders, K. 2019. Underwater hearing in sea snakes (Hydrophiinae): first evidence of auditory evoked potential thresholds. *Journal of Experimental Biology*, 222(14). https://doi.org/10.1242/jeb.198184.	
349.	Snoek, R., de Swart, R., Didderen K., Lengkeek, W. and Teunis, M.A. 2016. *Potential effects of electromagnetic fields in the Dutch North Sea Phase 1 – Desk Study*.	
350.	AECOM. 2019. *Jansz Io Compression Marine Electromagnetic Field Literature Review*. Unpublished report prepared by AECOM Australia for Chevron Australia, Perth, Western Australia.	G7-NT-REPX0000201
351.	Erbe, Christine; Reichmuth, Colleen; Cunningham, Kane; Lucke, Klaus; Dooling, Robert, 2016. Communication masking in marine mammals: A review and research strategy. *Marine Pollution Bulletin*. 15-38.	
352.	DOTIS. 2025. *Masking in Mammals*. Discovery of Sound in the Sea. Available from: https://dosits.org/animals/effects-of-sound/potential-effects-of-sound-on-marine-mammals/masking-in-mammals/ [Accessed May 2026].	

Ref No.	Description	Document ID
353.	Branstetter, B.K., Sills, J.M. 2022. Mechanisms of auditory masking in marine mammals. *Anim Cogn*. 25(5):1029-1047. doi: 10.1007/s10071-022-01671-z.	
354.	BOEM. [no date]. *Marine Mammals and Noise Fact Sheet*. NOAA Fisheries Service. Available from: https://www.boem.gov/environment/marine-mammals-and-noise-fact-sheet [Accessed May 2026].	
355.	Salas, A. K., A. M. Capuano, C. A. Harms, W. E. D. Piniak, and T. A. Mooney. 2023. Temporary noise-induced underwater hearing loss in an aquatic turtle (T*rachemys scripta elegans*). The *Journal of the Acoustical Society of America,* 154 (2): 1003-1017. DOI:10.1121/10.0020588.	
356.	Salas, A. K., A. M. Capuano, C. A. Harms, W. E. D. Piniak, and T. A. Mooney. 2024. Frequency-dependent temporary threshold shifts in the Eastern Painted Turtle (*Chrysemys picta picta*). The *Journal of the Acoustical Society of America,* 155(5): DOI: 10.1121/10.0026021.	
357.	Širović, A., Amorim, M., Baumann-Pickering, S., and Kok, S. 2026. Physiological effects of anthropogenic sound on aquatic animals: where are we and what is next?. *Journal of Experimental Biology*, 229(Suppl_1): jeb250800. https://doi.org/10.1242/jeb.250800.	
358.	Popper, A.N. and Hawkins, A.D. 2019. An overview of fish bioacoustics and the impacts of anthropogenic sounds on fishes. *Journal of Fish Biology*, 94(5), 692–713. DOI: 10.1111/jfb.13948.	
359.	McCauley, R.D., J. Fewtrell, A.J. Duncan, C. Jenner, M.-N. Jenner, J.D. Penrose, R.I.T. Prince, A. Adhitya, J. Murdoch, et al. 2000. *Marine seismic surveys: Analysis and propagation of air-gun signals; and effects of air-gun exposure on humpback whales, sea turtles, fishes and squid. Report R99-15.* Prepared for Australian Petroleum Production Exploration Association by Centre for Maine Science and Technology, Western Australia. 198 p. Available from: https://cmst.curtin.edu.au/wp-content/uploads/sites/4/2016/05/McCauley-et-al-Seismic-effects-2000.pdf [Accessed May 2026].	
360.	Parry, G.D. and Gason, A. 2006. *The effect of seismic surveys on catch rates of rock lobsters in western Victoria, Australia.* Fisheries Research 79:272-284.	
361.	Carroll, A.G., Przeslawski, R., Duncan, A., Gunning, M. and Bruce, B., 2017. A critical review of the potential impacts of marine seismic surveys on fish and invertebrates. *Marine Pollution Bulletin* 114: 9- 24.	
362.	Payne, J.F., C. Andrews, L. Fancey, D. White, and J. Christian. 2008. *Potential Effects of Seismic Energy on Fish and Shellfish: An Update since 2003*. Report 2008/060. Canadian Science Advisory Secretariat. 22 p. Available from: https://waves-vagues.dfo-mpo.gc.ca/Library/335123.pdf [Accessed October 2025].	
363.	Day, R.D., R.D. McCauley, Q.P. Fitzgibbon, and J.M. Semmens. 2016. Seismic air gun exposure during early-stage embryonic development does not negatively affect spiny lobster Jasus edwardsii larvae (Decapoda: Palinuridae). *Scientific Reports* 6: 1–9. https://doi.org/10.1038/srep22723.	
364.	Day, R.D., R.D. McCauley, Q.P. Fitzgibbon, K. Hartmann, and J.M. Semmens. 2019. Seismic air guns damage rock lobster mechanosensory organs and impair righting reflex. *Proceedings of the Royal Society* Volume 286 (1907). https://doi.org/10.1098/rspb.2019.1424.	
365.	Day, R.D., R.D. McCauley, Q.P. Fitzgibbon, K. Hartmann, J.M. Semmens, and Institute for Marine and Antarctic Studies. 2016. *Assessing the Impact of Marine Seismic Surveys on Southeast Australian*	

Ref No.	Description	Document ID
	Scallop and Lobster Fisheries. Impacts of Marine Seismic Surveys on Scallop and Lobster Fisheries. Fisheries Ressearch & Development Corporation. FRDC Project No 2012/008, University of Tasmania, Hobart. 159 p.	
366.	Day, R.D., R.D. McCauley, Q.P. Fitzgibbon, K. Hartmann, and J.M. Semmens. 2017. Exposure to seismic air gun signals causes physiological harm and alters behavior in the scallop Pecten fumatus. *Proceedings of the National Academy of Sciences of the United States of America* 114(40): E8537–E8546. https://doi.org/10.1073/pnas.1700564114.	
367.	Hydro International. no date *LBL Underwater Positioning*. Hydro International. Available from: https://www.hydro-international.com/content/article/lbl-underwater-positioning?output=pdf [Accessed April 2026].	
368.	Sonardyne. no date *Ranger 2 USBL Family*. Sonardyne. Available from: https://www.sonardyne.com/product/ranger-2-usbl-family/ [Accessed April 2026].	
369.	Sonardyne. no date *Fusion 2*. Sonardyne. Available from: https://www.sonardyne.com/product/fusion-2/ [Accessed April 2026].	
370.	DEWHA. 2008. *EPBC Act Policy Statement 2.1 – Interaction between offshore seismic exploration and whales*. Department of the Environment, Water, Heritage and the Arts, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/sites/default/files/documents/seismic-whales.pdf [Accessed May 2026/.	
371.	DEWHA. 2009. *Approved Conservation Advice for Dermochelys coriacea (Leatherback Turtle).* Department of the Environment, Water, Heritage and the Arts, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/biodiversity/threatened/species/pubs/1768-conservation-advice.pdf [Accessed May 2026].	
372.	CAPL. 2024. *ABU – Operations Process: Control of Work Manual*. Revision 10. Chevron Australia, Perth, Western Australia.	OE-03.06.1080
373.	Commonwealth of Australia. 2018. *Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans*. Department of the Environment and Energy, Australian Government, Canberra, Australian Capital Territory. Available from: https://www.dcceew.gov.au/sites/default/files/documents/tap-marine-debris-2018.pdf [Accessed May 2026].	
374.	AMSA. 2023. *Technical guidelines for preparing contingency plans for marine and coastal facilities*. Australian Maritime Safety Authority, Australian Government, Canberra, Australian Capital Territory. Available from: https://www.amsa.gov.au/sites/default/files/np-gui-012-technical-guidelines-contingency-plans-15082023_0.pdf [Accessed February 2026].	NP-GUI-012
375.	CAPL. 2023. *Offshore Cargo Handling Procedures: Manage Freight Movement*. Chevron Australia, Perth, Western Australia.	ABU-SSU-00427
376.	RPS. 2026. *Gorgon Backfill Fields Development: Oil Spill Modelling – MDO (350 m^3) at Chrysaor-Dionysis and Chandon*. Unpublished report prepared by RPS for Chevron Australia. RPS Group, Gold Coast, Queensland.	SSF-US00-RGL-RPT-CVX-000-00001-00
377.	Zieman J.C., Orth R., Phillips R.C., Thayer G.W., Thorhaug A. 1984. The effects of oil on seagrass ecosystems. In: Cairns J, Buikema AL (eds) *Restoration of habitats impacted by oil spills*. Butterworth-Heinemann, Boston, MA, p37−64.	

Ref No.	Description	Document ID
378.	Peters, E.C., Gassman, N.J., Firman, J.C., Richmond, R.H., Power, E.A. 1997. Ecotoxicology of tropical marine ecosystems. *Environmental Toxicology and Chemistry,* 16, 12–40.	
379.	O'Brien P.Y. and Dixon P.S. 1976. The Effects of Oil and Oil Components on Algae: A review. *British Phycological Journal,* 11:115–142.	
380.	Baca, B., Rosch, E., DeMicco, E.D. and Schuler, P.A. 2014. TROPICS: 30-year Follow-up and Analysis of Mangroves, Invertebrates, and Hydrocarbons. *International Oil Spill Conference Proceedings,* May 2014, Vol. 2014, No. 1, pp. 1734–1748.	
381.	Negri, A.P. and Heyward, A.J. 2000. Inhibition of fertilization and larval metamorphosis of the coral Acropora millepora (Ehrenberg, 1834) by petroleum products. *Marine Pollution Bulletin,* 41(7-12): 420–427.	
382.	Peters, E.C. 1981. Bioaccumulation and histopathological effects of oil on a stony coral. *Marine Pollution Bulletin*, 12(10):333–339.	
383.	Knap A.H, Wyers S.C, Dodge R.E, Sleeter T.D, Frith H.R, Smith S.R, Cook C.B. 1985. The effects of chemically and physically dispersed oil on the brain coral Diploria strigosa. *1985 Oil Spill Conference*, Publ 4385. Am Petroleum Inst, Washington, DC: 547–551.	
384.	Girard, F. and Fisher, C.R. 2018. Long-term impact of the Deepwater Horizon oil spill on deep-sea corals detected after seven years of monitoring. *Biological Conservation*, 225: 117-127.	
385.	Harris K. A., Nichol L. M., Ross P. S. 2011. Hydrocarbon concentration and patterns in free-ranging sea otters (Enhydra lutris) from British Columbia, Canada. *Environ. Toxicol. Chemi.* 30, 2184–2193. doi: 10.1002/etc.627.	
386.	Jarvela Rosenberger A. L., MacDuffee M., Rosenberger A. G. J., Ross P. S. 2017. Oil spills and marine mammals in British Columbia, Canada: Development and Application of a Risk-based Conceptual Framework. *arch. environ. Contam. Toxicol*. 73, 131–153. doi: 10.1007/s00244-017-0408-7.	
387.	Ramírez-León M. Rafael, Sosa-Nishizaki Oscar, Pérez-Brunius Paula, Romo-Curiel Alfonsina E., Ramírez-Mendoza Zurisaday, Fajardo-Yamamoto Arturo, Herzka Sharon Z,. García-Aguilar María C. 2023. Semi-quantitative risk assessment of marine mammal oil exposure: A case study in the western Gulf of Mexico. *Frontiers in Marine Science*. Volume 10. https://doi.org/10.3389/fmars.2023.1034647.	
388.	Engelhardt F. R. 1983. Petroleum effects on marine mammals. Aquatic Toxicology Volume 4, Issue 3:199–217 https://doi.org/10.1016/0166-445X(83)90018-8.	
389.	Colegrove K. M., Venn-Watson S., Litz J., Kinsel M., Garrison L., Terio K., Mori C., Rosenstein A., Carmichael R., Fougeres E., Mase-Guthrie B., Ewing R., Shannon D., Shippee S., Smith S., Staggs L., Stratton E., Tumlin M., Rowles T. 2013. *Marine mammals, oil, and the Gulf of Mexico: perspectives on the 2010–2013 Northern Gulf of Mexico cetacean unusual mortality event*. In: Proceedings from the 2013 meeting of the American college of veterinary pathologists, Montreal, Canada.	
390.	Wilkin S. M., Rowles T. K., Stratton E., Adimey N., Field C. L., Wissman S., et al. 2017. Marine mammal response operations during the deepwater horizon oil spill. *Endang. Species Res.* 33, 107–118. doi: 10.3354/esr00811.	
391.	Peterson C. H. 2001. The Exxon Valdez oil spill in Alaska: acute, indirect and chronic effects on the ecosystem. *Adv. Mar. Biol*. 39, 1–103. doi: 10.1016/S0065-2881(01)39008-9.	

Ref No.	Description	Document ID
392.	Venn-Watson S., Colegrove K. M., Litz J., Kinsel M., Terio K., Saliki J., Fire S., Carmichael R., Chevis C., Hatchett W., Pitchford J., Tumlin M., Field C.,Smith S., Ewing R., Fauquier D., Lovewell G., Whitehead H., Rotstein D., McFee W., Fougeres E., Rowles T. 2015. Adrenal gland and lung lesions in gulf of Mexico common bottlenose dolphins (*Tursiops truncatus*) found dead following the deepwater horizon oil spill. *PloS One* 10, e0126538. doi: 10.1371/journal.pone.0126538.	
393.	Lane S. M., Smith C. R., Mitchell J., Balmer B. C., Barry K. P., McDonald T. Mori C., Rosel P., Rowles T., Speakman T., Townsend F., Tumlin M., Wells R., Zolman E., Schwacke L., 2015. Reproductive outcome and survival of common bottlenose dolphins sampled in barataria bay, lousiana, USA following the deepwater horizon oil spill. *Proc. Biol. Sci.* 282, 1–9.	
394.	Frasier, K.E., Kadifa, M.A., Solsona Berga, A. et al. A decade of declines in toothed whale densities following the Deepwater Horizon oil spill. *Commun Earth Environ* 5, 782 (2024). https://doi.org/10.1038/s43247-024-01920-8.	
395.	Helm, Roger, Costa, Daniel, DeBruyn, Terry, O'Shea, Thomas, Wells, Randall, Williams, Terrie. 2015. *Overview of Effects of Oil Spills on Marine Mammals.* Doi:10.1002/9781118989982.ch18.	
396.	Lutcavage M. E., Plotkin P., Witherington B., Lutz P. 1997. Human impacts on sea turtle survival. In: Lutz PL, Musick JA (eds) *The biology of sea turtles*, Volume I. CRC Press, Boca Raton, FL, pp 387–409.	
397.	Alice F., Feitosa, Ícaro B.H.M.P., Menezes, Oscar S., Duarte, Carminda S. B., Salmito-Vanderley, Pedro B.M., Carneiro, Rufino N.A., Azevedo, André H.B., Oliveira, Ana C.S., Luz, Adriana P., Nascimento, Ronaldo F., Nascimento, Laercio L. Martins, Rivelino M., Cavalcante, Caroline V., Feitosa. 2024. The impact of chronic and acute problems on sea turtles: The consequences of the oil spill and ingestion of anthropogenic debris on the tropical semi-arid coast of Ceará, Brazil, *Aquatic Toxicology*, Volume 269. 106867, ISSN 0166-445X, https://doi.org/10.1016/j.aquatox.2024.106867.	
398.	Yaghmour Fadi. 2019. Are oil spills a key mortality factor for marine turtles from the eastern coast of the United Arab Emirates?, *Marine Pollution Bulletin*, Volume 149, 110624, ISSN 0025-326X, https://doi.org/10.1016/j.marpolbul.2019.110624.	
399.	Ruberg Elizabeth, Williams Tony, Elliott John. 2021. Review of petroleum toxicity in marine reptiles. *Ecotoxicology*. 16;30(4):525–536. doi: 10.1007/s10646-021-02359-9.	
400.	Lutcavage M., Lutz P., Bossart G., Hudson D. 1995.Physiologic and clinicopathologic effects of crude oil on loggerhead sea turtles *Arch. Environ. Contam. Toxicol.*, 28 (1995), pp. 417-422, 10.1007/BF00211622.	
401.	Camacho M., Calabuig P., Luzardo O. P., Boada L. D., Zumbado M., Orós J., Crude oil as a stranding cause among loggerhead sea turtles (*Caretta caretta*) in the Canary Islands, Spain (1998–2011) *J. Wildl. Dis.*, 49 (2013), pp. 637-640, 10.7589/2012-03-093.	
402.	Manire C., Norton T., Stacy B., Innis C., Harms C. A. 2017. *Sea Turtle Health and Rehabilitation* J. Ross Publishing.	
403.	Otten J. G., Williams L., Refsnider J. M. 2022. Survival outcomes of rehabilitated riverine turtles following a freshwater diluted bitumen oil spill *Environ. Pollut.*, 311, Article 119968, 10.1016/j.envpol.2022.119968.	
404.	NOAA Fisheries. 2025. *Sea Turtles, Dolphins, and Whales - 10 Years after the Deepwater Horizon Oil Spill.* National Oceanic and Atmospheric Administration Fisheries. Available from:	

Ref No.	Description	Document ID
	https://www.fisheries.noaa.gov/national/marine-life-distress/sea-turtles-dolphins-and-whales-10-years-after-deepwater-horizon-oil [Accessed October 2025].	
405.	AMSA. 2010. *Response to the Pacific adventurer: operational and technical issues reports*. Australian Maritime Safety Authority, Canberra, Australian Capital Territory.	
406.	Watson, J.E.M., Joseph, L.N., and Watson, A.W.T. 2009. *A rapid assessment of the impacts of the Montara oil leak on birds, cetaceans and marine reptiles.* Prepared on behalf of the Australian Government Department of the Environment, Water, Heritage and the Arts by the Spatial Ecology Laboratory, University of Queensland, Brisbane.	
407.	Gagnon, M.M. 2009. *Report on biopsy collections from specimens collected from the surrounds of the West Atlas oil leak – sea snake specimen*. Curtin University, Perth, Western Australia.	
408.	ITOPF 2014. *Effects of oil pollution on the marine environment. Technical Information Paper No. 13*. The International Tanker Owners Pollution Federation Limited. London, United Kingdom.	
409.	Christine Hale, Larissa Graham, Emily Maung-Douglass, Stephen Sempier, LaDon Swann, Monica Wilson. 2021. Impacts from the Deepwater Horizon oil spill on Gulf of Mexico fisheries. Oil Spill Science Sea Grant Programs of the Gulf of Mexico. Available from: https://masgc.org/oilscience/oil-spill-science-fish-impacts.pdf [Accessed October 2025].	
410.	NOAA. 2021. *How Oil Spills Affect Fish and Whales*. National Oceanic and Atmospheric Administration. Available from: https://response.restoration.noaa.gov/oil-and-chemical-spills/oil-spills/how-oil-spills-affect-fish-and-whales.html [Accessed January 2026].	
411.	ITOPF. 2014. *Effects of oil pollution on fisheries and mariculture. Technical Information Paper No. 11*. The International Tanker Owners Pollution Federation Limited. London, United Kingdom.	
412.	Lee, K., King, T.L., Robinson, B., Li, Z., Burridge, L., Lyons, M., Wong, D., MacKeigan, K., Courtenay, S., Johnson, S., Boudreau, M., Hodson, P., Greer, C. and Venosa, A.D. 2011. *Toxicity Effects of Chemically Dispersed Crude Oil on Fish*. In: International Oil Spill Conference Proceedings: March 2011, 2011(1): 163.	
413.	Takeshita R., Bursian S. J., Colegrove K. M., Collier T. K., Deak K., Dean K. M., … Hall, A. J. 2021. A review of the toxicology of oil in vertebrates: what we have learned following the Deepwater Horizon oil spill. *Journal of Toxicology and Environmental Health.* Part B, 24(8), 355–394. https://doi.org/10.1080/10937404.2021.1975182.	
414.	Barron M. G., Vivian D. N., Heintz R. A., Yim U. H. 2020. Long-Term Ecological Impacts from Oil Spills: Comparison of Exxon Valdez, Hebei Spirit, and Deepwater Horizon. *Environ Sci Technol*. 54(11):6456-6467. doi: 10.1021/acs.est.9b05020.	
415.	Langangen Ø., Olsen E., Stige L.C., Ohlberger J., Yaragina N. A., Vikebø F.B., Bogstad B., Stenseth N. C., Hjermann D.Ø. 2017. The effects of oil spills on marine fish: Implications of spatial variation in natural mortality, *Marine Pollution Bulletin*. Volume 119, Issue 1, Pages 102-109, ISSN 0025-326X, https://doi.org/10.1016/j.marpolbul.2017.03.037.	
416.	ITOPF 2014. Effects of oil pollution on fisheries and mariculture. Technical Information Paper No. 11. The International Tanker Owners Pollution Federation Limited. London, United Kingdom.	
417.	Volkman J.K., Miller, G.J., Revill, A.T. and Connell, D.W. 2004. 'Oil spills.' In Environmental Implications of offshore oil and gas development in	

Ref No.	Description	Document ID
	Australia – the findings of an independent scientific review. Edited by Swan, J.M., Neff, J.M. and Young, P.C. Australian Petroleum Exploration Association. Sydney.	
418.	Clark R. 1984. Impacts of oil pollution on seabirds. *Environmental Pollution Series: Ecology and Biology*. 33: 1–22.	
419.	Mason D. King, John E. Elliott, Tony D. Williams. 2021. Effects of petroleum exposure on birds: A review. Science of The Total Environment, Volume 755, Part 1, 142834, ISSN 0048-9697, https://doi.org/10.1016/j.scitotenv.2020.142834.	
420.	Peakall, D.B., Wells, P.G. and Mackay, D. 1987. A hazard assessment of chemically dispersed oil spills and seabirds. Marine Environmental Research 22(2):91–106.	
421.	Victor Pavlov, Neil A. James, Elizabeth A. Masden, Victor Cesar Martins de Aguiar, Lars Robert Hole, Henrikki Liimatainen, Eva Pongrácz. 2023. Impacts of offshore oil spill accidents on island bird communities: A test run study around Orkney and Svalbard archipelagos. *Environmental Pollution*. Volume 334, 122193, ISSN 0269-7491, https://doi.org/10.1016/j.envpol.2023.122193.	
422.	Ralph E.T. Vanstreels, Nola J. Parsons, Richard B. Sherley, Nicky Stander, Venessa Strauss, Jessica Kemper, Lauren Waller, Barbara J. Barham, Katrin Ludynia. 2023. Factors determining the number of seabirds impacted by oil spills and the success of their rehabilitation: Lessons learned from Namibia and South Africa. *Marine Pollution Bulletin*, Volume 188, 114708, ISSN 0025-326X, https://doi.org/10.1016/j.marpolbul.2023.114708.	
423.	Fodrie F.J., Able K.W., Galvez F., Heck K.L., Jensen O.P., López-Duarte P.C., Martin C.W., Turner R.E., Whitehead A. 2014. Integrating Organismal and Population Responses of Estuarine Fishes in Macondo Spill Research. *BioScience*, Volume 64, Issue 9, September 2014, Pages 778–788.	
424.	Hjermann D.Ø., Melsom A., Dingsør G.E., Durant J.M., Eikeset A.M., Roed L.P., Ottersen G., Storvik G., Stenseth N. 2007. Fish and oil in the Lofoten-Barents Sea system: synoptic review of the effect of oil spills on fish populations. *Mar. Ecol. Prog. Ser.*, 339 (2007), pp. 283–299.	
425.	Takeshita R., Bursian S. J., Colegrove K. M., Collier T. K., Deak K., Dean K. M., … Hall, A. J. 2021. A review of the toxicology of oil in vertebrates: what we have learned following the Deepwater Horizon oil spill. *Journal of Toxicology and Environmental Health.* Part B, 24(8), 355–394. https://doi.org/10.1080/10937404.2021.1975182.	
426.	Barron M. G., Vivian D. N., Heintz R. A., Yim U. H. 2020. Long-Term Ecological Impacts from Oil Spills: Comparison of Exxon Valdez, Hebei Spirit, and Deepwater Horizon. *Environ Sci Technol*. 54(11):6456-6467. doi: 10.1021/acs.est.9b05020.	
427.	Langangen Ø., Olsen E., Stige L.C., Ohlberger J., Yaragina N. A., Vikebø F.B., Bogstad B., Stenseth N. C., Hjermann D.Ø. 2017. The effects of oil spills on marine fish: Implications of spatial variation in natural mortality, *Marine Pollution Bulletin*. Volume 119, Issue 1, Pages 102-109, ISSN 0025-326X, https://doi.org/10.1016/j.marpolbul.2017.03.03.7	
428.	IPIECA. 1997. *Biological Impacts of Oil Pollution: Fisheries*. IPIECA Report Series 8, International Petroleum Industry Environmental Conversation Association, London, United Kingdon. Available from: https://www.amn.pt/DCPM/Documents/Fisheries.pdf [Accessed May 2026].	
429.	NOAA. 2018. *Deepwater Horizon Left Little Lasting Impact on Trends of Key Fish Species, New Study Finds.* NOAA Fisheries. Available from:	

Ref No.	Description	Document ID
	https://www.fisheries.noaa.gov/feature-story/deepwater-horizon-left-little-lasting-impact-trends-key-fish-species-new-study-finds [Accessed May 2026].	
430.	Holdway, D.A. 2002. *The acute and chronic effects of wastes associated with offshore oil and gas production on temperate and tropical marine ecological processes*. Marine Pollution Bulletin 44(3):185– 203.	
431.	Shigenaka, G. 2011. Chapter 27 – Effects of Oil in the Environment. In: M. Fingas, ed. *Oil Spill Science and Technology*. Gulf Professional. 9851024.	
432.	Davis, H.K., Moffat, C.F. and Shepherd, N.J. 2002. Experimental Tainting of Marine Fish by Three Chemically Dispersed Petroleum Products, with Comparisons to the Braer Oil Spill. *Spill Science & Technology Bulletin*. 7(5–6): 257– 278.	
433.	Challenger, G. and Mauseth, G. 2011. Seafood safety and oil spills. In: M. Fingas, ed. *Oil Spill Science and Technology*. 1083-1100.	
434.	Gagnon, M.M. and Rawson, C. 2011. *Montara Well Release, Monitoring Study S4A – Assessment of Effects on Timor Sea Fish*. Curtin University, Perth, Australia.	
435.	Gohlke, J.M. 2011. A Review of Seafood Safety after the Deepwater Horizon Blowout. *Environmental Health Perspectives*. 119(8):1062–1069.	
436.	Jung, J. 2011. Biomarker Responses in Pelagic and Benthic Fish Over One Year Following the Hebei Spirit Oil Spill (Taean, Korea). *Marine Pollution Bulletin.* 62(8):1859– 1866	
437.	Law, R.J. 1997. Hydrocarbons and PAH in Fish and Shellfish from Southwest Wales following the Sea Empress Oil Spill in 1996. *International Oil Spill Conference Proceedings* 1997 (1): 205–211	
438.	Rawson, C., Gagnon, M.M. and Williams, H. 2011. *Montara Well Release Olfactory Analysis of Timor Sea Fish Fillets*. Curtin University, Perth, Western Australia.	
439.	PTTEP. 2013. Montara Environmental Monitoring Program: Report of Research. PTTEP Australia, West Perth, Western Australia. Available from: https://www.au.pttep.com/wp-content/uploads/2019/09/2013-Report-of-Research-Book-vii-1.pdf [Accessed April 2026].	
440.	BlueSands Environmental. 2021. *Joint Industry Operational and Scientific Monitoring Framework.* Revision D. Prepared by BlueSands Environmental for the Australian Petroleum Production and Exploration Association. Available from: https://energyproducers.au/hubfs/Joint%20Industry%20OSM%20Framework%20Rev%20D%2012032021.pdf [Accessed May 2026].	
441.	UNESCO. 2003. Text of the Convention for the Safeguarding of the Intangible Cultural Heritage. United Nations Educational, Scientific and Cultural Organization, Paris, France. Available from: https://ich.unesco.org/en/convention [Accessed May 2026].	
442.	Deadly Story. [no date]. *Songlines*. Deadly Story. Available from: https://deadlystory.com/page/culture/Life_Lore/Songlines [Accessed May 2026].	
443.	Woodward, E., Hill, R., Harkness, P. and R. Archer (Eds). 2020. *Our Knowledge Our Way in caring for Country: Indigenous-led approaches to strengthening and sharing our knowledge for land and sea management. Best Practice Guidelines from Australian experiences*. NAILSMA and CSIRO. Available from: https://www.csiro.au/en/research/indigenous-	

Ref No.	Description	Document ID
	science/indigenous-knowledge/our-knowledge-our-way/okow-resources [Accessed May 2026].	
444.	DSEWPaC. 2011. *Approved Conservation Advice for Sternula nereis nereis (Fairy Tern)*. Department of Sustainability, Environment, Water, Population and Communities, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/biodiversity/threatened/species/pubs/82950-conservation-advice.pdf [Accessed May 2026].	
445.	National Plan Strategic Coordination Committee. 2022. *National Plan: Response, Assessment and Termination of Cleaning for Oil Contaminated Foreshores*. Australian Maritime Safety Authority, Australian Government, Canberra, Australian Capital Territory. Available from: https://www.amsa.gov.au/sites/default/files/np-gui-025-response-assessment-and-termination-of-cleaning-for-oil-contaminated-foreshores.pdf [Accessed February 2026].	NP-GUI-025
446.	Bonn Agreement. 2004. Bonn Agreement Oil Appearance Code. In *Bonn Agreement Aerial Operations Handbook* (Part 3, Annex A). Bonn Agreement, London, United Kingdom. Available from: https://www.bonnagreement.org/publications [Accessed February 2026].	
447.	CAPL. 2019. *ABU Strategic NEBA*. Chevron Australia, Perth, Western Australia.	ABU190801382
448.	CAPL. 2020. *Oil Spill Protection Prioritisation Process: North West Shelf*. Chevron Australia, Perth, Western Australia.	ABU 18050023
449.	Advisian. 2017. *DOT307215 Provision of Western Australian Marine Oil Pollution Risk Assessment – Protection Priorities: Protection Priority Assessment for Zone 2: Pilbara – Final Report*. Report prepared by Advisian for the WA Department of Transport, Perth, Western Australia. Available from: https://www.transport.wa.gov.au/getmedia/01C6AEEE-D6C6-4651-A3E1-DB977878274E/mac_p_dot307215_pilbaraprotectionpriorities.pdf [Accessed May 2026].	
450.	ISO. 2026. *ISO 14001:2026 Environmental management systems – Requirements with guidance for use*. International Organization for Standardization, Geneva, Switzerland.	
451.	CAPL. 2013. *OE Information Management: ABU Standardised OE Process*. Revision 6. Chevron Australia, Perth, Western Australia	OE-03.02.01
452.	CAPL. 2024. *ABU Management of Change for Facilities and Operations: Upstream and Gas Standardised OE Process*. Revision 11. Chevron Australia, Perth, Western Australia.	OE-04.00.01
453.	CAPL. 2024. *ABU OE Risk Management Process*. Revision 14.1. Chevron Australia, Perth, Western Australia.	OE-03.01.01
454.	Chevron Corporation. 2024. *OE Compliance and Assurance Standard*. Version 11. Chevron Corporation, Houston, Texas, United States of America.	OE-12.01.01
455.	Chevron Corporation. 2020. *OE Corporate Standard Incident Investigation*. Chevron Corporation, Houston, Texas, United States of America.	
456.	Chevron Corporation. 2021. *OE Data Reporting Standard*. Chevron Corporation, Houston, Texas, United States of America.	
457.	CAPL. 2024. *ABU Contractor Operational Excellence Management: ABU OE Process*. Chevron Australia, Perth, Western Australia.	OE-06.00.01

Ref No.	Description	Document ID
458.	CAPL. 2025. II&R Execution Manual: Chevron Australia Incident Investigation and Reporting. Revision 22. Chevron Australia, Perth, Western Australia.	OE-09.00.01
459.	CAPL. 2024. *Emergency Management: OE Execution Manual*. Revision 8. Chevron Australia, Perth, Western Australia.	OE-11-01-01
460.	Hinwood, J.B., Poots, A.E., Dennis, L.R., Carey, J.M., Houridis, H., Bell, R., Thomson, J.R., Boudreau, P. and Ayling, A.M., and Australian Marine and Offshore Group Pty Ltd. 1994. The Environmental Implication of Drilling Activities. In: Swan, J.M., Neff, J.M. and Young, P.C. (Eds) *Environmental Implications of Offshore Oil and Gas Development in Australia – The Findings of an Independent Scientific Review*. Australian Petroleum Exploration Association, Sydney, pp 123–207.	
461.	CAPL. 2025. *ABU OE Assurance Priorities and Plan*. Revision 9. Chevron Australia, Perth, Western Australia.	ABU161100798
462.	AMSA. 2020. *National Plan for Maritime Environmental Emergencies. 2020 Edition.* Australian Maritime Safety Authority, Australian Government, Canberra, Australian Capital Territory. Available from: https://www.amsa.gov.au/sites/default/files/national-plan-maritime-envrironmental-emergencies-2020.pdf [Accessed May 2026].	
463.	CAPL. 2024. *ABU Crisis Management Plan*. Revision 21. Chevron Australia, Perth, Western Australia.	OE-11.01.10
464.	CAPL. 2024. *ABU Business Continuity Planning: Standard OE Process*. Chevron Australia, Perth, Western Australia.	OE-11.01.1110
465.	APPEA 2021. *Guidance Document: Incident Management Teams – Knowledge Requirements for Responding to Marine Oil Spills*. Version 8. Australian Petroleum Production & Exploration Association in consultation with the Australian Marine Oil Spill Centre and peer reviewed by Oil Spill Response Limited. Available from: https://www.appea.com.au/wp-content/uploads/2021/12/APPEA-Guidance-Document-IMT-Knowledge-Requirements-for-Responding-to-Marine-Oil-Spills5113.pdf [Accessed May 2026].	
466.	CAPL. 2023. *PEMT Oil Spill Response Resource Assessment Tool*. Chevron Australia, Perth, Western Australia.	ABU231100481
467.	CAPL. 2018. *Chevron Corporate Emergency: ABU Response Teams and Resources Procedure*. Version 1. Chevron Australia, Perth, Western Australia.	OE-11.01.1111
468.	CAPL. 2025. *ABU EM 5 Year Training and Exercise Schedule*. Revision 8. Chevron Australia, Perth, Western Australia.	ABU 230300030
469.	NOPSEMA. 2026. *Guidance Note: Notification, Reporting and Recording Requirements for Incidents*. National Offshore Petroleum Safety and Environmental Management Authority, Perth, Western Australia. Available from: https://www.nopsema.gov.au/sites/default/files/documents/N-03300-GN2303%20-%20Notification%20Reporting%20and%20Recording%20Requirements%20for%20Incidents%20%28A1179039%29%20.pdf [Accessed May 2026].	N-03300-GN2303 A1179039
470.	NOPSEMA. 2026. *Guideline: Annual Environmental Performance Reporting*. National Offshore Petroleum Safety and Environmental Management Authority, Perth, Western Australia. Available from: https://www.nopsema.gov.au/sites/default/files/documents/N-04750-GL1942%20-%20Preparing%20an%20environmental%20performance%20report%20%28A748558%29.pdf [Accessed May 2026].	N-04750-GL1942 A748558

Ref No.	Description	Document ID
471.	NOPSEMA. 2024. *Form: Regulation 54 – Start or end of an activity*. National Offshore Petroleum Safety and Environmental Management Authority, Perth, Western Australia. Available from: https://www.nopsema.gov.au/document-hub/forms-and-templates [Accessed May 2026].	N-04750-FM1405 A417042
472.	DSEWPaC. 2013. *Approved Conservation Advice for Rostratula australis (Australian painted snipe)*. Department of Sustainability, Environment, Water, Population and Communities, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/biodiversity/threatened/species/pubs/77037-conservation-advice.pdf [Accessed May 2026].	
473.	Threatened Species Scientific Committee. 2015. *Conservation Advice Pterodroma Mollis soft-plumaged petrel*. Department of the Environment, Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/biodiversity/threatened/species/pubs/1036-conservation-advice-01102015.pdf [Accessed May 2026].	
474.	NOPSEMA. 2026. *Information Paper: Reducing marine pest biosecurity risks through good practice biofouling management*. National Offshore Petroleum Safety and Environmental Management Authority, Perth, Western Australia. Available from: https://www.nopsema.gov.au/sites/default/files/documents/Reducing%20marine%20pest%20biosecurity%20risks%20through%20good%20practice%20biofouling%20management%20.pdf [Accessed July 2026].	N-04750-IP1899 A715054

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.



