SGH | Energy

LONGTOM ENVIRONMENT PLAN

2025 5 YEAR REVISION

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Section: _____ Page: _____

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Name	Company	Position

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ATTACHMENTS

ACRONYMS

ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
ABM	Australian Biofouling Management
ABWM	Australian Ballast Water Management
AFMA	Australian Fisheries Management Authority
AFZ	Australian Fishing Zone
AHO	Australian Hydrographic Office
AHTS	Anchor Handling, Tug, and Supply
AIS	Automatic Identification System
ALARP	As Low As Reasonably Practicable
AMOSC	Australian Marine Oil Spill Centre
AMP	Australian Marine Park
AMSA	Australian Maritime Safety Authority
APASA	Asia-Pacific Applied Science Associates
API	American Petroleum Institute
APPEA	Australian Petroleum Production & Exploration Association (now Australian Energy Producers)
AS/NZS	Australian Standards/New Zealand Standards
ATBA	Area to be avoided
BIA	Biologically Important Area
BOD	Biological Oxygen Demand
BSCZSF	Bass Strait Central Zone Scallop Fishery
BWMP	Ballast Water Management Plan
BWRS	Ballast Water Record System
CAMBA	China/Australia Migratory Birds Agreement 1986
CFSR	Climate Forecast System Reanalysis
CHARM	Chemical Hazard Assessment and Risk Management
CITES	Convention on International Trade in Endangered Species of Wildlife and Flora 1973
CMP	Crisis Management Plan
CTS	Commonwealth Trawl Sector
DAFF	Department of Agriculture, Fisheries and Forestry
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DNV	Det Norske Veritas
DEECA	Department of Energy, Environment and Climate Action
DELWP	Department of Environment, Land, Water and Planning
DN	Nominal Diameter
DSV	Dive Support Vessel
DTP	Department of Transport and Planning

DP	Dynamic positioning
EAC	East Australian Current
ECD	Ecological Character Description
EFL	Electrical Flying Lead
EHU	Electro Hydraulic Umbilical
EIAPP	Engine International Air Pollution Prevention
EMBA	Environment that may be affected
EOFL	End Of Field Life
EP	Environment Plan
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPU	Electrical Power Unit
ERA	Environmental Risk Assessment
ERP	Emergency Response Plan
FFG Act	*Flora and Fauna Guarantee Act, 1988*
GDA	Geocentric Datum of Australia
GHG	Greenhouse Gas
GLaWAC	Gunaikurnai Land and Waters Aboriginal Corporation
HAZID	Hazard and risk identification workshop
HFL	Hydraulic Flying Lead
HFO	Heavy Fuel Oil
HIPPS	High integrity pressure protection system
HPU	Hydraulic Power Unit
HQ	Hazard Quotient
HSEQC	Health, Safety, Environment, Quality and Community
IAPP	International Air Pollution Prevention
IFO	Intermediate Fuel Oil
IMO	International Maritime Organisation
IMP	Integrity management Plan
IMR	Inspection, maintenance and repair
IMS	Invasive Marine Species
ISO	International Standards Organisation
JAMBA	Japan/Australia Migratory Birds Agreement 1974
JHA	Job Hazard Assessment
JRCC	Joint Rescue Coordination Centre
KEF	Key Ecological Feature
KP	Kilometre Point
LAC	Limit of Acceptable Change
LALC	Local Aboriginal Land Council
LC	Lethal Concentration

LDHI	Low Dose Hydrate Inhibitor
LEFCOL	Lakes Entrance Fishermen's Cooperative Limited
LT3	Longtom 3
LT4	Longtom 4
MARS	Maritime and Aircraft Reporting Systems
MBES	Multi Beam Echo Sounder
MCMPR	Ministerial Council on Minerals and Petroleum Resources
MCS	Master Control System
MDO	Marine Diesel Oil
MEG	Monoethylene Glycol
MNES	Matters of National Environmental Significance
MOC	Management of Change
MUTA	Main Umbilical Termination Assembly
NCEP	National Centre for Environmental Predictions
NEBA	Net Environmental Benefit Analysis
NIMPIS	National Introduced Marine Pest Information System
NNTT	National Native Title Tribunal
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NOPTA	National Offshore Petroleum Titles Administrator
NSW	New South Wales
OCNS	Offshore Chemical Notification Scheme
OIW	Oil-in-Water
OPEP	Oil Pollution Emergency Plan
OPGGS Act	*Offshore Petroleum and Greenhouse Gas Storage Act 2006*
OPGGS(E)	Offshore Petroleum and Greenhouse Gas Storage (Environment)
OSCP	Oil Spill Contingency Plan (see OPEP)
OSMP	Operational and Scientific Monitoring Plan
OSPAR	Oslo-Paris Convention
OSRA	Oil Spill Response Atlas
OSRO	Oil Spill Response Organisations
OSRT	Oil Spill Response Team
PLEM	Pipeline End Manifold
PLONOR	Pose Little or No Risk
PMS	Planned Maintenance System
POB	Persons On Board
PPE	Personal protective equipment
PSZ	Petroleum Safety Zone
PTS	Permanent Threshold Shift
RAP	Registered Aboriginal Party

RO	Reverse osmosis
ROKAMBA	Republic of Korea/Australia Migratory Birds Agreement, 2006
ROV	Remotely Operated Vehicle
RRM	Risk Reduction Measures
SBES/MBES	Single/multi beam echo sounder
SBP	Sub Bottom Profiler
SCM	Subsea Control Module
SCSSV	Surface controlled subsea safety valve
SCU	Subsea Control Unit
SDO	State Duty Officer
SESSF	Southern and Eastern Scalefish and Shark Fishery
SETFIA	South East Trawl Fishing Association
SHS	Scalefish Hook Sector
SIL	Safety Integrity level
SIT	Seafood Industry Tasmania
SIV	Seafood Industry Victoria
SOPEP	Shipboard Oil Pollution Emergency Plan
SPF	Small Pelagic Fishery
SSJF	Southern Squid Jig Fishery
SSS	Side Scan Sonar
SSSV	Sub-Surface Safety Valve
STP	Sewage Treatment Plant
TBT	Tributyltin
TD	Total Depth
TTS	Temporary Threshold Shift
UCH	Underwater Cultural Heritage
UTA	Umbilical Termination Assembly
VFA	Victorian Fisheries Authority
WOMP	Well Operations Management Plan

UNITS OF MEASUREMENT

bbl	Barrel (159 litres)
°C	Degrees centigrade
cP	Centipoise
dB	Decibels
dB(A)	Decibels A-weighting
g	Gram
GL	Gigalitre
ha	Hectare
hrs	Hours
Hz	Hertz
kg	Kilogram
km	Kilometre
km^2	Square kilometre
kHz	Kilohertz
kPa	Kilopascal
kW	Kilowatt
L	Litre
m	Metre
ML	Megalitre
m^2	Square metre
m^3	Cubic metre
mg/L	Milligrams per litre
mL	Millilitre
mm	Millimetre
MMscf	Million standard cubic feet
MMscfd	Million standard cubic feet per day
Mol %	Mole percent
MPa	Megapascal
m/s	Metres per second
nm	Nautical mile (1.856 km)
PJ	Petajoule
ppb	Parts per billion
ppm	Parts per million
t	Tonne

1 Introduction

1.1 Background

SGH Energy VICP54 Pty Ltd (ABN: 35 108 405 009 and otherwise known as SGH Energy or SGHE) is the title holder and operator of the Longtom gas field, in production licence VIC/L29, and the Longtom pipeline (VIC/PL38).

The Longtom gas field was discovered in June 1995 and lies approximately 30km offshore of Orbost in East Gippsland, Victoria (Figure 1.1).

The Longtom subsea facilities commenced production in October 2009 and are shown schematically in Figure 1.2. The subsea facilities consist of the following:

- Two existing subsea wells and production trees in water depths of approximately 51 to 57 m and plans for the tie in of one future well. Production can take place from subsea wells, Longtom-3 and Longtom-4. A third subsea well, Longtom-5, is proposed to be drilled within 150 m of the Longtom-3 well and would tie-in to the existing offshore facilities (subject to a separate Environment Plan (EP)). The subsequent operation and maintenance of this third well will be undertaken as per the requirements set out in this EP.
- A 17 km 300 mm nominal diameter (DN) pipeline originating at the Longtom-3 well and connecting into the offshore end of the Patricia Baleen pipeline, covered by pipeline licence VIC/PL38.
- A subsea umbilical extension connected to the existing Patricia Baleen umbilical line that provides electrical, hydraulic and chemical services to the Longtom facilities.

Longtom production flows to shore via the Patricia Baleen offshore gas pipeline, and then to the Orbost Gas Processing Plant. The Patricia Baleen pipeline is owned and operated by Amplitude Energy. The Orbost Gas Processing Plant is also owned and operated by Amplitude Energy.

The Patricia Baleen gas field and pipeline and the Orbost Gas Processing Plant are the responsibility of Amplitude Energy, as described above, and are outside the scope of this EP.

In May 2015 production was suspended from the Longtom field due to an electrical fault which led to the loss of communications. The Patricia Baleen gas pipeline was later shut down and operations at the Orbost Gas Processing Plant suspended. It is currently unknown when the electrical fault can be rectified to allow production to be reinstated from the Longtom-3 and Longtom-4 wells. Maintenance campaigns will continue to be carried out and this EP will remain in force to cover these activities and the Longtom production operations on recommencement.

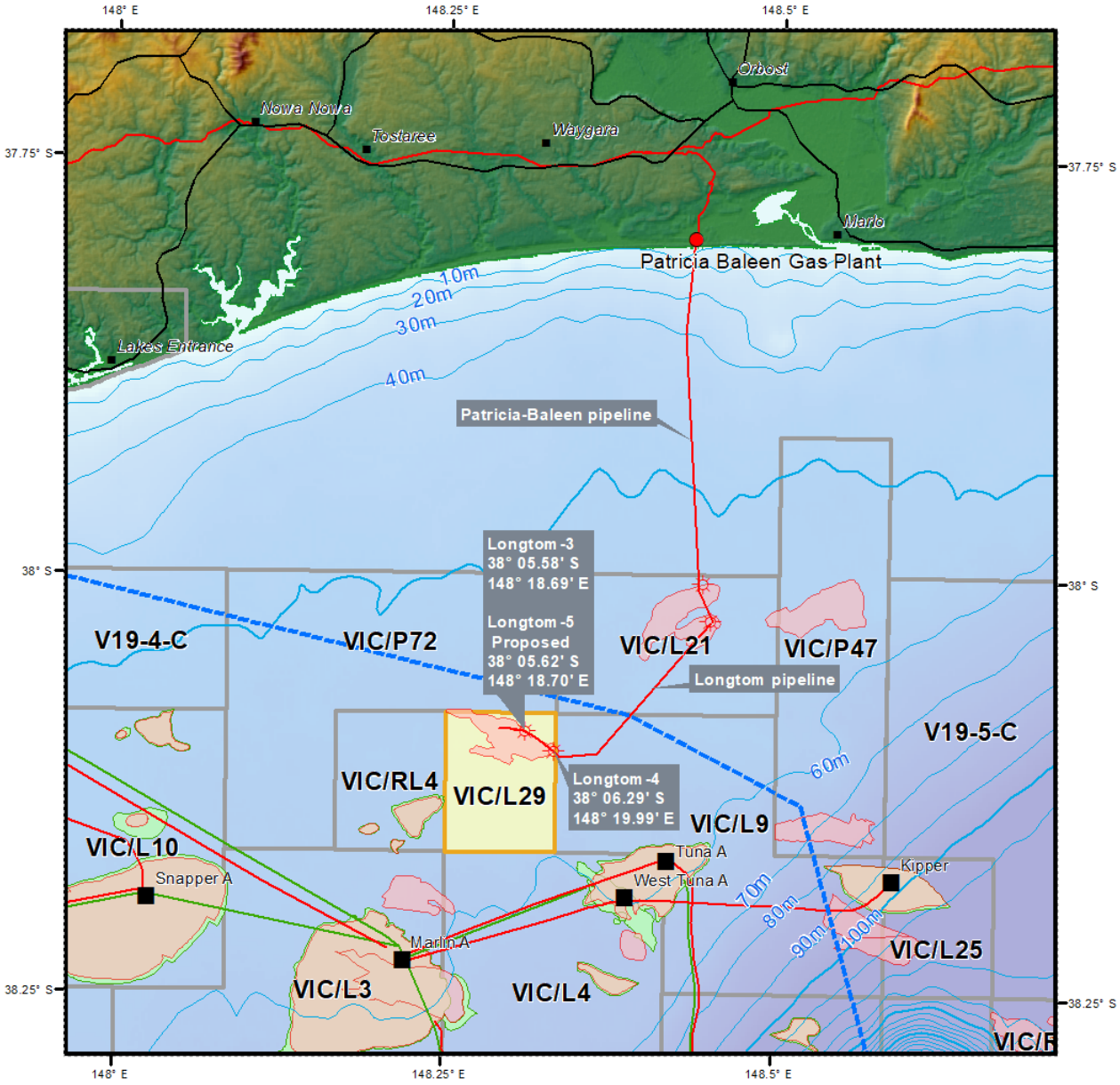
1.2 Environment Plan Summary

This summary has been prepared from material provided in this EP. The summary consists of Table 1-1 as required by Regulation 35(7)[1] of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations (OPGGS(E) Regulations) 2023.

Table 1-1 EP Summary of Material Requirements

EP Summary Material Requirement	Relevant Section of EP Containing EP Summary Material
Details of the titleholders nominated liaison person for the activity	Section 1.3
A description of the activity	Section 2
The location of the activity	Section 2.1
A description of the receiving environment	Section 4
Details of the environmental impacts and environment	Section 6
The control measures for the activity	Section 6
Consultation already undertaken and plans for ongoing consultation	Section 3
The arrangements for ongoing monitoring of the titleholder's environmental performance	Section 8
Response arrangements in the oil pollution emergency plan (OPEP)	Section 8.10 and OPEP

[1] As per the environment plan summary statement form N-04750-FM1848 – A662605 from NOPSEMA, the EP Summary requirements can be met through cross referencing sections of the EP (Table 1-1)

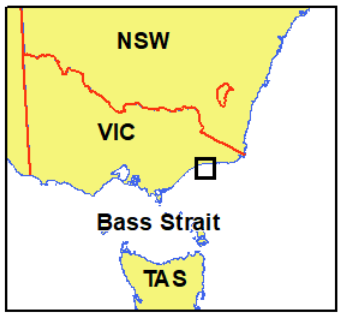


Legend

- Gas well
- Gas fields
- Oil fields
- SGHE Permit
- Non-SGHE Permits
- Production platforms
- Existing gas pipeline
- Oil pipeline
- Shipping Exclusion Zone
- Towns
- Roads

0 5 10 15 20
Kilometers

GDA94 Geodetic Datum
UTM Zone 55 S



LOCALITY MAP

Figure 1-1 Longtom Gas Project location

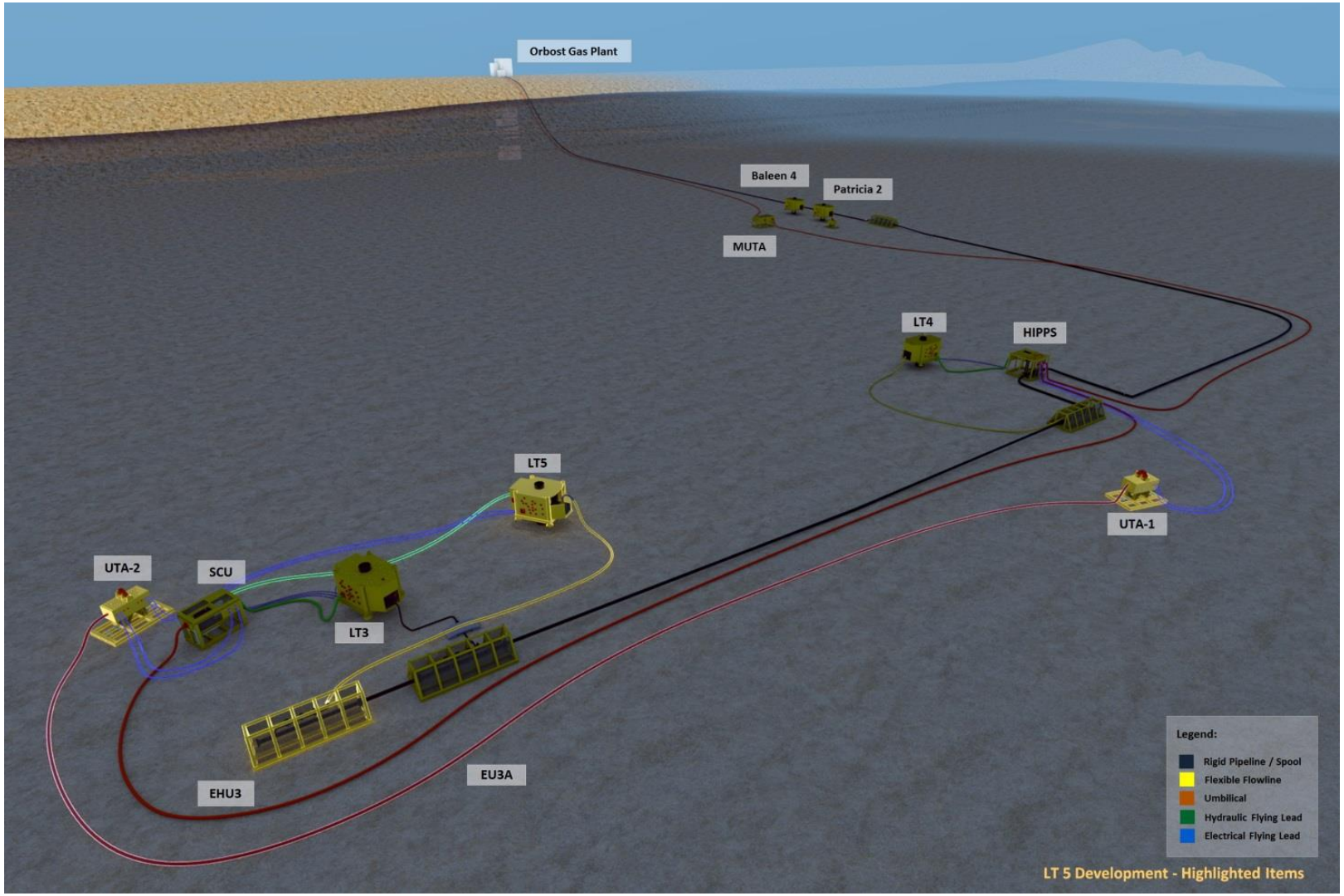


Figure 1-2 Longtom Gas Project – schematic

1.3 Titleholder Details

In accordance with Regulation 23 of the OPGGS(E) Regulations Table 1-2 provides the details of the titleholder and liaison person for this EP.

Table 1-2 Details of Titleholder and Liaison Person

Titleholder	Titleholder Details	Liaison Person
SGH Energy VICP54 Pty Ltd (ABN: 35 108 405 009)	1 Queens Road Melbourne VIC 3004 Australia	Rob Tyler HSEC Adviser SGH Energy VICP54 Pty Ltd 1 Queens Road Melbourne VIC 3004 +61 3 7053 1149 sghenergy@sghenergy.com.au

The National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) will be notified of a change in titleholder, a change in the nominated liaison or change in the contact details for either the titleholder or the nominated liaison in accordance with Regulation 23(3) of the OPGGS(E) Regulations.

1.4 Purpose of the Environment Plan

This EP has been prepared by SGHE in accordance with the requirements of the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGS Act) and associated OPGGS(E) Regulations, and more specifically with regard to Regulation 26 for submission, and acceptance, of NOPSEMA.

This EP covers:

- Description of the activity.
- Description of the environment.
- Requirements.
- Evaluation of environmental impacts and risks.
- Environmental performance outcomes and standards.
- Implementation strategy.
- Consultation.

The environmental assessment contained within the EP aims to systematically identify and assess the potential environmental impacts associated with the activity and presents measures to avoid, mitigate and manage known and potential adverse impacts to the environment, in particular the marine environment.

1.4.1 Scope of the Environment Plan

In accordance with Regulation 17 of the OPGGS(E) Regulations, an EP is required for all 'petroleum activities'. This EP covers the following 'petroleum activities' (described in detail in Section 2) related to the Longtom Gas Project:

1. Longtom non-production phase
2. Operation and production of hydrocarbons from subsea wells (Longtom-3, Longtom-4 and future Longtom-5) following recommencement of production.
3. Inspection, maintenance and repair (IMR) activities related to the Longtom wells and the Longtom pipeline).

IMR activities may include, but are not limited to, offshore vessel-supported ROV and/or diving campaigns to:

- Inspect the subsea facilities.
- Conduct testing of the subsea equipment.
- Replace communication, hydraulic or electrical cables and other subsea equipment.
- Stabilise the subsea facilities with sand bags/concrete mattresses.
- Install a temporary pig launcher and conduct pipeline pigging.

IMR activities are expected to take place approximately once every year and will generally last about a week. The exact requirements are dependent on the IMR activity, equipment availability and the duration may be extended due to adverse weather conditions and other operational requirements.

This EP is submitted as a revision of the Longtom Environment Plan (accepted by NOPSEMA 6th August 2020). It will cover a period of 5 years from the date of acceptance.

This EP does not cover:

- Operation of the Patricia Baleen facilities (operated by Amplitude Energy)
- Onshore petroleum activities including operation of the Orbost Gas Processing Plant (operated by Amplitude Energy)
- Field abandonment and decommissioning activities[2]
- Longtom well intervention or workover
- Exploration activities
- Installation activities (other than for the purpose of IMR)
- Drilling, installation and tie-in of future Longtom-5.
- Vessels transiting to or from the operating area; these vessels are deemed to be operating under the Commonwealth *Navigation Act 2012* and not performing a petroleum activity

[2] Asset decommissioning strategies and planning approaches are described within this EP.

1.5 Requirements

In accordance with Regulation 21(4) of the OPGGS(E) Regulations this section describes the legislation that applies to the Longtom Gas Project and is relevant to the project's environmental management. As the Longtom Gas Project is located in Commonwealth waters, only applicable Commonwealth legislation is discussed. Table 1-3 presents a summary of Commonwealth legislation (including any international conventions enacted) potentially relevant to the project.

1.5.1 Offshore Petroleum and Greenhouse Gas Storage Act 2006

The OPGGS Act provides the regulatory framework for all offshore oil and gas exploration and production in Commonwealth waters (those areas more than three nautical miles from the Territorial sea baseline and extending seaward to the outer limits of the continental shelf).

The OPGGS(E) Regulations have been made under the OPGGS Act. The objective of these Regulations is to ensure that any petroleum activity carried out in an offshore area is consistent with the principals of ecologically sustainable development and has appropriate environmental performance objectives, standards, measurement criteria and an implementation strategy, such that the environmental impacts and risks of the activity will be reduced to as low as reasonably practicable (ALARP) and will be of an acceptable level.

1.5.2 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) protects nationally and internationally important flora, fauna, ecological communities and heritage places, defined in the EPBC Act as Matters of National Environmental Significance (Protected Matters) (MNES). Under the EPBC Act, all activities that are likely to have a significant impact on a MNES require Commonwealth assessment and approval.

The relevant MNES are:

1. Listed threatened species and communities.
2. Listed migratory species.
3. Wetlands of international importance (Ramsar wetlands).
4. Commonwealth marine area.
5. World heritage properties.
6. National heritage places.

Drilling of Longtom-3 was deemed "Not a controlled action" (EPBC Ref: 2005/2494) with no conditions on 20 January 2006 (provided in Attachment 2).

Given the relatively small temporal and spatial scale of the project, and that no impacts on MNES were predicted, the Longtom project was referred to the then Commonwealth Department of Environment and Heritage under the EPBC Act, on 26 September 2006,

and was deemed “Not a controlled action” on 23 October 2006 (EPBC Ref: 2006/3072) (provided in Attachment 2), with no conditions.

Drilling of Longtom-4 was deemed “Not a controlled action” (EPBC Ref: 2007/3915) with no conditions on 17 January 2008 (provided in Attachment 2).

Whilst not relevant to this EP Nexus also submitted an EPBC Act Referral for the Longtom-5 drilling campaign (including details of the proposed flowline tie-in to the existing Longtom pipeline) to the then Department of Sustainability, Environment, Water, Population and Communities on 6 August 2012 (EPBC Ref: 2012/6498). The referral was deemed 'Not a controlled action if undertaken in a particular manner' on 6 September 2012 (the referral, associated documents and the decision are provided in Attachment 2).

The ‘manner in which the proposed action (Longtom-5) must be taken’ is as follows:

The following measures must be taken to avoid significant impacts on

- Wetlands of international importance (sections 16 & 17b)
- Listed threatened species and ecological communities (section 18 & 18A)
- Listed migratory species (sections 20 & 20A)
- Commonwealth marine areas (sections 23 & 24A)

1. The drilling and tie-in must be undertaken in accordance with the Environment Plan (inclusive of an Oil Spill Contingency Plan), as described in the referral, accepted by NOSEMA prior to the proposed action **commencing**

2. Oil spill protection priorities must be implemented as stated in Attachment 3 to the referral.

3. The drilling and tie-in must be undertaken in accordance with the Well Operations management Plan as described in the referral, accepted by NOPSEMA prior to the proposed action **commencing.**

Commencing: as described in the referral EPBC Ref: 2012/6498. The action will have commenced once drilling has started.

These conditions would be met by the development and acceptance of a drilling specific Environment Plan (inclusive of an Oil Spill Contingency Plan) and this Environment Plan as it relates to the operation. The oil spill protection priorities are consistent with those described in the EP and OPEP. A Longtom-5 drilling Well Operations Management Plan would be developed for the drilling, installation and tie-in campaign. All these regulatory documents would need to be accepted prior to drilling and tie-in of Longtom-5.

1.5.3 Environment Guidelines and Codes of Practice

1.5.3.1 Government Guidelines

This EP was initially developed in accordance with NOPSEMA’s Guidance Note on 'Environment plan content requirements' (N4700-GN1074, (2013)). The guidance note interprets the EP requirements that need to be met and demonstrated under the OPGGS(E) Regulations. Other, more recently issued NOPSEMA Guidelines, Guidance

Notes and Information Papers, were reviewed as relevant for the 2025, 5 yearly update of this EP including:

- Environment Plan Content Requirements (NOPSEMA Guidance Note, N04750-GN1344, (2024))
- Considerations for five-year environment plan revisions (NOPSEMA Information paper, N-04750-IP1764 A590072 (2024))
- Oil Spill Modelling (NOPSEMA Environment Bulletin, A652993, (2019))
- Oil Pollution Risk Management (NOPSEMA Guidance Note, N-04750-GN1488, (2021))
- Operational and scientific monitoring programs (NOPSEMA Information Paper, N-04700-IP1349, (2024))
- Reducing marine pest biosecurity risks through good practice biofouling management (NOPSEMA Information Paper, N-04750-IP1899 A715054, (2024))
- Consultation in the Course of Preparing an Environment Plan (NOPSEMA Guideline, N-04750-GL2086 A900179, (2023))

1.5.3.2 Industry Code of Practice

In Australia, the petroleum exploration and production industry operates within an industry code of practice developed by the former Australian Petroleum Production and Exploration Association (APPEA, now Australian Energy Producers); the APPEA Code of Environmental Practice (2008). This code provides guidelines for activities that are not formally regulated and have evolved from the collective knowledge and experience of the oil and gas industry, both nationally and internationally.

The APPEA Code of Practice covers general environmental objectives for the industry, including planning and design, assessment of environmental risks, emergency response planning, training and inductions, auditing and consultation and communication. For the offshore sector specifically, it covers issues relating to geophysical surveys, drilling and development and production.

SGHE adheres to the APPEA Code of Environmental Practice when undertaking petroleum exploration and production activities.

1.5.4 Associated Regulatory Approvals

In association with this EP, the following documents have been, or will be, submitted to regulatory agencies for approval:

- Oil Pollution Emergency Plan (OPEP): Issued to NOPSEMA for acceptance in conjunction with this EP, and to the Australian Maritime Safety Authority (AMSA), the Australian Marine Oil Spill Centre (AMOSC) and the Victorian Department of Transport and Planning (DTP) for information.
- Longtom Pipeline Safety Case accepted by NOPSEMA.
- Well Operations Management Plan (WOMP) accepted by NOPSEMA.

1.6 Environment Policy Statement

SGHE publicly recognises its obligation to the community to take all practicable steps to ensure that its operations and activities are conducted in an efficient and environmentally responsible manner. In achieving this, the Longtom Gas Project will be managed to comply with the SGHE Health, Safety, Environment, Quality and Community (HSEQC) Policy (provided as Attachment 1).

Table 1-3 Key Commonwealth legislation relevant to the project

Legislation	Coverage	International Convention Enacted	Administering Authority
Offshore Petroleum and Greenhouse Gas Storage Act 2006 and Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023	The OPGGS Act addresses all licensing, health, safety, environmental and royalty issues for offshore petroleum exploration and development operations extending beyond the three nautical mile limit. Ensures that petroleum activities are undertaken in an ecologically sustainable manner and in accordance with an EP. Section 572(1) of the Act requires that a titleholder maintain in good condition all structures and equipment in the title area, and that a titleholder remove from the title all structures and equipment that are neither used nor to be used for the operations. Note this EP was originally submitted in December 2013 under the then applicable regulations and updated in 2019, and again in 2025, for relevant amendments.	• Not applicable.	NOPSEMA
Environment Protection and Biodiversity Conservation Act 1999 and Environment Protection and Biodiversity Conservation Regulations 2000	Protects MNES, provides for Commonwealth environmental assessment and approval processes and provides an integrated system for biodiversity conservation and management of protected areas. Part 8 of the regulations provide distances and actions to be taken when interacting with cetaceans.	• Convention on Biological Diversity and Agenda 21, 1992. • Convention on International Trade in Endangered Species of Wildlife and Flora, 1973 (CITES). • Japan/Australia Migratory Birds Agreement, 1974 (JAMBA). • China/Australia Migratory Birds Agreement 1986 (CAMBA). • Republic of Korea/Australia Migratory Birds Agreement, 2006 (ROKAMBA). • Convention on Wetlands of International Importance especially Waterfowl Habitat, 1971 (Ramsar Convention).	DCCEEW

Table 1-3 Key Commonwealth legislation relevant to the project

Legislation	Coverage	International Convention Enacted	Administering Authority
		• International Convention for the Regulation of Whaling, 1946. • Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), 1979.	
Environment Protection (Sea Dumping) Act 1981	Aims to prevent the deliberate disposal of wastes (loading, dumping, and incineration) at sea from vessels, aircraft, and platforms.	• Convention on the Prevention of Marine Pollution by Dumping of Waste and Other Matter, 1972 (London Convention).	DCCEEW
Australian Maritime Safety Authority Act 1990	Sets out the functions of the Australian Maritime Safety Authority (AMSA), with responsibilities for maritime safety, search and rescue, and ship sourced pollution prevention functions.	• International Convention on Oil Pollution (Preparedness, Response and Cooperation), 1990 (OPRC).	AMSA
Underwater Cultural Heritage Act 2018	Replacing the *Historic Shipwrecks Act 1976*, continues the protection of Australia's shipwrecks, and has broadened protection to sunken aircraft and other types of underwater cultural heritage including Australia's Aboriginal and Torres Strait Islander Underwater Cultural Heritage in Commonwealth waters. Projects that damage or interfere with a historic shipwreck or relic in Australian waters or with a submerged aircraft or associated artefacts in Commonwealth waters require a permit. All suspected underwater cultural heritage is to be reported within 21 days of discovery.	• Australia and Netherlands Agreement Concerning Old Dutch Shipwrecks, 1972. • Convention on the Protection of Underwater Cultural Heritage, 2001.	DCCEEW
Hazardous Waste (Regulation of Exports and Imports) Act 1989	Regulates the import and export of hazardous waste material.	• Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal, 1992.	DCCEEW
Ozone Protection and Synthetic Greenhouse Gas Management Act 1989	Regulates the manufacture, import, export, use and disposal of ozone depleting substances and synthetic greenhouse gases and products containing these gases.	• Montreal Protocol on Substances that Deplete the Ozone Layer, 1987. • UN Framework Convention on Climate Change, 1992.	DCCEEW

Table 1-3 Key Commonwealth legislation relevant to the project

Legislation	Coverage	International Convention Enacted	Administering Authority
Navigation Act 2012	Regulates ship-related activities (safety of life at sea, safe navigation) and invokes certain requirements of the International Convention for the Prevention of Pollution from Ships 1973/78 (MARPOL 73/78) relating to equipment and construction of ships and prevention of pollution to the marine environment.	• Certain sections of the MARPOL 73/78 convention	AMSA
Protection of the Sea (Prevention of Pollution from Ships) Act 1983	Regulates ship-related operational activities and invokes certain requirements of the MARPOL 73/78 convention relating to discharge of noxious liquid substances, sewage, garbage, air pollution etc.	• Certain sections of the MARPOL 73/78 convention	AMSA
Protection of the Sea (Harmful Antifouling Systems) Act 2006	Regulates the use of harmful anti-fouling systems employed on vessels and their effects on the marine environment.	• International Convention on the Control of Harmful Anti-fouling Systems on Ships (2001)	AMSA
Australian Ballast Water Management Requirements (DAWE, 2020)	The Australian Ballast Water Management Requirements set out the obligations on vessel operators with regards to the management of ballast water and ballast tank sediment when operating within Australian seas in order to comply with the *Biosecurity Act 2015.*	• International Convention for the Control and Management of Ships' Ballast Water and Sediments (adopted in principle in 2004 and in force on 8 September 2017)	DAFF
Australian Biofouling Management Requirements (DAFF, 2023)	The Australian Biofouling Management Requirements set out vessel operator obligations for the management of biofouling when operating vessels under biosecurity control within Australian territorial seas (out to 12 nm from the coastline) to comply with the *Biosecurity Act 2015*.	• IMO 2011 Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species.	DAFF
Biosecurity Act 2015 and associated regulations including the Biosecurity Amendment (Biofouling Management) Regulations 2021	Manages diseases and pests that may cause harm to human, animal or plant health or the environment. It empowers authorities to monitor, authorise, respond to and control biosecurity risks for the movement of goods, vessels and people to prevent the introduction, establishment or spread of diseases or pests affecting human beings, animals, or plants.	• International Health Regulations (2005), Geneva • SPS Agreement (Agreement on the Application of Sanitary and Phytosanitary Measures set out in Annex 1A to World Trade Organization Agreement)	DAFF

Table 1-3 Key Commonwealth legislation relevant to the project

Legislation	Coverage	International Convention Enacted	Administering Authority
		• Ballast Water Convention (International Convention for the Control and Management of Ships' Ballast Water and Sediments), (2004), London • United Nations Convention on the Law of the Sea (1982), Montenegro Bay • Biodiversity Convention (Convention on Biological Diversity) (1992), Rio de Janeiro	

2 Description of the Activity

This section describes the project's operational and maintenance activities in accordance with Regulation 21(1) of the OPGGS(E) Regulations.