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Appendix B Concordance with the Gorgon Gas Development Backfill Fields 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 (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. 192). 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: OPP and EP activities concordance table

Component	Gorgon Backfill Fields Development OPP	Backfill Fields Site Investigation Surveys 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 Backfill Fields Site Investigation Surveys EP (this EP) is associated with the Chandon, Chrysaor, and Dionysus 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 late-2026/early-2027; refer to Section 4.1.2 of this EP. The activity timing described in this EP is within scope of the accepted OPP.
Activity	Section 4.3.1 of the OPP (Ref. 3). describes survey activities that may be undertaken to support the Backfill Fields Development.	The activities covered by this EP include geophysical, geotechnical and environmental surveys; refer to Section 4 of this EP. These activities are within the scope of activities covered by the accepted OPP. Note: While environmental surveys are not specifically described within the OPP, the

Component	Gorgon Backfill Fields Development OPP	Backfill Fields Site Investigation Surveys EP (this EP)
		potential environmental impacts and risks associated with these types of surveys are commensurate to the nature and scale of the potential environmental impacts and risks associated with the other survey (geophysical, geotechnical) activities described within 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: OPP and EP environmental performance concordance table

EPOs from the Gorgon Backfill Fields Development OPP	EPOs within this Backfill Fields Site Investigation Surveys EP	Refinement and/or modification between the OPP and this EP
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.	Not relevant to the scope of this petroleum activity. Given the sources of seabed disturbance within scope of this EP, a measurable effect to water quality was not considered credible.	N/A
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.	Not relevant to the scope of this petroleum activity. No wells or subsea infrastructure are being installed under this EP.	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.	**EPO-03**: No planned seabed disturbance from the petroleum activity to any previously undisturbed exposed hard substrate within the ancient coastline at 125 m depth contour KEF.	Modified to refer to the petroleum activity instead of the entire Development.
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 Development Area[187]. **EPS-02:** Planned seabed disturbance from the petroleum activity 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).	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.

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

EPOs from the Gorgon Backfill Fields Development OPP	EPOs within this Backfill Fields Site Investigation Surveys EP	Refinement and/or modification between the OPP and this EP
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 Development Area[187]. **EPS-02:** Planned seabed disturbance from the petroleum activity 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).	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.	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).	Not relevant to the scope of this petroleum activity. No wells or subsea infrastructure are being installed under this EP.	N/A
EPO-08: No adverse impacts to declared underwater cultural heritage without a permit[188] from planned activities associated with the Development.	**EPO-08:** No adverse impacts to declared UCH without a permit[188] 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 OAs 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 OAs instead of the entire Development

[188] Where a permit under section 23 of the UCH Act has been granted.

EPOs from the Gorgon Backfill Fields Development OPP	EPOs within this Backfill Fields Site Investigation Surveys EP	Refinement and/or modification between the OPP and this EP
Planned emissions—Greenhouse gas		
EPO-11: Manage GHG emissions from the 'Gorgon Operations Facility'[189] in accordance with requirements under the Commonwealth Safeguard Mechanism and from the 'Gorgon GTP'[190] 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 8.3.2).
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[191] 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 8.3.2).	N/A.
Planned emissions—Artificial light		
EPO-13: Artificial light emissions from planned Development activities do not prevent light sensitive marine fauna[192] from undertaking biological important behaviours[193].	**EPO-13:** Artificial light emissions from planned petroleum activities do not prevent light sensitive marine fauna[192] from undertaking biological important behaviours[193].	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[194] will be managed such that marine turtles are not displaced from these habitats.	**EPO-14:** Artificial light within or adjacent to HCTS of marine turtles[194] will be managed such that marine turtles are not displaced from these habitats.	No change.

[189] The 'Gorgon Operations Facility' is registered with the CER as a facility under both the NGER and Safeguard Mechanism schemes. The reporting boundary of the Gorgon Operations Facility includes direct (Scope 1) emissions from the 'Gorgon GTP' as well as direct (Scope 1) emissions from any activities or facilities in Commonwealth waters.

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

[191] Refer to Table 7-6 of the Gorgon Backfill Fields Development OPP (Ref. 3).

[192] Where light sensitive marine fauna includes marine turtles, seabirds and migratory shorebirds.

[193] Where biologically important behaviours are defined as behaviour associated with critical life functions (e.g. reproduction, foraging, migration, and resting) (Ref. 325).

[194] Where HCTS of marine turtle species is defined in Table 6 of the Recovery Plan for Marine Turtles in Australia (Ref. 73).

EPOs from the Gorgon Backfill Fields Development OPP	EPOs within this Backfill Fields Site Investigation Surveys EP	Refinement and/or modification between the OPP and this EP
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 • Nesting adults and dispersing hatchlings of the hawksbill turtle WA (H-WA) can continue.	**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 • Nesting adults and dispersing hatchlings of the hawksbill turtle WA (H-WA) can continue.	No change.
EPO-16: Implement an adaptive management approach (CM-17) 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 **EPS-09** and **EPS-10** within this EP, which are based on control measures selected to ensure potential risks from artificial light emissions are reduced to ALARP and acceptable levels.	N/A.
Planned emissions—Underwater sound		
EPO-17: Sound emissions from planned Development activities will be managed such that EPBC Act listed species continue undertaking biological important behaviours[195].	**EPO-17:** Sound emissions from planned petroleum activities will be managed such that EPBC Act listed species continue undertaking biological important behaviours[195].	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.

[195] Where biologically important behaviours are defined as behaviour associated with critical life functions (e.g. reproduction, foraging, migration, and resting) (Ref. 325)

EPOs from the Gorgon Backfill Fields Development OPP	EPOs within this Backfill Fields Site Investigation Surveys EP	Refinement and/or modification between the OPP and this EP
EPO-19: Any blue whale continues to utilise the BIA without injury[196], and is not displaced from a foraging area[197] [198].	**EPO-19:** Any blue whale continues to utilise the BIA without injury[196], and is not displaced from a foraging area[197, 198].	No change.
EPO-20: Any marine turtle is not displaced from identified HCTS of the species[199].	**EPO-20:** Any marine turtle is not displaced from identified HCTS of the species[199].	No change.
EPO-21: Any marine turtle continues to undertake biologically important behaviour within BIAs.	**EPO-21:** Any marine turtle continues to undertake biologically important behaviour within BIAs.	No change.
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 8.5.2 and 8.6.2).	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 EPSs established within this EP (**EPS-11, EPS-12, EPS-13, EPS-14** and **EPS-15**), which are based on control measures selected to ensure potential risks from underwater sound emissions are reduced to ALARP and acceptable levels.	N/A.

[196] For the purpose of Action A.2.3 from the Conservation Management Plan for the Blue Whale (Ref. 45) '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. 331).

[197] For the purpose of Action A.2.3 from the Conservation Management Plan for the Blue Whale (Ref. 45) 'displaced from a foraging area' applies in relation to BIAs (Ref. 331); 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. 45; Ref. 331). There are no Foraging Area BIAs within or adjacent to the Development Area or OAs.

[198] 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. 331). EPO-17 incorporates foraging as one of the biologically important behaviours of marine fauna.

[199] Where HCTS of marine turtle species is defined in Table 6 of the Recovery Plan for Marine Turtles in Australia (Ref. 73).

EPOs from the Gorgon Backfill Fields Development OPP	EPOs within this Backfill Fields Site Investigation Surveys EP	Refinement and/or modification between the OPP and this EP
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 vessels operations within the OAs 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 changes to marine fauna behaviour. Predator-prey dynamics will return to ambient state within seven days following the cessation of the discharge.	**EPO-25:** Planned discharges from general vessels operations within the OAs 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.	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).
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.	Not relevant to the scope of this petroleum activity. Planned discharges from subsea operations are outside of scope of this EP.	N/A.
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.	Not relevant to the scope of this petroleum activity. Planned discharges from subsea operations are outside of scope of this EP.	N/A.
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.	N/A.
EPO-29: Planned discharges from drilling operations within the Development Area will only cause localised	Not relevant to the scope of this petroleum activity.	N/A.

EPOs from the Gorgon Backfill Fields Development OPP	EPOs within this Backfill Fields Site Investigation Surveys EP	Refinement and/or modification between the OPP and this EP
changes to sediment quality (i.e. within the vicinity of the drill centres).	Planned discharges from drilling operations are outside of scope of this EP.	
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 assessments will be incorporated into Environment Plans for the petroleum activities associated with this Development.	Not relevant to the scope of this petroleum activity. Planned discharges from drilling operations are outside of scope of this EP.	N/A.
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).	Not relevant to the scope of this petroleum activity. Planned discharges from drilling operations are outside of scope of this EP.	N/A.
EPO-32: Planned discharges from drilling operations within the Development Area will not cause toxicity effects to benthic habitats or marine fauna.	Not relevant to the scope of this petroleum activity. Planned discharges from drilling operations are outside of scope of this EP.	N/A.
Physical presence—Vessels and 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.
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 OAs.	Modified to refer to the petroleum activity instead of the entire Development.
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 IMP attributable to the petroleum activity.	Modified to refer to the petroleum activity instead of the entire Development, and to align with an updated information paper on marine pest biosecurity from NOPSEMA (Ref. 474).

EPOs from the Gorgon Backfill Fields Development OPP	EPOs within this Backfill Fields Site Investigation Surveys EP	Refinement and/or modification between the OPP and this EP
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).
Unplanned releases—solid waste		
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 releases—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 releases—Loss of containment (vessel collision event)		
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.	N/A.

EPOs from the Gorgon Backfill Fields Development OPP	EPOs within this Backfill Fields Site Investigation Surveys EP	Refinement and/or modification between the OPP and this EP
Cultural heritage—Intangible values		
EPO-09: No interference with First Nations cultural heritage values 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-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.	Modified to refer to the petroleum activity instead of the entire Development. 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 Instruments made under the EPBC Act

The relevant requirements of the recovery plans, conservation advices, threat abatement plans, wildlife conservation plans, AMP management plans, and marine bioregional plans made under the EPBC act and where these have been considered within the EP are summarised in the following tables.

Recovery plans—Marine mammals

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. 45)	**Potential presence: C&D OA, Chanon OA, 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 BIAs, 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 8.3
Noise interference (Seismic surveys; Acute and chronic industrial noise; Shipping noise; Aircraft noise)	✓	Sections 8.5 and 8.6
Habitat modification (Commercial fisheries and aquaculture development; Marine debris; Infrastructure/coastal developments; Acute and chronic chemical discharge)	✓	Sections 8.12, 8.13 and 8.14
Vessel disturbance (Vessel collissions; Whale watching)	✓	Section 8.9

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
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 8.5 and 8.6
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.	✓	Sections 8.5 and 8.6
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 GHG emissions and regulate the krill fishery in Antarctica.	✓	Section 8.3
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
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 8.9

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
National Recovery Plan for the Southern Right Whale (Ref. 284)	**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 8.3
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)	—	
Whaling	—	

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Prey depletion (Climate change; Overfishing; Seismic survey)	✓	Section 8.3
Pollution (Chronic chemical pollution; Acute chemical pollution; Electromagnetic field disturbance)	✓	Section 8.14
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 GHG emissions.	✓	Section 8.3
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 plans—Marine reptiles

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Recovery Plan for Marine Turtles in Australia (Ref. 73)	**Potential presence: C&D OA, Chanon OA, 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 8.3
Marine debris (Entanglement; Ingestion)	✓	Section 8.12
Chemical and terrestrial discharge (Acute chemical and terrestrial discharge; Chronic chemical and terrestrial discharge)	✓	Sections 8.13 and 8.14

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
International take	—	
Terrestrial predation	—	
Fisheries bycatch	—	
Light pollution	✓	Section 8.4
Habitat modification (Infrastructure/coastal development; Dredging and trawling)	—	
Indigenous take	—	
Vessel disturbance	✓	Section 8.9
Noise interference (Acute noise; Chronic noise)	✓	Section 8.5 and 8.6
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 HCTS as per Section 3.3 Table 6 [of this Recovery Plan].	✓	Sections 8.5 and 8.6
Action A1.6: Manage anthropogenic activities in BIAs to ensure that biologically important behaviour can continue.	✓	Sections 8.5 and 8.6
Action A1.7: Develop robust criteria for the identification of HCTS of each stock for foraging, migration, mating and hatchling dispersal	—	

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
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 8.3
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.	—	
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.	✓	Section 8.14
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).	—	

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
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).	—	
Action Area A8: Minimise light pollution.		
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 this Recovery Plan].	✓	Section 8.4
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 8.4
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).	—	
Priority Actions for Flatback – Pilbara (F-Pil) Stock		
Quantify and model how changes in ambient temperatures (sand and water), sea level, frequency of extreme weather events, ocean circulation and acidification affect marine turtle nesting, sex ratios, hatching success, habitats, food availability and their ability to adapt to these changes.	—	
Manage anthropogenic activities to ensure marine turtles are not displaced from identified HCTS as per Section 3.3 Table 6.	✓	Sections 8.5 and 8.6
Ensure that spill risk strategies and response programs include management for turtles and their habitats, particularly in reference to slow to recover habitats, e.g. seagrass meadows or corals.	✓	Section 8.14

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Manage artificial light from onshore and offshore sources to ensure biologically important behaviours of nesting adults and emerging/dispersing hatchlings can continue.	✓	Section 8.4
Continue the implementation of the North West Shelf Flatback Turtle Conservation Program.	—	
Continue long-term nest monitoring program at Barrow Island, Mundabullangana Station and Delambre Island.	—	
Quantify predation of eggs and hatchlings by terrestrial predators.	—	
Determine genetic stock relatedness among Western Australian flatback turtle rookeries.	—	
Priority Actions for Green – North West Shelf (G-MWS) Stock		
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.	✓	Section 8.4
Ensure that spill risk strategies and response programs include management for turtles and their habitats.	✓	Section 8.14
Given this is a relatively accessible stock that is likely to be exposed to anthropogenic noise - Investigate the impacts of anthropogenic noise on turtle behaviour and biology and extrapolate findings from the North West Shelf stock to other stocks.	—	
Support the implementation of management plans and build capacity to undertake monitoring, education, and compliance management of marine turtles.	—	
Understand the threat posed to this stock by marine debris.	—	
Continue long-term monitoring of index beaches.	—	
Priority Actions for Loggerhead – Western Australia (LH-WA) Stock		
Quantify and model how changes in ambient temperatures (sand and water), sea level, frequency of extreme weather events, ocean circulation and acidification affect marine turtle nesting, sex ratios, hatching success, habitats, food availability and their ability adapt to these changes.	—	
Ensure that spill risk strategies and response programs include management for turtles and their habitats, particularly in reference to slow to recover habitats, e.g. seagrass meadows or corals.	✓	Section 8.14
Promote best practice bycatch mitigation and innovation in all Australian fisheries.	—	
Understand post-hatchling movements and assess threats in the Indian Ocean.	—	
Determine the extent to which marine debris is impacting loggerhead turtles.	—	

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Continue long-term monitoring of nesting and foraging populations.	—	
Priority Actions for Hawksbill – Western Australia (H-WA) Stock		
Maintain long-term monitoring programs at index beaches and establish monitoring at a key foraging area.	—	
Work on a regional scale to understand market supply chains and to reduce unsustainable harvest and illegal and unregulated trade.	—	
Manage artificial light from onshore and offshore sources to ensure biologically important behaviours of nesting adults and dispersing hatchlings can continue.	✓	Section 8.4
Quantify and model how changes in ambient temperatures (sand and water), sea level, frequency of extreme weather events, ocean circulation and acidification affect marine turtle nesting, sex ratios, hatching success, habitats, food availability and their ability adapt to these changes.	—	
Understand foraging ground requirements and identify priority areas for protection.	—	
Assess mixed stock genetics at foraging grounds.	—	

Recovery plans—Fishes, including sharks and rays

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Sawfish and River Sharks Multispecies Recovery Plan (Ref. 99)	**Potential presence: C&D OA, 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

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Threats		
Fishing activities	—	
Habitat degradation and modification	✓	Sections 8.13 and 8.14
Other potential threats to the species include: • Collection of animals for display in public aquaria • Marine debris	✓	Section 8.12
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. 287)	**Potential presence: C&D OA, 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 8.3, 8.13 and 8.14
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 HCTS of the grey nurse shark and reduce the impact of threatening processes within these areas.		
Action 8.1: Continue research to locate HCTS 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. 290)	**Potential presence: C&D OA, Chanon OA, 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
Threats		
Mortality related to being caught accidentally (bycatch) or illegally (targeted) by commercial and recreational fisheries, including issues of post release mortality.	—	

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 (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 8.3, 8.13 and 8.14
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 HCTS of the white shark and minimise the impact of threatening processes within these areas.		
Action 7.1: Continue research to locate HCTS 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.	—	

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
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).	—	

Recovery plans—Seabirds and migratory shorebirds

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
National Recovery Plan for Albatrosses and Petrels (Ref. 291)	**Potential presence: C&D OA, Chanon OA, 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

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
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.	—	
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 8.12, 8.13 and 8.14
Competition with fisheries for prey species	—	
Dependence of fisheries discards	—	
Marine infrastructure interactions	—	
Climate variability and change	✓	Section 8.3
Actions		
Action 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 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 A3: Identify whether competition with native species is causing population declines.		
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 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).	—	
Action 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 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
National Recovery Plan for the Australian Fairy Tern (Ref. 293)	**Potential presence: C&D OA, Chanon OA, 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	—	

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Invasive species	—	
Native wildlife	—	
Climate variability and change	✓	Section 8.3
Water management and increased salinity	—	
Pollution	✓	Sections 8.13 and 8.14
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).	—	

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
National Recovery Plan for the Australian Painted Snipe (Ref. 294)	**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 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 8.3
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).	—	

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
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).	—	
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—Marine mammals

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. 282)	**Potential presence: C&D OA, Chanon OA, Hydrocarbon EMBA**	
Threats		
Climate and oceanographic variability and change	✓	Section 8.3
Anthropogenic noise and acoustic disturbance	✓	Sections 8.5 and 8.6
Habitat degradation including coastal development, port expansion and aquaculture	—	
Pollution (persistent toxic pollutants)	✓	Sections 8.13 and 8.14
Fisheries catch, entanglement and bycatch	—	
Vessel strike	✓	Section 8.9
Resource 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 GHG emissions and regulate the krill fishery in Antarctica.	✓	Section 8.3
Assessing and addressing anthropogenic noise.		
Once the spatial and temporal distribution (including BIAs) 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. 283)	**Potential presence: C&D OA, Chanon OA, Hydrocarbon EMBA**	
Threats		
Climate and oceanographic variability and change	✓	Section 8.3
Anthropogenic noise and acoustic disturbance	✓	Sections 8.5 and 8.6
Habitat degradation including pollution (increasing port expansion and coastal development)	—	
Pollution (persistent toxic pollutants)	✓	Sections 8.13 and 8.14

Conservation advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Vessel strike	✓	Section 8.9
Prey depletion due to fisheries (potential threat)	—	
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 GHG emissions and regulate the krill fishery in Antarctica.	✓	Section 8.3
Assessing and addressing anthropogenic noise.		
Once the spatial and temporal distribution (including BIAs) 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. 285)	**Potential presence: C&D OA, 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

Conservation advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Threats		
Fisheries interactions—Active fishing gear (i.e. bycatch and entanglement)	—	
Fisheries interactions—Inactive fishing gear	—	
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 8.3
Habitat loss and degradation—Coastal development	—	
Habitat loss and degradation—Marine pollution	✓	Sections 8.13 and 8.14
Queensland Shark Control Program	—	
Vessel interactions—Vessel strike	✓	Section 8.9
Disease	—	
Anthropogenic underwater noise—Industrial noise	✓	Sections 8.5 and 8.6
Anthropogenic underwater noise—Vessel noise	✓	Section 8.5
Anthropogenic noise—Seismic	—	
Provisioning	—	
Actions		
Conservation and management priorities.		
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.		
Undertake appropriate baseline surveys in accordance with the National Guidelines for the Survey of Cetaceans, Marine Turtles, and the Dugong, prior to seeking approval for activities that may modify or degrade potential habitat for	—	

Conservation advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Australian humpback dolphins. Undertake continued monitoring throughout and post activities that may modify or degrade potential habitat for Australian humpback dolphins to understand population-level impacts.		
Continued standardised monitoring in collaboration with First Nations Sea Ranger groups of populations of known populations and additional sites are needed to further quantify population abundance and trends, distribution, movement patterns, genetic structure and habitat use and to support adaptive management.	—	
Information and research priorities.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Information and research priorities—Fishery interactions.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Information and research priorities—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.	—	
Information and research priorities—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 8.9
Information and research priorities—Health.		
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 Australian snubfin dolphin (Ref. 286)	**Potential presence: C&D OA, Hydrocarbon EMBA**	
Objectives		
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)	—	
Fisheries interactions—Inactive fishing gear	—	
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 8.3
Habitat loss and degradation—Coastal development and infrastructure	—	
Habitat loss and degradation—Marine pollution	✓	Sections 8.13 and 8.14
Anthropogenic underwater noise—Industrial noise	✓	Sections 8.5 and 8.6
Anthropogenic underwater noise—Vessel noise	✓	Section 8.5
Anthropogenic noise—Seismic	—	
Vessel interactions—Vessel strike	✓	Section 8.9
Disease	—	
Queensland Shark Control Program	—	
Provisioning	—	
Actions		
Conservation and management 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
Stakeholder engagement/community engagement.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Survey and monitoring priorities.		
Undertake appropriate baseline surveys in accordance with the National Guidelines for the Survey of Cetaceans, Marine Turtles, and the Dugong, prior to seeking approval for activities that may modify or degrade potential habitat for Australian humpback dolphins. Undertake continued monitoring throughout and post activities that may modify or degrade potential habitat for Australian snubfin dolphins to understand population-level impacts.	—	
Continued standardised monitoring in collaboration with First Nations Sea Ranger groups of known populations and at a broader scale are needed to further quantify population abundance and trends, distribution, movement patterns, genetic structure and habitat use and to support adaptive management.	—	
Information and research priorities.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Information and research priorities—Fishery interactions.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Information and research priorities—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 noise pollution from increasing vessel traffic and coastal construction on dolphin distribution and behaviour.	—	
Information and research priorities—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 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 8.9

Conservation advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Information and research priorities—Health.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Information and research priorities—Queensland Shark Control Program.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	

Conservation advices—Marine reptiles

Conservation advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Conservation advice for leatherback turtle (Ref. 371)	**Potential presence: C&D OA, Chandon OA, Hydrocarbon EMBA**	
Threats		
Incidental capture in commercial fisheries	—	
Harvest of eggs and meat	—	
Ingestion of marine debris	✓	Section 8.12
Boat strike	✓	Section 8.9
Predation on eggs by wild dogs, pigs, and monitor lizards	—	
Degradation of foraging areas	✓	Section 8.14
Changes to breeding sites	—	
Actions		
Habitat loss, disturbance and modification		
Identify and protect migratory corridors between nesting beaches and common foraging areas to facilitate colonisation.	—	
Investigate formal conservation arrangements, such as the development of conservation agreements and covenants with the fishing community.	—	

Conservation advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Animal predation.		
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).	—	
Conservation advice for leaf-scaled sea snake (Ref. 70)	**Potential presence: C&D OA, Hydrocarbon EMBA**	
Threats		
Degradation of reef habitat (primarily as a result of coral bleaching)	✓	Sections 8.3 and 8.14
Unsustainable and illegal fishing practices	—	
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	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Conservation advice for short-nosed sea snake (Ref. 71)	**Potential presence: C&D OA, Hydrocarbon EMBA**	
Threats		
Degradation of reef habitat (primarily as a result of coral bleaching)	✓	Sections 8.3 and 8.14
Incidental catch and death in commercial prawn trawling fisheries	—	
Unsustainable and illegal fishing practices	—	
Actions		
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 advices—Fishes, including sharks and rays

Conservation advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Conservation advice for dwarf sawfish (Ref. 310)	**Potential presence: C&D OA, Hydrocarbon EMBA**	
Threats		
Bycatch in commercial and recreational net fishing	—	
Illegal, unreported and unregulated fishing	—	
Other potential threats to the species include: • 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 for green sawfish (Ref. 311)	**Potential presence: C&D OA, Hydrocarbon EMBA**	
Threats		
Main potential threats to the species include: • Incidental capture as bycatch and byproduct in gillnet and trawl fisheries • Illegal capture for fins and rostra • Habitat degradation through coastal development	—	

Conservation advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Actions		
Habitat loss, disturbance and modification		
Identify populations and areas of high conservation priority.	—	
Protect remnants of the listed species through the development of conservation agreements and covenants with the fishing community.	—	
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. 288)	**Potential presence: C&D OA, 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 8.3
Mortality in Australian commercial fisheries	—	
Habitat loss and degradation (water resource development, coastal development, and alterations to river courses)	—	
Minor or poorly understood threats to the species include: • Recreational line fishing; Illegal, unreported and unregulated fishing; International fishing; First Nations fishing; Collection for display in public aquaria	✓	Section 8.14

Conservation advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
• Queensland Shark Control Program • Pollution and mining operations • Crocodile predation		
Actions		
Commercial fisheries.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Water resource development and alteration.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
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.	—	
Stakeholder engagement/community engagement.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
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. 289)	**Potential presence: C&D OA, Hydrocarbon EMBA**	
Threats		
Intentional and unintentional mortality from fishing outside of Australian waters	—	
Boat strike from large vessels	✓	Section 8.9
Habitat disruption from mineral exploration, production and transportation	—	

Conservation advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Other less important threats to the species include: • Disturbance from domestic tourism operations • Marine debris • Climate change	✓	Sections 8.3 and 8.12
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.	✓	Section 8.9
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.	—	
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.	—	
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.	—	

Conservation advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Consider the implications of climate change on whale shark distribution in Australian waters (possibly through the Range Extension Database Mapping Project).	—	

Conservation advices—Seabirds and migratory shorebirds

Conservation advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Conservation advice for Asian dowitcher (Ref. 292)	**Potential presence: Hydrocarbon EMBA**	
Objectives		
Primary conservation objective 1: Ensure no further loss of HCTS of Asian dowitcher throughout Australia (including habitat predicted to become HCTS of the species in the future because of climate change).	—	
Primary conservation objective 2: Prevent further declines in Asian dowitcher subpopulations by working with relevant Range States to address threats in the East Asian-Australasian Flyway (EAAF).	—	
Threats		
Habitat loss, fragmentation, and degradation (Habitat loss caused by residential and commercial development; Habitat loss caused by industrial aquaculture; Downstream effects of large dams)	—	
Climate change (Sea level rise)	✓	Section 8.3
Invasive species (Invasion of mudflats and coastal saltmarshes by mangroves and cordgrass)	—	
Exploitation (Hunting; Fishing bycatch)	—	
Pollution (Chronic and acute pollution)	✓	Section 8.14
Actions		
Habitat loss, disturbance and modifications 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
Invasive species impacts.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Climate change and severe weather impacts.		
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 Australian fairy tern (Ref. 444)	**Potential presence: C&D OA, Chanon OA, Hydrocarbon EMBA**	
Threats		
Predation by introduced mammals such as the European fox, dogs, cats, black rats, and native birds such as silver gulls, pacific gulls, swamp harrier and ravens.	—	
Disturbance by humans, dogs and vehicles, which can cause the direct destruction of nests or the desertion of nests.	—	
Increasing salinity in waters adjacent to fairy tern colonies, which can lead to a collapse in the numbers of prey fish causing a decline in fairy tern numbers.	—	
Irregular water management, which can result in water levels being too high, flooding nests, or too low allowing predators to walk across to breeding colonies.	—	
Weed encroachment, which often leads to nest sites being overgrown by vegetation rendering them unsuitable for breeding.	—	

Conservation advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Other potential threats to the species include: • Oil spills, particularly in Victoria, where the close proximity of oil facilities poses a risk of oil spills that may affect the species' breeding habitat.	✓	Section 8.14
Actions		
Habitat loss, disturbance and modification.		
Monitor the progress of recovery (using a variety of methods such as survey and banding programs, video surveillance of breeding colonies and maintaining a central breeding and sightings database), including the effectiveness of management actions and the need to adapt them if necessary.	—	
Identify populations of high conservation priority.	—	
Manage any changes to hydrology that may result in changes to tide levels, increase salinity or pollution.	—	
Manage any disruptions to water flows in wetland areas such as the Coorong in South Australia.	—	
Introduce recreational codes of conduct and license commercial tourism operations utilising the subspecies' habitat.	—	
Use nest protection measures to safeguard nests from extreme weather/tides, including sandbagging and nest relocation.	—	
Control access routes to suitably constrain public access to known sites on public and private land.	—	
Reduce disturbance during the breeding season from human recreation such as the use of off road vehicles and predation by domestic dogs, using signage and/ or fencing where appropriate. The use of signage can restrict access to the site as well as raise awareness of the sites ecological importance.	—	
Ensure appropriate oil-spill contingency plans are in place for the subspecies' breeding sites which are vulnerable to oil spills, such as the breeding colonies in Victoria.	✓	Section 8.14
Animal predation or competition.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Weed control.		
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 Australian painted snipe (Ref. 472)	**Potential presence: Hydrocarbon EMBA**	
Threats		
Loss and degradation of wetlands, through drainage and the diversion of water for agriculture and reservoirs	—	
Other potential threats to the species include: • Grazing and the associated trampling of wetland vegetation/nests • Nutrient enrichment and disturbance to substrate by livestock • Reduced rainfall and runoff in the Murray-Darling Basin associated with climate change • Predation by feral animals • Coastal port and infrastructure development • Shale oil mining near autumn-winter sites for this species on the central Queensland coast • Replacement of native wetland vegetation by invasive weeds.	—	
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.		
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 Christmas Island white-tailed tropicbird (golden bosun) (Ref. 295)	**Potential presence: C&D OA, Chandon OA, Hydrocarbon EMBA**	
Objectives		
Primary conservation objective: By 2034, the golden bosun will maintain its Area of Occupancy (AOO) and Extent of Occurrence (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	—	
Climate change and severe weather (Storms, flooding and marine heatwaves)	✓	Section 8.3
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.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
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.		