The section describes the following:

- Project location
- History and timing.
- Field characteristics.
- Operational activities (production and non-production phases).
- Inspection, maintenance and repair activities (production and non-production phases).
- Design standards.

A list of all key items of equipment associated with the title, production licence VIC/L29, and currently in-situ is provided in Attachment 5. With the exception of the Longtom 1 and 2 wells (already plugged and abandoned), all the Longtom installed equipment will be used in connection with future operations. There is currently no SGHE property that can be removed prior to the ultimate end of field life. Further details on removal of equipment and decommissioning are provided in Section 2.8.

2.1 Location

The Longtom gas field is located in eastern Bass Strait within production licence VIC/L29, approximately 30 km (16.2 nm) offshore south-southwest of Orbost in Commonwealth waters at approximately 55 m depth (see Figure 1-1). The project area comprises a pipeline corridor 17 km long between the Longtom-3 well and the tie into the Patricia Baleen pipeline. The coordinates for the project area are listed in Table 2-1

Table 2-1 Longtom coordinates

	Latitude	Longitude
Longtom-3 well (approx. pipeline end)	38° 05' 35" S	148° 18' 42" E
Longtom-4 well	38° 06' 18" S	148° 20' 00" E
Future Longtom-5 well	38° 05' 35" S	148° 18' 43" E
HIPPS	38° 06' 18" S	148° 20' 01" E
Downstream end of Longtom pipeline at Patricia Baleen	38^0 01' 37" S	$148^0$27' 02" E

Projection: GDA 94 Zone 55S

The future Longtom-5 well may be drilled within approximately 150 m of Longtom-3.

2.1.1 Operating Area

The operating area for the activity is the area where the petroleum activities will take place and will be managed under this EP. The operating area has been defined as 500 m buffer on either side of the Longtom pipeline and 500 m around the Longtom wells and subsea infrastructure. The operating area incorporates the gazetted Petroleum Safety Zones (PSZs) that are in place for the Longtom facilities (Table 2-2).

Table 2-2 Petroleum Safety Zones

Infrastructure	Distance	Gazette Notice
Longtom-3	500 m	A412738
Longtom-4	500 m	A194770

2.2 Field History and Timing of Activities

The Longtom gas field is located among a prolific oil and gas production province that has supplied oil and gas to Victoria since 1969.

Operational activities commenced with the project's first gas on 23 October 2009 and will continue throughout the life of this EP. Project maintenance activities are expected to occur for approximately one week every year.

The facilities were shutdown for 4 months in 2012-2013 due to an electrical fault. In February 2014 an electrical fault resulted in the shutdown of Longtom-3, and in May 2015 a further electrical fault resulted in shutdown of Longtom-4 and the cessation of production.

The ongoing suspension of production activities is not a strategy to extend or defer end of field life abandonment timeframes, the reasons for the ongoing shutdown of the Longtom facilities are beyond SGHE control. SGHE are maintaining the VIC/L29 title as a production licence and have no plans to relinquish it or convert it to a retention lease. SGHE continue to plan for recommencement of production however at the time of writing it is unknown when the operational arrangements and commercial agreements with third parties, can be finalised to allow production to be reinstated from the Longtom-3 and Longtom-4 wells.

The Longtom facilities are being maintained with active plans for the resumption of production. The Longtom Integrated Restart Plan (LT-OPS-PL-0037) is based on a restart of Longtom through the use of the existing connected pipelines to the Orbost Gas Processing Plant (as per the operations prior to the current shutdown). The restart is likely to occur within the 5-year period of this EP.

The potential future Longtom-5 well would be tied into the Longtom pipeline to support commercial production rates. However, the timing of this activity is also currently unknown as it too depends on the operational arrangements and commercial agreements with third parties.

2.3 Field Characteristics

A number of wells have been drilled within, and in close proximity to, the Longtom Gas Project, including Longtom-1, Longtom-2, Longtom-3, Longtom-4, Grayling-1A, Sunfish-1 and Sunfish-2. Of these wells, Longtom-3 and Longtom-4 are the only active wells capable of producing gas and small amounts of condensate.

Geologically, the project area is well understood. This includes the reservoir pressures, temperature and composition of the hydrocarbons (Table 2-3).

Table 2-3 Longtom field gas compositions

Component	Mol %				
	Longtom-1	**Longtom-2**	**Longtom-3 ST1**	**Longtom-3H**	**Longtom-4H**
Hydrogen Sulphide	0.00	0.00	0.00	0.00	0.00
Carbon Dioxide	0.73	1.13	0.93	1.30	2.00
Nitrogen	0.97	1.10	0.77	1.28	0.83
Methane	92.48	91.16	92.83	88.62	89.20
Ethane	3.46	3.86	3.49	4.60	4.67
Propane	1.16	1.37	1.10	1.74	1.70
Iso-Butane	0.18	0.25	0.19	0.40	0.32
n-Butane	0.23	0.32	0.22	0.48	0.38
iso-Pentane	0.07	0.10	0.06	0.17	0.13
n-Pentane	0.07	0.09	0.05	0.15	0.10
Hexanes	0.15	0.11	0.08	0.25	0.14
Heptanes	0.24	0.15	0.14	0.34	0.21
Octanes	0.11	0.15	0.05	0.14	0.08
Nonanes	0.09	0.06	0.04	0.11	0.06
Decanes	0.05	0.04	0.01	0.11	0.04
Undecanes	0.01	0.03	0.01	0.10	0.02
Dodecanes plus	0.00	0.08	0.03	0.21	0.12
Totals	100.00	100.00	100.00	100.00	100.00
Gravity	0.622	0.635	0.614	0.676	0.657

The Longtom wells are sweet gas wells (no H_2S) with small amounts of associated condensate (10 barrels per MMscf). Condensate is a vapour at reservoir conditions and a liquid at atmospheric conditions, it has the following properties:

- Density of 777.4 kg/m^3 at 25 ºC.
- API gravity of 51.2.
- Dynamic viscosity of 1.081 cP at 20ºC.
- Pour point of -9 ºC (when fresh).

If released into the environment, this condensate will evaporate quickly and not persist on the water surface. Reviews by APASA (2012) indicate that within 24 hours the condensate will have largely evaporated leaving behind waxy flakes posing little environmental impact.

The volumes of persistent and non-persistent components of the condensate are given in Table 2-4. The Longtom condensate contains 61.5% volatiles, 35.5% semi- to low-volatiles and only 3% of persistent residues.

Table 2-4 Physical characteristics and boiling ranges of the Longtom condensate

Characteristic	Volatiles (%)	Semi-volatiles (%)	Low Volatility (%)	Residual (%)	Density at 25°C (kg/m^3)	Viscosity (cP)
Boiling point (°C)	**<180**	**180 – 265**	**265 – 380**	**>380**		
Longtom condensate	61.5	14.3	21.2	3	777.4	1.081@20°C

Not persistent Persistent

2.4 Operational Activities

The Longtom gas field consists of subsea wells that can be produced via a pipeline that connects to the existing Patricia Baleen offshore pipeline and the Orbost Gas Processing Plant, with both of these facilities being owned and operated by Amplitude Energy. The Longtom development comprises:

- Two subsea wells and production trees in water depths of approximately 51 to 57 m.

  Hydrocarbons can be produced from Longtom-3 and Longtom-4 with facilities available for the future tie-in of Longtom-5 (see Section 2.6). The operational activities described in this section are applicable to all subsea wells.

- A 17 km 300mm DN pipeline (licence VIC/PL38) originating at the Longtom-3 well and connecting into the offshore end of the Patricia Baleen pipeline.

- A subsea umbilical extension connected to the existing Patricia Baleen umbilical line that provides electrical, hydraulic and chemical services to the Longtom wells and Longtom and pipeline.

Production of gas and condensate from the Longtom gas field commenced in 2009. In February 2014 an electrical fault resulted in the shutdown of Longtom-3, the closed status of the Longtom-3 wellhead valves was confirmed by ROV in March 2014. In May 2015 production from Longtom-4 was also suspended due to another electrical fault. The pipeline has been depressured to about 700 kPa and an IMR campaign in 2017 confirmed that the wellhead and pipeline valves are all closed.

Additional pipeline and subsea facilities inspections were carried out in 2023 and 2024. The results confirm that the well and pipeline valves remain closed isolating the Longtom pipeline from both the reservoirs and from the Patricia Baleen pipeline and that there has been no significant corrosion or disturbance to the Longtom facilities.

SGHE is planning a further offshore inspection and testing campaign for 2025.

2.4.1 Description of the Longtom Pipeline

2.4.1.1 Pipeline Overview

The Longtom pipeline extends 17 km from the Longtom-3 well and connects with the offshore end of the Patricia Baleen pipeline via the pipeline end manifold (PLEM).

Gas from the Longtom wells flows firstly through the Longtom pipeline and then through the Patricia Baleen pipeline before arriving at the Orbost Gas Processing Plant (see Figure 2-1).

The operation, monitoring and control of the Longtom wells is conducted from the Gas Plant by the use of an umbilical line which runs from the Gas Plant to the Longtom wells. This umbilical provides:

- Hydraulic and electrical power to open and close valves on the Longtom wells,
- Instrumentation to monitor and record flows, pressures, temperatures and valve status, and
- Ability to inject hydrate prevention and corrosion inhibition chemicals into the Longtom pipeline.

To protect the Patricia Baleen pipeline, which has a lower design pressure than the shut-in pressure of the Longtom wells, a subsea High-Integrity Pressure Protection System (HIPPS) has been installed. The use of a HIPPS allows the Patricia Baleen pipeline and associated downstream components to be rated to a lower pressure than the Longtom wells' shut-in pressure. The Longtom HIPPS package is located just downstream of the Longtom-4 tie-in assembly. The HIPPS has been the subject of Safety Integrity Level (SIL) determinations and SIL verification to ensure that it provides a sufficient level of protection. The SIL level was determined to be Level 2. The HIPPS has been designed to API 17D/6A.

During start-up and operations, methanol and monoethylene glycol (MEG) is pumped from the onshore Chemical Injection System via the umbilical into the subsea wells to prevent the formation of hydrates. Methanol is only required for start-up while MEG is continuously injected during operations.

The operating limits for the pipelines are provided in Table 2-5.

Table 2-5 Longtom / Patricia Baleen Pipelines - anticipated operating range

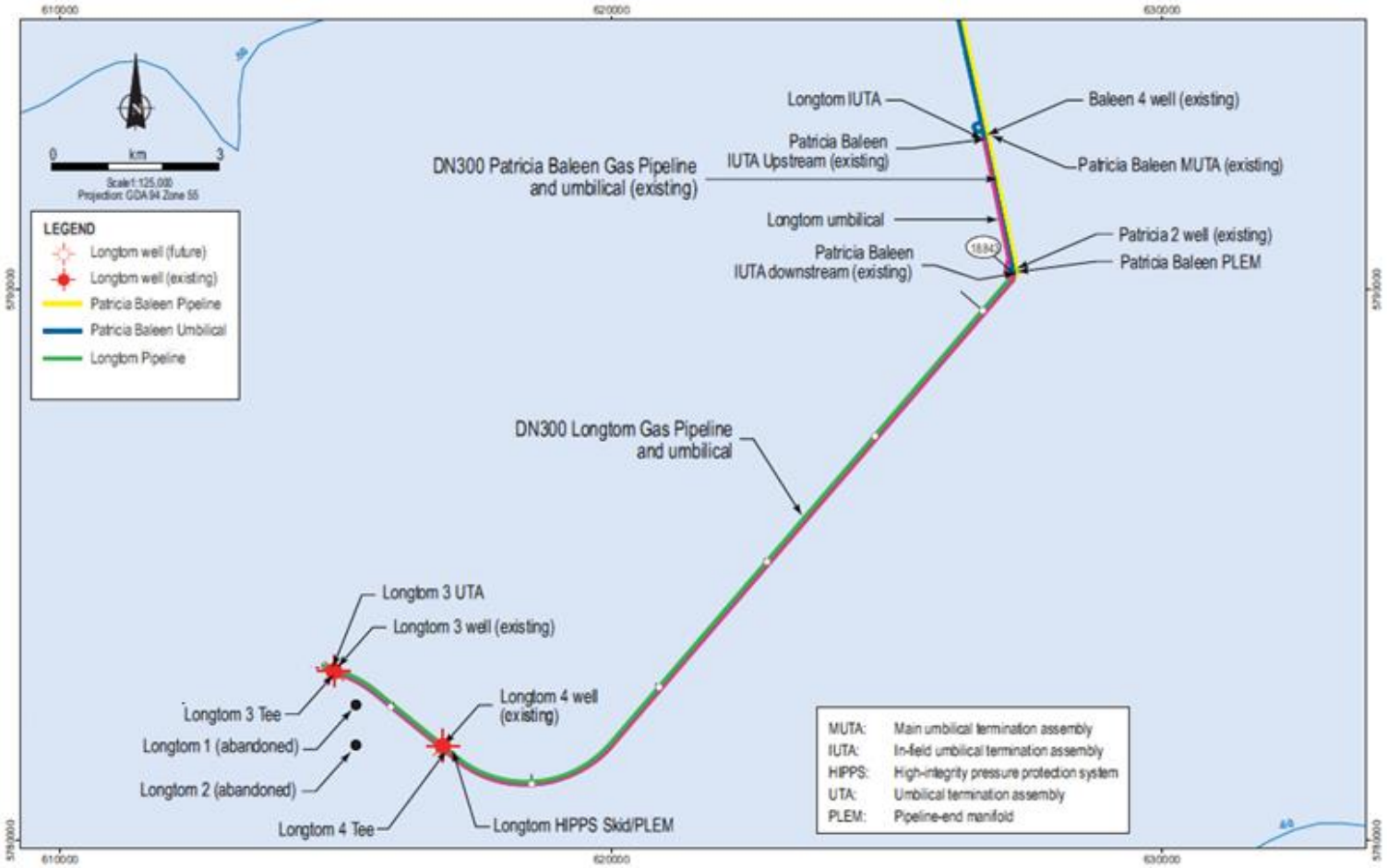
System	Pressure (MPa(g))
Longtom Pipeline (upstream of the HIPPS)	up to 27.6
Longtom Pipeline (downstream of the HIPPS)	up to 10.0
Patricia Baleen Pipeline	up to 10.0

Operating pressures and temperatures for the pipelines are included in the information provided to Orbost Gas Processing Plant operations personnel.

The Hydraulic Power Unit (HPU) that controls the well has been isolated at the Orbost Gas Processing Plant and is covered by an isolation certificate. This isolation will remain in place until Amplitude Energy and SGHE agree to its removal. While the isolation is in place there is no power (electrical or hydraulic) to the offshore facilities and they will remain shutdown.

During the 2023 offshore inspection program conducted on Longtom-3 an intermittent train of bubbles was observed. Subsequent leak testing indicates that the gas is not bleeding from the well, but rather across the (closed) valves from the pipeline. The leak rate is calculated to be very low (at an average estimated rate of 0.188 kg/day). It is important to note that this gas release does not indicate any material or immediate threat from a safety, environmental, or well integrity perspective.

Notwithstanding the above conclusions the plan was to rectify the gas bubble leak during the 2024 campaign. However, NOPSEMA determined that this activity required a vessel with a safety case and since the vessel available for the campaign did not have a safety case, the repair and associated testing has been deferred until a suitable vessel is identified and the necessary safety case requirements are met. These activities are now planned for an offshore campaign in 2025.



Note: The planned Longtom-5 would be within approximately 150 m of Longtom-3 and within the same petroleum safety zone. Longtom-5 would be connected by a new flowline / spool arrangement as shown in Figure 1-2.

Figure 2-1 Location of subsea infrastructure

2.4.1.2 Design Life

The design life for the Longtom pipeline is 25 years. Corrosion inspection of the pipeline in May 2013 and January 2017 indicated that corrosion values are within the design range and that the design life is still applicable. Further information on assessment of the pipeline design life and future operability is included in the sub-sections below.

2.4.1.3 Key Design Parameters

The following metocean parameters were used for the design of the Longtom pipeline (refer also to Table 2-6):

- Mean Sea Temperature: 16.7˚C.
- Still Water level: 61.1m.
- Highest Tide: 0.75m.
- Maximum Single Wave Height: 9.5m.
- Current Strength: 0.4 m/s (@ -54.7m).

Table 2-6 Longtom Pipeline – Key Design Parameters

Parameter	Value
Nominal outside diameter	323.9 mm
Nominal length	17,000 m
Internal corrosion allowance	3 mm
External corrosion allowance	None
External pipeline protection	Coating and sacrificial anodes
Principal design code	AS/NZS 2885.4 (DNV OS F101)
Pressure	27.6 MPa(g) upstream of the HIPPS 10.0 MPa(g) downstream of the HIPPS
Raw gas flow-rate	88.8 MMscfd
Temperature (maximum)	90°C
Temperature (minimum)	-20°C spools -10°C pipeline

2.4.1.4 General Design Considerations

The following design loading conditions for pipeline design, construction and operation were considered during the detailed design of the pipeline, consistent with the Offshore Standard DNV-OS-F101 (Submarine Pipeline Systems) (2000 edition).

- Pipeline size.
- Mechanical design, including pressure containment, collapse, buckling and stability.

- Spanning.
- Fatigue.
- Fracture control.

2.4.1.5 Pipeline Size

A 300 mm DN (323.9 mm outside diameter) was selected for the Longtom pipeline, which is the same size as the Patricia Baleen pipeline. Spool pieces that connect the wells to the pipeline were sized at 150 mm DN (168.3 mm outside diameter).

2.4.1.6 Wall Thickness

The wall thicknesses for the pipeline and tie-in spools are provided in Table 2-7.

Table 2-7 Longtom pipeline and spools – wall thicknesses

	Pipeline	LT 3 Rigid Spool	LT 4 Flexible Jumper
Outside Diameter (mm)	323.9	168.3	225.2
Steel Grade	DNV HFW 450 I SUD	DNV OS F101 22Cr IS	Duplex 2205 (Carcass)
Wall Thickness	KP 0.0 – 2.9 14.8mm KP 2.9 – 17.1 13.2mm	10.97mm	Multilayer flexible piping.

2.4.1.7 Stability

The Longtom pipeline is designed to be stable during extreme weather conditions. Stability is achieved using wall thickness and concrete weight coat for the entire pipeline route. Concrete coating has been applied to the offshore pipeline to provide stabilisation without additional requirements for secondary stabilisation including trenching or mattresses. The concrete coating details are shown in Table 2-8.

Table 2-8 Offshore Pipeline Concrete Coating

KP Start	KP Finish	Concrete thickness (mm)	Concrete density (kg/m^3)
0.0	2.9	50	2800
2.9	16.4	40	2800
16.4	17.1	50	2800

2.4.1.8 Spanning

Allowable free span lengths have been calculated for three conditions – installation, hydrotest and operations for the entire route of the offshore pipeline.

During the post-lay survey, survey in 2011 and partial survey in early 2014, no pipeline span lengths which exceeded the allowable value were detected. In January 2017 an IMR

campaign identified a number of minor spans and these were rectified by the installation of sand / grout bags. During the 2023 campaign a minor free span was identified along the pipeline and was stabilised using grout bags. The condition of this free span was inspected during the 2024 campaign which confirmed that the stabilisation remained in place and that no further scouring had occurred.

The pipeline and any freespans are monitored and if any spans exceeding the allowable length are detected during IMR campaigns they will be rectified, as and when required by installation of sandbags or similar, see Section 2.5.3 for more details.

The majority of the pipeline runs parallel to the main currents and the sea floor is relatively flat, hence spanning issues are not considered a significant concern.

2.4.1.9 Tie-in Spools

Longtom-3 is connected to the pipeline through a 150 mm DN UNS S32205 rigid tie-in spool which is connected to the wellhead and the pipeline using API 1 7D 5000# flanges. The spool is approximately 40 m long.

Longtom-4 is connected to the pipeline through a 150 mm ND NKT flexible flowline which is connected to the wellhead and the pipeline using ANSI Class 2500 weld neck flanges. The flowline is approximately 56 m long.

A future Longtom-5 well is likely to be connected to the pipeline through a 150mm ND flexible flowline (or spools) which would be connected to the wellhead and the pipeline. The flowline would be approximately 150m long. Further details on the tie-in of Longtom-5 have been provided in Section 2.6.

2.4.1.10 Accidental Loading

The pipeline protection philosophy is based on a qualitative/quantitative assessment of the frequency of events that could possibly threaten the pipeline, and a quantitative assessment of the consequence of loads from third party fishing gear and dropped objects.

Protective structures are provided for the HIPPS, tie-in assemblies, PLEMs and all other valves. The protective structures provide protection from the following accidental loads:

- cable snagging,
- anchor dragging,
- trawl-board impact, and
- dropped object.

2.4.1.11 Fatigue

Pipeline fatigue can occur through environmental loads or pressure fluctuations. For the Longtom pipeline, environmental loads can arise from severe storms causing seabed sediments to move resulting in pipeline spans, or damage to the pipeline itself through

excessive movement. As noted in Section 2.4.1.7, the pipeline has been designed to be stable during extreme weather conditions. The need for a survey of the pipeline after severe storms to assess excessive spans will be determined at the time.

Pressure fluctuations experienced by the Longtom pipeline are sufficiently limited that they need not be considered from a fatigue perspective.

2.4.1.12 Fracture Control

Materials meet the fracture toughness requirements of the Offshore Standard DNV-OS-F101 (Submarine Pipeline Systems).

2.4.1.13 Internal Corrosion Management

The Longtom pipeline carries primarily methane gas containing a small quantity of carbon dioxide in the presence of free water. Although the concentration of carbon dioxide and the gas pressure are both low by comparison with other operating wet gas pipelines, it is necessary to inject corrosion inhibitor into the well stream to maintain the wall thickness required for pressure containment. The corrosion inhibitor is delivered to the Longtom wellheads via the umbilical pre-mixed with the MEG and low dose hydrate inhibitor. The overall operation of the corrosion prevention system is checked by corrosion coupons and corrosion probes located at the onshore section of the Patricia Baleen pipeline in the Orbost Gas Processing Plant and by iron counts from samples of pipeline fluids collected at the gas plant.

The Longtom pipeline has an internal corrosion allowance of 3 mm. The pipeline IMR campaigns in May 2013 and January 2017 indicated that internal corrosion is well within the design parameters. In 2023, an update to the corrosion assessment was completed for the production cessation period. This assessment (PIC-033-OR-001) confirmed the main degradation mechanisms for the assets and modelled predicted corrosion rates. The review concluded that the equipment exposed to productions fluids since the cessation of production in May 2015 will be largely resistant to corrosion attack and that unless process conditions (temperature and pressure) changed, no further corrosion reviews are required until production start-up.

Pipeline end manifolds (PLEMs) are installed at the offshore ends of both the Longtom and Patricia-Baleen pipelines in order to provide future access for pigging, if required. Each manifold includes a full-bore main valve, bleed valves, other valves and additional equipment, all contained in a protective structure.

More detailed information on internal corrosion management is provided in the Integrity Management Plan (LT-OPS-PL-0030).

2.4.1.14 External Corrosion Management

Anti-corrosion Coating

External corrosion protection of the pipeline is provided by a 2.2 mm three-layer polyethylene coating. Protection of the field joints is provided by Canusa MIS 100 heat shrink sleeves.

Tie-in spools, PLEMs and tee assemblies are coated with three-layer coating system approved for subsea applications.

Cathodic Protection

The Longtom pipeline system cathodic protection has been designed so that the Longtom pipeline is electrically continuous with the Patricia-Baleen pipeline and the sacrificial galvalum anodes have been designed (quantity, sizing and spacing) with due regard to the current condition of the Patricia Baleen pipeline anodes and the Patricia Baleen pipeline future current demand. Cathodic protection has been designed in accordance with the Recommended Practice DNV RP B401 (Cathodic Protection Design).

2.4.1.15 Flow Assurance

The Longtom pipeline is operated under a Hydrate Management Plan (Document Number: LT-ENG-RP-005). Hydrate management shall normally be by the continuous injection of MEG from the Orbost Gas Processing Plant via the umbilical and into the pipeline at the Longtom wellheads and HIPPS. The MEG will be recovered from the liquid arriving at the Orbost Gas Processing Plant for re-use.

Methanol can be injected via a dedicated methanol line in the umbilical to further suppress the formation of hydrates (e.g., during start-up) or to disperse a hydrate should one form.

2.4.1.16 Control Umbilical

An umbilical installed from the end of the existing Patricia Baleen umbilical to the Longtom wells and the HIPPS provides chemicals (corrosion inhibitor, MEG and methanol), hydraulic power, electrical power and control services to the Longtom facilities. The electrical section of the umbilical between Longtom-4 and Longtom-3 was bypassed via the installation of a new electrical / communications cable installed in 2017.

A schematic showing the gas export and umbilical lines is given in Figure 2-2.

A Subsea Control Module (SCM) is installed on the HIPPS skid for the control of the HIPPS and the nearby Longtom-4 wellhead and a Subsea Control Unit (SCU) is installed adjacent to Longtom-3 for the control of the Longtom-3 wellhead. An additional SCM would be installed as part of the Longtom-5 tie-in activities to control Longtom-5.

During operations control of the Longtom facilities is from the Orbost Gas Processing Plant. Gas plant operations personnel are able to open and close the wellhead valves, operate the Longtom well chokes, the HIPPS valves and inject MEG and potentially methanol into the facilities at various locations to control and manage hydrates.

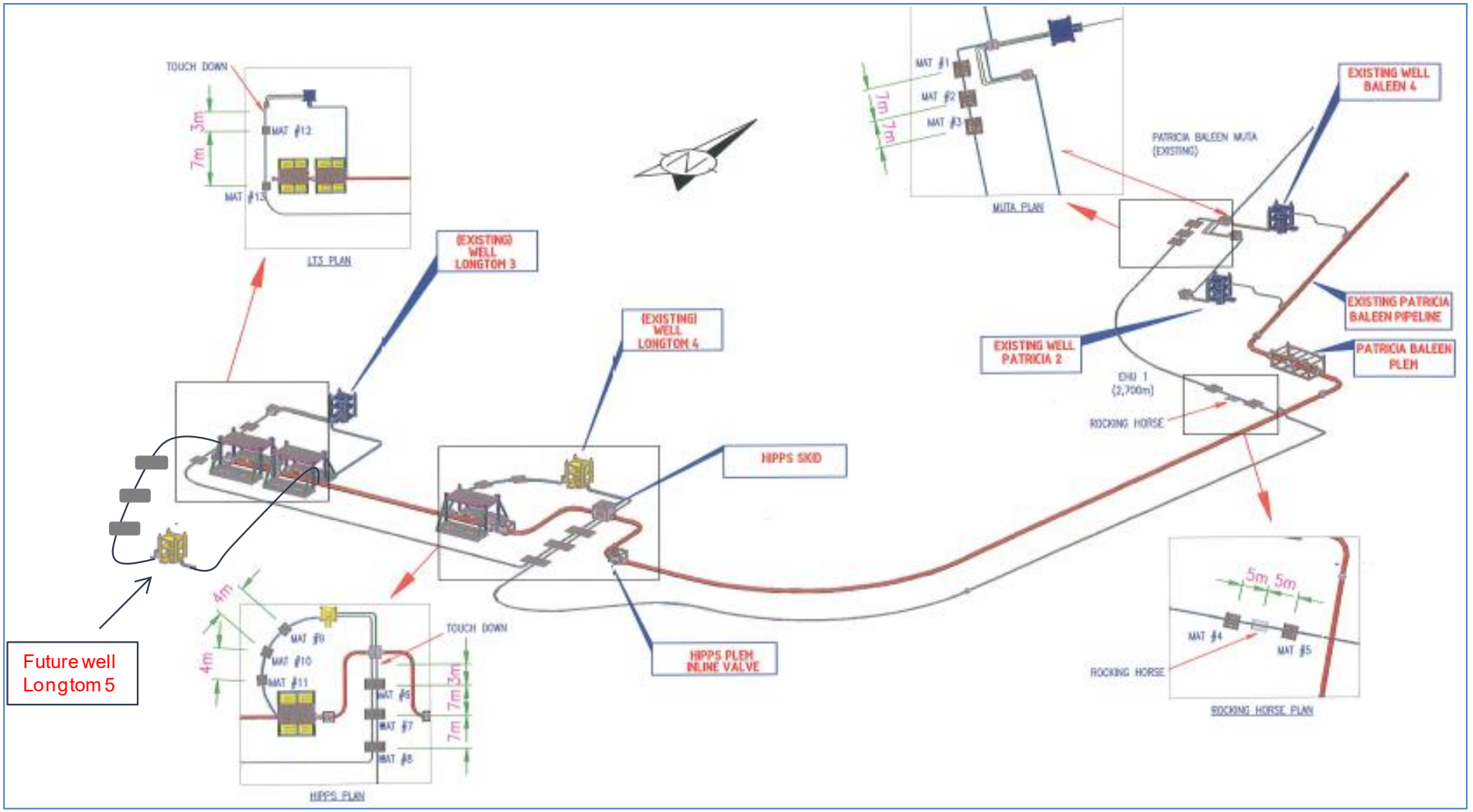


Figure 2-2 Gas export and umbilical lines (schematic)

2.4.2 Production Phase Operations Overview

Note that the Longtom facilities are currently shut down due to an initial electrical fault in the Patricia Baleen or Longtom umbilical. The following section describes how the facilities were operated and how they could be operated once the electrical fault is resolved.

Operation of the Longtom facilities has been integrated with the existing Patricia Baleen facilities. The onshore Patricia Baleen facilities (Orbost Gas Processing Plant) are manned 24 hours a day by rotating operational shifts. The Orbost Gas Processing Plant controls operation of the wells and the pipeline.

All Longtom functions are monitored and controlled from the Orbost Gas Processing Plant Control Room through a Master Control System (MCS) using a Subsea Control Module located at each wellhead or on the Umbilical Termination Assembly (UTA) adjacent to the wellhead. Well monitoring functions include downhole and wellhead pressure and temperature, flowline pressure and temperature, production choke position and other tree valve positions.

The subsea control system is an electro-hydraulic system - a Hydraulic Power Unit (HPU) provides the hydraulic power to the subsea controls while the Electrical Power Unit (EPU) supplies power to the umbilical. Production, hydrate control and internal corrosion control will operate within a closed-loop system, with no planned discharges to the marine environment.

During production the main operational activity is adjusting the wellhead chokes for the required daily production rate. The only planned discharge during operations is hydraulic fluid from the operation of the subsea valves. Other operational activities conducted from the Orbost Gas Processing Plant include the testing of the shutdown systems. The control system has been designed to provide full redundancy so that there is no loss of control or production following the failure of any single component within the control system, including the HPU. The control system has been configured so that in the event of loss of electrical power or signal to the wells, the subsea tree is left in its current state. However, a loss of power to the HIPPS will result in closure of the HIPPS valves and shut-in of production. Production will also be shut-in in the event of loss of hydraulic power as all shutdown systems are designed to be fail closed on loss of hydraulic pressure.

2.4.3 Non-production Phase Overview

There are no planned discharges associated with the non-production phase of Longtom. There is no ongoing injection of chemicals into the Longtom infrastructure for hydrate or corrosion control. This is not required as the current pipeline contents were inhibited via the chemical injection at the trees during production. Regular inspection and monitoring of the wells and subsea equipment via offshore vessel campaigns will continue during the non-production phase (see Section 2.5).

2.4.3.1 Wells

The Longtom-3 and Longtom-4 wells are currently shut-in at their subsea trees and all isolation valves on the subsea trees were verified closed during the IMR campaign in 2017. As described above, since an offshore electrical fault which occurred in May 2015, direct control and monitoring of the subsea system from the Orbost Gas Processing Plant is not possible.

2.4.3.2 Pipeline

The downstream pipeline system is isolated at the HIPPS (valves confirmed closed and holding pressure) and at the onshore plant inlet. The 17 km section of the Longtom pipeline downstream of the HIPPS and the approximately 30km Patricia Baleen pipeline was then blown down to 230 kPa. After being blown-down the pipeline was then injected with nitrogen to establish a pressure of 630 kPa. This positive pressure has been chosen to exceed the seawater head by 100 kPa to support the early identification of a passing valve and prove ongoing pipeline integrity.

Based on the above and known liquid hold-ups in the line, this downstream pipeline section contains approximately 2,700 m^3 natural gas, 4,550 m^3 Nitrogen, 5 m^3 Longtom condensate and 150 m^3 MEG/water mix (40:60).

Residual fluids in the pipeline have been left in-situ based on the following:

• The pipeline is not considered to be subject to internal corrosion, therefore purging/flushing to remove hydrocarbons upon suspension is not required (in accordance with AS2885); and

• A complete purge/flush of the pipeline would require an offshore campaign and potential diving/pigging operations, i.e. introduction of additional risks which are not justified due to the negligible risk of internal corrosion and minimised hydrocarbon pipeline contents.

Upstream of the HIPPS and back to the Longtom-3 well the pipeline is still pressured and contains hydrocarbons at 6,450 kPa. This upstream pipeline section contains approximately 10,600 m^3 natural gas, 1 m^3 Longtom condensate and 30 m^3 MEG/water mix (40:60).

The Patricia Baleen pipeline has been placed in a non-operational state and the pipeline is isolated at the gas plant.

2.4.3.3 Umbilical

Due to the electrical fault, the umbilical's power/communication signal, hydraulic and chemical injection functions are inactive and were subsequently isolated at the gas plant. The cores in the Longtom umbilical are filled with the water based hydraulic control fluid, MEG and methanol, the volumes of these are approximately 12 m^3, 18 m^3 and 6 m^3 respectively.

2.4.4 Longtom Restart

Extensive restart assessment and planning is underway, as described in the Longtom Integrated Restart Plan. Once the operational arrangements and commercial agreements for

future Longtom production are reached plans for the restart of the facilities will be finalised. This will likely require an inspection and maintenance campaign to visually inspect the facilities, confirm power and communication links and monitor the restart offshore. Personnel at the Orbost Gas Processing Plant will be trained in SGHE operating requirements, the Longtom restart and operating procedures, the EP, Safety Case, WOMP and the emergency response (including oil spill) arrangements. Re-start will be conducted remotely from the gas plant control room and apart from small amounts of water-based hydraulic fluid released from the valves (refer to Section 6.2.1) there would be no other planned releases or environmental impacts.

2.5 Inspection, Maintenance and Repair (IMR) Activities

The Longtom offshore facilities are located subsea and are unmanned, and any inspection or maintenance and repair activities will be conducted from an offshore vessel.

Inspection, maintenance and repair (IMR) programs are undertaken on the Longtom subsea infrastructure to confirm and maintain the integrity of the subsea systems. IMR programs are detailed in the accepted Pipeline Safety Case for subsea infrastructure and accepted WOMP for wells. The facility has an Integrity Management Plan (IMP) that details the management, monitoring, mitigation and inspection activities determined necessary to ensure integrity is maintained for the subsea infrastructure and wells. The IMP covers all aspects of facility lifecycle management.