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).	—	
Information and research priorities.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Conservation advice for common greenshank (Ref. 296)	**Potential presence: Hydrocarbon EMBA**	
Objectives		
Primary conservation objective 1: Minimise further loss of HCTS of common greenshank throughout Australia (including habitat predicted to become HCTS of the species in the future because of climate change).	—	
Primary conservation objective 2: Prevent further declines in common greenshank populations by working with relevant Range States to address threats in the EAAF.	—	
Threats		
Habitat loss, degradation, and fragmentation (Habitat loss caused by residential and commercial development; Habitat loss caused by industrial aquaculture; Downstream effects of large dams)	—	
Anthropogenic disturbance (Disturbance at feeding and roosting sites)	—	
Climate change (Sea level rise)	✓	Section 8.3
Invasive species (Invasion of mudflats and coastal saltmarshes by mangroves and cordgrass)	—	
Exploitation (Hunting; Fishing bycatch)	—	
Pollution (Chronic and acute pollution)	✓	Section 8.14
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.		
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
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 curlew sandpiper (Ref. 297)	**Potential presence: C&D OA, Hydrocarbon EMBA**	
Objectives		
Primary conservation objective 1: Minimise further loss of HCTS of curlew sandpiper throughout Australia (including habitat predicted to become HCTS of the species in the future because of climate change).	—	
Primary conservation objective 2: Prevent further declines in curlew sandpiper populations by working with relevant Range States to address threats in the EAAF.	—	
Threats		
Habitat loss, fragmentation, and degradation (Habitat loss caused by residential and commercial development; Habitat loss caused by 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 frequence and length of droughts; Sea level rise; Climate change in Arctic breeding areas)	✓	Section 8.3
Invasive species (Invasion of mudflats and coastal saltmarshes by mangroves and cordgrass)	—	

Conservation advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Exploitation (Hunting)	—	
Pollution (Chronic and acute pollution)	✓	Section 8.14
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.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
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	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Conservation advice for eastern curlew (far eastern curlew) (Ref. 298)	**Potential presence: C&D OA, Chandon OA, Hydrocarbon EMBA**	
Objectives		
Primary conservation objective 1: Minimise further loss of HCTS of far eastern curlew throughout Australia (including habitat predicted to become HCTS of the species in the future because of climate change).	—	
Primary conservation objective 2: Prevent further declines in far eastern curlew populations by working with relevant Range States to address threats in the EAAF.	—	
Threats		
Habitat loss, fragmentation, and degradation (Habitat loss caused by residential and commercial development; Habitat loss caused by 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; Climate change at breeding locations)	✓	Section 8.3
Exploitation (Hunting; Deliberate poisoning; Fisheries-related mortality)	—	
Pollution (Chronic and acute pollution)	✓	Section 8.14
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.		
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).	—	
Disturbance at feeding and roosting sites.		
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 greater sand plover (Ref. 299)	**Potential presence: Hydrocarbon EMBA**	
Objectives		
Primary conservation objective 1: Minimise further loss of HCTS of greater sand plover throughout Australia (including habitat predicted to become HCTS of the species in the future because of climate change).	—	
Primary conservation objective 2: Prevent further declines in greater sand plover populations by working with relevant Range States to address threats in the EAAF.	—	
Threats		
Habitat loss, fragmentation, and degradation (Habitat loss caused by residential and commercial development; Habitat loss caused by 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; Climate change at breeding areas)	✓	Section 8.3
Exploitation (Hunting)	—	
Pollution (Chronic and acute pollution)	✓	Section 8.14
Actions		
Habitat loss, disturbance and modifications 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.		
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).	—	
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 little tern (Ref. 300)	**Potential presence: Hydrocarbon EMBA**	
Objectives		
Primary conservation objective 1: 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.	—	
Primary conservation objective 2: Increase breeding success in existing breeding colonies in all range states through appropriate management of threats.	—	
Threats		
Anthropogenic disturbance (Human disturbance at nesting sites; Off-road vehicles)	—	
Habitat loss and degradation (Industrial and urban development; Altered hydrological regimes; Beach wrack harvesting; Invasive weeds)	—	
Predation (Predation by introduced species; Predation by silver gulls and other native species)	—	

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; Extreme natural events)	✓	Section 8.3
Hybridisation (Hybridisation with 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).	—	
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. 301)	**Potential presence: Hydrocarbon EMBA**	
Objectives		
Primary conservation objective 1: Minimise further loss of HCTS of Yakutian bar-tailed godwit throughout Australia (including habitat predicted to become HCTS of the species in the future because of climate change).	—	
Primary conservation objective 2: Prevent further declines in Yakutian bar-tailed godwit populations by working with relevant Range States to address threats in the EAAF.	—	

Conservation advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Threats		
Habitat loss, fragmentation, and degradation (Habitat loss caused by residential and commercial development; Habitat loss caused by 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; Climate change in Arctic breeding areas)	✓	Section 8.3
Exploitation (Hunting)	—	
Pollution (Chronic and acute pollution)	✓	Section 8.14
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.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
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).	—	

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 red knot (Ref. 302)	**Potential presence: C&D OA, Chandon OA, Hydrocarbon EMBA**	
Objectives		
Primary conservation objective 1: Minimise further loss of HCTS of red knot throughout Australia (including habitat predicted to become HCTS of the species in the future because of climate change).	—	
Primary conservation objective 2: Prevent further declines in red knot populations by working with relevant Range States to address threats in the EAAF.	—	
Threats		
Habitat loss, fragmentation, and degradation (Habitat loss caused by residential and commercial development; Habitat loss caused by 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; Climate change in Arctic breeding areas)	✓	Section 8.3
Exploitation (Hunting)	—	
Pollution (Chronic and acute pollution)	✓	Sections 8.13 and 8.14
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.		
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).	—	

Conservation advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
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 Indian Ocean red-tailed tropicbird (Ref. 303)	**Potential presence: Chandon OA, Hydrocarbon EMBA**	
Objectives		
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 8.3
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).	—	
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Survey and monitoring 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).	—	
Information and research priorities.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Conservation advice for sharp-tailed sandpiper (Ref. 304)	**Potential presence: C&D OA, Chandon OA, Hydrocarbon EMBA**	
Objectives		
Primary conservation objective 1: Minimise further loss of HCTS of sharp-tailed sandpiper throughout Australia (including habitat predicted to become HCTS of the species in the future because of climate change).	—	
Primary conservation objective 2: Prevent further declines in sharp-tailed sandpiper populations by working with relevant Range States to address threats in the EAAF.	—	
Threats		
Habitat loss, fragmentation, and degradation (Habitat loss caused by residential and commercial development; Habitat loss caused by industrial aquaculture; Habitat loss caused by clearing for large-scale agriculture; Downstream effects of large dams)	—	
Climate change (Increased frequence or length of droughts; Sea level rise)	✓	Section 8.3
Invasive species (Invasion of mudflats and coastal saltmarshes by mangroves and cordgrass)	—	
Pollution (Chronic and acute pollution)	✓	Sections 8.13 and 8.14
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).	—	

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.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
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 soft-plumaged petrel (Ref. 473)	**Potential presence: Hydrocarbon EMBA**	
Threats		
Potential threats to the species include: • Accidental introduction of predators on Maatsuyker Island.	—	
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).	—	

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. 373)		
Threats		
Marine debris	✓	Section 8.12
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 plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Wildlife Conservation Plan for Seabirds (Ref. 280)	**Potential presence: C&D OA, Chandon OA, Hydrocarbon EMBA**	
Threats		
Habitat loss (Coastal development; Habitat modification)	—	
Climate variability and change (Climate change; El Niño Southern Oscillation; Storms and cyclones)	✓	Section 8.3
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 8.9
Drones	—	
Pollution (Marine debris; Light pollution; Chronic pollution; Acute pollution; Heavy metals)	✓	Sections 8.4, 8.12, 8.13 and 8.14
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 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).	—	
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. 281)	**Potential presence: C&D OA, Chandon OA, Hydrocarbon EMBA**	
Threats		
Habitat loss (Infrastructure/coastal development in Australia; Infrastructure/coastal development in staging and stop-over areas)	—	

Wildlife conservation plan	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 8.13 and 8.14
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)	✓	Section 8.4
Climate variability and change	✓	Section 8.3
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 plan	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. 174)	**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 8.3
Changes in hydrology	—	
Extraction of living resources	—	
Habitat modification	—	
Invasive species	✓	Section 8.10
Marine pollution (including emission of noise or light, marine debris, and discharge of oil, chemicals or waste)	✓	Section 8.14
Actions		
Communication, education and awareness program.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	

Management plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
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 8.14 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. 19)		
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 8.3
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)	✓	Section 8.13
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)	✓	Section 8.12
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 8.5 and 8.6
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 8.4

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 8.14
Collision with vessels (Shipping; Fishing; Tourism)	—	
Collision/entanglement with infrastructure (Aquaculture infrastructure; Renewable energy infrastructure; Oil and gas infrastructure)	—	
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 8.10
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

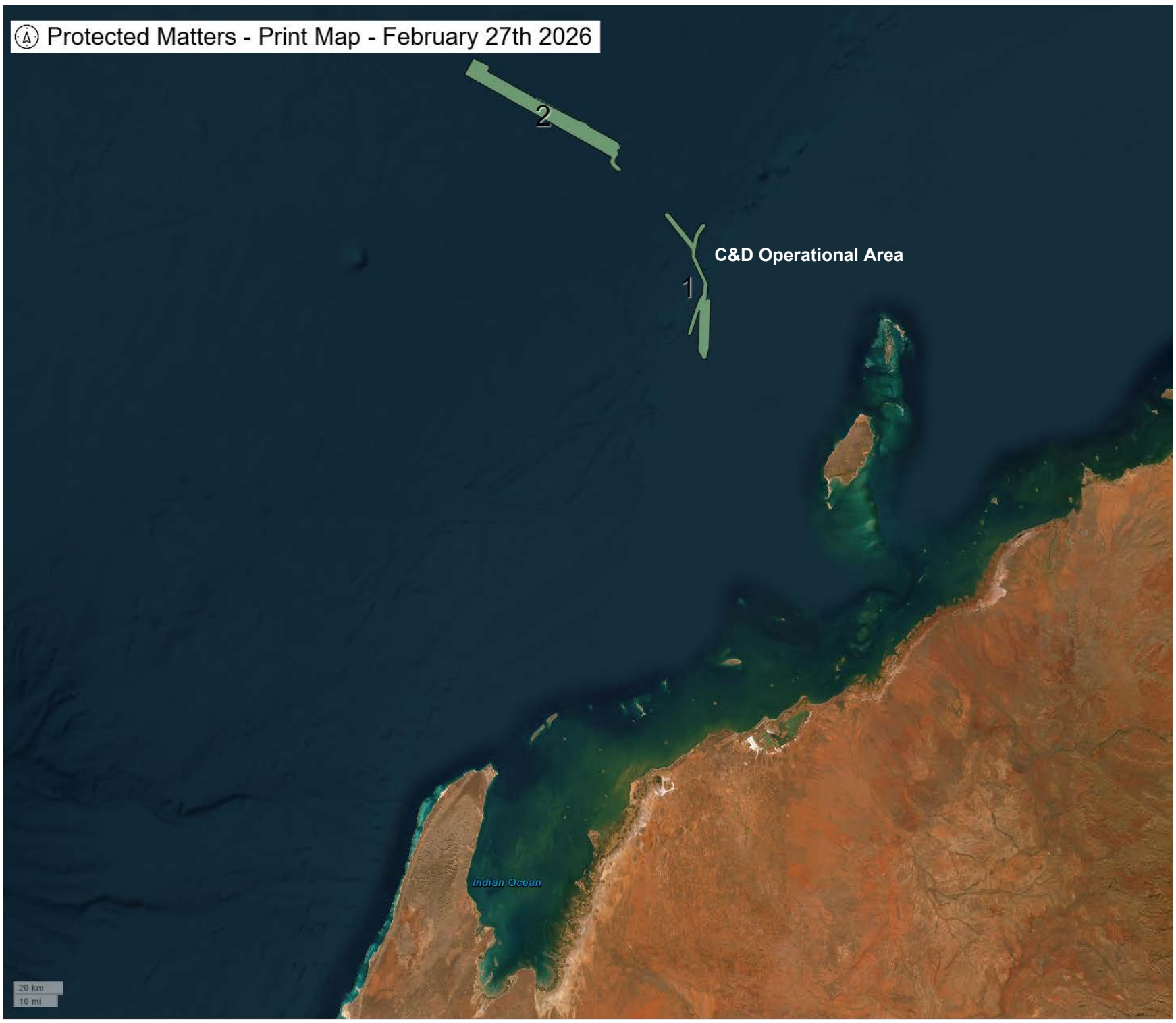
EPBC Act Protected Matters Report

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-Feb-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:	26
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:	68
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:	28
Key Ecological Features (Marine):	2
Biologically Important Areas:	5
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

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

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

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

Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon rubricauda westralis		
Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat may occur within area
Sternula nereis nereis		
Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
MAMMAL		
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
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		
Aipysurus apraefrontalis		
Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat may occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
SHARK		
Carcharias taurus (west coast population)		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Pristis clavata		
Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis		
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 known to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
null		
Balaenoptera omurai		
Omura's Whale [87136]		Species or species habitat likely to occur within area
Migratory Marine Birds		

Scientific Name	Threatened Category	Presence Text
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
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

Scientific Name	Threatened Category	Presence Text
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	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	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 known 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 known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
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
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		

Scientific Name	Threatened Category	Presence Text
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[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
Fish		
[Acentronura larsonae](#) Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area
[Bulbonaricus brauni](#) Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
[Campichthys tricarinatus](#) Three-keel Pipefish [66192]		Species or species habitat may occur within area
[Choeroichthys brachysoma](#) Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
[Choeroichthys latispinosus](#) Muiron Island Pipefish [66196]		Species or species habitat may occur within area
[Choeroichthys suillus](#) Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
[Corythoichthys flavofasciatus](#) Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
[Cosmocampus banneri](#) Roughridge Pipefish [66206]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Doryrhamphus multiannulatus Many-banded Pipefish [66717]		Species or species habitat may occur within area
Doryrhamphus negrosensis Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
Festucalex scalaris Ladder Pipefish [66216]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Phoxocampus belcheri Black Rock Pipefish [66719]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Reptile		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat may occur within area
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera 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

Current Scientific Name	Status	Type of Presence
[Feresa attenuata](#) Pygmy Killer Whale [61]		Species or species habitat may occur within area
[Globicephala macrorhynchus](#) Short-finned Pilot Whale [62]		Species or species habitat may occur within area
[Grampus griseus](#) Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
[Kogia breviceps](#) Pygmy Sperm Whale [57]		Species or species habitat may occur within area
[Kogia sima](#) Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
[Lagenodelphis hosei](#) Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
[Megaptera novaeangliae](#) Humpback Whale [38]		Breeding known to occur within area
[Mesoplodon densirostris](#) Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
[Orcaella heinsohni](#) Australian Snubfin Dolphin [81322]	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

Current Scientific Name	Status	Type of Presence
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
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
Controlled action			
Construct and operate LNG & domestic gas plant including onshore and offshore facilities - Wheatston	2008/4469	Controlled Action	Post-Approval
Develop Jansz-Io deepwater gas field in Permit Areas WA-18-R, WA-25-R and WA-26-	2005/2184	Controlled Action	Post-Approval
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Pluto Gas Project	2005/2258	Controlled Action	Completed
Pluto Gas Project Including Site B	2006/2968	Controlled Action	Post-Approval
Not controlled action			
Construction and operation of an unmanned sea platform and connecting pipeline to Varanus Island for	2004/1703	Not Controlled Action	Completed
Development of Halyard Field off the west coast of WA	2010/5611	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	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)			
"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 (Particular Manner)	Post-Approval
Draeck 3D Marine Seismic Survey, WA-205-P	2006/3067	Not Controlled Action (Particular Manner)	Post-Approval
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval
John Ross & Rosella Off Bottom Cable Seismic Exploration Program	2008/3966	Not Controlled Action (Particular Manner)	Post-Approval
Julimar Brunello Gas Development Project	2011/5936	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Osprey and Dionysus Marine Seismic Survey	2011/6215	Not Controlled Action (Particular Manner)	Post-Approval
Pomodoro 3D Marine Seismic Survey in WA-426-P and WA-427-P	2010/5472	Not Controlled Action (Particular Manner)	Post-Approval
Triton 3D Marine Seismic Survey, WA-2-R and WA-3-R	2006/2609	Not Controlled Action (Particular Manner)	Post-Approval
West Anchor 3D Marine Seismic Survey	2008/4507	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Ancient coastline at 125 m depth contour	North-west
Continental Slope Demersal Fish Communities	North-west

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Marine Turtles		
Natator depressus		
Flatback Turtle [59257]	Internesting buffer	Known to occur
Seabirds		
Ardenna pacifica		
Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Sharks		
Rhincodon typus		
Whale Shark [66680]	Foraging	Known to occur
Whales		

Scientific Name	Behaviour	Presence
Balaenoptera musculus brevicauda		
Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae		
Humpback Whale [38]	Migration (north and south)	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data 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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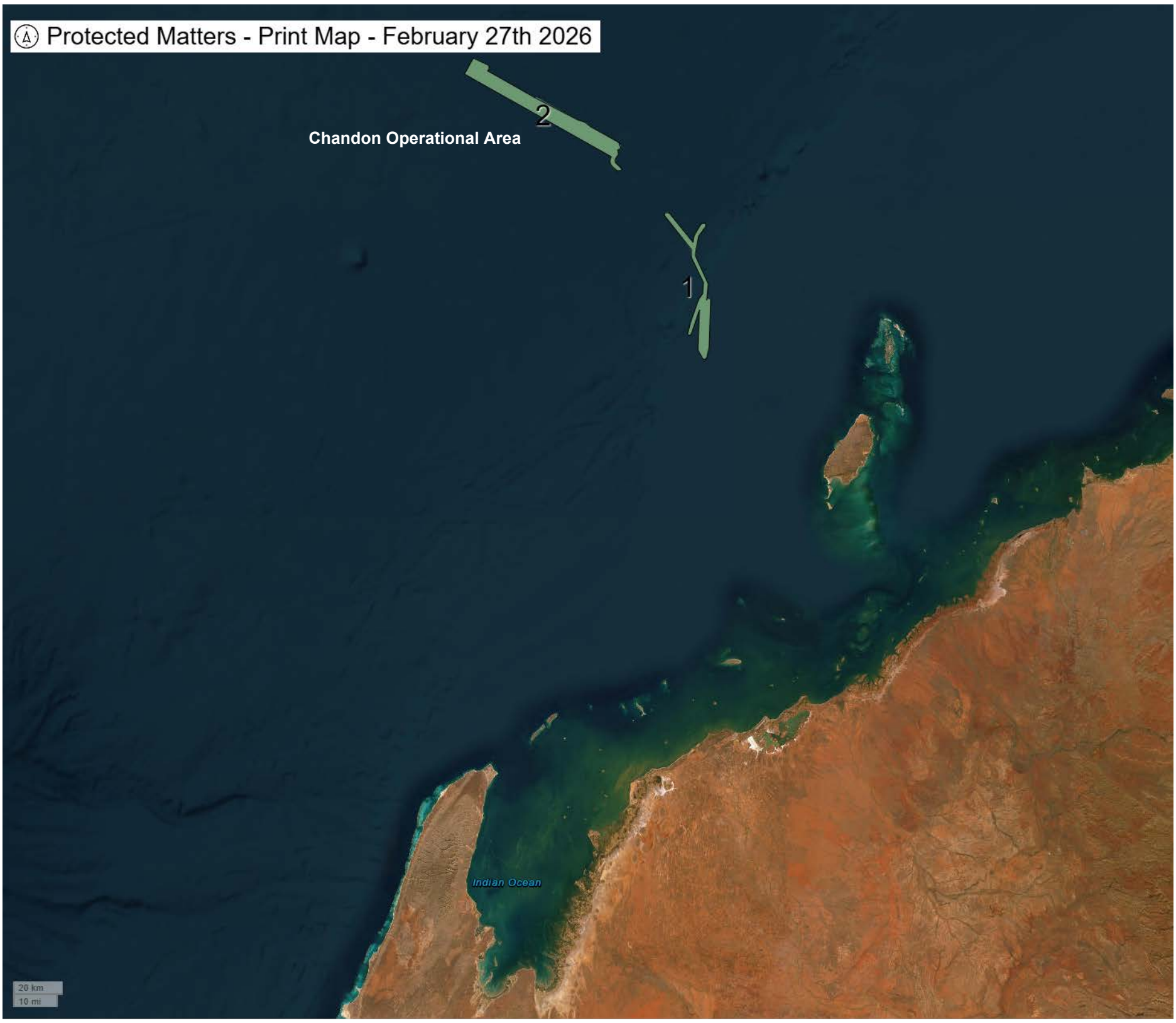
EPBC Act Protected Matters Report

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-Feb-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:	26
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:	68
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:	28
Key Ecological Features (Marine):	2
Biologically Important Areas:	5
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

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

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

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

Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon rubricauda westralis		
Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat may occur within area
Sternula nereis nereis		
Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
MAMMAL		
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
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		
Aipysurus apraefrontalis		
Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat may occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
SHARK		
Carcharias taurus (west coast population)		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Pristis clavata		
Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis		
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 known to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
null		
Balaenoptera omurai		
Omura's Whale [87136]		Species or species habitat likely to occur within area
Migratory Marine Birds		

Scientific Name	Threatened Category	Presence Text
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
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

Scientific Name	Threatened Category	Presence Text
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	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	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 known 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 known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
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
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		

Scientific Name	Threatened Category	Presence Text
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[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
Fish		
[Acentronura larsonae](#) Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area
[Bulbonaricus brauni](#) Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
[Campichthys tricarinatus](#) Three-keel Pipefish [66192]		Species or species habitat may occur within area
[Choeroichthys brachysoma](#) Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
[Choeroichthys latispinosus](#) Muiron Island Pipefish [66196]		Species or species habitat may occur within area
[Choeroichthys suillus](#) Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
[Corythoichthys flavofasciatus](#) Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
[Cosmocampus banneri](#) Roughridge Pipefish [66206]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Doryrhamphus multiannulatus Many-banded Pipefish [66717]		Species or species habitat may occur within area
Doryrhamphus negrosensis Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
Festucalex scalaris Ladder Pipefish [66216]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Phoxocampus belcheri Black Rock Pipefish [66719]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Reptile		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat may occur within area
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera 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

Current Scientific Name	Status	Type of Presence
[Feresa attenuata](#) Pygmy Killer Whale [61]		Species or species habitat may occur within area
[Globicephala macrorhynchus](#) Short-finned Pilot Whale [62]		Species or species habitat may occur within area
[Grampus griseus](#) Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
[Kogia breviceps](#) Pygmy Sperm Whale [57]		Species or species habitat may occur within area
[Kogia sima](#) Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
[Lagenodelphis hosei](#) Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
[Megaptera novaeangliae](#) Humpback Whale [38]		Breeding known to occur within area
[Mesoplodon densirostris](#) Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
[Orcaella heinsohni](#) Australian Snubfin Dolphin [81322]	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

Current Scientific Name	Status	Type of Presence
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
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
Controlled action			
Construct and operate LNG & domestic gas plant including onshore and offshore facilities - Wheatston	2008/4469	Controlled Action	Post-Approval
Develop Jansz-Io deepwater gas field in Permit Areas WA-18-R, WA-25-R and WA-26-	2005/2184	Controlled Action	Post-Approval
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Pluto Gas Project	2005/2258	Controlled Action	Completed
Pluto Gas Project Including Site B	2006/2968	Controlled Action	Post-Approval
Not controlled action			
Construction and operation of an unmanned sea platform and connecting pipeline to Varanus Island for	2004/1703	Not Controlled Action	Completed
Development of Halyard Field off the west coast of WA	2010/5611	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	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)			
"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 (Particular Manner)	Post-Approval
Draeck 3D Marine Seismic Survey, WA-205-P	2006/3067	Not Controlled Action (Particular Manner)	Post-Approval
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval
John Ross & Rosella Off Bottom Cable Seismic Exploration Program	2008/3966	Not Controlled Action (Particular Manner)	Post-Approval
Julimar Brunello Gas Development Project	2011/5936	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Osprey and Dionysus Marine Seismic Survey	2011/6215	Not Controlled Action (Particular Manner)	Post-Approval
Pomodoro 3D Marine Seismic Survey in WA-426-P and WA-427-P	2010/5472	Not Controlled Action (Particular Manner)	Post-Approval
Triton 3D Marine Seismic Survey, WA-2-R and WA-3-R	2006/2609	Not Controlled Action (Particular Manner)	Post-Approval
West Anchor 3D Marine Seismic Survey	2008/4507	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Ancient coastline at 125 m depth contour	North-west
Continental Slope Demersal Fish Communities	North-west

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Marine Turtles		
Natator depressus		
Flatback Turtle [59257]	Internesting buffer	Known to occur
Seabirds		
Ardenna pacifica		
Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Sharks		
Rhincodon typus		
Whale Shark [66680]	Foraging	Known to occur
Whales		

Scientific Name	Behaviour	Presence
Balaenoptera musculus brevicauda		
Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae		
Humpback Whale [38]	Migration (north and south)	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data 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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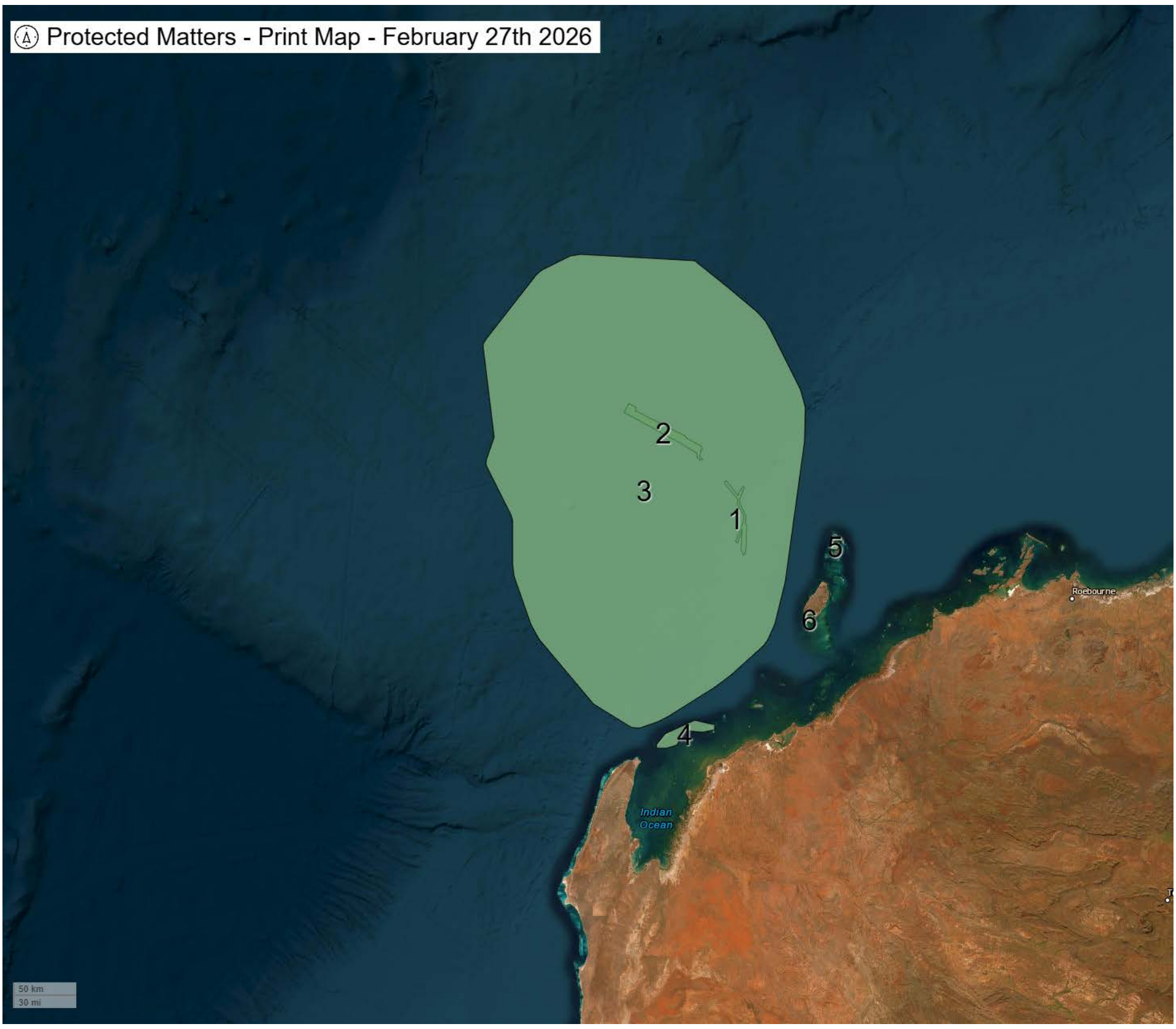
EPBC Act Protected Matters Report

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-Feb-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:	17
Listed Migratory Species:	33

Other Matters Protected by the EPBC Act

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

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at 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:	25
Whales and Other Cetaceans:	27
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	24
Key Ecological Features (Marine):	2
Biologically Important Areas:	2
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

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

Feature Name
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

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

Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Sternula nereis nereis		
Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within area
MAMMAL		
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
REPTILE		
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Species or species habitat likely to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Species or species habitat likely to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Species or species habitat likely to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
SHARK		
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat may occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
null		
Balaenoptera omurai		
Omura's Whale [87136]		Species or species habitat may 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
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

Scientific Name	Threatened Category	Presence Text
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat likely to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat likely to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Anous stolidus		
Common Noddy [825]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calonectris leucomelas		
Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel		
Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes giganteus		
Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Phaethon lepturus		
White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon lepturus fulvus		
Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda		
Red-tailed Tropicbird [994]		Species or species habitat may occur within area
Reptile		
Aipysurus laevis		
Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Species or species habitat likely to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Species or species habitat likely to occur within area
Crocodylus porosus		
Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Ephalophis greyae as Ephalophis greyi		
Mangrove Sea Snake [93738]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat likely to occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area

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 may 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
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

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			
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
Not controlled action			
Bollinger 2D Seismic Survey 200km North of North West Cape WA	2004/1868	Not Controlled Action	Completed
Controlled Source Electromagnetic Survey	2007/3262	Not Controlled Action	Completed
Hess Exploration Drilling Programme	2007/3566	Not Controlled Action	Completed
Jansz-2 and 3 Appraisal Wells	2002/754	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Not controlled action (particular manner)			

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
3D Marine Seismic Survey in Permit Areas WA-15-R, WA-18-R, WA-205-P, WA-253-P, WA-267-P and WA-268-P	2003/1271	Not Controlled Action (Particular Manner)	Post-Approval
3D marine seismic survey over petroleum title WA-268-P	2007/3458	Not Controlled Action (Particular Manner)	Post-Approval
3D seismic survey	2006/2715	Not Controlled Action (Particular Manner)	Post-Approval
Aperio 3D Marine Seismic Survey, WA	2012/6648	Not Controlled Action (Particular Manner)	Post-Approval
CGGVERITAS 2010 2D Seismic Survey	2010/5714	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Drilling Program	2010/5532	Not Controlled Action (Particular Manner)	Post-Approval
Draeck 3D Marine Seismic Survey, WA-205-P	2006/3067	Not Controlled Action (Particular Manner)	Post-Approval
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
Geco Eagle 3D Marine Seismic Survey	2008/3958	Not Controlled Action (Particular Manner)	Post-Approval
Glencoe 3D Marine Seismic Survey WA-390-P	2007/3684	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval
Osprey and Dionysus Marine Seismic Survey	2011/6215	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Continental Slope Demersal Fish Communities	North-west
Exmouth Plateau	North-west

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Seabirds		
Ardenna pacifica		
Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Whales		
Balaenoptera musculus brevicauda		
Pygmy Blue Whale [81317]	Migration	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data 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 Summary of Relevant Persons Consultation

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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)	27/02/2026	003000	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		
	27/02/2026	003013	Email	Auto reply email received in response to launch email.	No objection or claim raised		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	13/03/2026	003162	Email	Auto reply email received.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information.	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with ABF on 27 February 2025 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
				• 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. 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)	27/02/2026	002998	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 in line with previous EP engagements, including information regarding the presence of submarine cables.	No objection or claim raised		
	13/03/2026	003055	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	13/03/2026	003073	Email	ACMA replied and confirmed no comments in relation to the EP. ACMA referred to previous input provided on another EP, noting general advice to consult with Telstra and Vocus and the potential presence of submarine cables in the region.	ACMA recommended consulting with Telstra and Vocus and raised potential presence of submarine cables.	**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. The presence of submarine cables is included in Section 5.4.7 of the EP.
	16/03/2026	003074	Email	CAPL thanked ACMA for their response and noted their advice.	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
	13/04/2026	003230	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with ACMA on 27 February 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 the presence of submarine cables and potential Relevant Persons in the area. The presence of submarine cables is captured within the EP, and 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 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)	27/02/2026	003000	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and	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
				provided an information sheet and a link to CAPLs consultation webpage.			
	06/03/2026	003046	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.
	13/03/2026	003047	Email	CAPL thanked AFMA for their input and confirmed the raised fisheries were engaged with for this EP.	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with AFMA on 27 February 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. • 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.			

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 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)	27/02/2026	003000	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		
	02/03/2026	003025	Email	An email acknowledgement of the launch email was received.	No objection or claim raised		
	02/03/2026	003026	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.	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.
	05/03/2026	003034	Email	CAPL thanked and confirmed no identified concerns	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with AHO on 27 February 2026 via email advising they had been identified as a relevant person with functions, interests or activities that			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				may be 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)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information.	No objection or claim raised		
	30/03/2026-31/03/2026	003182	Email	AMSA thanked CAPL for the provided information and requested a copy of the geospatial dataset for the Operational Area.	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 supplied requested geospatial dataset.			
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
	29/04/2026	003395	Email	AMSA provided a response. AMSA noted the presence of the charted shipping fairway, and noted the potential to encounter vessels. AMSA also noted that North West Slope Trawl Fishery operates within the region. AMSA recommended consideration of navigational safety and of anti-collision measures during planning stages, notification requirements (including notification to AHO and AMSA) and recommended risk of collision be considered during operations.	AMSA raised vessel traffic, the North West Slope Trawl Fishery, notification requirements and the need for anti-collision measures.	**Claims have merit:** The input provided by AMSA is relevant and applicable to the activity.	No change made to the EP. Vessel traffic and the presence of shipping fairways is outlined in Section 5.4.4 of the EP. The North West Slope Trawl Fishery is identified and described in Section 5.4.1.1 of the EP. The physical presence of vessels is risk assessed in Section 8.8 and includes control measures relevant to this aspect. Notification requirements to AMSA and AHO are included in Table 10-5 of the EP. Vessel collision controls are standard within CAPL EPs, are already included within the EP. CAPL thanked AMSA and acknowledged the input received (Record ID: 003411).
	20/05/2026	003411	Email	CAPL thanked AMSA for their response and acknowledged the information provided.			
				Summary: • CAPL commenced consultation with AMSA on 27 February 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. • AMSA has not raised any objections or claims relating to the activity. AMSA requested a geospatial dataset for the Operational Area, which was provided by CAPL. AMSA provided feedback regarding vessel traffic, fisheries, notification requirements, control measures and the risk of vessel collision. These requirements are captured within the EP • 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. 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)	27/02/2026	003000	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		
	13/03/2026	003065	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
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003167	Email	CER thanked CAPL for the provided information and confirmed that CER have no feedback and no 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 8.3.
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with CER on 27 February 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			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				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 Agriculture, Fisheries and Forestry (DAFF)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information.	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with DAFF on 27 February 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			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				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 Environment and Water (DCCEEW)	27/02/2026	003000	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		
	16/03/2026	003086	Email	DCCEEW replied and thanked CAPL for their email. DCCEEW provided advice regarding: • Underwater cultural heritage (UCH) notification requirements • Potential to impact UCH • Noted that impacts to UCH is prohibited within a permit issued under the UCH Act, and referred to DCCEEW's 2024 guidelines on 'Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters' • Recommended engaging with an underwater archaeologist. CAPL thanked DCCEEW for their input and noted the advice provided.	DCCEEW provided advice regarding: • Underwater cultural heritage (UCH) notification requirements • Noted that impacts to UCH is prohibited within a permit issued under the UCH Act, and referred to DCCEEW's 2024 guidelines on 'Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters' • Recommended engaging with an underwater archaeologist.	**Claim has merit:** The information provided by DCCEEW is relevant and appliable to the EP.	No change made to the EP. Notification requirements regarding UCH are captured within Table 10-5. and Table 10-13. The risks to UCH are assessed in 8.1 Seabed Disturbance. The raised guideline has been considered during EP development. As discussed in Section 5.6.2 Underwater cultural heritage, a desktop UCH assessment was undertaken, and no UCH was identified within the OA. There are known UCH within the Hydrocarbon EMBA.
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with DCCEEW on 27 February			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				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. DCCEEW provided advice regarding UCH. This input was addressed within the EP. • 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).			
DCCEEW - Director of National Parks (DNP)	27/02/2026	003005	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		
	13/03/2026	003061	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
	13/03/2026	003076	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 • Emergency response requirements notification requirements. DNP confirmed that no further engagement regarding this activity was required activity changes or for emergency responses.	DNP raised the following: • Guidance note and management plan for consideration • 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. 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.
	16/03/2026	003083	Email	CAPL thanked DNP for their response, noted no further notification required unless the conditions raised are met. .	No objection or claim raised		
	13/04/2026	003239	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with DNP on 27 February 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. • DNP has not raised any objections or claims relating to the activity. DNP raised guidance note and AMP management plan for consideration and noted DNP notification requirements. These			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				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)	27/02/2026	002996	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 and pre-start notification.	No objection or claim raised		
	26/03/2026	003141	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	13/04/2026	003228	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with DoD on 27 February 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. • 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 Foreign Affairs and Trade (DFAT)	27/02/2026	003000	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		
	27/02/2026	003009	Email	Auto reply email to launch email received.	No objection or claim raised		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 DFAT on 27 February 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. • DFAT has not raised any objections or claims relating to the activity. • CAPL has provided DFAT 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)	27/02/2026	003015	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 DISR on 27 February 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 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)	27/02/2026	003000	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		
	27/02/2026	003007	Email	Auto-reply email received in response to launch email.	No objection or claim raised		
	13/03/2026	003065	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
	25/03/2026	003119	Email	CAPL replied to NOPTA auto-reply email (Record ID 003007) and noted that should they have any concerns or want further information to please reply by 10 April 2026.	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with NOPTA on 27 February 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. 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)	27/02/2026	003008	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		
	13/03/2026-16/03/2026	003081	Email	CAPL sent follow up email requesting feedback on the EP information DBCA acknowledged receipt of email and noted intent to reply by 10 April. CAPL thanked DBCA for their response.	No objection or claim raised		
	02/04/2026-13/04/2026	003225	Email	DBCA provided a response, noting that the EMBA overlaps with: • conservation significant species and important habitat and nesting area • Barrow Island Marine Park (M 10), Muiron Islands Marine Management Area (M 12), and Montebello Islands Marine Park (M 9). 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 Pilbara 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. CAPL thanked DBCA for their feedback and acknowledged the input received.	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' • spill notification • DOT marine pollution web	**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. Potential cumulative environmental impacts and risks associated with planned activities are described and evaluated within Section 8 the EP, where applicable. Table 10-5 was updated to include notification to DBCA Pilbara regional office in the event of an unplanned release.

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
					content and guidance note.		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.
	13/04/2026	003237	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with DBCA on 27 February 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.			

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 DBCA 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 Energy and Economic Diversification (DEED)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information.	No objection or claim raised		
	31/03/2026-07/04/2026	003206	Email	DEED confirmed receipt of the email, and noted they are already in discussions with Chevron (unrelated to this EP). CAPL thanked DEED for their response confirming receipt of information.	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with DEED on 27 February 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
				• 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).			
Department of Planning, Lands and Heritage (DPLH)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	30/03/2026-01/04/2026	003196	Email	DPHL emailed CAPL and requested a shapefile of the project area. CAPL requested confirmation of which EP this request was regarding. DPHL replied and confirmed the enquiry was regarding this EP. CAPL thanked DPLH for clarifying and provided the requested shapefiles.	No objection or claim raised		
	07/04/2026	003213	Email	DPLH provided a response and confirmed that the proposed Operational Areas do not intersect with any known Aboriginal Heritage Places or Registered Aboriginal sites, based on a review of the Register of Places and Objects and the DPLH Aboriginal Heritage Database. DPLH noted that no approvals under the *Aboriginal Heritage Act 1972* (AHA) are required.	DPHL provided advice regarding the *Aboriginal Heritage Act 1972.*	**Claim has merit:** The advice provided is relevant to the activity.	No change made to the EP. CAPL acknowledges the advice provided by DPLH regarding the *Aboriginal Heritage Act 1972*. As the activity is located offshore in

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				DPLH raised that under Section 15 of the *Aboriginal Heritage Act 1972*, any new of updated information on Aboriginal heritage should be submitted to DPLH via the ACHknowledge Portal. The discovery of new or updated information on Aboriginal Heritage should be submitted to DPLH.			Commonwealth waters, the discovery of new or additional information regarding Aboriginal Heritage sites covered by the *Aboriginal Heritage Act* is not expected. Should certain underwater cultural heritage be discovered, CAPL will act in accordance with the *Underwater Cultural Heritage Act 2018* (Commonwealth).
	08/04/2026	003214	Email	CAPL thanked DPLH for their response and acknowledged the input received.			
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with DPLH on 27 February 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			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				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)	27/02/2026	002999	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 in regard to fishing in the region, impacts to fisheries, cumulative impacts, biosecurity measures, consultation and risk mitigation.	No objection or claim raised		
	13/03/2026	003056	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003142	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003231	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with DPIRD on 27 February 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			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				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)	27/02/2026	002997	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		
	13/03/2026	003059	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	19/03/2026	003090	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		
	23/03/2026	003091	Email	CAPL replied and thanked DTMI for their response. CAPL welcomed input from the Marine Pollution team, and noted the consultation period closing date of 10th April 2026.	No objection or claim raised		
	13/04/2026-14/04/2026	003293	Email	CAPL advised the consultation period for the EP has closed. DTMI replied to the close out email and confirmed that DTMI have no feedback or input on the EP. CAPL thanked DTMI for their response.	No objection or claim raised		
				Summary: • CAPL commenced consultation with DTMI on 27 February 2026 via email advising they had			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				been identified as a relevant person with functions, interests or activities that may be 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)	27/02/2026	002995	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		
	13/04/2026	003226	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with DWER on 27 February 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
				• 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)	27/02/2026	002995	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		
	13/04/2026	003226	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with EPA on 27 February 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			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				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 *Formerly Pilbara Ports Authority*	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Pilbara Ports on 27 February 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. • 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			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				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)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with DMPE on 27 February 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 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 ongoing Environmental Plans (EP). This included an Environment Plan consultation look ahead, including the planned consultation timeframe for 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		
	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 ongoing 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		

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	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		
	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	13/03/2026	003075	Email	BTAC replied and indicated intent to provide input on this EP in the coming weeks.	No objection or claim raised		
	16/03/2026	003082	Email	CAPL thanked BTAC and offered to provide additional information if required.	No objection or claim raised		
	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 the Backfill Fields Site Investigation Surveys EP and another EP. Copies of the relevant information sheets were provided and slides providing further information was presented. BTAC and CAPL discussed timing of training opportunities for the BTAC rangers. Agreed to have quarterly meetings between CAPL and EWG.	BTAC raised expectations: • Compliance with regulatory requirements • Consideration of environmental, cultural heritage and community safety • Surveys and research conducted to a high standard	**Claims have merit:** The input provided is relevant to this EP.	No change to the EP. CAPL acknowledged the input provided. The EP includes relevant regulatory requirements and consideration of the environment that may be affected, cultural heritage and community. Activities are to be conducted as

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				In regards to this EP, BTAC EWG noted that they expected CAPL to comply with all regulatory requirements to minimise the effects on the environment. Consideration should be given to environmental and cultural heritage protections and community safety. All surveys, assessments and research should be conducted to a high standard.			outlined within the EP.
	01/04/2026	003203	Email	CAPL provided BTAC with the March Bulletin outlining CAPL ongoing 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		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL provided a briefing on the activity ahead of formal consultation period on 27 February 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			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				the activity and the opportunity for further briefings. • CAPL has maintained contact through 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 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 period of over 8 weeks for consultation, which CAPL assessed to be 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.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				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 ongoing EPs. This included an Environment Plan consultation look ahead, including 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		
	03/03/2026	003028	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		
	25/03/2026	003138	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
	02/04/2026	003212	Email	CAPL provided MCH with the March 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		
	13/04/2026	003245	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL provided a briefing on the activity ahead of formal consultation period on 27 February 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. • MCH 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 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 ongoing EPs. This included an Environment Plan consultation look ahead, including the planned consultation timeframe for 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		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	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 ongoing 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		
	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	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 document and share any feedback, question or consultation on any of the EPs. No comments or feedback was received on this EP.			
	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	01/04/2026	003204	Email	CAPL provided NTGAC with the March Bulletin outlining CAPL ongoing 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		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL provided a briefing on the activity ahead of formal consultation period on 27 February 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.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				• 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. • 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.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Nhuwala Claimant Group (NHU)	25/09/2025	002568	Email	CAPL provided Nhuwala Claimant Group with the September "Bulletin," outlining CAPL ongoing EPs. This included an Environment Plan consultation look ahead, including the planned consultation timeframe for 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.	No objection or claim raised		
	12/12/206	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 ongoing 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		
	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	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
				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.			
	15/01/2026	002878	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.	No objection or claim raised		
	19/01/2026	003150	Email	CAPL responded to Nhuwala Claimant Group representative suggesting potential time and date for the meeting.	No objection or claim raised		
	20/01/2026	003155	Email	Nhuwala Claimant Group representative responded confirming time and date and suggested to meet that they office. CAPL confirm availability for meeting and location. 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		
	27/02/2026	003000	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an	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
				information sheet and a link to CAPLs consultation webpage.			
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	10/04/2026	003366	Email	Nhuwala Claimant Group representatives requested an extension to review and provide feedback to mid-May. Nhuwala Claimant Group representatives requested AUV, ROV and other environmental data collected to be shared if possible.	Nhuwala Claimant Group representatives requested an extension and environmental data.	**Claim has merit:** CAPL acknowledge Nhuwala Claimant Group's extension request and request for environmental data.	No change made to the EP. CAPL provided an extension to the 15 May 2026 and provided a link to the 2022 Gorgon Backfill Fields benthic survey (Record ID 003362).
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
	21/04/2026-28/04/2026	003361	Phone and Email	CAPL spoke to Nhuwala Claimant Group representatives regarding confirmation on who is represented by YMAC. CAPL followed up on this phone call by email, and requested clarification on who from the Nhuwala application is being represented by YMAC. CAPL noted that feedback had been received by a different firm (Record ID: 003385). Nhuwala Claimant Group representatives replied and confirmed that they represent the Nhuwala applicant, comprised of the members of the applicant named on the claim.	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	003362	Email	CAPL replied to Nhuwala Claimant Group representatives and confirmed extension of feedback until 15 May 2026. CAPL thanked Nhuwala Claimant Group representatives for confirming who they represent in a separate email (Record ID 003361) and requested further information. CAPL provided a link to the Gorgon Backfill Fields Benthic Survey 2022.	No objection or claim raised		
	11/06/2026	003499	Email	CAPL confirmed no further feedback had been received following approval of the extension for feedback. CAPL thanked NHU for their engagement.	No objection or claim raised		
				Summary: • CAPL provided a briefing on the activity ahead of formal consultation period on 27 February 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 that Nhuwala Claimant Group that they are committed to ongoing consultation communication and welcome meaningful feedback.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				• Nhuwala Claimant Group has previously asked about the privacy of the information captured through consultation and requested information be stored securely with controlled access. • 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.			
Nhuwala Claim Group 2	09/04/2026	003385	Email	CAPL received engagement from subset of the Nhuwala Claimant Group (Nhuwala Claimant Group 2) via different representatives in response to the February 2026 Fact Sheet.	Nhuwala Claimant Group 2 raised matters on cultural heritage and associated control measures, cumulative impacts, oil spill and	**Claim has merit:** The matters raised are relevant to the EP and requests	No change made to the EP. CAPL provided a response and addressed all matters raised

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				Nhuwala Claimant Group 2 raised matters and requested clarification on matters of cultural heritage and associated control measures, cumulative impacts, oil spill and shoreline response, ongoing consultation and confidentiality.	shoreline response, ongoing consultation and confidentiality.	for clarification are considered fair and reasonable.	(Record ID: 003386). CAPL confirmed its commitment to working with the Nhuwala people. CAPL outlines the systems in place regarding offshore cultural heritage. CAPL welcomed the opportunity to meet or to submit written information to better understand the raised cultural heritage matter, to better understand potential impacts to Nhuwala cultural values. CAPL confirmed the EP includes an evaluation of potential cumulative impacts from the petroleum activity and other petroleum activities in the vicinity. CAPL clarified that potential shoreline contact is outside of the Nhuwala claim area, and that appropriate stakeholders will be contacted in a spill scenario. CAPL confirmed it will consult with representatives of

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
							the Nhuwala Claimant Group 2. CAPL confirmed that any cultural heritage information provided for this EP will be recorded as confidential and sensitive information.
	15/05/2026	003386	Email	CAPL provided a response regarding the matters raised in Record ID: 003385. CAPL addressed all matters raised and confirmed ongoing consultation was welcomed. CAPL sought clarification of the representation of Nhuwala Claimant Group 2.	No objection or claim raised		
	20/05/2026-21/05/2026	003456	Email	Nhuwala Claimant Group 2 representatives replied and provided clarification regarding the specifics of their representation. CAPL responded and confirmed receipt of email.	No objection or claim raised		
				Summary: • Nhuwala Claimant Group 2 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. • Nhuwala Claimant Group 2 provided input on this EP via different representation on 9 April 2026. • Nhuwala Claimant Group 2 raised matters for consideration and			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				clarification. CAPL provided a response to all matters raised. • CAPL notified that Nhuwala Claimant Group 2 that they are committed to ongoing consultation communication and welcome meaningful feedback. • Nhuwala Claimant Group 2 has asked about the privacy of the information captured through consultation and requested information be stored securely with controlled access. • CAPL has confirmed with Nhuwala Claimant Group 2 that they may request information provided during consultation not to be published (Regulation 25(4)). • CAPL has provided Nhuwala Claimant Group 2 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 2 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 ongoing EPs. This included an Environment Plan consultation look ahead, including the planned consultation timeframe for this EP. The Bulletin provides a detailed overview of proposed activities, including descriptions, location maps, timing,	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
				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.			
	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		
	17/12/2025	002819	Email	CAPL provided WAC with the December Bulletin outlining CAPL ongoing 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		
	15/01/2025	002797	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.	No objection or claim raised		
	15/01/2026	002879	Email	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		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	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		
	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	01/04/2026	003202	Email	CAPL provided WAC with the March Bulletin outlining CAPL ongoing 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		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL provided a briefing on the activity ahead of formal consultation period on 27 February 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			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				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 • 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. • 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)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with ACWA on 27 February 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).			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Australian Council of Prawn Fisheries Ltd (ACPF)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with ACPF on 27 February 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	27/02/2026	003000	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
Association (ASBTIA)							
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003143	Phone	CAPL sent follow up SMS text message requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information.	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with ASBTIA on 27 February 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).			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Commonwealth Fisheries Association (CFA)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with CFA on 27 February 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. • 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	27/02/2026	003000	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
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003139	Email	Tuna Australia replied to the follow up email and indicated intent to provide a consultation report by the 10 April 2026. Tuna Australia provided a copy of their services agreement.	No objection or claim raised		
	27/03/2026	003171	Email	Tuna Australia replied to the follow up email and attached the email sent to their community requesting input on this EP.	No objection or claim raised		
	31/03/2026	003192	Email	CAPL thanked Tuna Australia for their response and confirmed they look forward to receiving their response.	No objection or claim raised		
	10/04/2026	003365	Email	Tuna Australia replied and provided a consultation report. Tuna Australia provided information regarding their organisation and associated fisheries, noting that the presence of historic and future longline effort in the Western Tuna and Billfish Fishery in the region. Tuna Australia noted that all current Southern Bluefin Tuna longline effort occurs on the east coast of Australia and around Tasmania, and that the species spawns off the northwest coast of WA. Tuna Australia raised concerns regarding: • Access to fishing areas • Notice to mariners, and requested additional notifications • Historic yellowfin tuna aggregation site • Southern Bluefin Tuna migration and consideration in environmental assessment • Future effects of gas extraction activities in the region, and addressing and minimising risks and impacts to fish from spills or pollutants • Adequate risk assessment of cumulative impacts in the region.	Tuna Australia provided information regarding fisheries within the region. Tuna Australia raised concerns regarding: • Access to fishing areas • Notice to mariners, and requested additional notifications • Historic yellowfin tuna aggregation site • Southern Bluefin Tuna migration and consideration in environmental assessment • Future effects of gas extraction activities in the region, and addressing and minimising risks and impacts to fish from spills or pollutants • Adequate risk assessment of	**Claims have merit:** The input raised is relevant to the activity and location.	No change made to the EP. CAPL provided a response and addressed all concerns and queries raised (Record ID 003364). Commercial fisheries with management areas and fishing effort within the OA and EMBA are discussed within Section 5.4.1. CAPL reiterated the limited duration of activities, and that under the requirements of the OPGGS Act 2006 CAPL is required to not interfere with fishing to a greater extent than is necessary. The requirement to issue a Notice to Mariners is already captured within the EP (Table 10-5). Table 10-5 also includes notification to Tuna Australia. Yellowfin tuna and southern bluefin tuna are described in Section 5.4.1.1 and are

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
					cumulative impacts in the region.		considered within the risk assessment in Section 8.14. The potential environmental risks from unplanned releases are evaluated in Section 8.13 and 8.14. Potential cumulative environmental impacts and risks associated with planned activities are described and evaluated within Section 8 the EP, where applicable.
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
	15/05/2026	003364	Email	CAPL apologised for the delay and provided a response to Tuna Australia addressing all concerns and queries raised (Record ID 003364).	No objection or claim raised		
				Summary: • CAPL commenced consultation with Tuna Australia on 27 February 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. • Tuna Australia has not raised any objections or claims relating to the activity. • 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			

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).			
Western Australian Fishing Industry Council (WAFIC)	25/09/2025	002569	Email	CAPL provided WAFIC with the September "Bulletin," outlining CAPL EPs. This included an Environment Plan consultation look ahead, including the planned consultation timeframe for 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 ongoing 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		
	27/02/2026	003002	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		
	13/03/2026	003063	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	01/04/2026	003205	Email	CAPL provided WAFIC with the March Bulletin outlining CAPL ongoing 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.			
	13/04/2026	003241	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with WAFIC on 27 February 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. • 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	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003143	Phone	CAPL sent follow up SMS text message requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Apache on 27 February 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			

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).			
Aquatic Adventure Exmouth	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003143	Phone	CAPL sent follow up SMS text message requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information.	No objection or claim raised		
	13/04/2026	003227	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 27 February 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			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				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	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003143	Phone	CAPL sent follow up SMS text message requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Ashburton Anglers on 27 February 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			

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).			
Baiyungu Dreaming	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003143	Phone	CAPL sent follow up SMS text message requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Baiyungu Dreaming on 27 February 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. • Baiyungu Dreaming has not raised any objections or claims relating to the activity. • CAPL has provided Baiyungu Dreaming 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).			
Blue Horizon Charters	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 27 February 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.			

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).			
Blue Juice Charters	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 27 February 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			

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).			
Blue Lightning Fishing Charters	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003143	Phone	CAPL sent follow up SMS text message requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Blue Lightning Fishing Charters on 27 February 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			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				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 Immersion Tours	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003143	Phone	CAPL sent follow up SMS text message requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Cape Immersion Tours on 27 February 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. • Cape Immersion Tours has not raised any objections or claims relating to the activity. • CAPL has provided Cape Immersion 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			

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).			
Exmouth Dive & Whalesharks Ningaloo	27/02/2026	003000	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		
	27/02/2026	003014	Email	Received an automated reply acknowledging receipt of launch email.	No objection or claim raised		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 27 February 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. • 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			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				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	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 27 February 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. • 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			

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).			
Image Dive and Charters	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003143	Phone	CAPL sent follow up SMS text message requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 27 February 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. • 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			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				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	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003143	Phone	CAPL sent follow up SMS text message requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information.	No objection or claim raised		
	13/04/2026	003227	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 27 February 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.			

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 Innkeeper Sport Fishing Charter 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).			
Kings Ningaloo Reef Tours	27/02/2026	003000	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		
	26/03/2026	003143	Phone	CAPL sent follow up SMS text message requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Kings Ningaloo Reef Tours on 27 February 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. • Kings Ningaloo Reef Tours 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 Kings Ningaloo Reef 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).			
Live Ningaloo	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Live Ningaloo on 27 February 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			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				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).			
Mackerel Islands and Onslow Beach Resort	27/02/2026	003000	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		
	27/02/2026	003011	Email	Auto reply to launch email received.	No objection or claim raised		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003143	Phone	CAPL sent follow up SMS text message requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 27 February 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
				• 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)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with MTWA on 27 February 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
				• 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	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003143	Phone	CAPL sent follow up SMS text message requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 27 February 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			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				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	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 27 February 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 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	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003143	Phone	CAPL sent follow up SMS text message requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Ningaloo Coral Bay Boats on 27 February 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			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				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	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003143	Phone	CAPL sent follow up SMS text message requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Ningaloo Discovery on 27 February 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • 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	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003143	Phone	CAPL sent follow up SMS text message requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 27 February 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. • 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	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 27 February 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			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				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 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	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 27 February 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			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				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. 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	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003143	Phone	CAPL sent follow up SMS text message requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 27 February 2026 via email advising they had been identified as a relevant person with functions, interests or			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • 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).			
Ningaloo Reef to Range Tours	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003143	Phone	CAPL sent follow up SMS text message requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 27 February 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 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 Safari Tours	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Ningaloo Safari Tours on 27 February 2026 via email advising they had been identified as a relevant person with functions, interests			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Ningaloo Safari Tours has not raised any objections or claims relating to the activity. • CAPL has provided Ningaloo Safari 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	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003143	Phone	CAPL sent follow up SMS text message requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 27 February 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 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	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 27 February 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. • 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	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003143	Phone	CAPL sent follow up SMS text message requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 Whaleshark Swim on 27 February 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	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 27 February 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	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003143	Phone	CAPL sent follow up SMS text message requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 On Strike Charters on 27 February 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. • 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	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003143	Phone	CAPL sent follow up SMS text message requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 Peak Sportfishing Adventures on 27 February 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. • 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	27/02/2026	003010	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		
	13/03/2026	003057	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	17/03/2026-18/03/2026	003089	Email	Recfishwest replied and noted that recreational fishing is unlikely to be impacted by the activity. As such, Recfishwest has no concerns. CAPL thanked Recfishwest 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
	13/04/2026	003243	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Recfishwest on 27 February 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. • 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	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003143	Phone	CAPL sent follow up SMS text message requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second 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
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Sail Ningaloo on 27 February 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, 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	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 Three Islands Whale Shark Tours on 27 February 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).			
Top Gun Charters	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003143	Phone	CAPL sent follow up SMS text message requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second 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
	13/04/2026	003227	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 27 February 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).			
Ultimate WaterSports	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 Ultimate WaterSports on 27 February 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. • Ultimate WaterSports has not raised any objections or claims relating to the activity. • CAPL has provided Ultimate WaterSports 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	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003143	Phone	CAPL sent follow up SMS text message requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 View Ningaloo on 27 February 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).			
Wilderness Island	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003143	Phone	CAPL sent follow up SMS text message requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 Wilderness Island on 27 February 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 Island has not raised any objections or claims relating to the activity. • CAPL has provided Wilderness Island 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	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003143	Phone	CAPL sent follow up SMS text message requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 Yardi Creek Boat Tours on 27 February 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 (SOA) (Pilbara)	27/02/2026	003003	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		
	13/03/2026	003062	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
	26/03/2026	003140	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003244	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with SOA on 27 February 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 Carnarvon (SOC) (Gascoyne)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second 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
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with SOC on 27 February 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).			
Shire of Exmouth (SOE) (Gascoyne)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with SOE on 27 February 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. • SOE has not raised any objections or claims relating to the activity. • CAPL has provided SOE 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 WA World Heritage advisory committees

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Ningaloo Coast World Heritage Advisory Committee (NCWHAC)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 NCWHAC on 27 February 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. • NCWHAC has not raised any objections or claims relating to the activity. • CAPL has provided NCWHAC 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).			

1.3.6 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
bp Australia	27/02/2026	003000	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
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with bp Australia on 27 February 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. • bp Australia has not raised any objections or claims relating to the activity. • CAPL has provided bp 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).			
Carnarvon Energy	27/02/2026	003000	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		
	27/02/2026	003016	Email	Carnarvon Energy replied and confirmed no comments.	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
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Carnarvon Energy on 27 February 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	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 Eni Australia on 27 February 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. • 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).			
Equus Energy	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Equus Energy on 27 February 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			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				provided an overview of the activity and provided a link to their website for further information regarding the activity. • Equus Energy has not raised any objections or claims relating to the activity. • CAPL has provided Equus 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).			
Exxon Mobil	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Exxon Mobil on 27 February 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.			

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 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. 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	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Jadestone Energy on 27 February 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.			

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).			
KATO Energy	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with KATO Energy on 27 February 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).			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Kuwait Foreign Petroleum Exploration Company (KUFPEC)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	13/03/2026-16/03/2026	003072	Email	KUFPEC replied and confirmed no objections on proposed activities. CAPL thanked KUFPEC for their response.	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with KUFPEC on 27 February 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	27/02/2026	003000	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
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003169	Email	Pathfinder Energy replied and confirmed no objection to the proposed activities and that no further consultation is required. CAPL thanked Pathfinder Energy for their response.	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Pathfinder Energy on 27 February 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 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	27/02/2026	003000	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
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with PGS on 27 February 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	27/02/2026	003000	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		
	13/03/2026	003065	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
	17/03/2026	003087	Email	Santos replied and requested activity notification given the potential for concurrent activities. Santos noted that they had no objections of claims in relation to the activity.	Santos requested activity notifications.	**Claim has merit:** As an operator with the potential for concurrent activities, the request for notifications is considered fair and reasonable.	Table 10-5 was updated to include the provision of activity notifications to Santos.
	17/03/2026	003095	Email	CAPL thanked Santos for their response and confirmed the notification request was provided to the project team.	No objection or claim raised		
	13/04/2026	003240	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Santos on 27 February 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).			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Shell	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Shell on 27 February 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).			
Vantris Energy	27/02/2026	003000	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
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Vantris Energy on 27 February 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. • Vantris Energy has not raised any objections or claims relating to the activity. • CAPL has provided Vantris 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).			
Vermilion Oil & Gas	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second 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
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
	14/04/2026	003295	Email	Vermilion Oil & Gas replied to the close out email and confirmed they do not require consultation for this EP. CAPL thanked Vermilion Oil & Gas for their response.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Vermilion Oil & Gas on 27 February 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. • 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	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second 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
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Woodside on 27 February 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 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 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)	27/02/2026	003000	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		
	13/03/2026	003065	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
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with AMCS on 27 February 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 has not raised any objections or claims relating to the activity. • 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, 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)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second 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
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with CCG on 27 February 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).			
Protect Ningaloo	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 Protect Ningaloo on 27 February 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).			

1.3.8 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)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second 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
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with AEP on 27 February 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)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 AIMS on 27 February 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).			
Care For Hedland Environmental Association (CFH)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	14/03/2026	003078	Email	CFH replied and confirmed receipt of email and understanding of consultation close date.	No objection or claim raised		
	16/03/2026	003085	Email	CAPL thanked CFH for their response and noted they welcome the opportunity to provide further information if required.	No objection or claim raised		
	13/04/2026	003227	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
	13/04/2026	003236	Email	CFH thanked CAPL for the update.	No objection or claim raised		
				Summary: • CAPL commenced consultation with CFH on 27 February 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. • CFH has not raised any objections or claims relating to the activity. • CAPL has provided CFH 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)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 ECCI on 27 February 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).			
Exmouth Gulf Taskforce	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Exmouth Gulf Taskforce on 27 February			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				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. • Exmouth Gulf Taskforce has not raised any objections or claims relating to the activity. • CAPL has provided Exmouth Gulf Taskforce 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)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with KDCCI on 27 February 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			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				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)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with OSRL on 27 February 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
				• 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)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with OCCI on 27 February 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. • OCCI has not raised any objections or claims relating to the activity. • CAPL has provided OCCI 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).			
Telstra	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Telstra on 27 February 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 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			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				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	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Vocus Group on 27 February 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. • Vocus Group has not raised any objections or claims relating to the activity. • 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			

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).			

1.4 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	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 27 February 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 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
Pearl Producers Association (PPA)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with PPA on 27 February 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 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)	27/02/2026	003000	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
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with WRLC on 27 February 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 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)	27/02/2026	003000	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
				and provided an information sheet and a link to CAPLs consultation webpage.			
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information.	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with TWA on 27 February 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. • 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)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with ACF on 27 February 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)	27/02/2026	003000	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
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with CWR on 27 February 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 ongoing EPs. This included an Environment Plan consultation look ahead, including the planned consultation timeframe for 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		

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	002822	Email	CAPL provided CCWA with the December Bulletin outlining CAPL ongoing 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		
	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	01/04/2026	003200	Email	CAPL provided CCWA with the March Bulletin outlining CAPL ongoing 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		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with CCWA on 27 February 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 further information on the activity and the opportunity for further briefings.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				• 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)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	13/03/2026	003077	Email	CBPA responded and confirmed receipt of email, noted that no further consultation is required.	No objection or claim raised		
	16/03/2026	003084	Email	CAPL thanked CBPA for their response.	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with CBPA on 27 February 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. • CAPL has provided CBPA 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).			
Coral Futures Corporation (CFC)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003143	Phone	CAPL sent follow up SMS text message requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with CFC on 27 February 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 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).			
Gascoyne Development Commission (GDC)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with GDC on 27 February 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).			
Gascoyne Junction Community Resource Centre (GJCRC)	27/02/2026	003000	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
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with GJCRC on 27 February 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. • GJCRC has not raised any objections or claims relating to the activity. • CAPL has provided GJCRC 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).			
Greenpeace	27/02/2026	003000	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		
	27/02/2026	003012	Email	Automatic reply email received.	No objection or claim raised		
	13/03/2026	003065	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
	13/03/2026	003069	Email	Automatic reply email received.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
	13/04/2026	003234	Email	Automatic reply email received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Greenpeace on 27 February 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)	27/02/2026	003000	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		
	13/03/2026	003065	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
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with IFAW on 27 February 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)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	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 PDC on 27 February 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 Marine Science Institution (WAMSI)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with WAMSI on 27 February 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
				• 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)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information.	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with WAM on 27 February 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			

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).			
Whale and Dolphin Conservation (WDC)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with WDC on 27 February 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. • 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).			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Wilderness Society WA Inc	27/02/2026	003000	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		
	27/02/2026	003004	Email	Automatic reply email received.	No objection or claim raised		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	13/03/2026	003066	Email	Automatic reply email received.	No objection or claim raised		
	25/03/2026	003121	Email	CAPL replied to Wilderness Society's email (Record ID 003004) and noted that it welcomes the opportunity to answer any questions or concerns regarding the EP.	No objection or claim raised		
	30/03/2026-01/04/2026	003198	Email	Wilderness Society thanked CAPL for the provided information. Wilderness Society noted that they have an interest in ensuring that operators plan for the full removal of infrastructure. Wilderness requested clarification regarding the activity and asked whether installation of property is in scope. CAPL replied and clarified the EP scope, confirming that the EP does not involve installation of any property. Wildness Society thanked CAPL for their response and clarified best contact email.	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Wilderness Society on 27 February 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.			

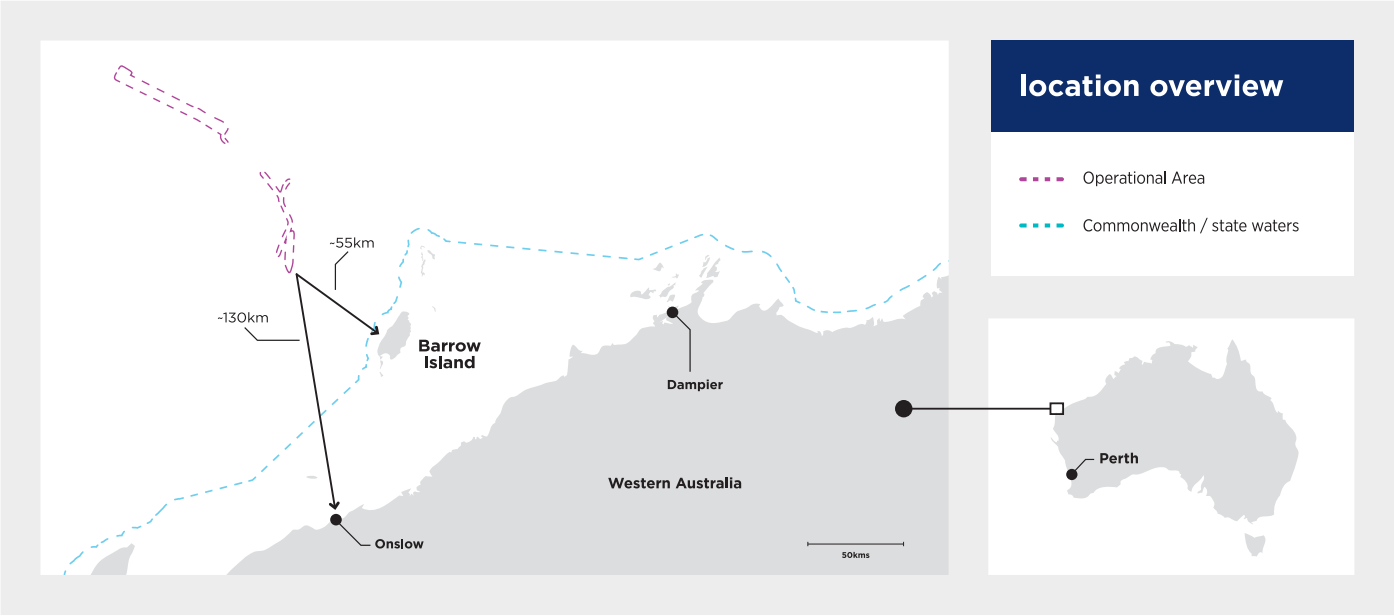
Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				• CAPL has provided Wilderness Society with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed 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)	27/02/2026	003000	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		
	13/03/2026	003065	Email	CAPL sent follow up email requesting feedback on the EP information	No objection or claim raised		
	26/03/2026	003145	Email	CAPL sent second follow up email requesting feedback on the EP information	No objection or claim raised		
	13/04/2026	003227	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with WACMN on 27 February 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.			

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).			

Appendix F Relevant Persons Consultation Materials

information sheet

gorgon backfill fields development site investigation surveys



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 over multiple stages, with some to be co-developed including Chrysaor and Dionysus (C&D). 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.

To inform ongoing engineering design for the future development of the C&D and Chandon gas fields,

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Chevron Australia is proposing to undertake additional site investigation surveys (geophysical, geotechnical, environmental) within these fields.

Chevron Australia is currently developing the Gorgon Backfill Fields Site Investigation Surveys Environment Plan (the Site Surveys 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 Site Surveys 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

Site investigation surveys (the 'petroleum activity') include geophysical, geotechnical, and environmental surveys within areas associated with the future development of the C&D and Chandon gas fields.

The geophysical surveys may include the use of multibeam echo sounder (MBES), side-scan sonar (SSS), and/or sub-bottom profiler (SBP) data collection techniques. These geophysical surveys provide data on water depth, bathymetry, and seabed and shallow sub-seabed features and characteristics.

The geotechnical surveys may include both in situ testing (e.g. penetration testing) and the recovery of sediment samples (e.g. via grab, box core, or borehole) for analysis. These geotechnical surveys provide data on the sediment profile and characteristics below the seabed.

During geophysical and geotechnical surveys, environmental baseline surveys may also be undertaken. These surveys may include the collection of sediment samples for sediment quality and/or benthic infauna assemblage analyses, and video or still imagery collection for benthic habitat characterisation and mapping.

The site investigation surveys will be undertaken using a survey vessel. Autonomous underwater vehicles (AUVs), remotely operated vehicles (ROVs), and/or uncrewed survey vessels may also be deployed from the main survey vessel to support the surveys. Crew transfers and supplies for the main survey vessel may be provided via helicopters and/or a resupply vessel.

simultaneous operations (SIMOPS)

There may be other Chevron Australia petroleum activities (e.g. Gorgon Stage 3 or the Jansz-Io Compression Project) occurring at the same time as the site investigation surveys.