Equipment is managed with a risk-based maintenance plan with the objective to maintain it in 'good condition and repair' for the future restart of operations and per Section 572[3] of the OPGGS Act and to enable removal at end of field life decommissioning. As detailed in the accepted Pipeline Safety Case and WOMP a risk assessment methodology is used to assess potential threats to the subsea assets, risk mitigations and determine appropriate integrity monitoring plans including required frequency of subsea inspections to maintain Longtom integrity for future operation.

Inspection, maintenance and repair programs consist of activities such as:

- Inspection of wellheads, pipelines and subsea structures (Section 2.5.1).
- Maintenance or repair of the pipeline, wells and associated subsea infrastructure (Section 2.5.2); and
- Span rectification (Section 2.5.3).

[3] **572 Maintenance and removal of property etc. by titleholder**

Maintenance of property etc.

A titleholder must maintain in good condition and repair all structures that are, and all equipment and other property that is:

(a) in the title area; and

(b) used in connection with the operations authorised by the permit, lease, licence or authority.

Removal of property etc.

A titleholder must remove from the title area all structures that are, and all equipment and other property that is, neither used nor to be used in connection with the operations:

(a) in which the titleholder is or will be engaged; and

(b) that are authorised by the permit, lease, licence or authority.

2.5.1 Inspection

- Visual well integrity inspections are planned annually and a test of well barriers every three years in line with the WOMP requirements. The duration of these inspections is approximately one week.
- Pipeline inspection via side scan sonar (SSS) and/or single or multi beam surveys, expected to occur once every three years taking approximately one week and can be concurrent with the well inspections.
- Pipeline inspection via ROV survey and external inspection of equipment status and condition, expected to occur once every three years taking approximately one week, concurrent with SSS or multi beam survey.
- Internal inspection of the pipeline may also be carried out in the form of intelligent pigging inspections. This would require divers and a dive support vessel. Pigging is not expected to be necessary, however if it is undertaken the dive campaign is estimated to be approximately one week duration.

Inspections typically monitor:

- anode wastage,
- coating damage,
- cathodic protection measurements,
- external and internal corrosion,
- marine growth,
- damage (impact, environment or third party),
- scour and pipeline spans,
- variation of inspected components or operating conditions; and
- leaks (gas or liquid).

2.5.2 Maintenance and Repair

The facilities were designed to require minimal maintenance. While normal operations do not require maintenance activities, a severe storm, fishing impact, failure of subsea equipment or a requirement to pig the pipeline may require occasional maintenance or repair activity.

Maintenance and repair activities are typically conducted in response to inspection findings, engineering analyses, and/or external events. Maintenance and repair activities are expected to be rare and infrequent. If a repair is required, it is expected that it may take approximately a week.

Table 2-9 summarises the typical maintenance and repair activities that may be undertaken but this list is not exhaustive. The table also includes details of the initiation criteria for the various maintenance programs.

Table 2-9 Typical Maintenance and Repair Activities

Maintenance and Repair Type	Description	Initiation Criteria
Cathodic protection system maintenance	Replacement of anodes and continuity straps. Installation of cathodic skids.	Anodes are retrofitted when the existing anodes have depleted, or are about to deplete, beyond 90% of their original volume.
Well barrier testing	Testing the well barriers is undertaken as part of the WOMP requirements. This generally involves an ROV and downline to gather pressure related information and sequentially open and close valves. Water based fluids may also be utilised to support leak testing as described below.	Detailed in the WOMP.
Leak testing	Leak testing is undertaken as required to verify the pressure integrity of components. Leak testing involves filling the component with water dosed with inhibitor, biocide and dye (normally fluorescent) and pressurising the pipeline to an appropriate test pressure.	Where the integrity of the pipeline system must be re-confirmed following a significant wall thickness defect.
Excavation for inspection, maintenance or repair	To undertake subsea IMR, localised excavation may be required directly adjacent to the subsea system, allowing access to buried infrastructure. Typically, this is conducted by jetting, mechanical and/or digging equipment from an ROV, vessel, or by using divers.	Access required to buried subsea infrastructure for inspection, maintenance or repair.
Marine growth and hard deposit removal	Marine growth and deposits may be removed by water jetting or manual cleaning from an ROV or by divers to access equipment. Water jetting may use potable or sea water. In some cases equipment may need to be soaked / flushed with acid to remove hard deposits.	Access required to subsea infrastructure for inspection, maintenance or repair.
Physical valve operation	Operation of valves by ROV.	Remote operation of valve is not functioning.
Removal of debris or fishing net	Removal of debris such as ropes and fishing nets that may become entangled on infrastructure.	Inspection identifies hazardous debris on infrastructure.
Rectification of electrical or hydraulic fault	Rectification of an electrical or hydraulic fault associated with an umbilical and associated connected equipment. Replacement of electrical/hydraulic/chemical umbilical or flying leads, cleaning of connectors, testing of connectors.	Electrical or hydraulic fault.
Pipeline repair	Pipeline repair which may, depending upon the damage the pipeline has sustained, include composite wrap application, mechanical clamp installation and anode retrofit. Pipeline cut-out and section replacement would only be undertaken for loss of containment events where pipeline contents have already been discharged.	Inspection identifies significant corrosion or damage to pipeline or a loss of containment from the pipeline.

Flexible jumper replacement	Replacement of flexible jumper with either rigid or flexible flowline between existing flange connections.	Flexible jumper significantly damaged or not functioning.
Subsea control module (SCM) / unit (SCU) change out	Replacement, or in situ servicing, of SCM / SCU including cleaning of interface and testing of connections.	SCM / SCU significantly damaged or not functioning:
Replacement of equipment on the seafloor	Where subsea equipment cannot be repaired it may be replaced. This would typically occur in the same location or near to the previous location.	Subsea equipment significantly damaged or not functioning.
Mattress, grout and sand bag deployment	Mattresses, grout and sand bags maybe used where electrical or hydraulic flying leads (EFLs or HFLs) are observed to be "floating" or additional protection is deemed to be needed for subsea infrastructure (such as umbilical at trench entry/exit points). Includes replacement of mattresses.	Inspection identified EFL or HFL "floating" or other infrastructure requires physical protection. Identification of a pipeline span that exceeds the acceptance criteria may require deployment of sand or grout bags to rectify the span.
Subsea trees, flowline, flanges and mechanical connections servicing	Tensioning, blanking or polymer sealant application to restore or preserve integrity to subsea conduits.	Subsea equipment significantly damaged or not functioning.

The only planned discharge to the marine environment would occur during well barrier and leak testing or during cleaning of subsea equipment (refer to Section 6.2.1).

All maintenance and repair activities will be risk assessed to ensure that the proposed activity does not pose a greater environmental risk than those assessed and presented within this EP. If it is determined that the activity is of greater environmental risk, then a revised EP will be submitted to NOPSEMA for approval before the activity can commence.

Note that any physical well intervention or workover will be covered by a separate EP.

2.5.3 Span Rectification

In addition to maintenance and repair of the Longtom facilities, pipeline span anomalies could potentially occur requiring remediation, these would likely be identified from the pipeline inspection. Spans can be rectified by the use of sand bags and grout bags, (a bladder/bag that is positioned under the pipeline and pumped full of grout until the bag supports the pipeline) and/or the installation of concrete mattresses. Depending on the inspection campaigns and the capability of the vessel and ROV, span rectification may be conducted during the same inspection campaign or may require an additional offshore vessel campaign. There have been minor spans previously rectified and these activities have been completed by ROV in less than a day.

2.5.4 Offshore Vessels

Any offshore IMR campaign will require an appropriate offshore support or installation vessel. The size of the vessel will depend on the activity being conducted and may vary from a small vessel out of Lakes Entrance with a small crew (e.g., less than 10 personnel) to conduct a simple visual ROV inspection, to a larger offshore installation vessel potentially with up to 120 personnel if a major maintenance or diving campaign is required, such as for an internal pigging run.

Vessels utilised for previous IMR activities range from small local vessels such as the Bass Trek and Silver Star to larger South East Asia based construction vessels such as the Skandi Hercules. The Bass Trek has a gross tonnage of 95 tonnes and a fuel capacity of 25 m^3 with fuel spread between numerous tanks (maximum 11.5 m^3). The Silver Star has a gross tonnage of 300 tonnes and a fuel capacity of 48 m^3 with fuel spread between numerous tanks (maximum 12 m^3). The larger vessels with a gross tonnage of up to 10,000 tonnes may have fuel tanks up to 220 m^3 (Table 2-10)

Only vessels using Marine Diesel Oil (MDO) (or a fuel with similar or lower environmental impact) will be utilised. Vessels using Heavy Fuel Oil (HFO) or Intermediate Fuel Oil (IFO) will not be used. Given the short period of time that the vessels are expected to be in the field, vessels will return to port to refuel.

Whilst conducting petroleum activities the vessels will be operating at low speeds ($\leqslant$ 2 knots) or stationary. Vessels will not anchor in the field.

Helicopters are not anticipated to be required for operations and maintenance activities. However, a helicopter may be required for medical emergencies and for transfers where vessel-based options are not suitable. Helicopters and fixed wing aircraft may also be utilised in the event of an incident to provide aerial monitoring.

The vessels are considered part of the ‘petroleum activity’, as defined by Regulation 4(1) of the OPGGS(E) Regulations, while they are within the VIC/L29 production licence (the ‘petroleum instrument’) and actively engaged (i.e. with an ROV or diver in the water). The vessels come under the regulatory jurisdiction of AMSA under the *Navigation Act 2012* at all times.

2.5.5 Use of Remotely Operated Vehicles

ROVs will be used to conduct visual observations and, where possible and appropriate, to conduct subsea maintenance, repair and span rectification activities.

Table 2-10 Typical vessels and fuel storage capacities

Vessel	Type	POB	Gross Tonnage	Total fuel volume (m^3)	Number of fuel-Tanks	Fuel tank sizes (m^3)
Seven Eagle	DSV / Large Construction	106	9556	1644	17	18 – 190
SIEM AHTS VS491	AHTS	60	7473	1224	15	3 – 195
Skandi Hercules	Construction / Large ROV	90	4960	2416	[1]	[1]
Go Altair	AHTS	[1]	4500	600	10	31 – 119
Deep Sea	AHTS	[1]	4500	1242	15	23 – 212
Fugro Mariner	ROV Support / Maintenance	58	3466	976	12	41 – 118
Harvest Shine	Multipurpose / ROV	50	992	536	10	15 – 55
Bhagwan Dryden	Multipurpose / Med ROV	40	1475	130	[1]	[1]
Offshore Solution	Multipurpose / Med ROV	42	902	120	[1]	[1]
MV Offshore Guardian	Multipurpose / small ROV	28	316	60	[1]	[1]
Silver Star	Survey / small ROV	32	300	48	[1]	< 12
Bass Trek	Survey / small ROV	~24	95	25	[1]	< 11.5

[1] *Information not publicly available*

2.5.6 Diving

The inspection, maintenance or repair of the pipeline, wellheads and/or trees may require diving where the work is too complex to undertake via ROV. Diving could include air diving, saturation diving or hard suit diving.

2.6 Longtom-5

The following section is provided for information only, the actual drilling, installation and tie-in of Longtom-5 will be the subject of a separate EP. The Longtom-5 subsea well would be tied into the Longtom facilities by undertaking the following:

- Tie-in of hydraulic and electric flying leads (HFL and EFL).
- Tie-in of a flexible flowline or rigid spools.
- Pressure/leak testing.

The tie in and commissioning of Longtom-5 would probably take about 10 days in the field. As the drilling campaign is yet to be confirmed the timing of the tie-in campaign is also currently unknown.

2.6.1 Longtom-5 Equipment and Installation

The Longtom-5 wellhead and subsea tree system would be approximately 3 x 3 x 2.5 m in size and similar to the existing Longtom 3 and 4 trees, these would be installed under a separate drilling EP.

Longtom-5 would be connected to the existing production pipeline through a 150mm ND flowline or spools approximately 150m long. Longtom-5 would be installed within the existing Longtom-3 Petroleum Safety Zone.

It is likely that some of the tie-in activities would require divers and hence a dive support vessel would be required to undertake the work.

2.6.2 Longtom-5 Commissioning

The flowline or spools would be pre-commissioned and pressure tested prior to mobilisation, so that minimum offshore hydrostatic pressure testing is required (although a leak test would be required on completion of installation). Testing is normally performed by filling the flowlines with MEG or water and applying a pressure and then monitoring the pressure for indications of a leak. MEG is expected to be used for this and this would then be produced along with the Longtom-5 gas and processed within the onshore Orbost Gas Processing Plant, as such offshore discharges would be minimised.

If water is used it is generally dosed at a controlled rate with four types of chemicals:

- Biocide.
- Oxygen Scavenger.
- Dye.
- Corrosion inhibitor.

These chemicals would be reviewed for environmental acceptability and would be subject to the SGHE chemical selection process.

Biocide and oxygen scavenger in the line-fill and hydrotest water are required to protect the inner wall of the pipeline from oxidation and biological activity during pre-commissioning. The dye is used in the hydrotesting process so that any leaks could be visually detected. Corrosion inhibitor added to the hydrotest water inhibits corrosion.

Commissioning would commence once the well has been completed and after the hook-up. Commissioning confirms the integrity of the facilities and the state of readiness to operate safely. Commissioning would be subject to detailed commissioning procedures and these would need to be signed off and accepted prior to the introduction of hydrocarbons.

Commissioning of Longtom-5 would be carried out from the onshore Orbost Gas Processing Plant control room and may be monitored from a vessel.

2.7 Design Standards

Table 2-11 lists the key standards and testing requirements of the subsea wellheads and trees.

Further information on the design and standards can be found in the Longtom Pipeline Safety Case. The Pipeline Safety Case will be revised prior to the tie-in of Longtom-5 and the design will be subject to independent third-party validation as part of the revision process. The validation will confirm the appropriateness of the design codes and standards to ensure their implementation will result in a design that achieves ALARP.

Table 2-11 Wellhead and Tree standards

Code/Standard	Description
ISO9001 (2000)	Quality Management System requirements.
API Q1	Specification for quality programs for the petroleum, petrochemical and natural gas industry (seventh edition).
API Specification 6A	Wellhead equipment.
ASME Section IX	Weld procedures.
API 17D	Specifications for subsea wellhead and xmas tree equipment.
DNV RP B401	Cathodic protection design.
NAS 1638	Requirements of parts used in hydraulic systems (class 6).
API RP 17H	Remotely operated vehicle (ROV) interfaces for subsea equipment.
NACE MR0175/ISO 15156	Sulfide stress cracking resistant metallic material for oilfield equipment.
DNV 2.7.1	Offshore freight containers – design and certification.
AS 1666	Wire rope slings.
Testing requirement	Hydrotesting, gas testing and function testing.
Certification	Lloyds certified design verification package.

Table 2-12 lists the standards and codes relevant to the pipeline, umbilical and subsea structures and were drawn from the project Basis of Design codes and standards. Where no Australian Standard provides coverage, international codes and standards were used.

Table 2-12 Pipeline and umbilical codes and standards

Code/Standard	Description
API 17A	Recommended practice for the Design and Operation of Subsea Systems.
ISO 13628-5	Specification for Subsea Production Control Umbilicals.
API 17F	Specification for Subsea Production Control Systems.
API 17G	Recommended Practice for the Design and Operation of Completion/Workover Riser Systems.
API 17I	Installation Guidelines for Subsea Umbilicals.
AS/NZS 2885.4	Pipelines – Gas and liquid petroleum – Offshore submarine pipeline systems.
BS 4832	Specification for compatibility between elastomeric materials and hydraulic fluids.

PR-178-9731 (AGA)	Submarine Pipeline on-bottom Stability Analysis and Design Guidelines (Volume 1).
DNV-OS-F101	Submarine pipeline systems.
DNV RP B401	Cathodic Protection Design.
DNV RP E305	On-Bottom Stability Design of Submarine Pipelines.
DNV RP F105	Free Spanning Pipelines.
DNV RP F103	Cathodic Protection of Submarine Pipelines by Galvanic Anodes.
Table 2ISO/DIN 10474	Material Testing Certificates.
NACE 1638	Cleanliness Requirements for Parts Used in Hydraulic Systems.
SAE J517	Hydraulic Hoses.
SAE J343	Tests and Procedures for Hydraulic Hoses.

2.8 Asset Decommissioning

Whilst there are no immediate plans to decommission the Longtom facilities due to the requirement for production operations, in accordance with Section 572(2) of the OPGGS Act, SGHE commits to remove from the VIC/L29 title area all VIC/PL38 related structures, equipment and property that is neither used nor to be used in connection with the operations in which SGHE is or will be engaged and that are authorised by the licences, in accordance with future permissioning documents submitted by SGHE and accepted by NOPSEMA. In these future permissioning documents, SGHE may propose justified alternatives to complete removal where these are assessed as the preferred decommissioning option via a Comparative Assessment process that considers all risks and impacts. Until such time as final decommissioning options are determined, SGHE will ensure the appropriate maintenance of Longtom facilities so as not to preclude removal, consistent with Section 572(1) of the OPGGS Act.

2.8.1 Decommissioning Planning

SGHE have a high level scope, plan and cost estimate for the eventual plugging and abandonment of the two existing Longtom wells (Longtom Gas Project Decommissioning Plan LT-REG-PLN-0036). A well abandonment assessment, and proposed plug and abandonment schematics and high-level Basis of Design were developed by AGR in 2022. A decommissioning assessment for the pipeline and associated subsea equipment was prepared by Genesis in 2022.