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 Site Surveys EP.

location and water depths

The site investigation surveys will be undertaken off the northwest coast of WA within two Operational Areas (OAs). The OAs are based on an ~750 m radius buffer around the proposed geophysical survey areas, geotechnical sampling sites, and potential locations of future subsea infrastructure.

The C&D OA is located ~55 km northwest of Barrow Island and ~130 km from Onslow in water depths of ~125 m to 1,230 m.

The Chandon OA is located ~120 km northwest of Barrow Island and ~200 km from Onslow in water depths of ~1,145 m to 1,370 m.

Figure 1 shows the petroleum activity location.

schedule and duration

The site investigation surveys are indicatively scheduled to commence from late-2026/early-2027.

The surveys are estimated to take ~4–6 months to complete, and may be undertaken over a single or multiple campaigns. The petroleum activity can occur 24 hours per day and 7 days per week.

These schedules and durations are indicative and subject to potential delays caused by vessel and/or equipment availability, regulatory approvals, weather events, or other unforeseen factors. Therefore, the surveys may occur any time over the 5-year in-force period of the Site Surveys EP.

safe navigation area

Marine notices will be issued prior to site investigation survey activities commencing within the OAs.

The notices will include a request to other marine users for a 500 m safe navigation area (temporary exclusion) around the survey vessel and any deployed equipment during the petroleum activity.

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 potential environmental impacts or risks arising from planned activities would occur within, or within proximity of, the OAs. 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 (an oil spill) resulting from a vessel collision event.

The EMBA has been defined through combining multiple oil spill model simulations (~300 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 1 summarises the potential environmental 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 OAs 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). Both OAs intersect with the migration BIA for pygmy blue whales. The C&D OA also intersects with a foraging BIA for whale sharks, a breeding BIA for wedge-tailed shearwaters, and an internesting buffer BIA for flatback turtles.

The broader EMBA also intersects with the BIAs for:

- pygmy blue whale and humpback whale
- whale shark
- flatback turtle, green turtle, hawksbill turtle, and loggerhead turtle
- fairy tern, lesser crested tern, roseate tern, wedge-tailed shearwater.

The closest nesting habitats for turtle, seabird or shorebird species are Montebello Islands and Barrow Island, ~60 km and ~55 km respectively from the C&D OA.

Chevron Australia undertakes environmental and modelling studies and considers scientific advice and government guidance (including conservation management and recovery plans) in assessing

potential environmental impacts and risks to marine fauna.

Further, the Gorgon Backfill Fields Offshore Project Proposal (OPP) described an Adaptive Management Framework for pygmy blue whales [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 Site Surveys 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 are 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 Site Surveys 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 Site Surveys 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 1.

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 **10 April 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 receive during consultation will be used to inform and enhance the Site Surveys 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, Chevron Australia 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 Chevron Australia protect your personal information, and your rights, please refer to our privacy notice at australia.chevron.com/privacy

Figure 1: Gorgon Backfill Fields Development —Site Investigation Surveys—Location and Operational Areas (OAs).

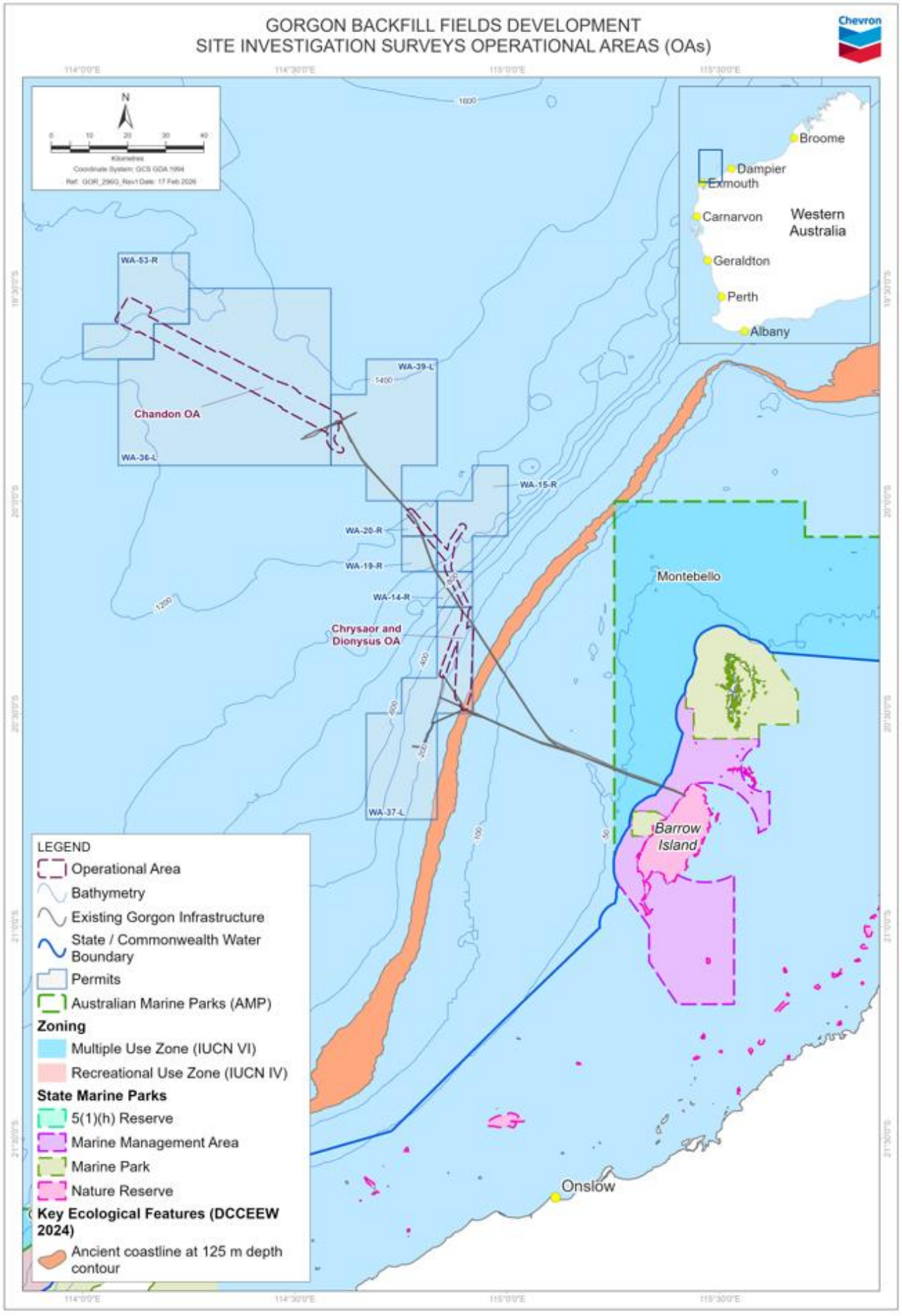

Figure 2: Gorgon Backfill Fields Development—Site Investigation Surveys—Environment that May Be Affected (EMBA).

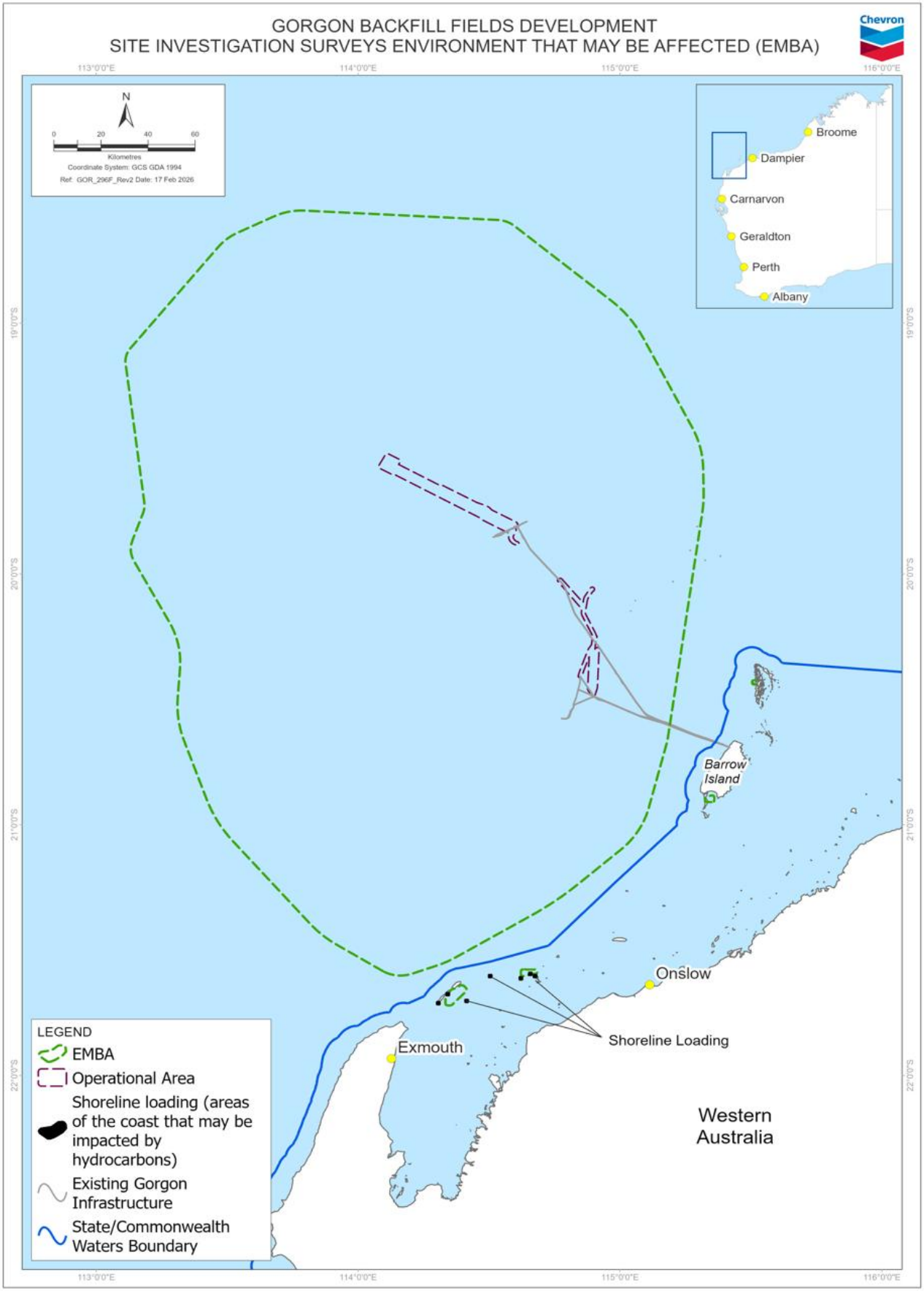

Table 1: Summary of potential environmental impacts and risks and proposed control measures.

Aspect[1] (and key sources)	Potential impact or risk	Key proposed control measures[2]
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 and equipment • Temporary presence of vessels and survey equipment (e.g. AUVs, ROVs, uncrewed survey vessels, geotechnical equipment, etc.) within the OAs.	• A potential change to the functions, interests, and activities of other marine users.	• Vessels operating within the OAs will comply with any Notice to Mariners requirements under the *Navigation Act 2012* (Cth). • Vessels operating within the OAs will comply with the requirements of Marine Order 27 in relation to navigation and radio equipment. • Vessels operating within the OAs will comply with the requirements of Marine Order 28 in relation to watchkeeping. • Chevron Australia will develop and implement SIMOPS Plan(s) to manage the site investigation surveys and other Chevron Australia petroleum activities that may occur concurrently within the vicinity of the OAs.
Physical presence—Seabed disturbance • Short-term disturbance due to temporary presence of geotechnical survey equipment on the seabed and/or sample collection. • Discharge of small volumes of drill cuttings and/or fluids during borehole drilling at the seabed.	• A localised and temporary change in water quality. • A localised and temporary change to benthic habitats and communities. • A potential change to the values and sensitivities of key ecological features (KEFs).	• Planned seabed disturbance from survey activities 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. • No planned seabed disturbance from the petroleum activity to any previously undisturbed exposed hard substrate within the 'ancient coastline at 125 m depth contour' KEF.
Planned discharges—Vessel operations • May include a variety of intermittent discharges from general vessel operations; e.g. sewage,	• 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. • 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.

[1] 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).
[2] The proposed control measures are subject to change through consultation with relevant persons and the subsequent NOPSEMA assessment process.

Aspect[1] (and key sources)	Potential impact or risk	Key proposed control measures[2]
greywater, food wastes, cooling water, deck wash-water, bilge water. • Discharges occur in near-surface water.		• 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 emissions—Atmospheric • Fuel use from vessels and helicopters within the OAs.	• 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 OAs.	• A potential reduction to the Intergovernmental Panel on Climate Change (IPCC) 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 OAs.	• A localised and temporary change in ambient light. • A potential temporary change in the behaviour of marine fauna.	• Vessels operating within the OA will comply with the requirements of Marine Order 30 in relation to the use of navigation lights. • 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 vessels, helicopters, AUVs/ROVs, and geophysical survey equipment within the OAs.	• 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 2000 (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 2000 (Cth). • The Adaptive Management Framework for pygmy blue whales [Appendix 1] will be applied to the site investigation surveys and any concurrent Chevron Australia petroleum activities.
Unplanned events		
Unplanned disturbance: Fauna interaction • Temporary presence of vessels and helicopters within the OAs.	• Injury or death of an individual marine fauna due to an unplanned interaction (e.g. vessel strike).	• Vessels under transit within the OAs 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 2000 (Cth). • Helicopters under transit within the OAs will operate in alignment with section 8.07 of Part 8, Division 8.1 (Interacting with cetaceans) of the EPBC Regulations 2000 (Cth).
Unplanned disturbance: Seabed disturbance • Dropped objects (e.g. equipment) within the OAs. • Equipment drag due to loss of vessel dynamic positioning (DP).	• A localised and temporary change to benthic habitats and communities. • A potential change to the values and sensitivities of KEFs.	• Develop and implement a Lift Plan (or equivalent) for the petroleum activity. • Dropped equipment will be retrieved wherever practicable within operational and safety constraints.

Aspect[1] (and key sources)	Potential impact or risk	Key proposed control measures[2]
Non-indigenous species: Introduction of invasive marine pests • Planned ballast water exchange from vessels within the OAs. • Presence and unplanned release of biofouling from vessels or equipment within the OAs.	• 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 OAs 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 OAs 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 OAs 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 OAs.	• Potential adverse effects (e.g. injury, entanglement) to marine fauna.	• Vessels operating within the OAs 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 OAs. • Use, handling, and transfer of hazardous materials onboard vessels within the OA.	• 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 OAs will comply with the requirements of Marine Order 91 in relation to having an approved Ship Oil Pollution Emergency Plan (SOPEP) in place.
Unplanned releases: 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 release of marine fuel may result in potential effects to marine fauna, subtidal or intertidal habitats, indirect impacts to fisheries, and/or changes in amenity.	• Vessels operating within the OAs 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 OAs will comply with the requirements of Marine Order 27 in relation to navigation and radio equipment. • Vessels operating within the OAs will comply with the requirements of Marine Order 28 in relation to watchkeeping. • Vessels operating within the OAs will comply with the requirements of Marine Order 30 in relation to prevention of collisions at sea. • Vessels operating within the OAs 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 Plan (OSMP).

Aspect[1] (and key sources)	Potential impact or risk	Key proposed control measures[2]
Oil spill response		
Oil spill response—Shoreline • Response may be implemented in the event of an oil spill which results in oil accumulation on a shoreline.	• Implementing shoreline clean-up techniques will involve people and equipment, which may further disturb shoreline habitats and fauna.	• 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 OSMP.
Oil spill response—Oiled wildlife • 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 disturb fauna.	• 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 OSMP.

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[3]
- **EPO-19**: Any blue whale continues to utilise the biologically important area without injury[4], and is not displaced from a foraging area[5,6]
- **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

[3] Where biologically important behaviours are defined as behaviour associated with critical life functions (e.g. reproduction, foraging, migration, and resting) (Ref. 719).
[4] 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).
[5] 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).
[6] 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.

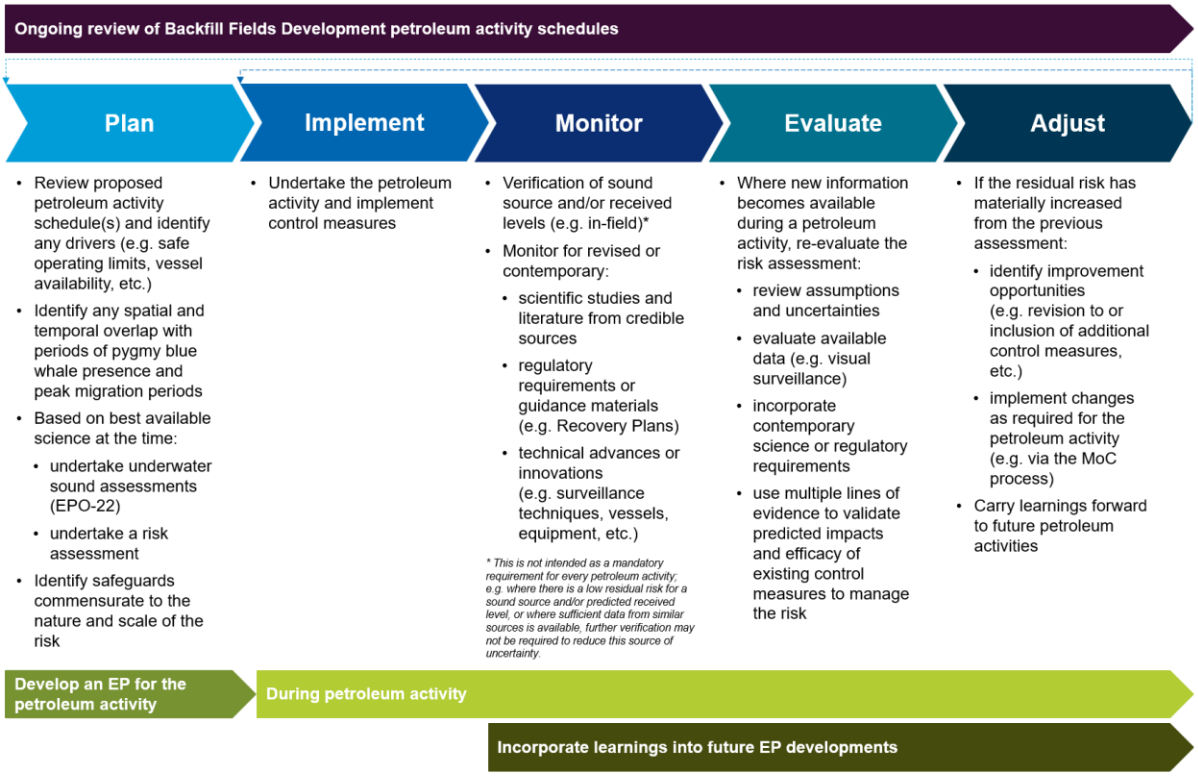

Figure 10-3: Overview of adaptive management framework

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.

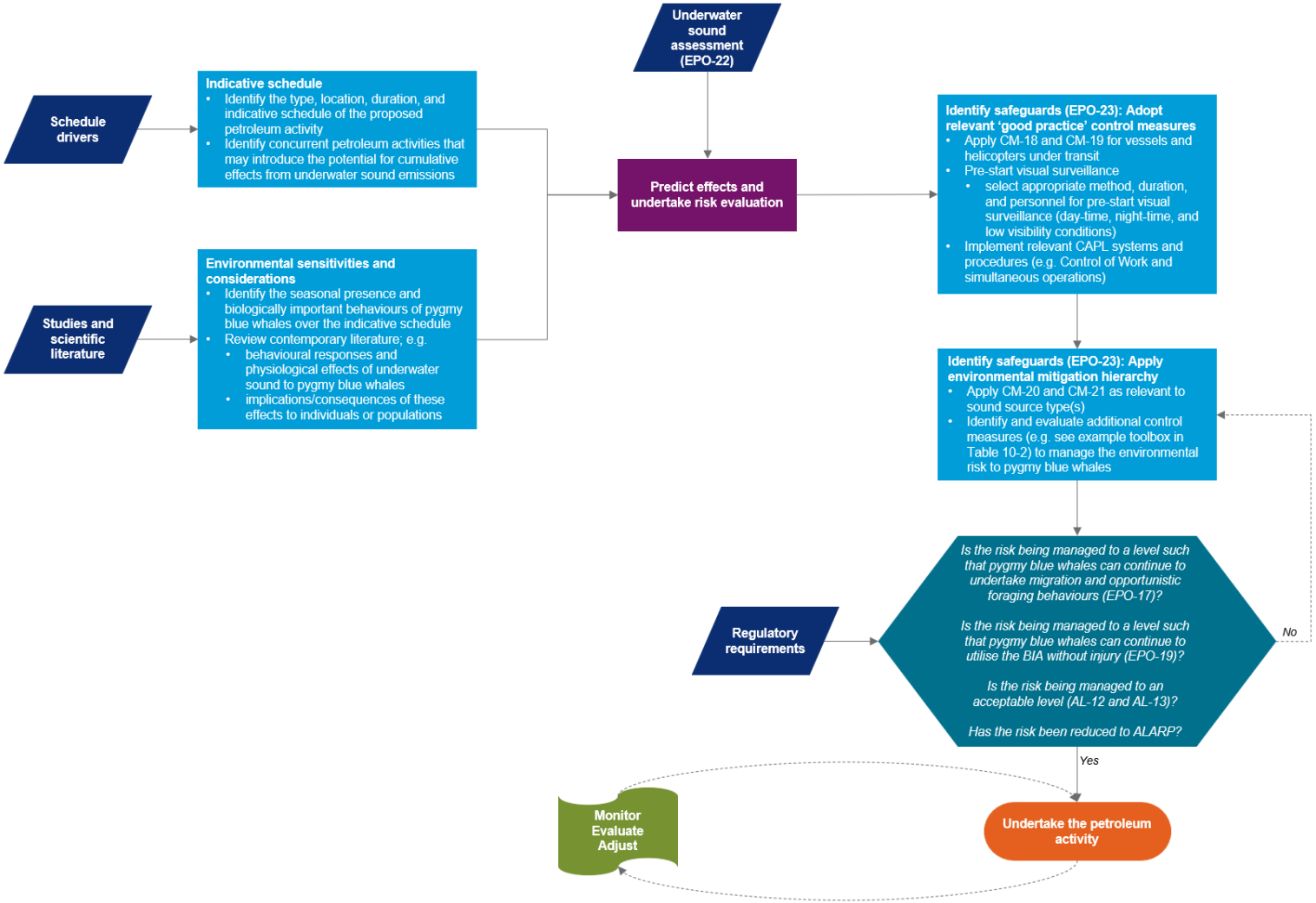

Figure 10-4: Expanded overview of 'plan' with application of the environmental mitigation hierarchy

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[7], 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[8] 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[9] (e.g. pause activity, reduce DP, change position, etc.) if pygmy blue whale foraging behaviour[10] is observed within action zone[8] – 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.

[7] 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.).
[8] 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.
[9] 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.
[10] 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 backfill fields

site investigation surveys

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 over multiple stages, with some to be co-developed including Chrysaor and Dionysus (C&D). 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.

To inform ongoing engineering design for the future development of the C&D and Chandon gas fields, Chevron Australia is proposing to undertake some additional site investigation surveys (geophysical, geotechnical, environmental) within these fields.

Chevron Australia is currently developing the Gorgon Backfill Fields Site Investigation Surveys Environment Plan (the Site Surveys 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 Site Surveys 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.DFG

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 site investigation surveys (the 'petroleum activity') include geophysical, geotechnical, and environmental surveys within areas associated with the future development of the C&D and Chandon gas fields.

The geophysical surveys may include the use of multibeam echo sounder (MBES), side-scan sonar (SSS), and/or sub-bottom profiler (SBP) data collection techniques. These geophysical surveys provide data on water depth, bathymetry, and seabed and shallow sub-seabed features and characteristics

The geotechnical surveys may include both in situ testing (e.g. penetration testing) and the recovery of sediment samples (e.g. via grab, box core, or

borehole) for analysis. These geotechnical surveys provide data on the sediment profile and characteristics below the seabed

During geophysical and geotechnical surveys, environmental baseline surveys may also be undertaken. These surveys may include the collection of sediment samples for sediment quality and/or benthic infauna assemblage analyses, and video or still imagery collection for benthic habitat characterisation and mapping.

The site investigation surveys will be undertaken using a survey vessel. Autonomous underwater vehicles (AUVs), remotely operated vehicles (ROVs), and/or uncrewed survey vessels may also be deployed from the main survey vessel to support the surveys. Crew transfers and supplies for the main survey vessel may be provided via helicopters and/or a resupply vessel.

simultaneous operations (SIMOPS)

There may be other Chevron Australia petroleum activities (e.g. Gorgon Stage 3 or the Jansz-Io Compression Project) occurring at the same time as the site investigation surveys.
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 Site Surveys EP.

location and water depth



The site investigation surveys will be undertaken off the northwest coast of WA within two Operational Areas (OAs). The OAs are based on an ~750 m radius buffer around the proposed geophysical survey areas, geotechnical sampling sites, and potential locations of future subsea infrastructure.

The C&D OA is located ~55 km northwest of Barrow Island and ~130 km from Onslow in water depths of ~125 m to 1,230 m.

The Chandon OA is located ~120 km northwest of Barrow Island and ~200 km from Onslow in water depths of ~1,145 m to 1,370 m.

Figures 1 and 2 show the location of the OA.

schedule and duration

The site investigation surveys are indicatively scheduled to commence from late-2026/early-2027. The surveys are estimated to take ~4–6 months to complete, and may be undertaken over a single or multiple campaigns. The petroleum activity can occur 24 hours per day and 7 days per week.

These schedules and durations are indicative and subject to potential delays caused by vessel and/or equipment availability, regulatory approvals, weather events, or other unforeseen factors. Therefore, the surveys may occur any time over the 5-year in-force period of the Site Surveys EP.

safe navigation area

Marine notices will be issued prior to site investigation survey activities commencing within the OAs.

The notices will include a request to other marine users for a 500 m safe navigation area (temporary exclusion) around the survey vessel and any deployed equipment during the petroleum activity.

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 potential environmental impacts or risks arising from planned activities would occur within, or within proximity of, the OAs. 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 (an oil spill) resulting from a vessel collision event.

The EMBA has been defined through combining multiple oil spill model simulations (~300 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 1 summarises the potential environmental 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 OAs 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). Both OAs intersect with the migration BIA for pygmy blue whales. The C&D OA also intersects with a foraging BIA for whale sharks, a breeding BIA for wedge-tailed shearwaters, and an internesting buffer BIA for flatback turtles.

The broader EMBA also intersects with the BIAs for:

- pygmy blue whale and humpback whale
- whale shark
- flatback turtle, green turtle, hawksbill turtle, and loggerhead turtle
- fairy tern, lesser crested tern, roseate tern, wedge-tailed shearwater.

The closest nesting habitats for turtle, seabird or shorebird species are Montebello Islands and Barrow Island, ~60 km and ~55 km respectively from the C&D OA.

Chevron Australia undertakes environmental and modelling studies and considers scientific advice and government guidance (including conservation management and recovery plans) in assessing potential environmental impacts and risks to marine fauna.

Further, the Gorgon Backfill Fields Offshore Project Proposal (OPP) described an Adaptive Management Framework for pygmy blue whales [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 Site Surveys 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 andintangible cultural values and features—including songlines, dreaming stories, and the flora and fauna connected to them.

Chevron Australia are 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 Site Surveys 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 Site Surveys 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 the Gorgon Backfill Fields Site Investigation Surveys can be viewed in Table 1.

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 1.

We encourage you to provide additional details about the environment, aspects, consequences of the activity or control measures or to ask for further information or consultation by **10 April 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 Chevron Australia receive during consultation will be used to inform and enhance the Site Surveys 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: Gorgon Backfill Fields Development —Site Investigation Surveys—Location and Operational Areas (OAs).

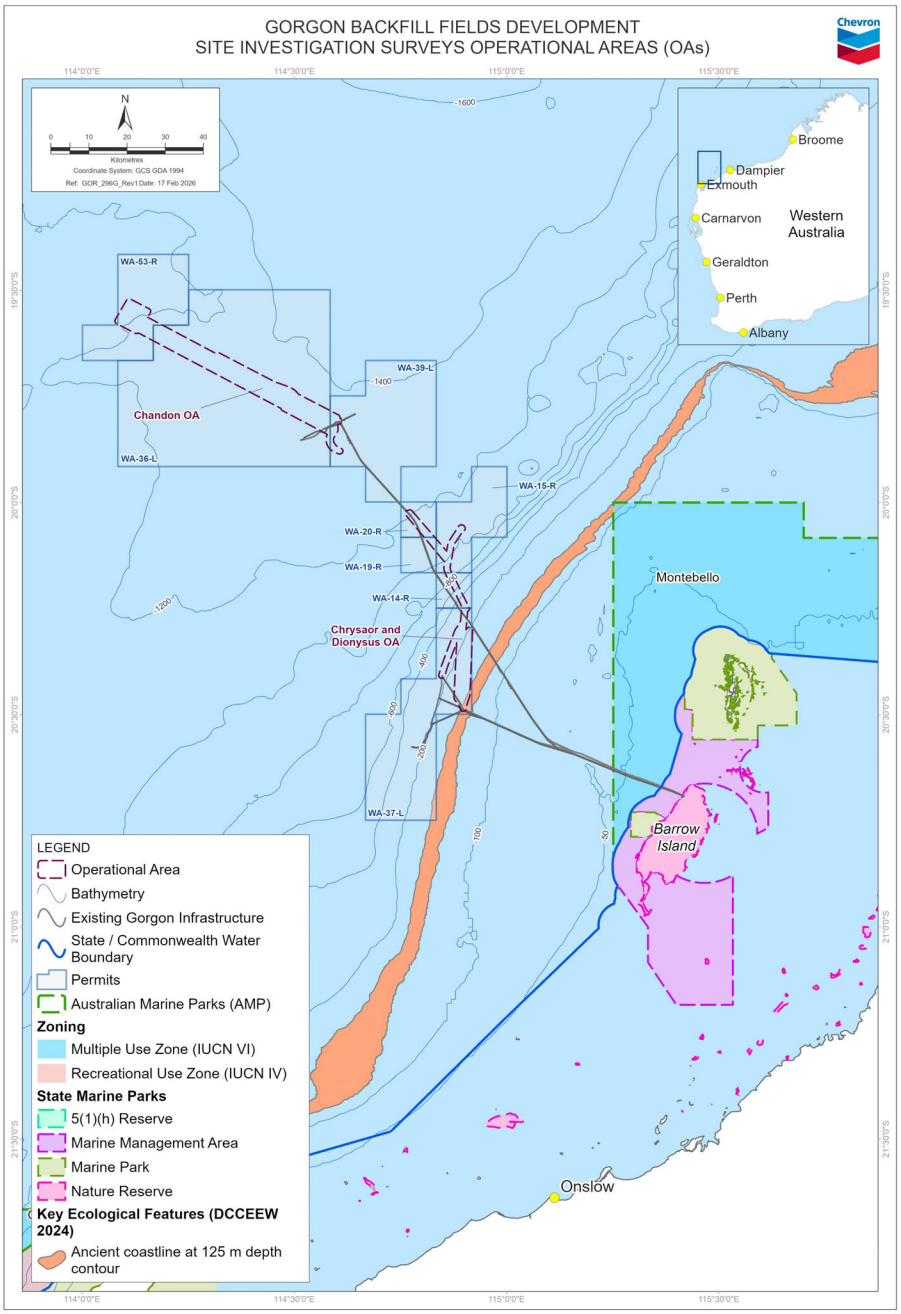

Figure 2: Gorgon Backfill Fields Development—Site Investigation Surveys—Environment that May Be Affected (EMBA).

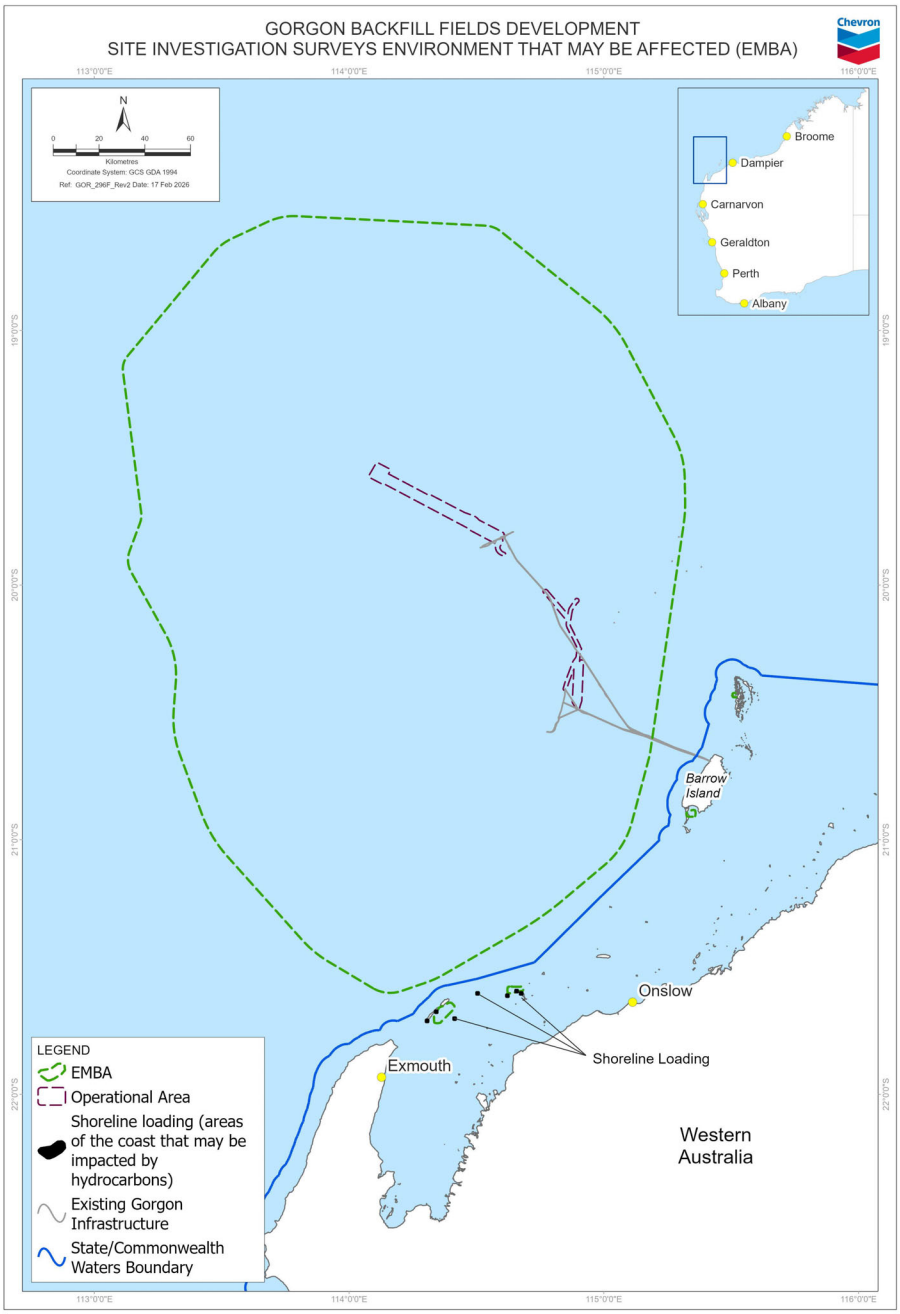

Table 1: Summary of potential environmental impacts and risks and proposed control measures. – view here

Appendix 1: Adaptive Management Framework for Pygmy Blue Whales exposed to underwater sound emissions from the Gorgon Backfill Fields Development. – view here

resources

Gorgon Backfill Fields Development - Site Investigation Surveys - info sheet - Feb 2026

Consultation on Offshore Petroleum Environment Plans – NOPSEMA

Environment plan content requirements – NOPSEMA

Environmental requirements – NOPSEMA

Offshore Petroleum Greenhouse Gas Storage (Environment) Regulations

Chevron Operational Excellence Management System (OEMS)

Consultation in the course of preparing an environment plan – NOPSEMA

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environment plan

seeking relevant persons' input

our activities

Chevron Australia is planning to undertake site investigation surveys within areas associated with the future development of Gorgon backfill fields – Chrysaor and Dionysus (C&D) and Chandon – located in Commonwealth waters off the northwest coast of Western Australia, in water depths between 125 m to 1370 m.

The petroleum activity includes geophysical, geotechnical, and environmental surveys, which are indicatively scheduled to commence late-2026/early-2027 and are estimated to take approximately four months to complete.

The feedback we receive during consultation will inform and enhance the Gorgon Backfill Fields Site Investigation Surveys 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)

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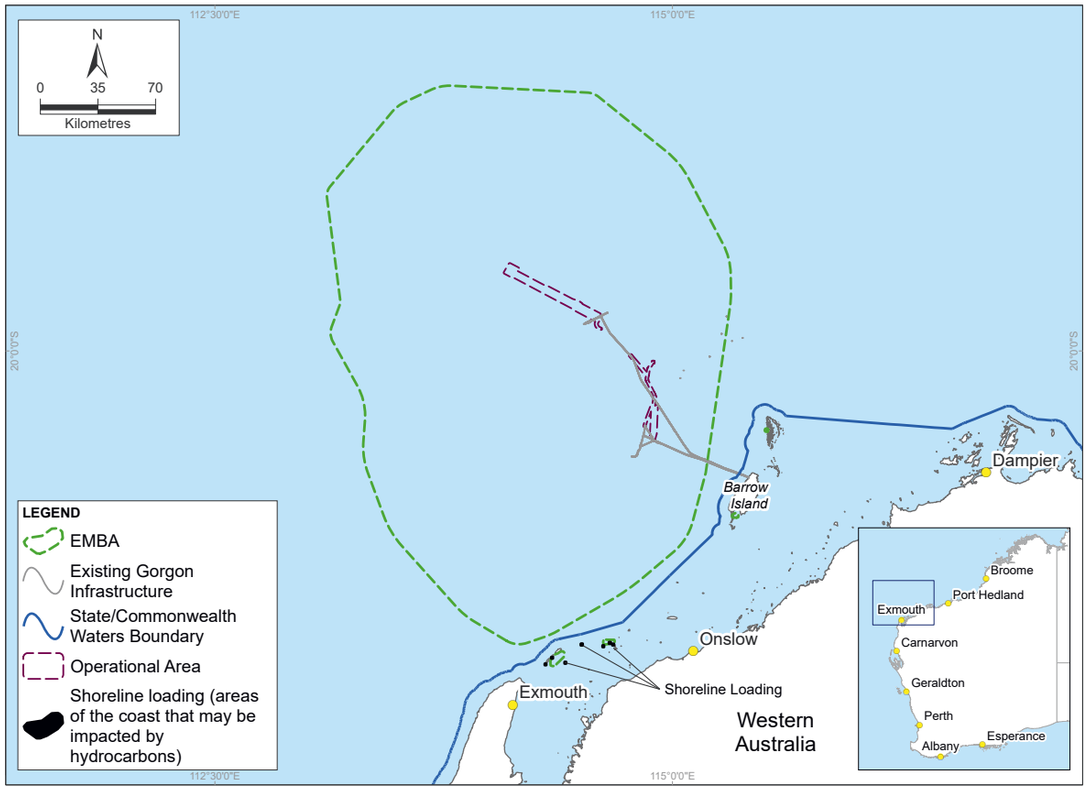
The map shows the C&D and Chandon operational areas (OAs), based on an ~750 m radius buffer around the proposed survey areas, and the EMBA, which is based on worst-case unplanned hydrocarbon release (oil spill) scenarios resulting from a vessel collision.

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.

The majority of the potential environmental impacts and risks arising from planned activities would occur within, or within proximity of, the OAs. 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

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Please contact us by **10 April 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.

THE WEST AUSTRALIAN

9th March 2026

Page 11

Premier's plans to move out of his electorate due to commute



"It must be nice in a cost-of-living crisis to be able to move ... I drive 55 minutes to work every day on the crappy Kwinana Freeway with two lanes."
Vivienne



"The move is a bit strange ... he's felt like one of us. I suppose it's his job to represent this area, so I hope he still does."
Christine Lynch



"If he's representing the area he should be here, not in Perth."
Ken Bowry

Pictures: Michael Wilson

member in 2008. "I raised my family in Kwinana and it will always be home.

"(Being Premier) involves regularly attending early and late meetings, and with that in mind Carly and I have decided the time is right to relocate, close to where we work."

Kwinana resident Fiona Reily argued the Premier should stay in Kwinana and instead catch the train to work.

"Roger and Rita are going on about our world-class transport system and our transport network, so maybe he could just hire a security guard and catch the train," she said.

"I totally get the commute is hard but maybe he should be more focused on fixing that rather than moving out of the area.

"I think to represent a community you have to be a part of it and I think if you're not part of the community, how can you really understand the residents?"

Christine Lynch was more optimistic that he would still represent the electorate effectively. "The move is a bit strange as he's been here for all this time and he's felt like one of us," she said.

"I suppose it's his job to represent this area so I hope he still does."

Mr Cook's office has declined to say how much he paid for the West Perth apartment, but the median apartment price in the suburb is $603,000 or as much as $916,000 for a three-bedroom unit.

He and his wife built in Wellard in 2009, which the pair have said they will keep and rent out.

The median rent for a house there is $690 a week.

environment plan

seeking relevant persons' input

Chevron

our activities

Chevron Australia is planning to undertake site investigation surveys within areas associated with the future development of Gorgon backfill fields – Chrysaor and Dionysus (C&D) and Chandon – located in Commonwealth waters off the northwest coast of Western Australia, in water depths between 125 m to 1370 m.

The petroleum activity includes geophysical, geotechnical, and environmental surveys, which are indicatively scheduled to commence late-2026/early-2027 and are estimated to take approximately four months to complete.

The feedback we receive during consultation will inform and enhance the Gorgon Backfill Fields Site Investigation Surveys Environment Plan, which must be accepted by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) before activities may commence.

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PILBARA NEWS

11th March 2026

Page 16 (Outside Back Cover)

SPORT

Wednesday, March 11, 2026 pilbaranews.com.au

RECORDS FALL AT PENNANTS

SWIMMING
CAIN ANDREWS

Nearly 400 swimmers representing 19 clubs from across regional WA and more than 600 spectators, coaches and officials descended on Karratha for the Swimming WA Country Pennants from February 27-March 1.

Young swimmers from across the Pilbara, including from Karratha, Tom Price, Wickham and Onslow took part in the massive competition hosted by the Northern Swimming Association at the Karratha Leisureplex.

But it was Mandurah Swimming Club which claimed its third consecutive A-grade pennant at the competition.

Mandurah's Luke McDonough broke the A-grade boys' 50m freestyle record, which had stood since 2014, with a time of just 25.41sec.

National-level swimmer Yani Davis who hails from Karratha broke the A-grade men's 100m backstroke with a time of 1:58.69. Davis participated in Karratha's 200m freestyle relay win, when the Karratha team — Seight Sarah, Bodie Biddiscombe and Brian Nguyen — also broke the record finishing in 1min. 45.68sec.

In B-grade, Jessica Leeson from Northam broke a record in the girls' 100m freestyle, with a time of 1:58.00.

Kalgoorlie Amateur Swimming Club won the traditional march past with their tribute to the Jamaican bobsled team.

Adding to the excitement, Olympic gold medallist and soon-to-be World Aquatics Hall of Fame inductee Simone Fountain delivered the opening address, speaking about resilience, belief, and enjoying the journey.

Swimming WA's Kirsty Read highlighted the broader importance of hosting Country Pennants in regional locations. "Country Pennants brings one of our largest participation events directly into regional WA," she said.

"That visibility matters, not only for growing our sport, but for demonstrating the value of aquatic facilities within regional communities and supporting future investment by local governments.

"If we don't take advantage of the incredible landscapes and communities we have here in WA, we risk losing those opportunities for future generations."

Next year's Country Pennants are due to be held in Geraldton.



Broome Barracudas at the 2026 Country Pennants.

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environment plan

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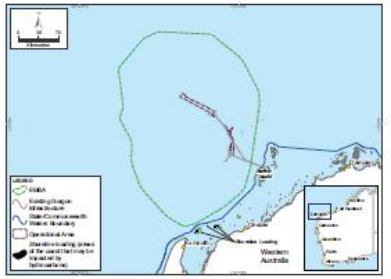

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NORTH WEST TELEGRAPH

11th March 2026

Page 5

North West Telegraph
Wednesday, March 11, 2026
northwesttelegraph.com.au

appointment



Sharon Todd

appointment of a local government monitor.

"Good governance is not something we should be afraid of — it's something we should welcome," she said. "If an independent monitor can provide guidance, strengthen processes, and ensure policy and procedures are being followed properly, then that is ultimately in the best interests of our community. For me, this isn't about politics — it's about restoring and reinforcing public confidence.

"Our residents deserve transparency, accountability and steady leadership. If the monitor's role is to support councillors, the CEO and administration to operate within strong governance frameworks, then that is a positive step.

"Local government works best when systems are clear, roles are understood, and decisions are made openly and lawfully."

The Port Hedland council election is set for March 28.

Council candidates Peter Carter, Jacinta Behrund, Frank Edwards, Ash Christensen, Lorraine Butson, George Daccache, Jemma Scott, Adrian McRae, Troy Melville, Janet Gillingham, Jillian Fisher, Rachael Baxter, Zoe Little and Russell McDowall were contacted for comment.

Port Hedland commissioners chair Jessica Shaw was also contacted for comment.

Ratepayers urged to vote early

The Town of Port Hedland is urging ratepayers to get their votes in early for March 28's council election as voting packs start landing in mailboxes.

Port Hedland Chair of Commissioners Jessica Shaw said community members should vote as early as possible.

"With the election being conducted by post, it's incredibly important voters complete and return their ballot papers as soon as possible to ensure their vote counts," she said.

Voters can either post their ballots or drop them off in person at ballot boxes in one of the two voting stations at the Civic Centre or South Hedland Library in business hours before March 27. Voters can also drop their ballots off on election day at the same voting stations between 8am and 6pm.

Residents and owner-occupiers who have not received their packs by mail, or who have lost or damaged them, can request replacement ballot papers at the Civic Centre or South Hedland Library.

Are you an employer in a remote community or want to become one?

You can apply for a grant to create new jobs in your community, through the Remote Jobs and Economic Development program.

Grants will support eligible employers to employ local people in new jobs by funding wages and equipment.

To find out more – **scan the QR code**, call **1800 079 098** or visit your **local NIAA office**.

Australian Government
National Indigenous Australians Agency

NIAA

environment plan

seeking relevant persons' input

Chevron

our activities

Chevron Australia is planning to undertake site investigation surveys within areas associated with the future development of Gorgon backfill fields – Chrysaor and Dionysus (C&D) and Chandon – located in Commonwealth waters off the northwest coast of Western Australia, in water depths between 125 m to 1370 m.

The petroleum activity includes geophysical, geotechnical, and environmental surveys, which are indicatively scheduled to commence late-2026/early-2027 and are estimated to take approximately four months to complete.

The feedback we receive during consultation will inform and enhance the Gorgon Backfill Fields Site Investigation Surveys 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)

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The map shows the C&D and Chandon operational areas (OAs), based on an ~750 m radius buffer around the proposed survey areas, and the EMBA, which is based on worst-case unplanned hydrocarbon release (oil spill) scenarios resulting from a vessel collision.

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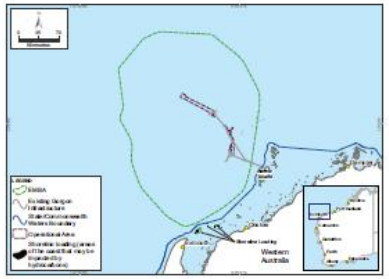
The majority of the potential environmental impacts and risks arising from planned activities would occur within, or within proximity of, the OAs. Chevron Australia has systematic control measures to prevent and mitigate emergencies and to reduce the impact of planned activities on the environment, including ecological, social and cultural sensitivities.



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MIDWEST TIMES

11th March 2026

Page 14

Soap visit could lure European tourists

CLARE RIGDEN

WA has long been a popular destination with overseas travellers, particularly from the UK.

It's a big market for the State; in the year to September, 140,000 of them contributed $384 million to the economy.

Tourism Minister Reece Whitby hopes even more will be enticed to visit our shores — particularly along our Coral Coast — after watching episodes of Home and Away, which debuted this week.

The long-running Aussie drama filmed here last October with the assistance of Tourism WA for a series of special episodes featuring the return of two of the show's most beloved characters, Brax (Stephen Peacocke) and Ricky (Bonnie Sveen). Over the years Home and Away has attracted plenty of fans to NSW, keen to see the iconic Summer Bay — or Sydney's Palm Beach as it is in real life — in the flesh.

It's been a stop on the tourist trail for four decades — WA is now ready for its close up.

Eagle-eyed viewers will recognise many backdrops in next week's episodes: the show travelled to Elizabeth Quay to film, before heading to the Coral Coast for a 10-day shoot.

Some of the region's most iconic tourist destinations make stunning cameos, including Ningaloo Coast World Heritage Area, Coral Bay, Charles Knife Canyon, plus Yardie Creek, Turquoise Bay and Shot Hole Canyon in Cape Range National Park. Bullara Station, a camping destination 90km outside of Exmouth, was used as a base for cast and crew, also doubling as Brax and Ricky's home on screen.

For Sveen, filming on the Coral Coast was a dream, with the location at Yardie Creek a particular highlight.

"Luckily we got quite a big amount of time to film there, and a few hours on the Yardie Creek tour boat," Sveen said.

"We got lots of time to really take in the gorgeous red limestone cliffs; we saw plenty of those black-footed rock wallabies, which was so amazing.

"Being from Tassie, to get to see these rare, precious native wildlife on the other side of the country was amazing — you couldn't help but imagine what life must have been like for the Thalanyji people for the thousands of years before colonisation.

"Just how serene and magical, and how proud that mob must be of their land."

Tourism Minister Reece Whitby said it was a "great opportunity" for the State Government to offer assistance to bring the iconic show to WA.

"Programs like Home and Away capture and show the Australian lifestyle, and they are really popular," he said.

"If you can imagine you are sit-



Bonnie Sveen and Stephen Peacocke in Home and Away.



Bullara Station.



On set. Picture: Jeremy Grove

environment plan

seeking relevant persons' input

Chevron

our activities

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The petroleum activity includes geophysical, geotechnical, and environmental surveys, which are indicatively scheduled to commence late-2026/early-2027 and are estimated to take approximately four months to complete.

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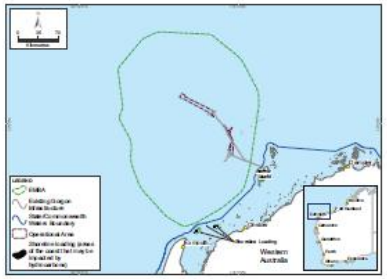

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THE AUSTRALIAN

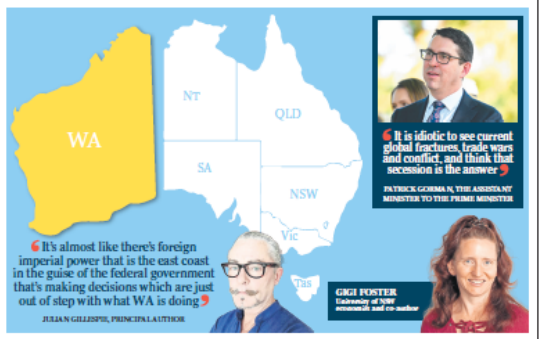
9th March 2026

Page 6

'MANIFESTO' TO STOKE CAMPAIGN TO SEVER FEDERAL TIES

New 'manifesto' for western secession

PAUL GARVEY



Coalition call: apply from afar

Chevron

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our activities

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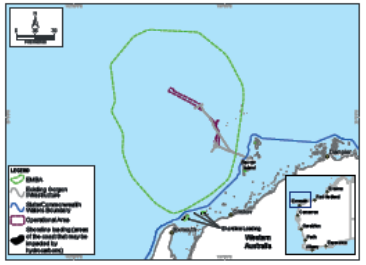

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BUSINESS NEWS

16th March 2026

Page 19



(left), Margaret Nowak and Megan McCracken were among the inductees. Photo: Karen Wheatland Photography

with her students was important for them to see what they can be.

"It's about building awareness because the students have got to see themselves in it," Ms Buckley said.

"If all of our examples are male dominated and there's no females, they can't see it."

Megan McCracken was inducted into the WA Women's Hall of Fame under the business category for her work specialising in promoting gender equity in the workplace.

After a career in the corporate sphere, Ms McCracken founded her own firm, Pleiades Consulting, and has since worked with some of state's largest miners, including Rio Tinto and Fortescue, among other companies such as CBH.

She specialises in advising and enacting cultural and workforce change in industrial and operating businesses in the resources, automotive, energy and rail sectors.

Ms McCracken said she was focused on systematic change, thread by thread.

"I'm really focused on systems, symbols and behaviours in workplaces, and often small changes that are great for everybody," she said.

Ms McCracken described her work as a portfolio, featuring board roles, leadership team coaching and mentoring, with a leadership thread running through it.

"I feel my best impact now is in working with people who are leaders or who want to be leaders, and to help them through what kind of leader they're going to be," she said.

"I think that's just extraordinarily powerful.

"I will also get people who feel stuck in their careers and being a sounding board for them to work our their own best pathway forward."

environment plan

seeking relevant persons' input

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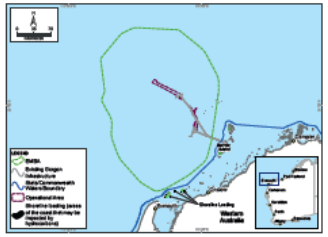

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Appendix G Operational and Scientific Monitoring Assessment

Appendix G Operational and Scientific Monitoring Assessment

Relevance of OMPs and SMPs to the activity

Table G-1 lists the Joint Industry OMPs and SMPs that are relevant to CAPL's Gorgon Backfill Fields Site Investigation Surveys activities ('Backfill Fields Site Survey' 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 Gorgon Backfill Fields Site Investigation Surveys activities

Operational monitoring	Relevant for Backfill Fields Site Surveys	Scientific monitoring	Relevant for Backfill Fields Site Surveys
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 Backfill Fields Site Survey 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.

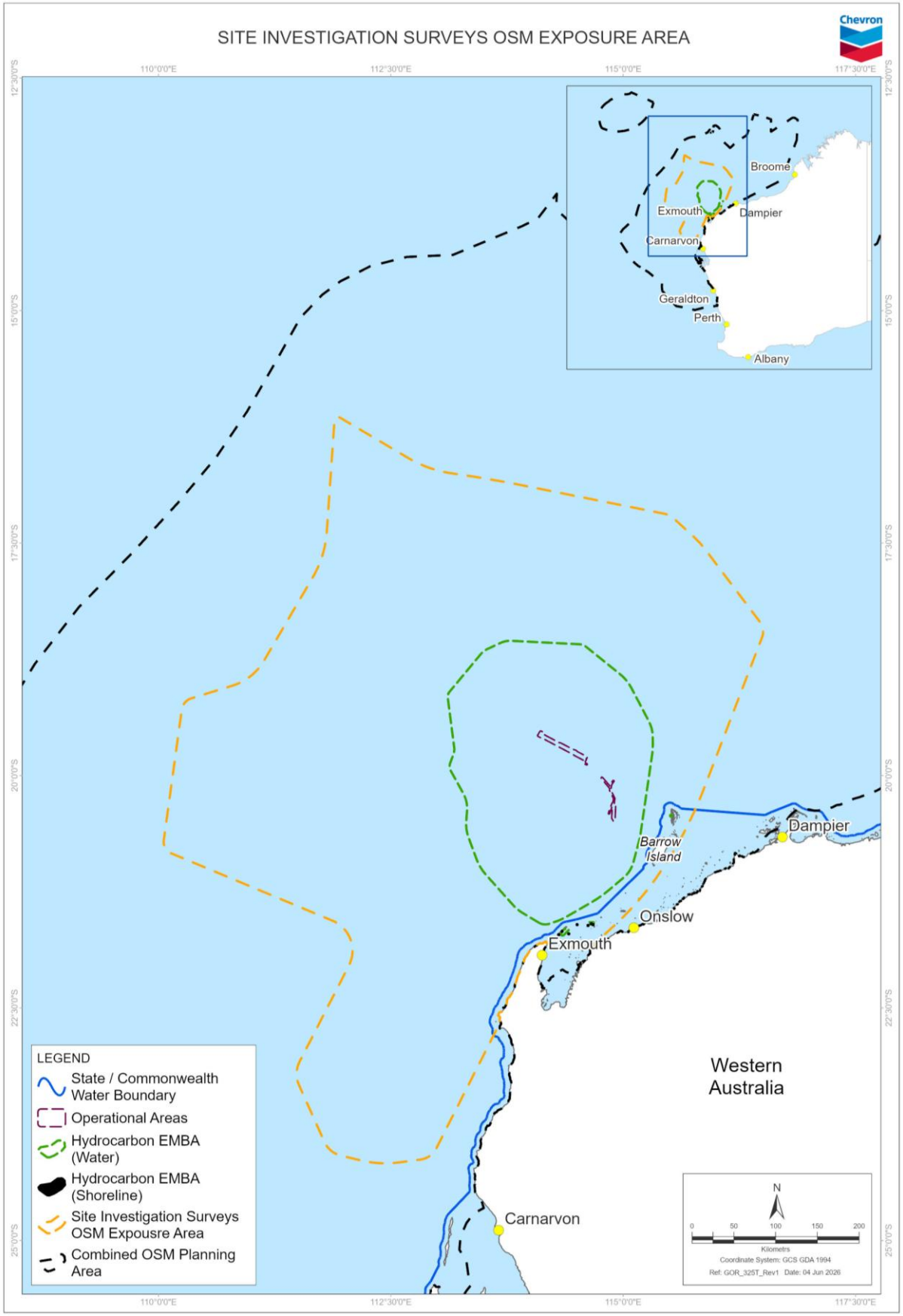


Figure G-1: OSM Exposure Area for Gorgon Backfill Fields Site Investigation Surveys activity

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 Backfill Fields Site Surveys activity 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 two worst-case credible spill scenarios: 350 m^3 surface release of Marine Diesel Oil (MDO) at Gorgon MPTS (scenario 1), and 350 m^3 surface release of MDO at Chandon DC2-NW1 (scenario 2).

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 8.14 of the EP.

As per Section 2.2 of the CAPL 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 Backfill Fields Site Surveys 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 Backfill Fields Sites Survey activity).

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. Biologically Important Areas (BIAs), habitat critical to the survival of marine turtles (HCTS) and Key Ecological Features (KEFs) are broad-scale areas mapped by the Australian Government (Ref. 5; Ref. 6; Ref. 7) rather than discrete receptor locations, and are not assessed separately; where they overlap a named receptor, the species and habitats they support are captured in that receptor's baseline assessment (Table G-3).

Initial monitoring priorities (within the first 14 days of a spill)

CAPL has reviewed the scenario 1 (350 m³ MDO at Gorgon MPTS) stochastic modelling results (Table G-2) and identified the receptors, including BIAs, HCTS and KEFs, predicted to be contacted at ≥10% probability within the 14-day window, and assigned each a Base Tier as summarised below. Tier rankings for scenario 1 are presented in Table G-4.

- Base Tier 1: the flatback turtle (internesting buffer, Montebello Islands), wedge-tailed shearwater (breeding), whale shark (foraging, northward from Ningaloo along the 200 m isobath), humpback whale (migration) and pygmy blue whale (migration) BIAs, the flatback turtle HCTS, and the Ancient coastline at 125 m depth contour and Continental Slope Demersal Fish Communities KEFs, contacted at the high entrained exposure value (≥1,000 ppb) and, for the BIAs, HCTS and KEF within which the release location lies, also at the high floating exposure value (≥50 g/m²);
- Base Tier 2: the flatback turtle (internesting buffer, Thevenard Island) BIA, contacted at the moderate entrained exposure value (≥100 ppb);
- Base Tier 3: the Gascoyne AMP, Ningaloo WHA and AMP, Muiron Islands MMA, Outtrim Patches and Ningaloo Reef, the WA10 (122: North West Cape), WA10 (123: Ningaloo MP coastline), WA10 (124: Ningaloo MP coastline), WA11.West (326: Serrurier, Bessieres, Round Islands) and WA11.West (329: Muiron Islands) shoreline cells, the dugong (Exmouth Gulf), fairy tern, roseate tern and lesser crested tern (breeding), green, hawksbill and loggerhead turtle (internesting buffer and nesting), pygmy blue whale (foraging, Ningaloo) and whale shark (foraging, Ningaloo Marine Park and adjacent Commonwealth waters) BIAs, the green, hawksbill, and green and loggerhead turtle HCTS, and the Canyons linking the Cuvier Abyssal Plain and the Cape Range

Peninsula, Commonwealth waters adjacent to Ningaloo Reef and Exmouth Plateau KEFs, contacted at the low exposure values.

For scenario 2 (350 m³ MDO at Chandon DC2-NW1), CAPL has identified the receptors, including BIAs and KEFs, predicted to be contacted at ≥10% probability within the 14-day window, and assigned each a Base Tier as summarised below. No HCTS is predicted to be contacted at ≥10% probability within the 14-day window under this scenario. Tier rankings for scenario 2 are presented in Table G-5.

- Base Tier 1: the Exmouth Plateau KEF, within which the release location lies, contacted at the high floating (≥50 g/m²) and entrained (≥1,000 ppb) exposure values, and the pygmy blue whale (migration) BIA, contacted at the high entrained exposure value (≥1,000 ppb);
- Base Tier 2: no additional receptors;
- Base Tier 3: the Gascoyne AMP, the wedge-tailed shearwater (breeding) BIA and the Continental Slope Demersal Fish Communities KEF, contacted only at the low entrained exposure value (≥10 ppb).

The named receptors are contacted at ≥10% probability 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), and 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 under either scenario.

Figure G-2 and Figure G-3 present the tier envelope maps for the Backfill Fields Site Surveys vessel collision scenarios, showing the spatial extent of the receptor tier assignments in Table G-4 and Table G-5. Each map shows the tiered 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.

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 and Table G-5.

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.

Receptors contacted beyond the 14-day initial prioritisation window

Stochastic modelling for the Backfill Fields Site Surveys activity predicts that some receptors are contacted beyond the 14-day initial prioritisation window. These receptors are ranked and prioritised using the same three-tier framework as per Section 2.2 of the CAPL OSM-BIP, based on the exposure value reached and the additional criteria in Section 2.2.3. Beyond-14-day receptors are addressed post-spill through the continual re-evaluation of

monitoring priorities described in Section 13 and 18 of the CAPL OSM-BIP, informed by monitor and evaluate data and post-spill modelling assessment.

Consideration of KEFs, BIAs, HCTS and other 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, HCTS and Australian Marine Parks (AMPs) intersecting the OSM Exposure Area are described in Appendix G and Appendix I of the CAPL OSM-BIP. Consistent with Section 2.2.3 of the CAPL OSM-BIP, the CAPL PPP (Ref. 2) considers these features in two ways. AMPs and KEFs are ranked as conservation estates in their own right and are therefore assessed as receptors in Table G-4 and Table G-5 wherever they are predicted to be contacted, whereas BIAs are incorporated into the CAPL PPP fauna rankings, as described below.

Five KEFs are predicted to be contacted at ≥10% probability within the 14-day window under scenario 1, and two under scenario 2 (Table G-2). Their tier rankings are presented in Table G-4 and Table G-5.

Four of these KEFs are defined by seafloor features at depth, being the Continental Slope Demersal Fish Communities, the Exmouth Plateau, the canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula, and the Ancient coastline at 125 m depth contour (Ref. 7). Modelled 'contact' with these KEFs indicates hydrocarbons at the sea surface or in the water column above the feature, and as both scenarios are surface releases of MDO, direct exposure of their seabed habitats is unlikely. However, the values of these KEFs apply to both their benthic and pelagic habitats, as the features are associated with upwelling and enhanced productivity that support aggregations of pelagic species such as whale sharks, humpback whales, large predatory fish and seabirds (Ref. 7). Monitoring of these KEFs therefore focuses on water quality (OM2 and SM1), marine fish (SM7) and any associated fauna (SM4 and SM5, initiated as indicated by OM5). Close to the release locations, the Ancient coastline at 125 m depth contour KEF (scenario 1) and the Exmouth Plateau KEF (scenario 2) are monitored by the spill site monitoring team, which implements OM2, and SM1 and SM7 where indicated by their initiation criteria.

BIAs are incorporated into the CAPL PPP fauna rankings (Ref. 2). Each BIA contacted at the Tier 1, Tier 2 or Tier 3 base exposure values is assessed as a receptor in its own right, at the tier its exposure warrants, and is assigned the CAPL PPP fauna ranking (Ref. 2) for the species' listing status under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) and its life cycle or behaviour grouping. The BIAs assessed are those in the current BIA dataset (Ref. 6).

HCTS (Ref. 4; Ref. 5) is not ranked in the CAPL PPP (Ref. 2) and is treated in the same way as BIAs. As HCTS comprises only nesting and internesting habitat (Ref. 4), it is assigned the CAPL PPP fauna ranking for the species in the breeding grouping (Ref. 2), with the higher ranking applied where an area is defined for more than one species (Ref. 2). Under scenario 1, the flatback turtle HCTS, within which the release location lies, is Tier 1, and the green, hawksbill, and green and loggerhead turtle HCTS are Tier 3 (Table G-4). No HCTS is predicted to be contacted at ≥10% probability within the 14-day window under scenario 2.

BIAs and HCTS contacted only at the low exposure values within the 14-day window (Table G-2), being the dugong, fairy tern, roseate tern, lesser crested tern, marine turtle, pygmy blue whale (foraging) and whale shark (foraging, Ningaloo Marine Park and adjacent Commonwealth waters) BIAs and the green, hawksbill, and green and loggerhead turtle HCTS under scenario 1, and the wedge-tailed shearwater (breeding) BIA under scenario 2, are listed as Tier 3 in Table G-4 and Table G-5. To keep the tables concise, Tier 3 BIAs of the same species are grouped in a single row, as are the roseate and lesser crested tern breeding BIAs and the green and hawksbill turtle HCTS, each pair sharing the same CAPL PPP fauna ranking. Where the BIAs grouped for a species carry different CAPL PPP fauna rankings, as for the dugong breeding, calving, nursing and foraging BIAs in Exmouth Gulf,

the higher ranking is applied, consistent with the CAPL PPP approach for receptors with multiple ranks (Ref. 2). For grouped rows, the probability of contact and time to contact for each BIA and HCTS area are given in Table G-2, and the row shows where the peak concentration was predicted.

Several of the BIAs and HCTS listed in Table G-4 and Table G-5 are of significance only during particular periods of the year, being the periods in which the species is present or undertakes the behaviour for which the BIA is defined:

- pygmy blue whale (migration): the northern migration passes Exmouth from April to August, and the southern migration follows the Western Australian coastline from October to late December (Ref. 6; Table 5-6 of the EP); CAPL passive acoustic monitoring (2019 to 2023) detected pygmy blue whales migrating north past the Jansz location from late March to mid-September (peak late May to June), and south from early October to late January (peak late November to early December) (Section 5.3.3.1.1 of the EP);
- humpback whale (migration): the northern migration through the BIA occurs from late July to September (Ref. 6; Table 5-6 of the EP); by October the majority of whales have started the southward migration, and sightings are rare after November (Ref. 2);
- wedge-tailed shearwater (breeding): a breeding visitor to the Pilbara, arriving in mid-August and leaving in April (Ref. 6; Table 5-15 of the EP);
- flatback turtle (internesting buffer BIAs and HCTS): flatback turtles nest on Barrow Island from October to March, with peak nesting from November to January (Section 5.3.3.2.1 of the EP), the flatback HCTS is defined for October to March (Ref. 5; Table 5-8 of the EP), and the internesting buffer BIAs are attributed to early summer (Montebello Islands) and summer (Thevenard Island) (Ref. 6; Table 5-9 of the EP);
- green turtle (internesting buffer and nesting BIAs and HCTS): the green turtle HCTS is defined for November to March (Ref. 5; Table 5-8 of the EP), and the BIAs at the North West Cape and the North and South Muiron Islands are attributed to summer (Ref. 6; Table 5-9 of the EP);
- hawksbill turtle (internesting buffer and nesting BIAs and HCTS): the hawksbill turtle HCTS is defined for October to February (Ref. 5; Table 5-8 of the EP); the Thevenard Island BIA is attributed to year-round use (Ref. 6), and no seasonal timing is given for the Ningaloo and Jurabi coasts BIAs (Ref. 6; Table 5-9 of the EP);
- loggerhead turtle (internesting buffer and nesting BIAs and HCTS): the loggerhead turtle HCTS at Exmouth Gulf and the Ningaloo coast is defined for November to May, and overlaps the green turtle HCTS in the same area, defined for November to March (Ref. 5; Table 5-8 of the EP); no seasonal timing is given for the loggerhead turtle BIAs (Ref. 6; Table 5-9 of the EP);
- dugong (breeding, calving, nursing and foraging, Exmouth Gulf): the BIAs are attributed to year-round use (Ref. 6);
- fairy tern, roseate tern and lesser crested tern (breeding): fairy terns breed from July to late September, roseate terns from mid-March to July, and lesser crested terns from March to June (Ref. 6; Table 5-15 of the EP);
- pygmy blue whale (foraging, Ningaloo): no seasonal timing is given for the BIA (Ref. 6); however, foraging areas along the shelf edge from Ningaloo Reef to the Rowley Shoals may be used during the northern migration in the austral winter, and use of the most important foraging areas off north-west Western Australia is correlated with the northern and southern migrations (Section 5.3.3.1.1 and Table 5-16 of the EP);

- whale shark (foraging): the BIA northward from Ningaloo along the 200 m isobath is attributed to spring (Ref. 6; Table 5-12 of the EP), and the BIA in the Ningaloo Marine Park and adjacent Commonwealth waters to April to June (Ref. 6); whale sharks show year-round presence in north-west Western Australia, form a seasonal aggregation at Ningaloo Reef from March to July, and migrate north-east from Ningaloo along the 200 m isobath, typically between July and November (Section 5.3.3.3.1 of the EP).