End of Field Life (EOFL) is not expected to occur until 2032 at the earliest. The Longtom pipeline was installed in 2009 with a nominal 25-year design life, Longtom-3 was drilled in 2006 with a 25-year life and Longtom-4 in 2008 also with a 25-year life. The following table presents the earliest estimated abandonment and decommissioning timelines for the Longtom facilities. Note that these timings are indicative and are dependent on a number of factors, including:

- Timing of recommencement of operation from existing Longtom wells.

- Commencement of Longtom-5 drilling and tie-in.
- Production rates and reservoir performance.
- Potential to utilise Longtom assets for other reservoir developments or adjacent projects.
- Rig and vessel availability.
- Regulatory approvals.

Table 2-13 Indicative Decommissioning Plan

Asset	Scope	Estimated Earliest Timing	Notes
Longtom Field	Maintain Production Title	Ongoing	SGHE will maintain a production title for the restart of and continuing production operations.
Longtom Field	Maintain Pipeline Licence	Ongoing	SGHE will maintain a pipeline licence for the restart of and continuing production operations.
Longtom Field	Engineering, comparative studies and detailed planning	5 years prior to EOFL	Define decommissioning scope and commence detailed planning and regulatory approvals to support end of field life
Longtom 3	Plug and abandon production well	Within 3 years of EOFL	Well will be permanently abandoned using cement plugs, with casing cut off below the natural sea floor
Longtom 4	Plug and abandon production well	Within 3 years of EOFL	Well will be permanently abandoned using cement plugs, with casing cut off below the natural sea floor
Longtom 5	Plug and abandon production well	Within 3 years of EOFL	Note - not yet drilled. Well will be permanently abandoned using cement plugs, with casing cut off below the natural sea floor
Longtom 3, 4 and 5	Removal of trees and wellheads	Within 5 years of EOFL	
Longtom Pipeline and Jumpers	Decomissioning of pipeline and, jumpers	Within 5 years of EOFL	Pipeline and jumpers will be de-pressured, flushed and filled with inhibited sea water. This may occur during cessation of production or during decommissioning. Comparative assessments will be conducted to

			compare full removal and alternative solutions such as leave in situ. The final decommissioning option will be confirmed during the decommissioning planning stages and subject to regulatory approvals.
Longtom Umbilical and Flying Leads	Disconnection and removal of electrical and hydraulic flying leads. Decommissioning of umbilical.	Within 5 years of EOFL	Flying leads to be removed in conjunction with removal of trees. The umbilical will be flushed and filled with inhibited sea water. Comparative assessments will be conducted to compare full removal and alternative solutions such as leave in situ. The final decommissioning option will be confirmed during the decommissioning planning stages and subject to regulatory approvals.
Subsea Equipment/Structures	Disconnection and removal of • Longtom Pipeline End Manifold (PLEM) • Longtom-3 Umbilical Termination Assembly (UTA-2) • Longtom-3 Subsea Control Unit (SCU) • Longtom-4 Umbilical Termination Assembly (UTA-1) • Longtom-4 Subsea Control Module (SCM) • Longtom High Integrity Pressure Protection Skid (HIPPS) • Patricia Baleen Pipeline End Manifold (PB PLEM)	Within 5 years of EOFL	To be undertaken in conjunction with removal of trees and wellheads. Note- it has been assumed that the decommissioning of the Patricia Baleen and Longtom pipelines will occur at the same time.
Longtom Pipeline	Relinquish/surrender Pipeline Licence	Within 6 years of EOFL	Title surrendered in discussion with NOPTA and post decommissioning.
Longtom Field	Relinquish/surrender Production Licence.	Within 6 years of EOFL	Title surrendered in discussion with NOPTA and post decommissioning.

The activities and timelines in the above table are reviewed annually and the SGHE activities and plans in relation to field development and production included in the Annual Title Assessment Reports submitted to NOPTA. As these activities become nearer and fall within the timeline of the EP, the plans, processes, environmental impacts and specific controls associated with these activities will be further documented in an EP revision. That revision will include appropriate performance standards and measurement criteria for any new and/or changed controls to ensure risks continue to be managed to ALARP and an acceptable level.

3 Consultation

The SGHE HSEQC Policy includes a commitment to communicating openly with the community regarding SGHE activities. This section outlines how SGHE has worked and will continue to work to achieve this commitment.

SGHE has developed a good reputation as a responsible industry operator and has had active engagement with stakeholders, where a stakeholder is defined as:

'those who have an interest in a particular decision, either as individuals or representatives of a group. This includes people who influence a decision, or can influence it, as well as those affected by it' (MCMPR, 2005).

Stakeholders include coastal communities, fishing interests, conservation interests, First Nations groups, non-government organisations, and government agencies.

3.1 Regulatory Requirements

The OPGGS(E) Regulations require that the titleholder consult with 'relevant persons' in the preparation of an EP, where a 'relevant person' has the meaning given by Regulation 25(1) as follows:

a) *each Commonwealth, State or Northern Territory agency or authority to which the activities to be carried out under the environment plan may be relevant;*

b) *if the plan relates to activities in the offshore area of a State—the Department of the responsible State Minister;*

c) *if the plan relates to activities in the Principal Northern Territory offshore area—the Department of the responsible Northern Territory Minister;*

d) *a person or organisation whose functions, interests or activities may be affected by the activities to be carried out under the environment plan, or the revision of the environment plan;*

e) *any other person or organisation that the titleholder considers relevant.*

In carrying out the duty to consult with relevant persons the titleholder must:

a) give each 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;

b) allow a relevant person a reasonable period for the consultation; and

c) inform the relevant person that they may request information not be published.

To meet these requirements, SGHE has and will continue to undertake consultation with persons and organisations that operate or have an interest in the area where the Longtom Gas Project activities are undertaken.

Key learnings and consultation from previous SGHE campaigns and ongoing Longtom activities have also been considered for the current activities where relevant.

3.2 Consultation Objectives

The principal objectives of the project's consultation activities are to:

- Identify all relevant persons i.e. confirm existing relevant persons and identify whether there are additional relevant persons to those identified with regard to previously accepted activities for the Longtom Gas Project and previous consultation undertaken.
- Ensure relevant persons are informed about the project and its environmental and social impacts and risks.
- Provide timely information to relevant persons to ensure adequate time to consider the information and ask questions or raise issues of concern to them.
- Establish an open and transparent process for input.
- Capture concerns raised by relevant persons so that they may be assessed in the relevant regulatory documentation (such as this EP).
- Demonstrate to NOPSEMA that relevant persons have been consulted in line with the requirements of the OPGGS (E) Regulations.
- Provide for ongoing consultation that reflects the reasonable requirements of relevant persons and the activity schedule.

3.3 Consultation Methodology

An overview of SGHE's approach is outlined at Figure 3-1 and described in the following sections. The flowchart represents a summary of the key steps in the consultation approach and is used as a guide to help make decisions for each relevant person, however, consultation was tailored on a case-by-case basis to the needs and requests made by individual relevant persons and groups.

3.3.1 Scoping – Identification of Relevant Persons

SGHE has undertaken consultation activities in relation to the Longtom activities since the initial stages of development, or since they were acquired from the previous operator. SGHE has continued to consult in relation to its ongoing activities and built on the good working relationships already established. In doing so SGHE has developed a good understanding of issues and areas of interest of relevant persons.

Consultation from previous SGHE campaigns and ongoing activities informed SGHE's initial list of relevant persons. The approach to identifying relevant persons was recently broadened in response to recent applicable Case Law and NOPSEMA Guideline N-04750-GL2086 A900179 Consultation in the course of preparing an environment plan (2024).

The steps taken by SGHE include:

- reviewing the receptors identified in the existing environment section, persons or groups linked to those receptors, and their functions, interests and activities,
- reviewing existing relevant persons identified within the Longtom Consultation Log and reviewing previous offshore campaign consultation records,
- reviewing recently accepted Environment Plans in the Gippsland Basin area,
- reviewing Commonwealth and State fisheries jurisdictions and fishing effort in the region and/or using peak bodies SIV and SETFIA as conduits to, or representatives of, fisheries members,
- reviewing and acting upon NOPSEMA guideline N-04750-GL1887 Consultation with Commonwealth agencies with responsibilities in the Commonwealth marine area (2024),
- reviewing guidance and resources from State and Commonwealth government agencies,
- reviewing First Nations resources such as AIATSIS map of Indigenous Australia and State Government spatial data sets,
- reviewing and acting upon recommendations from existing identified relevant persons, and
- reviewing online search results

During the scoping exercise for this revision, it was identified that some stakeholders previously engaged are no longer relevant or no longer exist and they have been identified as such in the Longtom Consultation Log. Note that for this revision of the EP where there are no changes to the footprint of operations, there is considered to be no new impact or risk to any of the stakeholders.

Relevant persons identified and contacted for this activity are listed in Table 3-1.

Once each relevant person has been identified, a Consultation Level, either 1 or 2, is assigned. In assigning a Consultation Level, the following considerations are taken into account:

- the functions, interests and activities of the relevant person,
- whether or not their functions, interests and activities are impacted by the planned or unplanned activity,
- if any impact, the degree of that impact,
- relevant persons known to SGHE and previously recorded in the Longtom Consultation Log,
- relevant person’s known preferred methods of communication and any specific information needs,
- SGHE’s relationship with the relevant person e.g., when SGHE last engaged with them, on what topic and their level of interest, and
- if the relevant person can provide any information that will assist the design or management of the planned activities.

Consultation Level 1 is generally applied to relevant persons whose functions, interests or activities are located in, or in close proximity to, the operational area of the planned activity, or if the relevant person has indicated that this is the level of consultation they prefer. These relevant persons are anticipated to require consultation over an extended period e.g., prior to each IMR campaign. All other relevant persons are assigned Consultation Level 2.

SGHE notes that throughout the consultation process the assigned Consultation Level may be adjusted based on feedback received from the relevant person.

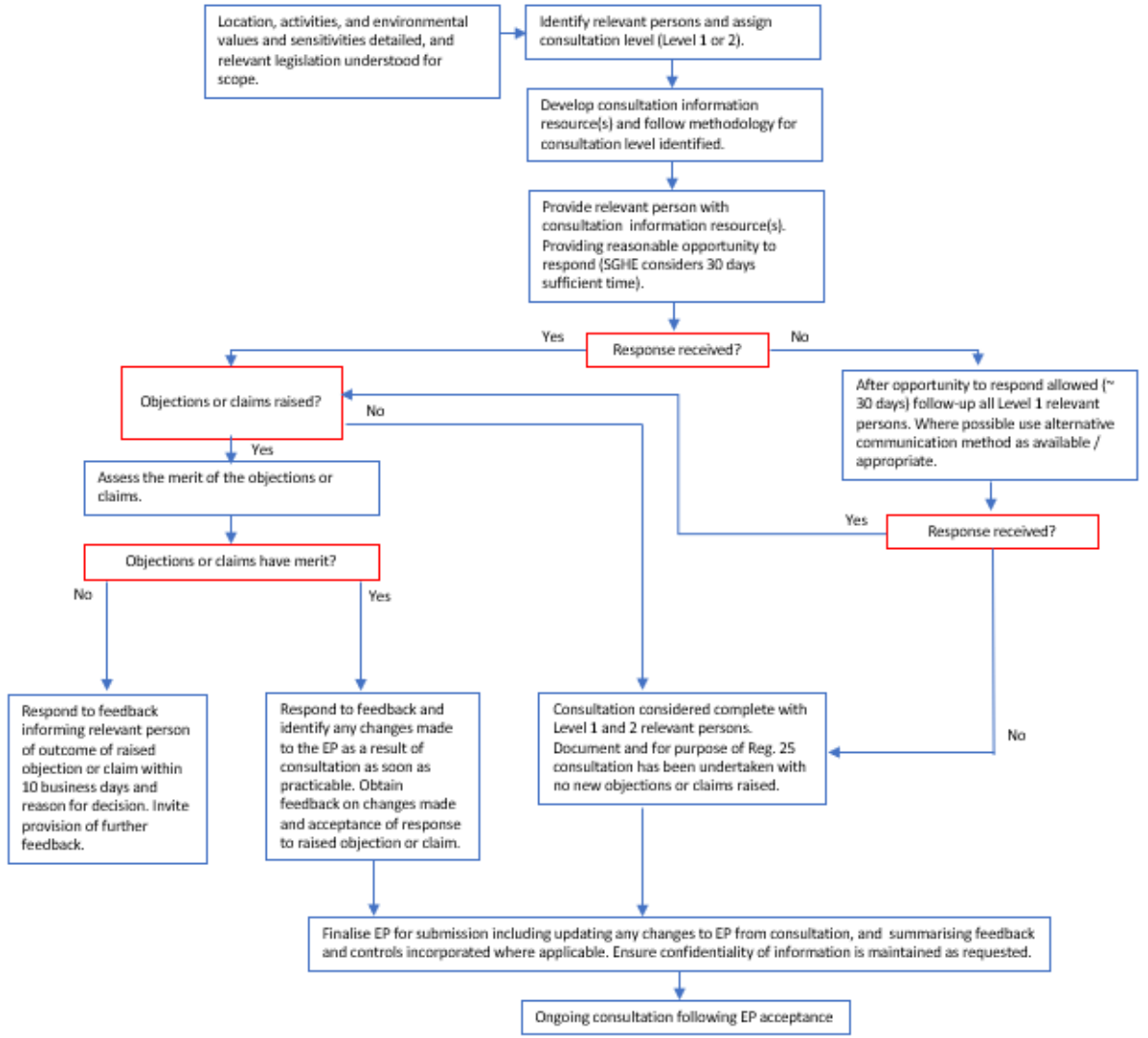


Figure 3-1 Approach to consultation

Table 3-1 Relevant persons identified

Relevant Person	Function, interest or activity	Consult. Level	Relevance
Each Commonwealth, State or Northern Territory agency or authority to which the activities to be carried out under the EP may be relevant – Regulation 25(1)(a)			
Agriculture Victoria (part of Department of Energy, Environment and Climate Action Victoria) – Biosecurity (marine pests)	Function as a state government department whose role is to support thriving, productive and sustainable communities, environments and industries.	L1	SGHE has applied its methodology and assessed the department as a Consultation Level 1 following previous consultation in relation to biosecurity management.
Australian Fisheries Management Authority (AFMA).	Function as a Commonwealth government agency responsible for management of Commonwealth commercial fisheries from 3-200 nm.	L1	Function is in the operating area of the planned activity. Operating area overlaps Commonwealth-managed fisheries. Via previous consultation, AFMA has recommended engagement with CFA as the peak fishing industry body for Commonwealth waters and that ABARES reports should be reviewed for fishery status. CFA is included in this table as a relevant person. Recent publications were used to determine which Commonwealth fisheries have fishing effort within the activity area (see Section 4.5.5). AFMA recommended engagement with the Tasmanian Seafood Industry Council, now Seafood Industry Tasmania (SIT). SIT has been included in this table as a relevant person.
Australian Hydrographic Office (AHO)	Function as a Commonwealth government agency responsible for publication of nautical charts and other information for safety of ships navigating in Australian waters (including Notices to Mariners).	L1	Function is in the operating area of the planned activity. Via previous consultation, AHO has requested information be provided no less than four weeks prior to commencement of any activity to allow for publication of Notices to Mariners.
Australian Maritime Safety Authority (AMSA).	Function as a Commonwealth government statutory authority responsible for maritime safety, protection of the marine environment including marine pollution and maritime aviation search and rescue.	L1	Function is in the operating area of the planned activity. Via previous consultation, AMSA has requested AMSA Joint Rescue Coordination Centre (JRCC) be contacted 24-48 hours before activity commences* to promulgate AUSCOAST warning. *AMSA JRCC will also be notified if the vessel moves out of the area that the broadcast is issued for.

Relevant Person	Function, interest or activity	Consult. Level	Relevance
Bega Valley Shire Council	Function as a New South Wales (NSW) government local council delivering services to community and issuing planning permits for land use and development. Has an interest in maintaining sustainable communities and business.	L2	Function is within the EMBA and their interest may be relevant in the event of an unplanned activity.
Department of Agriculture, Fisheries and Forestry (DAFF) –Agriculture and land (fisheries), Biosecurity and trade (marine pests)	Function as a Commonwealth government department whose role is to promote the biological, economic and social sustainability of Australian fisheries and manage marine pest biosecurity. DAFF has primary policy and regulatory responsibility for managing marine pest biosecurity within Australian waters through administering the *Biosecurity Act 2015*.	L1	Function is in the operating area of the planned activity.
Department of Climate Change, Energy, the Environment and Water (DCCEEW) –Underwater cultural heritage (UCH), Wetlands	Function as a Commonwealth government department whose role is to help Australia respond to climate change, manage water and energy resources, environment, parks and heritage. DCCEEW administers the *Underwater Cultural Heritage Act 2018* and regulates activities in relation to protected UCH within Australian waters including the Commonwealth marine area. This department is also the administrative authority in Australia for the Ramsar convention.	L2	Function is within the EMBA and their interest may be relevant in the event of an unplanned activity.
Department of Defence	Function as a Commonwealth government department for national defence. The East Sale Air Base is located in Gippsland and undertakes activities over Bass Strait.	L2	Activity is within the EMBA and their interest may be relevant in the event of an unplanned activity.
Department of Energy, Environment and Climate Action Victoria – Gippsland region	Function as a state government department whose role is to support thriving, productive and	L2	Function is within the EMBA and their interest may be relevant in the event of an unplanned activity.