The tier rankings in Table G-4 and Table G-5 combine the three modelled seasons (summer, September to March; transitional, April and August; winter, May to July) and therefore assume that the BIA and HCTS values are present year-round. For the Tier 1 and Tier 2 BIAs and the flatback turtle HCTS, the exposure that sets the tier is predicted in every modelled season, including the season that overlaps the period of significance (Ref. 8). At the time of a spill, the seasonal presence of the species and behaviour for which each BIA and HCTS area is defined will be considered when tier rankings are confirmed and re-evaluated (Section 13 of the CAPL OSM-BIP), so that SM4 and SM5 effort is directed to the BIAs and HCTS whose values are present. The BIAs and HCTS listed at Tier 3 are retained at Tier 3, the lowest tier, as a precautionary planning ranking, including where the low exposure that sets the tier is predicted only outside their period of significance (for example, the green turtle nesting BIA at the North and South Muiron Islands, which is contacted at ≥10% probability within the 14-day window only in the winter season under scenario 1). Their seasonal presence is likewise considered when tier rankings are confirmed at the time of a spill.

The KEFs, BIAs and HCTS listed in Table G-4 and Table G-5 are captured by the monitoring units in which they lie (Table 8-2 of the CAPL OSM-BIP). In the monitoring unit figures for each scenario, the units are numbered as Areas; Area 8 (Ningaloo Onshore) corresponds to the Ningaloo Nearshore unit in Table 8-2 of the CAPL OSM-BIP.

Under scenario 1, the Gorgon MPTS release location lies within the Montebello monitoring unit. Of the named receptors, the Gascoyne AMP lies within the Ningaloo Offshore unit, the Ningaloo WHA and MP, Ningaloo Reef and the WA10 (122: North West Cape), WA10 (123: Ningaloo MP coastline) and WA10 (124: Ningaloo MP coastline) shoreline cells within the Ningaloo Nearshore unit, and the Muiron Islands MMA, Outtrim Patches and the WA11.West (326: Serrurier, Bessieres, Round Islands) and WA11.West (329: Muiron Islands) shoreline cells within the Southern Pilbara unit (Table 8-2 of the CAPL OSM-BIP). The monitoring units are shown relative to the stochastic Tier 3 exposure area (≤14 days) for scenario 1, together with the KEFs in Figure G-4, the dugong, whale shark, whale and seabird BIAs in Figure G-5, and the marine turtle BIAs and HCTS in Figure G-6.

Under scenario 2, the Chandon DC2-NW1 release location lies just outside the boundary of the Offshore Environs monitoring unit. The only named receptor, the Gascoyne AMP, lies within the Ningaloo Offshore unit (Table 8-2 of the CAPL OSM-BIP). The monitoring units are shown relative to the stochastic Tier 3 exposure area (≤14 days) for scenario 2, together with the KEFs in Figure G-7, the dugong, whale shark, whale and seabird BIAs in Figure G-8, and the marine turtle BIAs and HCTS in Figure G-9.

Within each monitoring unit contacted, teams are allocated according to the features and species present in that unit. Where a BIA or HCTS area within a unit extends beyond the named receptors, OM5 (Rapid Marine Fauna Surveillance) surveys these areas and directs the dedicated vessel-based fauna team (SM4 and SM5) to where animals are found. The BIAs, HCTS and KEFs within which the release locations lie are monitored by the operational and scientific monitoring teams allocated to the spill site and its surrounds, being the spill site monitoring team (OM2, and SM1 and SM7 where indicated by their initiation criteria), OM5 spill site aerial surveillance and the vessel-based fauna team (SM4 and SM5) working under the direction of OM5, or by the teams allocated to the monitoring unit where the spill site lies within one, as for the Montebello unit under scenario 1. As the scenario 2 release location lies outside the monitoring units, the Exmouth Plateau KEF (Tier 1;

Table G-5) around it would be monitored by the spill site teams rather than by teams allocated to a monitoring unit.

Table G-2: Stochastic modelling results for Backfill Fields Site Survey 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)
Scenario 1—Surface release of 350 m^3 of MDO over 6 hours following a loss of containment (vessel collision) at Gorgon MPTS																								
Gascoyne AMP*	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	49% (W)	NC	NC	4 days 12 hrs (W)	NC	NC	NC	NC	NC	NC	NC	NC
Ningaloo WHA and MP	NC	NC	NC	NC	NC	NC	2% (W)	NC	NC	7 days 14 hrs (W)	NC	NC	43% (W)	1% (W)	NC	3 days 22 hrs (W)	6 days 15 hrs (W)	NC	NC	NC	NC	NC	NC	NC
Muiron Islands MMA	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	23% (W)	1% (W)	NC	3 days 22 hrs (W)	6 days 15 hrs (W)	NC	NC	NC	NC	NC	NC	NC
Outtrim Patches*	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	16% (W)	NC	NC	5 days 6 hrs (W)	NC	NC	NC	NC	NC	NC	NC	NC
Ningaloo Reef*	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	11% (W)	NC	NC	6 days 21 hrs (W)	NC	NC	NC	NC	NC	NC	NC	NC
WA10 (122) - Vlamingh Head - North West Cape	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	14% (W)	NC	NC	4 days 18 hrs (W)	NC	NC	NC	NC	NC	NC	NC	NC
WA10 (123) - Low Point - Vlamingh Head (A) – Exmouth	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	27% (W)	NC	NC	6 days 1 hr (W)	NC	NC	NC	NC	NC	NC	NC	NC
WA10 (124) - Low Point - Vlamingh Head (B) – Exmouth	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	12% (W)	NC	NC	6 days 8 hrs (W)	NC	NC	NC	NC	NC	NC	NC	NC
WA11.West (326) - Baresand Point - Entrance Point E (Serrurier Island, Bessieres Island, Round Island)	NC	NC	NC	NC	NC	NC	2% (W)	NC	NC	5 days 20 hrs (W)	NC	NC	16% (W)	1% (W)	NC	4 days 14 hrs (W)	6 days 13 hrs (W)	NC	NC	NC	NC	NC	NC	NC
WA11.West (329) - Locker Point - Baresand Point (Muiron Islands)	NC	NC	NC	NC	NC	NC	2% (W)	NC	NC	7 days 14 hrs (W)	NC	NC	28% (W)	1% (W)	NC	3 days 17 hrs (W)	6 days 15 hrs (W)	NC	NC	NC	NC	NC	NC	NC	NC
BIAs																								

Receptor	Floating						Shore						Entrained						Dissolved					
Dugong - Breeding (Exmouth Gulf)	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	29% (W)	NC	NC	4 days 21 hrs (W)	NC	NC	NC	NC	NC	NC	NC	NC
Dugong - Calving (Exmouth Gulf)	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	29% (W)	NC	NC	4 days 21 hrs (W)	NC	NC	NC	NC	NC	NC	NC	NC
Dugong - Foraging (high density seagrass beds) (Exmouth Gulf)	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	29% (W)	NC	NC	4 days 21 hrs (W)	NC	NC	NC	NC	NC	NC	NC	NC
Dugong - Nursing (Exmouth Gulf)	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	29% (W)	NC	NC	4 days 21 hrs (W)	NC	NC	NC	NC	NC	NC	NC	NC
Fairy Tern - Breeding (Pilbara and Gascoyne coasts and islands)	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	34% (W)	1% (S)	NC	4 days 15 hrs (W)	15 days 16 hrs (S)	NC	NC	NC	NC	NC	NC	NC
Flatback Turtle - Internesting buffer (Montebello Is - Hermite Is, NW Is, Trimouille Is)**	100% (S)	100% (S)	43% (T)	0.3 hrs (S)	0.3 hrs (S)	1.0 hrs (T)	NA	NA	NA	NA	NA	NA	100% (S)	100% (S)	85% (S)	0.3 hrs (S)	0.3 hrs (S)	0.8 hrs (S)	52% (S)	1% (S)	NC	1.3 hrs (S)	5.5 hrs (S)	NC
Flatback Turtle - Internesting buffer (Thevenard Island - South coast)	9% (T)	3% (S)	NC	13.5 hrs (T)	14.5 hrs (S)	NC	NA	NA	NA	NA	NA	NA	82% (W)	70% (W)	NC	7.8 hrs (W)	8.5 hrs (W)	NC	2% (W)	NC	NC	14.5 hrs (W)	NC	NC
Green Turtle - Internesting buffer (North West Cape)	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	35% (W)	1% (T)	NC	4 days 2 hrs (W)	3 days 14 hrs (T)	NC	NC	NC	NC	NC	NC	NC
Green Turtle - Internesting buffer (North and South Muiron Is)	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	42% (W)	3% (W)	NC	3 days 2 hrs (W)	3 days 20 hrs (W)	NC	NC	NC	NC	NC	NC	NC
Green Turtle - Nesting (North and South Muiron Is)	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	17% (W)	1% (W)	NC	4 days 17 hrs (W)	8 days 1 hr (W)	NC	NC	NC	NC	NC	NC	NC
Hawksbill Turtle - Internesting buffer (Ningaloo coast and Jurabi coast)	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	48% (W)	1% (T)	NC	4 days 3 hrs (W)	3 days 14 hrs (T)	NC	NC	NC	NC	NC	NC	NC
Hawksbill Turtle - Internesting buffer (Thevenard Island)	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	16% (W)	NC	NC	3 days 15 hrs (W)	NC	NC	NC	NC	NC	NC	NC	NC

Receptor	Floating						Shore						Entrained						Dissolved					
Hawksbill Turtle - Nesting (Ningaloo coast and Jurabi coast)	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	15% (W)	NC	NC	6 days 21 hrs (W)	NC	NC	NC	NC	NC	NC	NC	NC
Humpback Whale - Migration (north and south)	47% (W)	31% (T)	2% (S)	0.8 hrs (W)	1.8 hrs (T)	8.0 hrs (S)	NA	NA	NA	NA	NA	NA	92% (T)	85% (W)	42% (W)	1.0 hrs (T)	0.8 hrs (W)	2.5 hrs (W)	23% (W)	1% (W)	NC	2.0 hrs (W)	6.0 hrs (W)	NC
Lesser Crested Tern - Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	21% (W)	1% (S)	NC	3 days 0 hrs (W)	15 days 16 hrs (S)	NC	NC	NC	NC	NC	NC	NC
Loggerhead Turtle - Internesting buffer (Muiron Island)	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	40% (W)	2% (W)	NC	3 days 2 hrs (W)	3 days 23 hrs (W)	NC	NC	NC	NC	NC	NC	NC
Loggerhead Turtle - Internesting buffer (Ningaloo coast and Jurabi coast)	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	48% (W)	1% (T)	NC	4 days 3 hrs (W)	3 days 14 hrs (T)	NC	NC	NC	NC	NC	NC	NC
Loggerhead Turtle - Nesting (Muiron Island)	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	20% (W)	1% (W)	NC	4 days 8 hrs (W)	6 days 15 hrs (W)	NC	NC	NC	NC	NC	NC	NC
Loggerhead Turtle - Nesting (Ningaloo coast and Jurabi coast)	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	15% (W)	NC	NC	6 days 21 hrs (W)	NC	NC	NC	NC	NC	NC	NC	NC
Pygmy Blue Whale - Foraging (Ningaloo)	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	40% (W)	NC	NC	4 days 15 hrs (W)	NC	NC	NC	NC	NC	NC	NC	NC
Pygmy Blue Whale - Migration (Augusta to Derby)	37% (T)	14% (T)	1% (T)	3.0 hrs (T)	6.5 hrs (T)	13.5 hrs (T)	NA	NA	NA	NA	NA	NA	99% (T)	74% (T)	17% (S)	2.8 hrs (T)	3.5 hrs (T)	6.5 hrs (S)	4% (T)	NC	NC	6.8 hrs (T)	NC	NC
Roseate Tern - Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	26% (W)	2% (S)	NC	2 days 15 hrs (W)	2 days 22 hrs (S)	NC	NC	NC	NC	NC	NC	NC

Receptor	Floating						Shore						Entrained						Dissolved					
Wedge-tailed Shearwater - Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)**	100% (S)	100% (S)	43% (T)	0.3 hrs (S)	0.3 hrs (S)	1.0 hrs (T)	NA	NA	NA	NA	NA	NA	100% (S)	100% (S)	85% (S)	0.3 hrs (S)	0.3 hrs (S)	0.8 hrs (S)	52% (S)	1% (S)	NC	1.3 hrs (S)	5.5 hrs (S)	NC
Whale Shark - Foraging (Northward from Ningaloo along 200 m isobath)**	100% (S)	100% (S)	43% (T)	0.3 hrs (S)	0.3 hrs (S)	1.0 hrs (T)	NA	NA	NA	NA	NA	NA	100% (S)	100% (S)	85% (S)	0.3 hrs (S)	0.3 hrs (S)	0.8 hrs (S)	52% (S)	1% (S)	NC	1.3 hrs (S)	5.5 hrs (S)	NC
Whale Shark - Foraging (high density prey) (Ningaloo Marine Park and adjacent Commonwealth waters)	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	26% (W)	NC	NC	6 days 12 hrs (W)	NC	NC	NC	NC	NC	NC	NC	NC
HCTS																								
Flatback Turtle - Barrow Island, Montebello Islands, coastal islands from Cape Preston to Locker Island. 60km internesting buffer**	100% (S)	100% (S)	43% (T)	0.3 hrs (S)	0.3 hrs (S)	1.0 hrs (T)	NA	NA	NA	NA	NA	NA	100% (S)	100% (S)	85% (S)	0.3 hrs (S)	0.3 hrs (S)	0.8 hrs (S)	52% (S)	1% (S)	NC	1.3 hrs (S)	5.5 hrs (S)	NC
Green Turtle - Barrow Island, Montebello Islands, Serrier Island and Thevenard Island. 20km internesting buffer	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	42% (W)	2% (T)	NC	3 days 0 hrs (W)	3 days 1 hr (T)	NC	NC	NC	NC	NC	NC	NC
Hawksbill Turtle - Cape Preston to mouth of Exmouth Gulf including Montebello Islands and Lowendal Islands. 20km internesting buffer	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	42% (W)	2% (T)	NC	3 days 0 hrs (W)	3 days 1 hr (T)	NC	NC	NC	NC	NC	NC	NC

Receptor	Floating						Shore						Entrained						Dissolved					
Green and Loggerhead Turtle - Exmouth Gulf and Ningaloo coast. 20km internesting buffer	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	44% (W)	1% (W)	NC	4 days 4 hrs (W)	10 days 18 hrs (W)	NC	NC	NC	NC	NC	NC	NC
KEFs																								
Ancient coastline at 125 m depth contour*, **	100% (S)	100% (S)	43% (T)	0.3 hrs (S)	0.3 hrs (S)	1.0 hrs (T)	NA	NA	NA	NA	NA	NA	100% (S)	97% (S)	77% (S)	0.3 hrs (S)	0.3 hrs (S)	0.8 hrs (S)	52% (S)	1% (S)	NC	1.3 hrs (S)	5.5 hrs (S)	NC
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula*	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	57% (W)	2% (T)	NC	2 days 22 hrs (W)	2 days 23 hrs (T)	NC	NC	NC	NC	NC	NC	NC
Commonwealth waters adjacent to Ningaloo Reef*	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	38% (W)	NC	NC	4 days 11 hrs (W)	NC	NC	NC	NC	NC	NC	NC	NC
Continental Slope Demersal Fish Communities*	25% (T)	7% (T)	NC	4.5 hrs (T)	11.3 hrs (T)	NC	NA	NA	NA	NA	NA	NA	100% (T)	73% (T)	10% (S)	4.3 hrs (T)	4.8 hrs (T)	9.3 hrs (S)	2% (T)	NC	NC	8.5 hrs (T)	NC	NC
Exmouth Plateau*	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	18% (T)	NC	NC	5 days 21 hrs (T)	NC	NC	NC	NC	NC	NC	NC	NC
Scenario 2—Surface release of 350 m3 of MDO over 6 hours following a loss of containment (vessel collision) at Chandon DC2-NW1																								
Gascoyne AMP*	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	21% (T)	1% (W)	NC	4 days 10 hrs (T)	4 days 5 hrs (W)	NC	NC	NC	NC	NC	NC	NC
BIAs																								
Pygmy Blue Whale - Migration (Augusta to Derby)	24% (S)	13% (S)	2% (T)	1.3 hrs (S)	2.0 hrs (S)	10.0 hrs (T)	NA	NA	NA	NA	NA	NA	73% (S)	58% (S)	24% (W)	1.0 hrs (S)	1.0 hrs (S)	3.8 hrs (W)	17% (S)	NC	NC	1.5 hrs (S)	NC	NC
Wedge-tailed Shearwater - Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	16% (S)	1% (S)	NC	2 days 7 hrs (S)	2 days 17 hrs (S)	NC	NC	NC	NC	NC	NC	NC
KEFs																								

Receptor	Floating						Shore						Entrained						Dissolved					
Continental Slope Demersal Fish Communities*	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	11% (S)	1% (S)	NC	3 days 1 hr (S)	3 days 12 hrs (S)	NC	NC	NC	NC	NC	NC	NC
Exmouth Plateau*, **	100% (S)	100% (S)	33% (T)	0.3 hrs (S)	0.3 hrs (S)	1.3 hrs (T)	NA	NA	NA	NA	NA	NA	100% (T)	100% (W)	86% (W)	0.3 hrs (T)	0.3 hrs (W)	0.8 hrs (W)	62% (W)	1% (S)	NC	1.3 hrs (W)	6.5 hrs (S)	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*

*** The release location lies within the receptor boundary.*

NA = Not applicable (e.g. shoreline exposure not applicable to a submerged receptor, or shoreline accumulation not assessed in the modelling for BIAs, KEFs and HCTS). NC = No contact predicted at that exposure value.

Values are probability of contact (%) and minimum arrival time (days and hours).

Season codes: S = Summer (Sep–Mar); T = Transitional (Apr/Aug); W = Winter (May–Jul). Season codes identify the season with the highest probability of contact at that exposure value, and the minimum time to contact shown is for that same season. Where more than one season has the same highest probability, the season with the shortest time to contact is shown.

Exposure values: Floating oil Low/Moderate/High = ≥1 / ≥10 / ≥50 g/m². Shoreline Low/Moderate/High = ≥10 / ≥100 / ≥1,000 g/m². Dissolved Low/Moderate/High = ≥10 / ≥50 / ≥ 300 ppb. Entrained Low/Moderate/High = ≥10 / ≥100 / ≥1,000 ppb

Table G-3: Baseline data assessment for Backfill Fields Site Survey 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*			NA			Pygmy blue whales Other species				
Ningaloo Coast (including Ningaloo WHA)					Turtle Sea snakes	Whale shark				
Muiron Islands & Muiron Islands MP					Turtle Sea snakes					
Southern Pilbara Islands and shoreline	Ashburton Port	Ashburton Port		Seabirds at Urala Station, Onslow, Airlie, Serrurier & Thevenard Isl.	Turtles: Onslow, Thevenard & Airlie Islands			Green sawfish		
				Seabirds & Shorebirds elsewhere	Turtles elsewhere Sea snakes					
Reefs, Shoals and Banks*			N/A							

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^
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- 350 m^3 of MDO Gorgon MPTS - Monitoring priority tier assessment (stochastic modelling results, ≥10% probability, ≤14 days; source: Ref. 8)

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 (49% (W), 4 days 12 hrs (W))	NC	Base Tier 3	Entrained-only exposure at ≥10 ppb (peak 80.6 ppb, Transitional)	Tier 3
Ningaloo WHA & MP	World Heritage Area & State Marine Park	5 / 5	NC	NA	Low ≥10 ppb (43% (W), 3 days 22 hrs (W))	NC	Base Tier 3	Entrained-only exposure at ≥10 ppb (peak 145.2 ppb, Winter, predicted at <10% probability)	Tier 3
Muiron Islands MMA	WA Marine Management Area (State)	5 / 5	NC	NA	Low ≥10 ppb (23% (W), 3 days 22 hrs (W))	NC	Base Tier 3	Entrained-only exposure at ≥10 ppb (peak 145.2 ppb, Winter, predicted at <10% probability).	Tier 3
Outtrim Patches*	Submerged reef/shoal (offshore)	4 / 5	NC	NA	Low ≥10 ppb (16% (W), 5 days 6 hrs (W))	NC	Base Tier 3	Entrained-only exposure at ≥10 ppb (peak 73.6 ppb, Winter)	Tier 3
Ningaloo Reef*	Submerged reef/shoal (nearshore)	4 / 5	NC	NA	Low ≥10 ppb (11% (W), 6 days 21 hrs (W))	NC	Base Tier 3	Entrained-only exposure at ≥10 ppb (peak 29.8 ppb, Winter)	Tier 3
WA10 (122) - Vlamingh Head - North West Cape	WAMOPRA shoreline cell (State)	5 / 5	NC	NC	Low ≥10 ppb (14% (W), 4 days 18 hrs (W))	NC	Base Tier 3	Entrained-only exposure at ≥10 ppb (peak 51.7 ppb, Transitional)	Tier 3
WA10 (123) - Low Point -	WAMOPRA shoreline cell (State)	5 / 5	NC	NC	Low ≥10 ppb (27% (W), 6 days 1 hr (W))	NC	Base Tier 3	Entrained-only exposure at ≥10 ppb (peak 86	Tier 3

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
Vlamingh Head (A) – Exmouth								ppb, Transitional)	
WA10 (124) - Low Point - Vlamingh Head (B) – Exmouth	WAMOPRA shoreline cell (State)	5 / 5	NC	NC	Low ≥10 ppb (12% (W), 6 days 8 hrs (W))	NC	Base Tier 3	Entrained-only exposure at ≥10 ppb (peak 55 ppb, Winter)	Tier 3
WA11.West (326) - Baresand Point - Entrance Point E (Serrurier, Bessieres, Round Islands)	WAMOPRA shoreline cell (State)	5 / 4	NC	NC	Low ≥10 ppb (16% (W), 4 days, 14 hrs (W))	NC	Base Tier 3	Entrained-only exposure at ≥10 ppb (peak 109.8 ppb, Winter, predicted at <10% probability)	Tier 3
WA11.West (329) - Locker Point - Baresand Point (Muiron Islands)	WAMOPRA shoreline cell (State)	5 / 5	NC	NC	Low ≥10 ppb (28% (W), 3 days, 17 hrs (W))	NC	Base Tier 3	Entrained-only exposure at ≥10 ppb (peak 145.2 ppb, Winter, predicted at <10% probability)	Tier 3
BIAs									
Flatback turtle (internesting buffer, Montebello Islands) BIA**	BIA (EPBC Act: Vulnerable)	4 / 3	High ≥50 g/m² (43% (T), 1.0 hrs (T))	NA	High ≥1,000 ppb (85% (S), 0.8 hrs (S))	Low ≥10 ppb (52% (S), 1.3 hrs (S))	Base Tier 1	Release location lies within the BIA. Contact at the high floating and entrained exposure values (peak entrained 7,168.2 ppb, Winter), with high floating exposure predicted within 7.3 km of the release location.	Tier 1

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
Wedge-tailed shearwater (breeding) BIA**	BIA (EPBC Act: Migratory)	3 / 2	High ≥50 g/m² (43% (T), 1.0 hrs (T))	NA	High ≥1,000 ppb (85% (S), 0.8 hrs (S))	Low ≥10 ppb (52% (S), 1.3 hrs (S))	Base Tier 1	Release location lies within the BIA. Floating oil is the relevant exposure pathway for seabirds, and high floating exposure is predicted within 7.3 km of the release location.	Tier 1
Whale shark (foraging, northward from Ningaloo along 200 m isobath) BIA**	BIA (EPBC Act: Vulnerable)	2 / 3	High ≥50 g/m² (43% (T), 1.0 hrs (T))	NA	High ≥1,000 ppb (85% (S), 0.8 hrs (S))	Low ≥10 ppb (52% (S), 1.3 hrs (S))	Base Tier 1	Release location lies within the BIA. Contact at the high floating and entrained exposure values (peak entrained 7,168.2 ppb, Winter), with high floating exposure predicted within 7.3 km of the release location.	Tier 1
Humpback whale (migration) BIA	BIA (EPBC Act: Migratory)	2 / 1	Moderate ≥10 g/m² (31% (T), 1.8 hrs (T))	NA	High ≥1,000 ppb (42% (W), 2.5 hrs (W))	Low ≥10 ppb (23% (W), 2.0 hrs (W))	Base Tier 1	Contact at the moderate floating and high entrained exposure values (peak entrained 3,381.3 ppb, Summer).	Tier 1
Pygmy blue whale (migration) BIA	BIA (EPBC Act: Endangered)	4 / 3	Moderate ≥10 g/m² (14% (T), 6.5 hrs (T))	NA	High ≥1,000 ppb (17% (S), 6.5 hrs (S))	NC	Base Tier 1	Contact at the moderate floating and high entrained	Tier 1

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
								exposure values (peak entrained 2,618.5 ppb, Transitional).	
Flatback turtle (internesting buffer, Thevenard Island) BIA	BIA (EPBC Act: Vulnerable)	4 / 3	NC	NA	Moderate ≥100 ppb (70% (W), 8.5 hrs (W))	NC	Base Tier 2	Contact at the moderate entrained exposure value (peak 786.6 ppb, Winter).	Tier 2
Dugong (breeding, calving, nursing and foraging, Exmouth Gulf) BIAs	BIA (EPBC Act: Migratory)	3 / 2	NC	NA	Low ≥10 ppb	NC	Base Tier 3	Entrained-only exposure at ≥10 ppb (peak 90.4 ppb, Transitional, at all four BIAs).	Tier 3
Fairy tern (breeding) BIA	BIA (EPBC Act: Vulnerable)	4 / 3	NC	NA	Low ≥10 ppb (34% (W), 4 days 15 hrs (W))	NC	Base Tier 3	Entrained-only exposure at ≥10 ppb (peak 768.2 ppb, Summer, predicted at <10% probability).	Tier 3
Green turtle (internesting buffer, North West Cape and North and South Muiron Islands; nesting, North and South Muiron Islands) BIAs	BIA (EPBC Act: Vulnerable)	4 / 3	NC	NA	Low ≥10 ppb	NC	Base Tier 3	Entrained-only exposure at ≥10 ppb (peak 145.2 ppb, Winter, at the North West Cape and North and South Muiron Islands internesting buffer BIAs, predicted at <10% probability).	Tier 3
Hawksbill turtle (internesting buffer, Ningaloo	BIA (EPBC Act: Vulnerable)	4 / 3	NC	NA	Low ≥10 ppb	NC	Base Tier 3	Entrained-only exposure at ≥10 ppb (peak 105.3	Tier 3

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
and Jurabi coasts and Thevenard Island; nesting, Ningaloo and Jurabi coasts) BIAs								ppb, Transitional, at the Ningaloo and Jurabi coasts internesting buffer BIA, predicted at <10% probability).	
Loggerhead turtle (internesting buffer and nesting, Muiron Island and Ningaloo and Jurabi coasts) BIAs	BIA (EPBC Act: Endangered)	5 / 4	NC	NA	Low ≥10 ppb	NC	Base Tier 3	Entrained-only exposure at ≥10 ppb (peak 145.2 ppb, Winter, at the Muiron Island BIAs, predicted at <10% probability).	Tier 3
Pygmy blue whale (foraging, Ningaloo) BIA	BIA (EPBC Act: Endangered)	4 / 3	NC	NA	Low ≥10 ppb (40% (W), 4 days 15 hrs (W))	NC	Base Tier 3	Entrained-only exposure at ≥10 ppb (peak 74.3 ppb, Winter)	Tier 3
Roseate tern and lesser crested tern (breeding) BIAs	BIA (EPBC Act: Migratory; Marine)	3 / 2	NC	NA	Low ≥10 ppb	NC	Base Tier 3	Entrained-only exposure at ≥10 ppb (peak 768.2 ppb, Summer, at both BIAs, predicted at <10% probability).	Tier 3
Whale shark (foraging, Ningaloo Marine Park and adjacent Commonwealth waters) BIA	BIA (EPBC Act: Vulnerable)	2 / 3	NC	NA	Low ≥10 ppb (26% (W), 6 days 12 hrs (W))	NC	Base Tier 3	Entrained-only exposure at ≥10 ppb (peak 86 ppb, Transitional)	Tier 3
HCTS									

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
Flatback turtle HCTS (Barrow Island, Montebello Islands, coastal islands from Cape Preston to Locker Island. 60km internesting buffer)**	HCTS (EPBC Act: Vulnerable)	4 / 3	High ≥50 g/m² (43% (T), 1.0 hrs (T))	NA	High ≥1,000 ppb (85% (S), 0.8 hrs (S))	Low ≥10 ppb (52% (S), 1.3 hrs (S))	Base Tier 1	Release location lies within the HCTS area. Contact at the high floating and entrained exposure values (peak entrained 7,168.2 ppb, Winter), with high floating exposure predicted within 7.3 km of the release location.	Tier 1
Green turtle HCTS (Barrow Island, Montebello Islands, Serrier Island and Thevenard Island. 20km internesting buffer) and hawksbill turtle HCTS (Cape Preston to mouth of Exmouth Gulf including Montebello Islands and Lowendal Islands. 20km internesting buffer)	HCTS (EPBC Act: Vulnerable)	4 / 3	NC	NA	Low ≥10 ppb	NC	Base Tier 3	Entrained-only exposure at ≥10 ppb (peak 768.2 ppb, Summer, in both HCTS areas, predicted at <10% probability).	Tier 3
Green and loggerhead turtle HCTS (Exmouth Gulf	HCTS (EPBC Act: Vulnerable; Endangered)	5 / 4	NC	NA	Low ≥10 ppb (44% (W), 4 days 4 hrs (W))	NC	Base Tier 3	Entrained-only exposure at ≥10 ppb (peak 123.7 ppb, Winter,	Tier 3

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
and Ningaloo coast. 20km internesting buffer)								predicted at <10% probability).	
KEFs									
Ancient coastline at 125 m depth contour KEF*, **	Key Ecological Feature (Commonwealth)	2 / 3	High ≥50 g/m² (43% (T), 1.0 hrs (T))	NA	High ≥1,000 ppb (77% (S), 0.8 hrs (S))	Low ≥10 ppb (52% (S), 1.3 hrs (S))	Base Tier 1	Release location lies within the KEF. Contact at the high floating and entrained exposure values (peak entrained 7,168.2 ppb, Winter), with high floating exposure predicted within 7.3 km of the release location.	Tier 1
Continental Slope Demersal Fish Communities KEF*	Key Ecological Feature (Commonwealth)	2 / 3	Low ≥1 g/m² (25% (T), 4.5 hrs (T))	NA	High ≥1,000 ppb (10% (S), 9.3 hrs (S))	NC	Base Tier 1	Contact at the low floating and high entrained exposure values (peak entrained 2,243.6 ppb, Transitional).	Tier 1
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula KEF*	Key Ecological Feature (Commonwealth)	2 / 3	NC	NA	Low ≥10 ppb (57% (W), 2 days 22 hrs (W))	NC	Base Tier 3	Entrained-only exposure at ≥10 ppb (peak 137.1 ppb, Transitional, predicted at <10% probability)	Tier 3
Commonwealth waters adjacent to Ningaloo Reef KEF*	Key Ecological Feature (Commonwealth)	2 / 3	NC	NA	Low ≥10 ppb (38% (W), 4 days 11 hrs (W))	NC	Base Tier 3	Entrained-only exposure at ≥10 ppb (peak 90.4	Tier 3

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
								ppb, Transitional)	
Exmouth Plateau KEF*	Key Ecological Feature (Commonwealth)	2 / 3	NC	NA	Low ≥10 ppb (18% (T), 5 days 21 hrs (T))	NC	Base Tier 3	Entrained-only exposure at ≥10 ppb (peak 74.3 ppb, Winter)	Tier 3

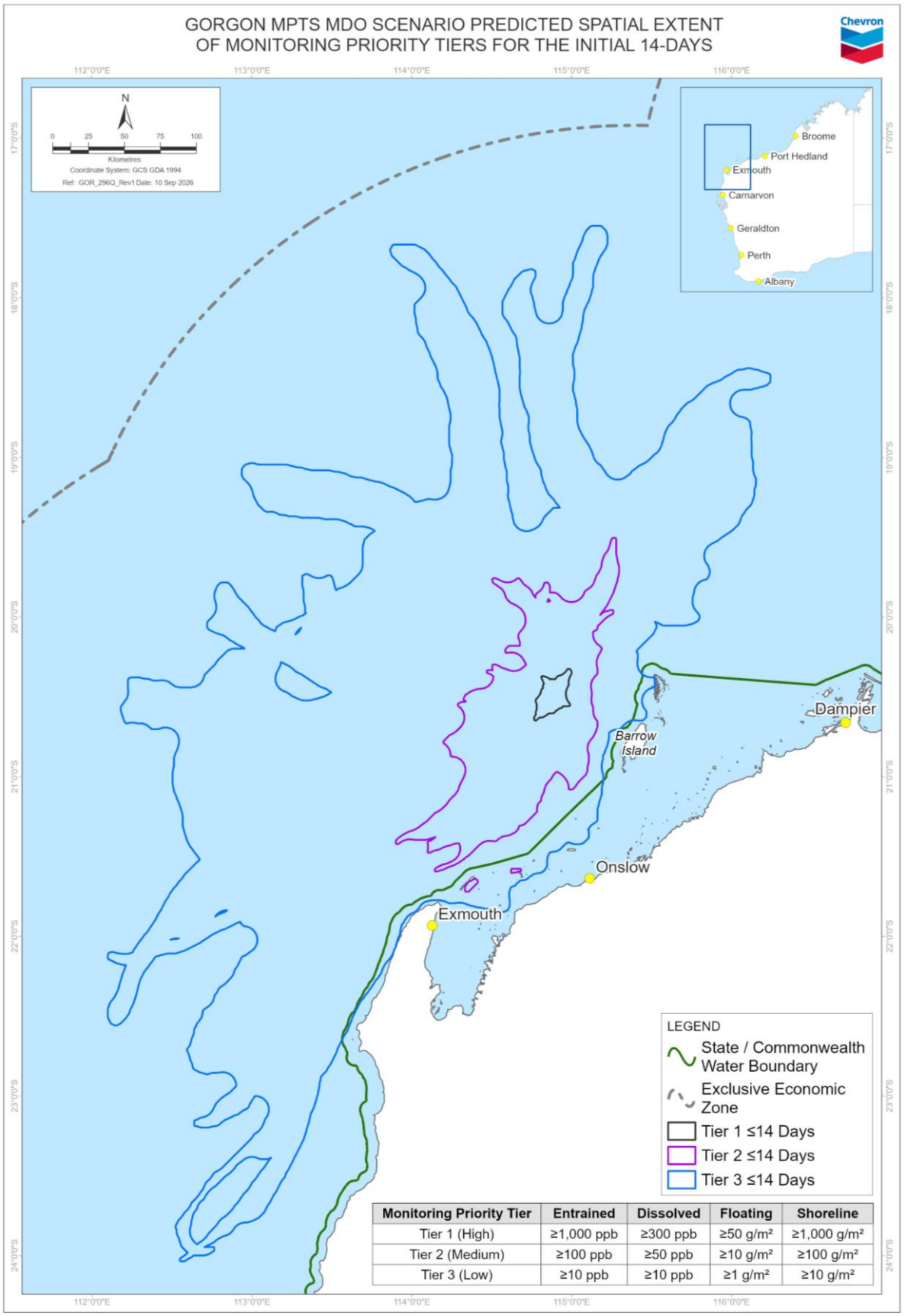
Legend	
*	Submerged receptor
**	Release location lies within the BIA, HCTS or KEF
NA	Not applicable
NC	No contact