Relevant Person	Function, interest or activity	Consult. Level	Relevance
	sustainable communities, environments and industries.		
Department of Transport and Planning Victoria	Function as a state government department with primary responsibility for maritime sourced pollution oil spills in Victorian waters. Function as the oil spill response control agency for Victorian state waters.	L1	Function is within the EMBA and their function may be relevant in the event of an unplanned activity. SGHE has applied its methodology and assessed the department as a Consultation Level 1 following previous consultation in relation to oil spill response preparedness.
Director of National Parks	Function as a Commonwealth entity responsible for the management of Commonwealth terrestrial and marine protected areas (including Australian Marine Parks).	L2	There are no Commonwealth terrestrial or marine protected areas in the operating area or EMBA. SGHE has applied its methodology and assessed the department as a Consultation Level 2 as their interest may be relevant in the event of an unplanned activity.
Department of Climate Change, Energy, the Environment and Water NSW – Environment and Heritage	Function as a department of the NSW state government responsible for the protection of the natural environment and heritage. The National Parks and Wildlife Services is part of Environment and Heritage.	L2	Function is within the EMBA and their interest may be relevant in the event of an unplanned activity.
Department of Primary Industries and Regional Development NSW – Fisheries and forestry	Function as a department of the NSW state government, responsible for the administration and development for fisheries and aquaculture in NSW. The Department also undertakes the day-to-day management of marine parks and aquatic reserves in NSW.	L2	Function is within the EMBA and their interest may be relevant in the event of an unplanned activity.
East Gippsland Shire Council	Function as a Victorian government local council delivering services to community and issuing planning permits for land use and development to the local government area. Has an interest in maintaining sustainable communities and business.	L2	Function is within the EMBA and their interest may be relevant in the event of an unplanned activity.

Relevant Person	Function, interest or activity	Consult. Level	Relevance
Environment Protection Authority Victoria	Function as Victoria's state environmental regulator and performs oil spill response support functions and conducts incident investigations.	L2	Function is within the EMBA and their function may be relevant in the event of an unplanned activity.
Gippsland Ports	Function as a Victorian statutory authority responsible for five Gippsland Ports, including Lakes Entrance, Port of Corner Inlet and Port Albert.	L2	Function is within the EMBA and their interest may be relevant in the event of an unplanned activity.
Parks Victoria	Function as a Victorian state Government agency that manages coastal marine parks and reserves, and coastal areas. Parks Victoria manages significant stretches of land along the Gippsland coastline and some maritime infrastructure in the Gippsland area (e.g., piers, jetties, berths and ports including Western Port). Support agency for oil spill response.	L2	Function is within the EMBA and their function may be relevant in the event of an unplanned activity.
Port Authority of NSW	Function as a NSW state government agency that manages the safe transit of vessels into and out of NSW's commercial ports including Port of Eden. It provides maritime expertise, informing the strategic development and operations within NSW's commercial ports and waterways.	L2	Function is within the EMBA and their interest may be relevant in the event of an unplanned activity.
Safe Transport Victoria – Maritime	Function as a Victorian state government department responsible for conducting audits of Victoria's ports and waterways and working with the entities that manage them to ensure they are safe for all waterway users.	L2	Function is within the EMBA and function may be relevant in the event of an unplanned activity.
Transport for NSW	Function as a NSW state government department responsible for NSW's maritime safety and management of transport on coastal waterways.	L2	Function is within the EMBA and their function may be relevant in the event of an unplanned activity.

Relevant Person	Function, interest or activity	Consult. Level	Relevance
	Function as the oil spill response control agency for NSW state waters.		
Victorian Fisheries Authority	Function as a Victorian state statutory authority to effectively manage Victoria's fisheries resources. This includes providing support during an emergency that involves cetacean entanglement, strandings and vessel strike; responding to pollution in waterways; respond to marine pest incursions; and preventing noxious aquatic species being brought into Victoria.	L2	EMBA overlaps Victorian-managed fisheries. Function is within the EMBA and their interest may be relevant in the event of an unplanned activity.
Wellington Shire Council	Function as a Victorian government local council delivering services to community and issuing planning permits for land use and development to the local government area. Has an interest in maintaining sustainable communities and business.	L2	Function is within the EMBA and their interest may be relevant in the event of an unplanned activity.
The Department of the responsible State Minister– Regulation 25(1)(b)			
Department of Energy, Environment and Climate Action Victoria – Earth Resources Regulation	Regulator of exploration, mining, quarrying, petroleum, recreational prospecting and other earth resource activities in Victoria	L2	Function is within the EMBA and their interest may be relevant in the event of an unplanned activity (potentially impacting state waters).

Relevant Person	Function, interest or activity	Consult. Level	Relevance
A person or organisation whose functions, interests or activities may be affected by the activities to be carried out under the EP – Regulation 25(1)(d)			
First Nations			
Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC)	Function as a Registered Aboriginal Party (RAP) that represents the Gunaikurnai people, the Traditional Owners of lands from West Gippsland near Warragul, east to the Snowy River, north to the Great Dividing Range and extending 200 m offshore. The Victorian *Aboriginal Heritage Act 2006* recognises RAPs as the primary guardians, keepers and knowledge holders of Aboriginal Cultural Heritage. As such, RAPs are well placed to advise on potential impacts and risks of Longtom activities and to advise on the existence of potential additional relevant persons whose functions, interests or activities may be impacted.	L2	Function is within the EMBA, and their interest may be relevant in the event of unplanned activity (potentially impacting Gunaikurnai seacountry). Note: Cooper Energy (now Amplitude Energy) was advised by GLaWAC that “GLaWAC management could act on behalf of its members for the purposes of consultation on the proposed activities offshore Gippsland” (Cooper Energy, 2024).
Bega Local Aboriginal Land Council	Function as a Local Aboriginal Land Council (LALC) including maintenance and enhancement of Aboriginal culture, identity and heritage (including the management of traditional sites and cultural materials). Under the *Aboriginal Land Rights Act, 1983*, the Board of a LALC has the function to direct and control the affairs of their LALC. As such the Board would determine the appropriate consultation on any matters affecting and of interest to the LALC.	L2	Activity may occur in the EMBA, and their interest may be relevant in the event of unplanned activity.
Eden Local Aboriginal Land Council	Function as a Local Aboriginal Land Council (LALC) including maintenance and enhancement of Aboriginal culture, identity and	L2	Activity may occur in the EMBA, and their interest may be relevant in the event of unplanned activity.

Relevant Person	Function, interest or activity	Consult. Level	Relevance
	heritage (including the management of traditional sites and cultural materials). Under the *Aboriginal Land Rights Act, 1983*, the Board of a LALC has the function to direct and control the affairs of their LALC. As such the Board would determine the appropriate consultation on any matters affecting and of interest to the LALC.		
Merrimans Local Aboriginal Land Council	Function as a Local Aboriginal Land Council (LALC) including maintenance and enhancement of Aboriginal culture, identity and heritage (including the management of traditional sites and cultural materials). Under the *Aboriginal Land Rights Act, 1983*, the Board of a LALC has the function to direct and control the affairs of their LALC. As such the Board would determine the appropriate consultation on any matters affecting and of interest to the LALC.	L2	Activity may occur in the EMBA, and their interest may be relevant in the event of unplanned activity.
NSW Aboriginal Land Council	Function as peak representative body in Aboriginal affairs constituted as a statutory corporation under the *Aboriginal Land Rights Act 1983*. Responsible for developing land rights among Aboriginal people in NSW through its network of 120 Local Aboriginal Land Councils.	L2	Activity may occur in the EMBA, and their interest may be relevant in the event of unplanned activity. Note: Cooper Energy (now Amplitude Energy) was advised by the NSWALC South Coast Zone Director "… that within the legislated boundaries, each LALC was independent, with its own CEO and Board. As such, the zone administration was not able to consult on the proposed activities within this EP, as each LALC would have its own independent views." (Cooper Energy, 2024). Emperor Energy similarly noted the advice that "each LALC will need to be contacted for consultation" (Emperor Energy, 2025).

Relevant Person	Function, interest or activity	Consult. Level	Relevance
Commercial Fisheries			
Abalone Council Victoria	Function as the peak body representing the interests of abalone divers, quota holders and processors in the Victorian wild harvest abalone fishery.	L2	Activity may occur in the EMBA and no impact from planned activity.
Australian Southern Bluefin Tuna Industry Association	Function as organisation representing the Australian Southern Bluefin Tuna Industry working to maintain a high level of quality and training.	L2	Activity may occur in the EMBA and no impact from planned activity.
Australian Wildcatch Fishing	Activities as business operating five fishing vessels in Gippsland (within the SESSF area) and supports a variety of other vessels, with the design and construction of fishing gear, crew placement, quota, licence management and associated administration.	L1	Activity may overlap the OA of the planned activity.
Commonwealth Fisheries Association	Function as peak industry body representing the interests of fishers operating in Commonwealth-managed fisheries and contributing to the formulation of effective and responsible fisheries policies.	L1	Function is in the operating area of the planned activity. Operating area overlaps Commonwealth-managed fisheries.
Victorian Sea Urchin Divers Association	Organisation representing the interests of Sea Urchin Divers.	L2	Currently commercial fishing is undertaken in Port Phillip Bay and the Eastern Zone however interaction with the fishery is not considered likely in the operating area. Activity may occur in the EMBA and their interest may be relevant in the event of an unplanned activity
Eastern Zone Abalone Industry Association	Organisation representing the interests of members of the Eastern Zone abalone industry to preserve and maintain the strong environmental stewardship of the resource.	L2	Activity may occur in the EMBA and their interest may be relevant in the event of an unplanned activity.

Relevant Person	Function, interest or activity	Consult. Level	Relevance
Lakes Entrance Fishermen's Co-operative (LEFCOL).	Activities as fishing co-operative representing the Interest of Lakes Entrance based commercial fishing vessels. Represents Lakes Entrance commercial fishing by providing a full-service unloading facility to the local fishing fleet. From here, fresh seafood is distributed to local shops.	L2	Activity is within the EMBA, and their interest may be relevant in the event of an unplanned activity.
Seafood Industry Tasmania (SIT) formerly Tasmanian Seafood Industry Council	Function as the representative peak body for the Tasmanian seafood industry.	L2	There is no overlap of Tasmanian-managed fisheries with the EMBA. SGHE has applied its methodology and assessed the organisation as a Consultation Level 2 as inclusion was recommended by AFMA and their interest may be relevant in the event of an unplanned activity.
Seafood Industry Victoria (SIV)	Function as the representative peak body for the Victorian seafood industry, from professional fishers through to wholesale, processors and retail.	L2	Function is within the EMBA, and their interest may be relevant in the event of an unplanned activity.
Small Pelagic Fishery Industry Association	Industry body representing interests of its Commonwealth-licensed members in the Small Pelagic Fishery.	L1	Activity overlaps the operating area of the planned activity. Consultation with Small Pelagic Fishery undertaken via SETFIA.
South East Trawl Fishing Industry Association (SETFIA).	Activities as incorporated association representing the interests of commercial fishers in the Commonwealth Trawl Sector of the Southern and Eastern Scalefish and Shark Fishery (SESSF). SETFIA supports consultation with members of the following fisheries: • South East Trawl Fishery • Gillnet Hook and Trap Fishery • Eastern Zone Rock Lobster Fishery • Central Zone Scallop Fishery • Small Pelagic Fishery.	L1	Activity overlaps the operating area of the planned activity. SGHE has a long-standing agreement in place with SETFIA to support SGHE's consultation.

Relevant Person	Function, interest or activity	Consult. Level	Relevance
Southern Squid Jig Fishery	Individual skippers managed by AFMA South East Management Advisory Committee.	L2	Although there is potential for overlap of fishing activity within the operating area the major landing ports are Portland and Queenscliff in western Victoria. Activity may occur in the EMBA and their interest may be relevant in the event of an unplanned activity. Consultation undertaken via Commonwealth Fisheries Association.
Southern Shark Industry Alliance	Industry body representing interests of its Commonwealth-licensed shark gillnet and shark hook members in the SESSF Gillnet Hook and Trap Sector.	L1	Activity may overlap the operating area of the planned activity.
Tuna Australia	Activities representing statutory fishing right owners, holders, fish processors and sellers, and associate members of the Eastern and Western Tuna and Billfish Fisheries.	L2	No overlap of fishing activity is expected within the operating area. Activity may occur in the EMBA and their interest may be relevant in the event of an unplanned activity.
Victorian Scallop Fishermen's Association.	Association representing the interests of scallop fishermen operating within Australia's south east. Members hold entitlement to operate within the Bass Strait Central Zone Scallop Fishery, the Victorian Scallop Fishery and the Tasmanian Scallop Fishery.	L2	Although there is potential for overlap of fishing activity with the operating area historically the area has not been subject to scallop fishing. Activity may occur in the EMBA and their interest may be relevant in the event of an unplanned activity.
NGOs			
Australian Conservation Foundation	Interest as an organisation working to solve the climate crisis and protect natural habitats.	L2	SGHE has applied its methodology and assessed person or organisation as Consultation Level 2 as their interest may be relevant.
Australian Marine Conservation Society	Interest as an organisation dedicated to protecting Australia's coasts and oceans.	L2	SGHE has applied its methodology and assessed person or organisation as Consultation Level 2 as their interest may be relevant.

Relevant Person	Function, interest or activity	Consult. Level	Relevance
Environment Victoria	Interest as an organisation campaigning for a safe climate, healthy rivers and sustainable living.	L2	SGHE has applied its methodology and assessed person or organisation as Consultation Level 2 as their interest may be relevant.
Friends of the Earth	Interest as an organisation working to protect and/or educate about the natural environment.	L2	SGHE has applied its methodology and assessed person or organisation as Consultation Level 2 as their interest may be relevant.
Greenpeace	Interest as an organisation whose campaigns include ending the oil age, whale protection and climate change.	L2	SGHE has applied its methodology and assessed person or organisation as Consultation Level 2 as their interest may be relevant.
Sea Shepherd Australia	Interest as an organisation whose focus is marine conservation to protect global oceans.	L2	SGHE has applied its methodology and assessed person or organisation as Consultation Level 2 as their interest may be relevant.
Surfrider Foundation Australia	Interest as organisation dedicated to the protection of Australia's waves and beaches through conservation, activism, research and education.	L2	SGHE has applied its methodology and assessed person or organisation as Consultation Level 2 as their interest may be relevant.
The Wilderness Society Victoria	Interest as an organisation committed to protecting Australian nature and wildlife. Campaigns include stopping the expansion of fossil fuel production.	L2	SGHE has applied its methodology and assessed person or organisation as Consultation Level 2 as their interest may be relevant.
Businesses			
Committee for Gippsland	Interest as independent group established to represent all sectors of business, industry and community views to collaboration on regional priorities to benefit Gippsland communities.	L2	SGHE has applied its methodology and assessed person or organisation as Consultation Level 2 as their interest may be relevant in the event of an unplanned activity.
Orbost Chamber of Commerce	Interest as an organisation which promotes and supports the growth of local business and communities in the Orbost region.	L2	SGHE has applied its methodology and assessed person or organisation as Consultation Level 2 as their interest may be relevant in the event of an unplanned activity.

Relevant Person	Function, interest or activity	Consult. Level	Relevance
Recreational Fishing			
Game Fishing Association of Victoria	Function as the governing body for Game Fishing in Victoria.	L2	Function is in the EMBA and their interest may be relevant in the event of unplanned activity.
Gippsland Lakes Fishing Club	Activities as a recreational fishing club based in Lakes Entrance.	L2	Activity may occur in the EMBA and their interest may be relevant in the event of unplanned activity.
Victorian Game Fishing Club	Activities as game fishing club.	L2	Activity may occur in the EMBA and their interest may be relevant in the event of unplanned activity.
VRFish	Function as the peak body representing recreational fishers in Victoria	L2	Function is in the EMBA and their interest may be relevant in the event of unplanned activity.
Energy Industry			
Amplitude Energy (formerly Cooper Energy)	Activities as oil and gas company with operations including eight licences offshore from Gippsland (including the Sole and Patricia Baleen (non-producing) wells) and the onshore Orbost Gas Processing Plant.	L1	Activity overlaps the operating area of the planned activity.
Emperor Energy	Interests as oil and gas company with licence offshore from Gippsland (VIC/P47), but currently no operational oil and gas developments.	L2	Emperor Energy has recently submitted an EP for a proposed exploration well (Judith-2) approximately 5 km east of the operating area. Activity may occur in the EMBA and no impact from planned activity.
Exxon Mobil	Activities as oil and gas company with multiple licences offshore from Gippsland.	L1	Activity is in the EMBA. SGHE has applied its methodology and assessed person or organisation as a Consultation Level 1 as planned activities (e.g., vessel movements to and from the operating area) may be relevant to their activities.

Relevant Person	Function, interest or activity	Consult. Level	Relevance
Greater Gippsland 2 OWP Project (Gippsland Dawn)	Interests as a company with a feasibility licence for an offshore wind farm project off the south coast of Gippsland.	L2	Activity may occur in the EMBA and no impact from planned activity.
Navigator North Project	Interests as a company with a feasibility licence for an offshore wind farm project off the south coast of Gippsland.	L2	Activity may occur in the EMBA and no impact from planned activity.
Any other person or organisation that the titleholder considers relevant - Regulation 25(1)(e).			
No relevant persons were classified under Regulation 25(1)(e), however in general persons or organisations who self-identified would be assigned to this category.			

3.3.1.1 Targeted and extended enquiry

SGHE undertook both targeted and passive methods to identify and consult with relevant persons. The targeted approach involved searching for relevant persons with search efforts focused on the Gippsland Basin area. This area encompasses the activities and therefore would include the persons more likely to be directly affected by those activities. This area also captures those parts of the EMBA that might be more significantly and more likely affected by a worst-case spill scenario, considering potential timing of shoreline impact and levels of hydrocarbons that could impact shorelines, and probability of impact in the unlikely event of a major spill.