Table G-5: 350 m^3 of MDO Chandon DC2 NW1 - Monitoring priority tier assessment (stochastic modelling results, ≥10% probability, ≤14 days; source: Ref. 8)

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 (21% (T), 4 days 10 hrs (T))	NC	Base Tier 3	Entrained-only exposure at ≥10 ppb (peak 118.7 ppb, Winter, predicted at <10% probability)	Tier 3
BIAs									
Pygmy blue whale (migration) BIA	BIA (EPBC Act: Endangered)	4 / 3	Moderate ≥10 g/m² (13% (S), 2.0 hrs (S))	NA	High ≥1,000 ppb (24% (W), 3.8 hrs (W))	Low ≥10 ppb (17% (S), 1.5 hrs (S))	Base Tier 1	Contact at the moderate floating, high entrained and low dissolved exposure values (peak entrained 3,521.7 ppb, Transitional).	Tier 1
Wedge-tailed shearwater (breeding) BIA	BIA (EPBC Act: Migratory)	3 / 2	NC	NA	Low ≥10 ppb (16% (S), 2 days 7 hrs (S))	NC	Base Tier 3	Entrained-only exposure at ≥10 ppb (peak 150.1 ppb, Summer, predicted at <10% probability)	Tier 3
KEFs									
Exmouth Plateau KEF*, **	Key Ecological Feature (Commonwealth)	2 / 3	High ≥50 g/m² (33% (T), 1.3 hrs (T))	NA	High ≥1,000 ppb (86% (W), 0.8 hrs (W))	Low ≥10 ppb (62% (W), 1.3 hrs (W))	Base Tier 1	Release location lies within the KEF. Contact at the high floating and entrained exposure values (peak entrained 7,308.6 ppb, Winter), with high floating	Tier 1

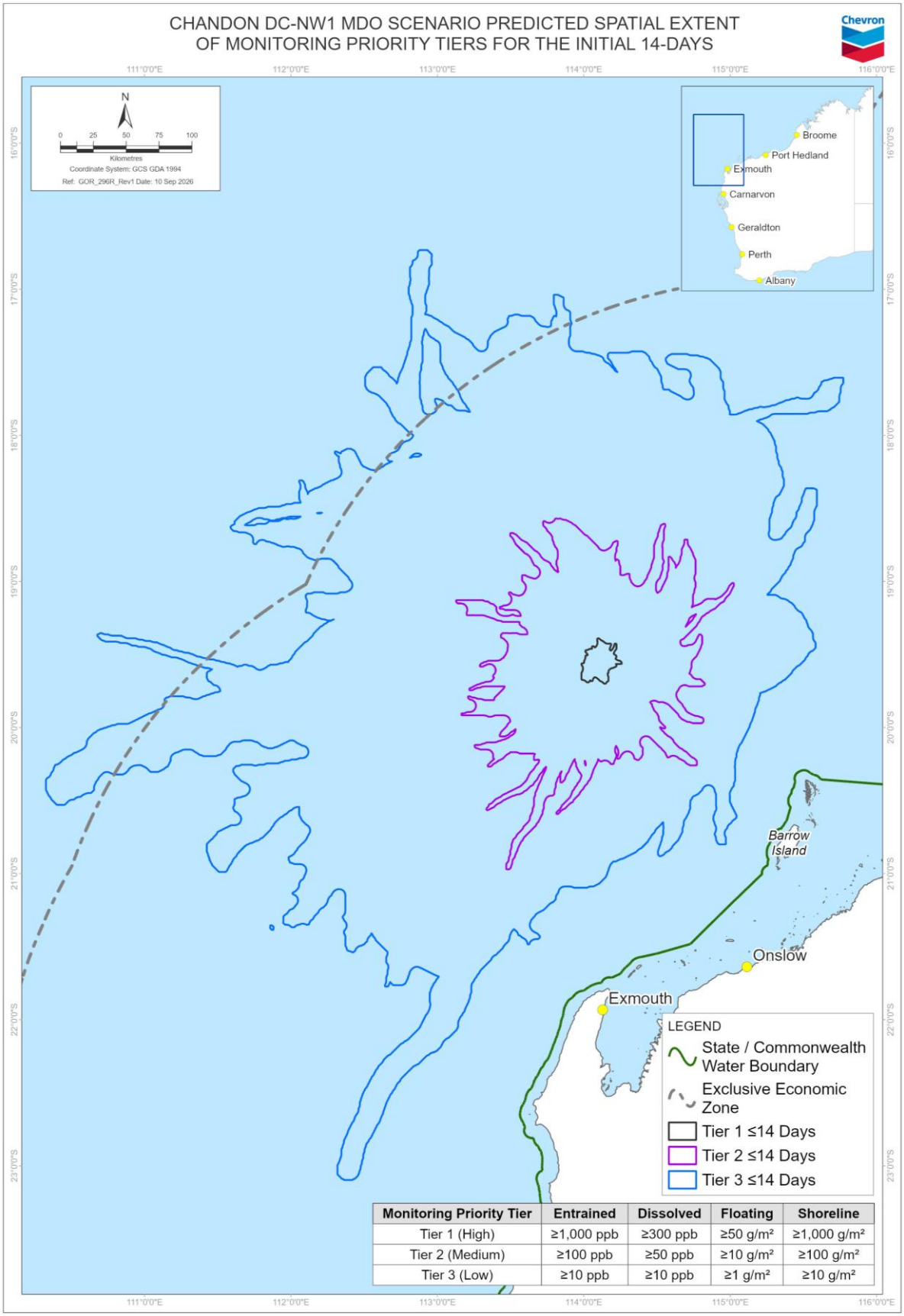
Receptor	Receptor type	CAPL PPP ranking (Floating / Dissolved)	Base tier - floating contact (%, time)	Base tier - shoreline contact (%, time)	Base tier - entrained contact (%, time)	Base tier - dissolved contact (%, time)	Resultant base tier	Additional monitoring prioritisation criteria	Initial monitoring prioritisation tier
								exposure predicted within 5.8 km of the release location.	
Continental Slope Demersal Fish Communities KEF*	Key Ecological Feature (Commonwealth)	2 / 3	NC	NA	Low ≥10 ppb (11% (S), 3 days 1 hr (S))	NC	Base Tier 3	Entrained-only exposure at ≥10 ppb (peak 119.5 ppb, Summer, predicted at <10% probability)	Tier 3

Legend	
*	Submerged receptor
**	Release location lies within the BIA, HCTS or KEF
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 – Scenario 1 350 m^3 of MDO at Gorgon MPTS within the 14-day initial prioritisation window



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-3: Geographical extent of the Tier 1, Tier 2 and Tier 3 stochastic exposure areas – 350 m^3 of MDO at Chandon DC2 NW1 within the 14-day initial prioritisation window

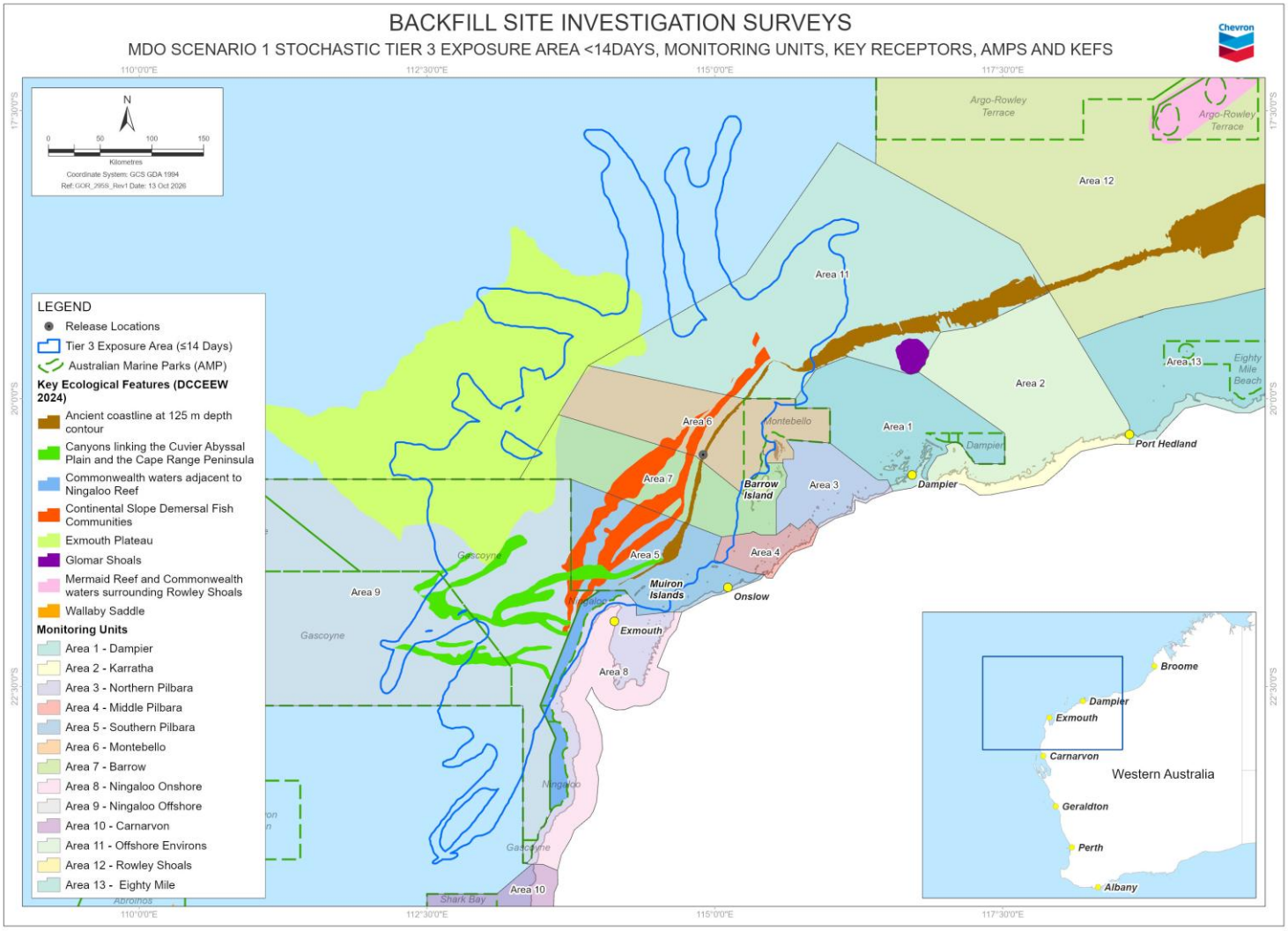


Figure G-4: OSM monitoring units and KEFs relative to the stochastic Tier 3 exposure area (≤14 days) – Scenario 1 350 m³ of MDO at Gorgon MPTS

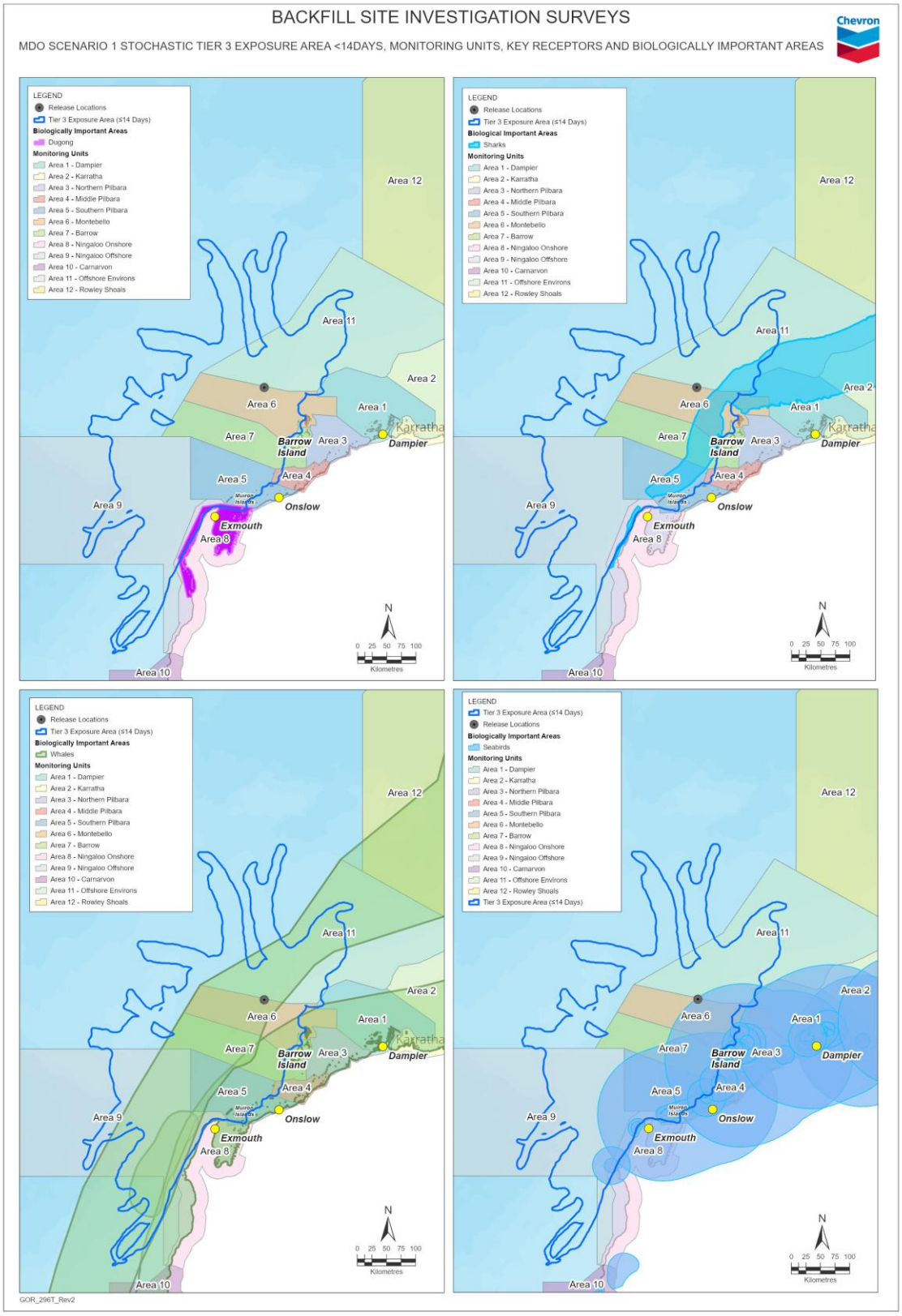


Figure G-5: OSM monitoring units and dugong, whale shark, whale and seabird BIAs relative to the stochastic Tier 3 exposure area (≤14 days) – Scenario 1 350 m³ of MDO at Gorgon MPTS

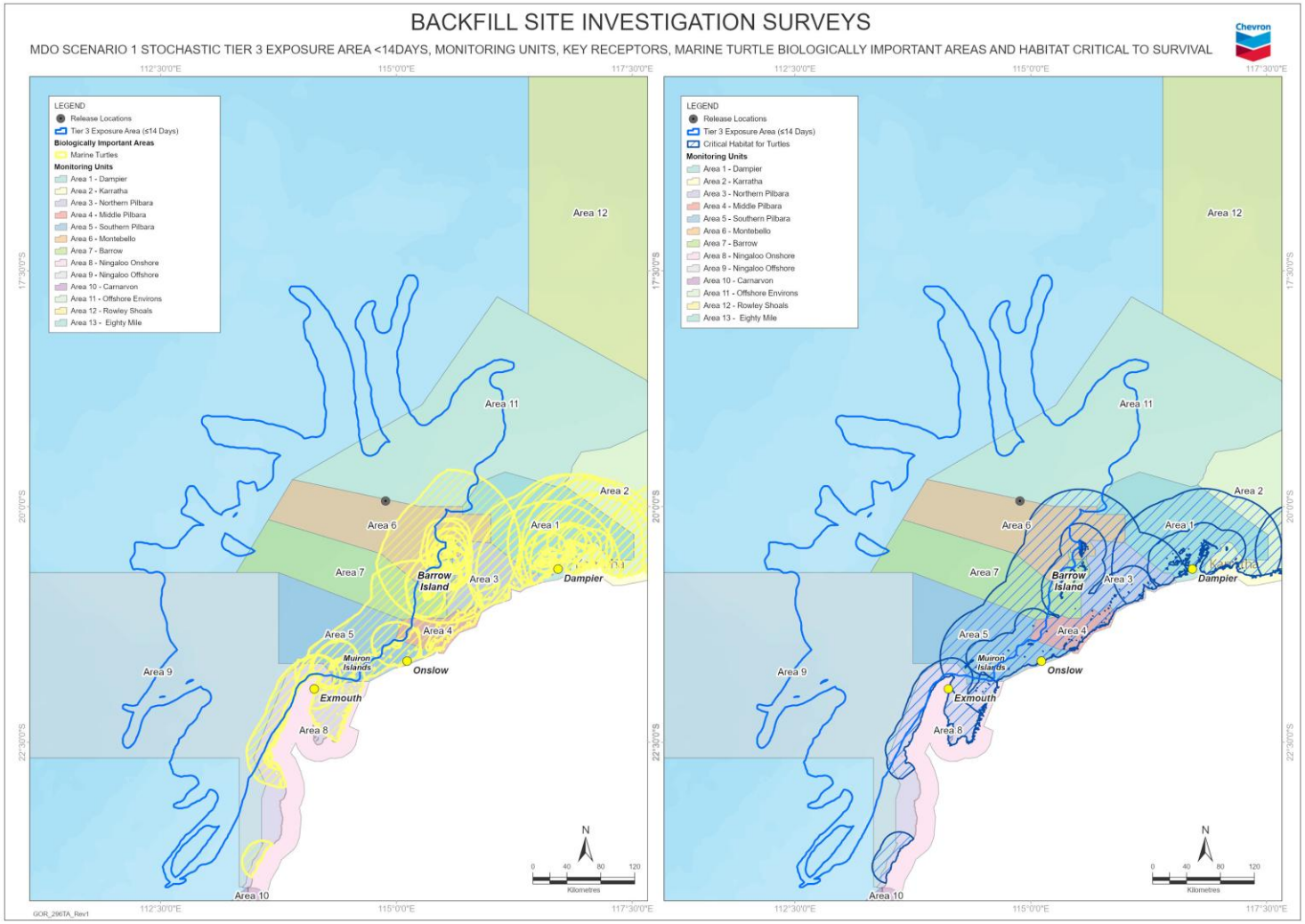


Figure G-6: OSM monitoring units, marine turtle BIAs and HCTS relative to the stochastic Tier 3 exposure area (≤14 days) – Scenario 1 350 m³ of MDO at Gorgon MPTS

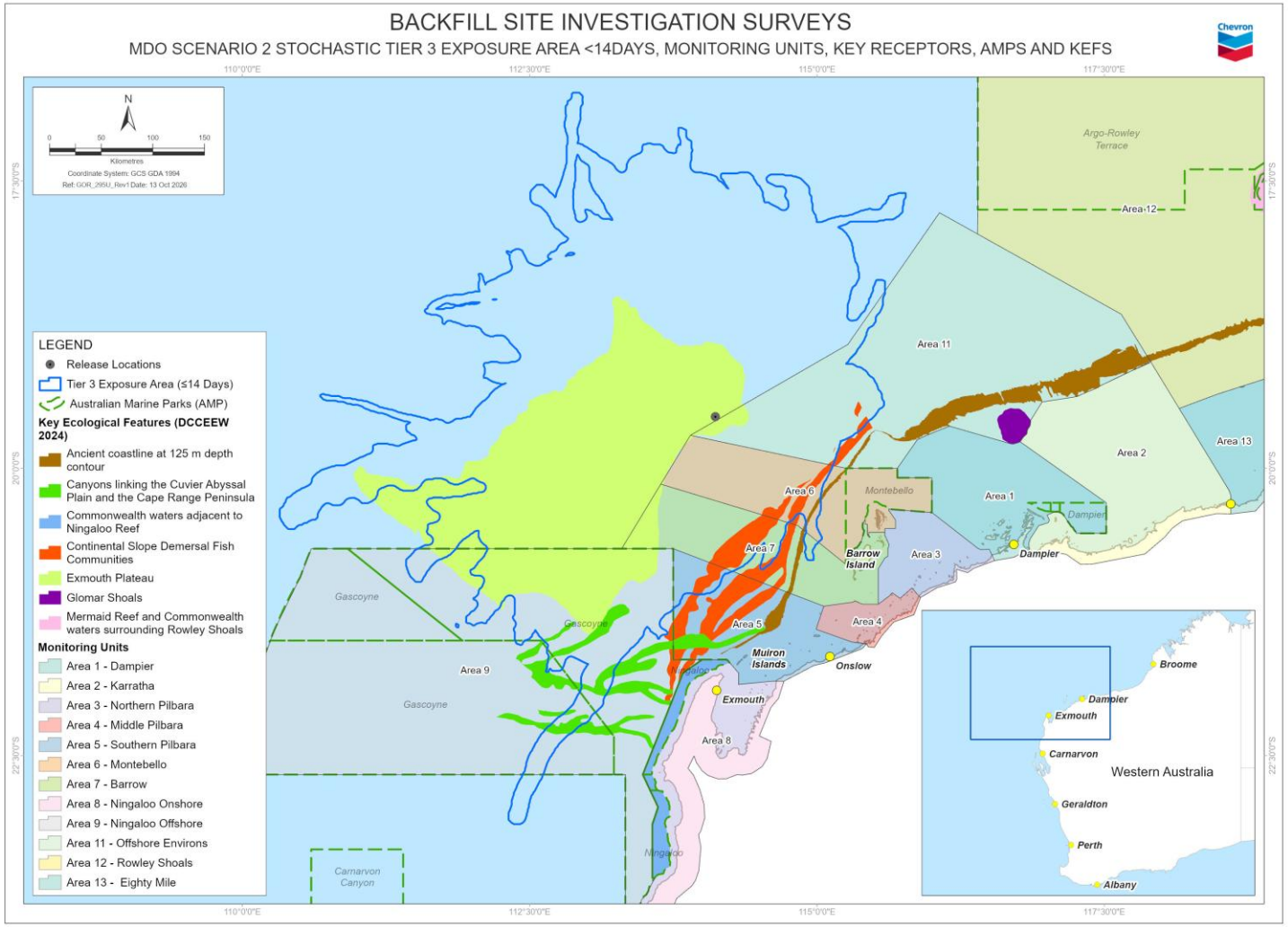


Figure G-7: OSM monitoring units and KEFs relative to the stochastic Tier 3 exposure area (≤14 days) – Scenario 2 350 m³ of MDO at Chandon DC2-NW1

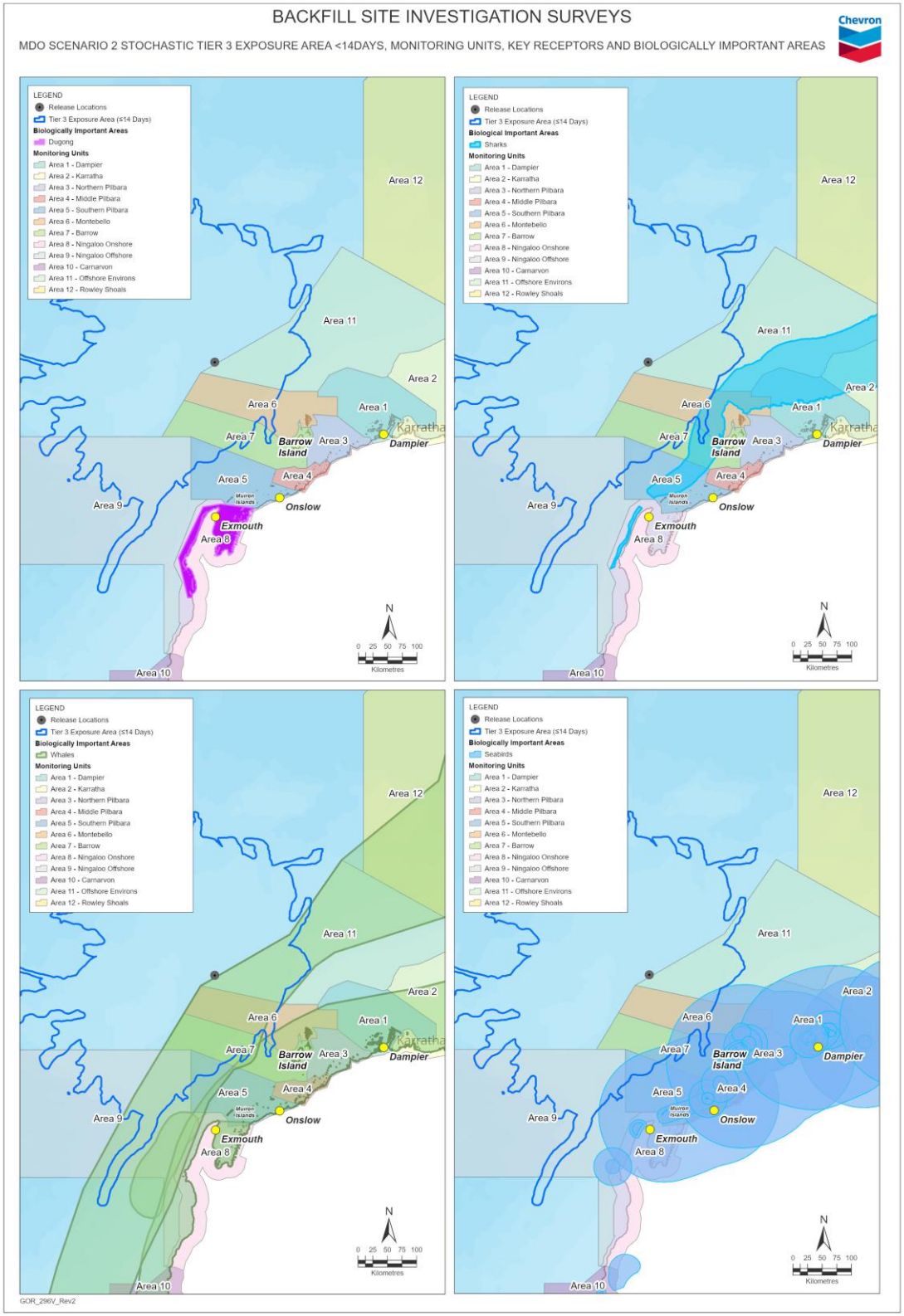


Figure G-8: OSM monitoring units and dugong, whale shark, whale and seabird BIAs relative to the stochastic Tier 3 exposure area (≤14 days) – Scenario 2 350 m³ of MDO at Chandon DC2-NW1

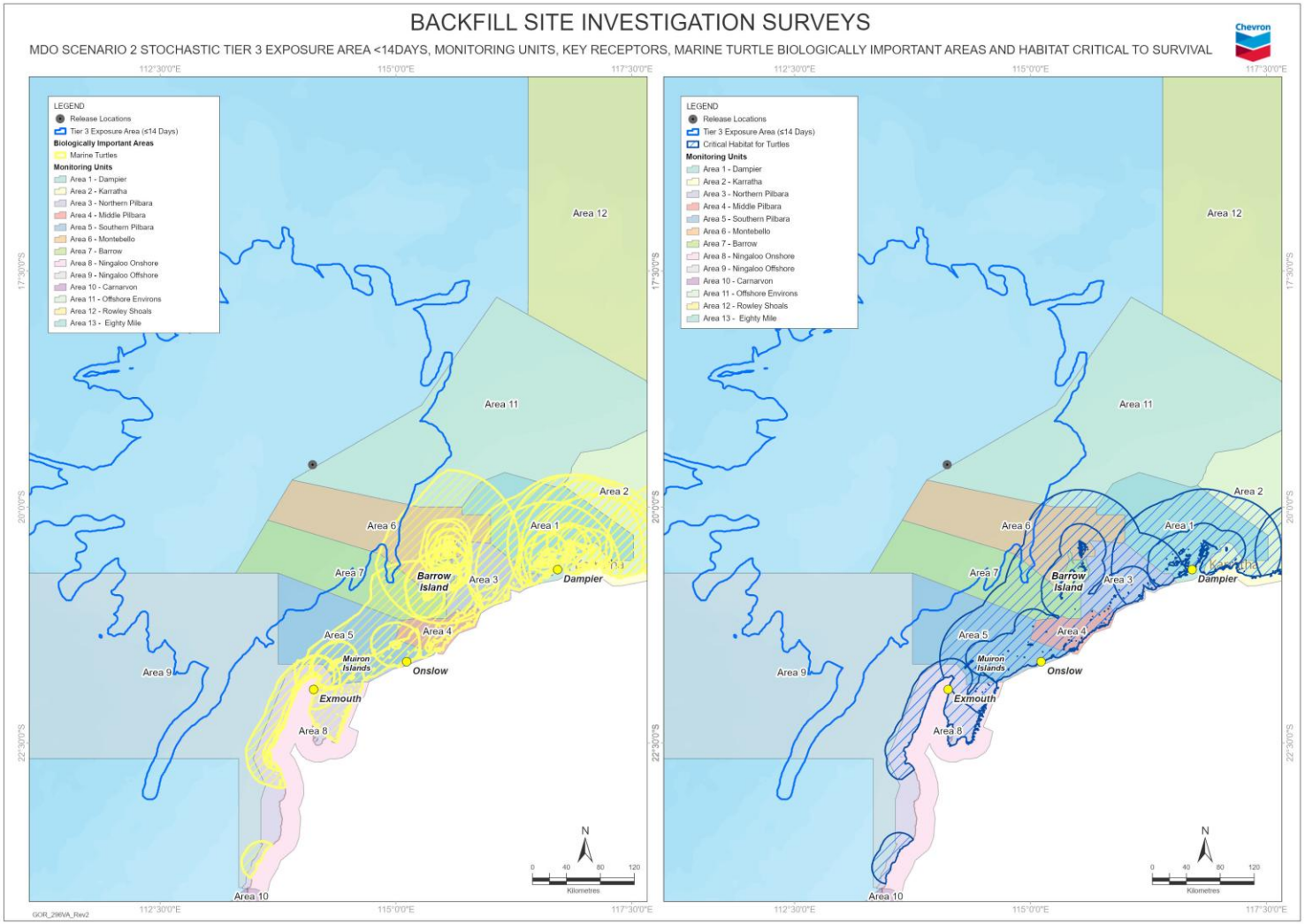


Figure G-9: OSM monitoring units, marine turtle BIAs and HCTS relative to the stochastic Tier 3 exposure area (≤14 days) – Scenario 2 350 m³ of MDO at Chandon DC2-NW1

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 Backfill Fields Site Survey 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 eight floating, no shoreline and six dissolved receptors are predicted to be contacted by scenario 1 within 14 days at a probability ≥10%, and two floating, no shoreline and two dissolved receptors by scenario 2. The shoreline and dissolved criteria are therefore not exceeded under either scenario, nor is the floating criterion under scenario 2. Under scenario 1, the eight floating receptors exceed the criterion of seven; however, all eight are broad-scale BIAs, HCTS and KEFs (Table G-4) rather than separate locations. They are contacted by floating oil close to the Gorgon MPTS release location, within 0.3 to 4.5 hours (Table G-2), and high floating exposure (≥50 g/m²) is predicted only within 7.3 km of the release location (Ref. 8). These receptors would therefore be monitored together by the operational and scientific monitoring teams allocated to the spill site and its surrounds, being the spill site monitoring team (OM2, and SM1 and SM7 where indicated by their initiation criteria), OM5 spill site aerial surveillance and the dedicated vessel-based fauna team (SM4 and SM5) working under the direction of OM5, or by the teams allocated to the Montebello monitoring unit for scenario 1, in which the release location lies.
- **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 Backfill Fields Site Surveys activity is located a considerable distance offshore, in a remote location. The C&D OA is approximately 55 km north-west of Barrow Island, in water depths of 125-1,230m and the Chandon OA is approximately 120 km north-west from Barrow Island, in water depths of approximately 1,145-1,375m. The location is remote, and the closest AMP is the Montebello Marine Park which is approximately 35 km east of the C&D OA, and approximately 70 km south-east of the Chandon OA. Both OAs are adjacent to or overlapping with 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 Backfill Fields Site Survey 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 Backfill Fields Site Survey activities is not required to inform initial OSM capabilities.

  The Backfill Fields Site Surveys activity is included in the consideration of worst-case spill scenarios in the OSM-BIP (Ref. 1) in Section 2.2 (Table 2-1) and therefore the capabilities described in the OSM-BIP (Ref. 1) also cover the Backfill Fields Site Surveys activity.

  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-6: References

Ref. No.	Description	Document ID
1.	CAPL. 2025. Operational and Scientific Monitoring Bridging Implementation Plan. Rev. 1.0. Chevron Australia, Perth, Western Australia.	ABU250200169
2.	CAPL. 2020. Oil Spill Protection Prioritisation Process – North West Shelf. 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.	Commonwealth of Australia. 2017. Recovery Plan for Marine Turtles in Australia 2017–2027. Department of the Environment and Energy, Canberra.	-
5.	Department of Climate Change, Energy, the Environment and Water (DCCEEW). 2020. Habitat critical to the survival of marine turtles in Australian waters (spatial dataset, revised 3 September 2020). Commonwealth of Australia, Canberra.	-
6.	Department of Climate Change, Energy, the Environment and Water (DCCEEW). 2026. Biologically Important Areas for Protected Marine Species (spatial dataset, last updated 11 September 2026). Commonwealth of Australia, Canberra.	-
7.	Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC). 2012. Marine bioregional plan for the North-west Marine Region, prepared under the Environment Protection and Biodiversity Conservation Act 1999. Commonwealth of Australia, Canberra.	-
8.	RPS. 2026. Chevron Gorgon Backfill Fields Development Oil Spill Modelling MDO (350m³) at chrysaor-dionysis and chandon. Report GOC424060, Rev 2. 5 February 2026. Prepared by RPS for Chevron Australia Pty Ltd.	SSF-US00-RGL-RPT-CVX-000-00001-00