Significant effort was made to contact relevant persons through multiple channels, with broad contact initiated in early May 2025 through introductory emails and provision of the updated consultation flyer (attached as Attachment V).

Effort to identify and contact persons or organisations who were distant from the activity, and therefore less likely to be impacted by the activity or an emergency was also generally less than those with the potential to be directly impacted by the activity. A non-response from those groups was reasonably construed to be an assessment of limited impact on their interests, and likely reflected the nature and scale of the activities under the EP. It was also considered that government departments and agencies, local government and large environmental Non-Government Organisations (NGOs) had mature administrative processes where it was reasonable to assume email accounts were monitored.

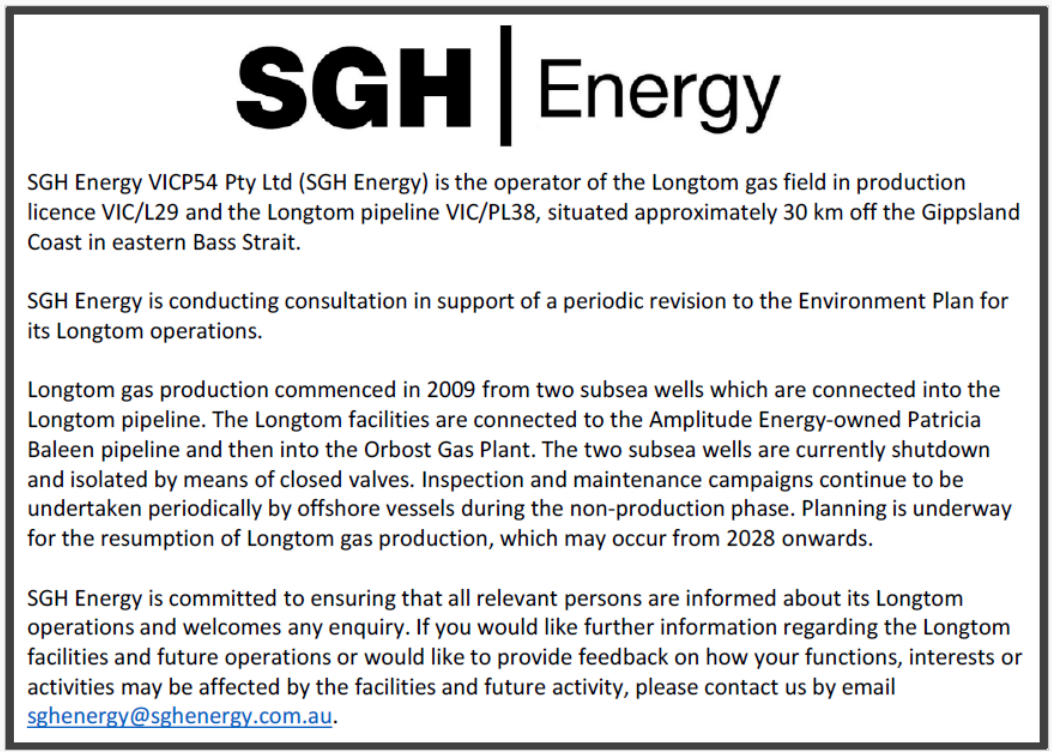
Multiple attempts were made to contact relevant persons categorised as Consultation Level 1.

Additional opportunity to consult via self-identification as a relevant person was provided through extended enquiry via media advertising. Advertising comprised regional media across Gippsland as summarised in Table 3-2. The advertisement is shown in Figure 3-2.

Table 3-2 Extended media enquiry

Media Organisation	Publication Dates
South Gippsland Sentinel Times	15 and 29 July 2025
Gippsland Times	16 and 30 July 2025
Lakes Post	16, 23 and 30 July 2025
Bairnsdale Advertiser	16, 23 and 30 July 2025
Snowy River Mail	16, 23 and 30 July 2025

Figure 3-2 Media advertisement



SGH | Energy

SGH Energy VICP54 Pty Ltd (SGH Energy) is the operator of the Longtom gas field in production licence VIC/L29 and the Longtom pipeline VIC/PL38, situated approximately 30 km off the Gippsland Coast in eastern Bass Strait.

SGH Energy is conducting consultation in support of a periodic revision to the Environment Plan for its Longtom operations.

Longtom gas production commenced in 2009 from two subsea wells which are connected into the Longtom pipeline. The Longtom facilities are connected to the Amplitude Energy-owned Patricia Baleen pipeline and then into the Orbost Gas Plant. The two subsea wells are currently shutdown and isolated by means of closed valves. Inspection and maintenance campaigns continue to be undertaken periodically by offshore vessels during the non-production phase. Planning is underway for the resumption of Longtom gas production, which may occur from 2028 onwards.

SGH Energy is committed to ensuring that all relevant persons are informed about its Longtom operations and welcomes any enquiry. If you would like further information regarding the Longtom facilities and future operations or would like to provide feedback on how your functions, interests or activities may be affected by the facilities and future activity, please contact us by email sghenergy@sghenergy.com.au.

3.3.2 Mechanisms for Consulting

The consultation process has, and will continue to, utilise a number of mechanisms to communicate with relevant persons, both formal and informal. These include:

- Emails and phone calls
- Information sheets (flyers)
- Face-to-face meetings (in-person or online).
- Project briefings – project briefings held with relevant persons at project milestone points.
- One-on-one technical discussions – one-on-one meetings with relevant persons for information dissemination and obtaining input into technical issues. Particularly relevant to oil spill response providers such as AMSA and DTP.
- Information releases – provision of information to the wider community, including:
  - Media releases (e.g., information updates in local and regional newspapers).
  - Information mail-outs (e.g., campaign information sheets and notifications).
- SMS alerts from SETFIA to the fishing industry.

3.3.2.1 Longtom Consultation Information

The Longtom Consultation Information consisted of an introductory email and an updated consultation flyer that was developed to inform relevant persons about this EP revision. The Longtom Consultation Information contained the following:

- information about the consultation process under the OPGGS(E) Regulations
- a link to NOPSEMA's consultation brochure
- advice that the relevant person could request that any sensitive information provided not be published
- a request that the information be provided to any other relevant persons that might be known the relevant person
- a description of nature, location and timing of the activities
- an overview of impacts and risks, and mitigation measures
- access to further information through a contact email address.

The information provided allowed for an informed assessment of the possible consequences of the activity on a relevant person's functions, interests or activities. There are no outstanding requests for further information.

Attachment 4 provides evidence of the provision of sufficient information for each of the identified relevant persons.

3.3.3 Period for Consultation

Consultation in relation to the offshore activities in Gippsland commenced in 2005 and has spanned decades. During the most recent consultation for this EP revision the list of relevant persons has been expanded, and individual persons and organisations afforded reasonable time to consult prior to submission of the EP.

For the nature and scale of the activity described in this EP, SGHE determined a minimum 30 days would provide a reasonable period for relevant persons to make an informed assessment of the possible consequences of the activity on the functions, interests or activities of the relevant person.

However, once two-way dialogue has been initiated, SGHE provides flexibility on timing based on complexity of issues raised and nature and resourcing of the relevant person. No identified relevant person requested additional time.

Attachment 4 provides evidence of the provision of sufficient time for each of the identified relevant persons.

3.3.4 Summary of Relevant Person Consultation

Attachment 4 provides a summary of the relevant person consultation undertaken as part of revising the EP and where applicable an assessment of any claims or objections. All relevant person consultation activities along with any actions required and commitments made, are recorded and tracked via the Longtom Consultation Log.

The Longtom Consultation Log was originally established for the drilling of Longtom-3 but has since been utilised to record consultation for drilling Longtom-4, the construction phase of the

project and the subsequent revisions of this operations EP. The log is a live document and will continue to be maintained for future activities.

The level of interest and response was in line with the nature and scale of the activities and quite low. It is considered likely that this is due to both familiarity with oil and gas operations in offshore Bass Strait and a view that SGHE is carrying on business as usual. No negative comments about the ongoing activities described were received.

3.4 Ongoing Consultation

SGHE will continue to consult with stakeholders to keep them informed of activities as necessary as part of Longtom operations. This will be done via ongoing consultation including commencement and cessation notifications and updates in relation to the any offshore campaigns including any future Longtom-5 tie-in activities via emails, phone calls, face-to-face meetings (in-person or virtually) and SMS alerts. Table 3-3 details the ongoing relevant person consultation and notification requirements. Relevant persons are able to contact SGHE directly via the SGH email address which is included on all outgoing consultation correspondence.

SGHE will ensure that the time allowed for consultation is sufficient to permit consideration of this information and provision of feedback.

Records of consultation will be maintained in the Longtom Consultation Log as described in Section 3.3.3.

3.4.1 Ongoing Identification of Relevant Persons

New or changes to relevant persons will be identified through ongoing consultation with stakeholders including peak industry bodies and the environment plan review process detailed in Section 8.9.3. Should new relevant persons be identified they will be contacted and provided information about the activity relevant to their functions, interests or activities. Any objections or claims raised will be managed as per Section 3.4.2.

3.4.2 Management of Objections and Claims

If any objections or claims are raised during ongoing consultation these will be substantiated via evidence such as publicly available credible information and/or scientific or fishing data. Where the objection or claim is substantiated it will be assessed as per the risk assessment process and controls applied where appropriate to manage impacts and risks to ALARP and an acceptable level. Stakeholders will be provided with feedback as to whether their objection or claim was substantiated, and if not why, and if it was substantiated - how it was assessed and what additional controls if any were put in place to manage the impact or risk to ALARP and an acceptable level. If the objection or claim triggers a revision of the EP this will be managed and communicated to the stakeholder.

Table 3-3 Ongoing relevant person consultation and notification requirements

Relevant Persons	Ongoing engagement	Timing
All (Consultation Levels 1 and 2)	Communication of information and addressing specific feedback, queries or concerns via email, phone or meetings.	As required or as agreed (and as recorded in the Longtom Consultation Log)
Consultation Level 1	Confirmation of contact details and communication of activity update for the up-coming year including both planned and un-planned campaigns that could take place.	Once a year to confirm contact details unless otherwise contacted
DEECA Biosecurity and agricultural services	Principal Officer Invasive Marine Species to be consulted on invasive marine species (IMS) risk assessment result if not Low.	4 weeks prior to an offshore campaign commencing
AHO	Vessel Contractor to issue notification of activity for publication of Notice to Mariners.	4 weeks prior to an offshore campaign commencing
AMSA JRCC	Vessel Contractor to issue notification of activity for publication of AusCoast warning.	48 – 24 hrs prior to an offshore campaign commencing
SETFIA, who will provide SMS to South East Fishing Fleet	Notification of offshore campaign sent out by SETFIA to their distribution list of South East fishers, details will include; • dates/duration, • vessel details and • co-ordinates of campaign.	10 days prior to an offshore campaign

4 Existing Environment

This section describes the physical, biological and socio-economic environment in the operating area and surrounds, including the values and sensitivities of the region.

As a result of significant oil and gas exploration and production in the eastern part of Bass Strait for several decades, significant physical and ecological data has been collected for the region, which has been referenced in this section (including Longtom-specific surveys). SGHE has determined that this information is comprehensive and indicative of the existing environment within the operating area and surrounds, and does not warrant the collection of additional field data to support this EP.

4.1 Environment that may be affected (EMBA)

SGHE has identified the environment that may be affected (EMBA) by the project. The EMBA has been used to describe the extent of the existing environment included in this section and is based on the oil spill modelling and the consequences/impact of a Longtom condensate or marine diesel oil (MDO) spill on the environment (see Section 6.5.4 for further details).

The EMBA has been defined by stochastically modelling two hydrocarbon spill scenarios[4], taking into account the NOPSEMA bulletin (A652993 dated April 2019) on oil spill modelling.

1. A 900 bbl/day subsea release of Longtom condensate over 90 days. This relates to an 81,000 bbl subsea release in the event of a loss of well control (blowout) where the release is halted after relief well drilling.
2. An 80m^3 MDO spill from an offshore vessel over 6 hours, plus ADIOS modelling of the duration/extent of a 220m^3 MDO spill.

From these two scenarios the EMBA is defined by the area which is the greater extent of:

- Surface hydrocarbons floating on the sea equal to or above 1 g/m^2
- Shoreline stranded hydrocarbon equal to or above 10 g/m^2
- Entrained oil with instantaneous concentrations of equal to or above100 ppb
- Dissolved hydrocarbons within the water column with instantaneous concentrations equal to or above 6 ppb hydrocarbon

[4] For details on modelling parameters and metocean data used, refer Section 6.5.4.4, Oil Spill Modelling

This area is represented as Zone 1 in the figure below.

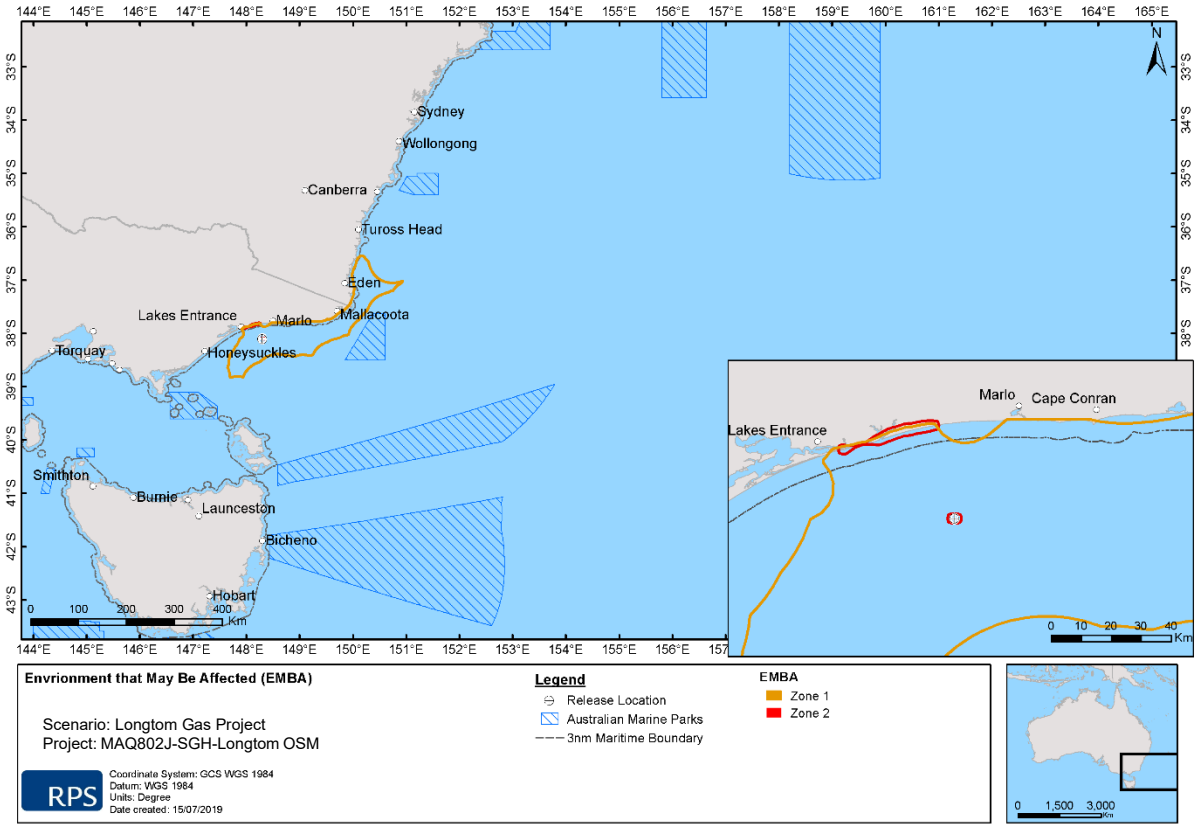


Figure 4-1 Indicative EMBA

Zone 2 represents the area potentially exposed to;

- Surface hydrocarbons floating on the sea equal to or above 10 g/m^2
- Shoreline stranded hydrocarbon equal to or above 100 g/m^2
- Entrained oil with concentrations equal to or above 100 ppb for at least 48hrs
- Dissolved hydrocarbons within the water column with concentrations equal to or above 6 ppb hydrocarbon for at least 48hrs

4.2 Physical Environment

4.2.1 Climate and Meteorology

4.2.1.1 Temperature

Lakes Entrance is the nearest meteorological station to the project area, located approximately 37 km northwest of the Longtom wells. Data collected from 1965 to 2006 indicates that the mean maximum temperature varies from 14.6°C in July to 23.8°C in February, with the mean minimum temperature being 6.0°C in July and 14.8°C in February (BoM, 2011).

4.2.1.2 Rainfall

Data collected from the Lakes Entrance meteorological station indicates that from 1965 to 2006 the average annual rainfall is 710 mm, with the highest total rainfall occurring in November and the lowest total rainfall occurring in February (BoM, 2011).

4.2.1.3 Winds

Bass Strait is located on the northern edge of the westerly wind belt known as the Roaring Forties. Wind direction and speed depend on the position and movement of synoptic systems.

High resolution wind data was sourced from the National Centre for Environmental Prediction (NCEP) Climate Forecast System Reanalysis (CFSR) from 2008 to 2012 (inclusive) (RPS, 2019). The CFSR wind model includes observations from many data sources; surface observations, upper-atmosphere air balloon observations, aircraft observations and satellite observations and is capable of accurately representing the interaction between the earth's oceans, lands and atmosphere. The gridded wind data output is available at ¼ of a degree resolution (approximately 33 km) and 1 hourly time intervals. Figure 4.2 illustrates the monthly wind rose distributions. Note that the atmospheric convention for defining wind direction, that is, the direction the wind blows from, is used.

The model wind data demonstrates that this region typically experiences strong wind all year round and although the monthly average wind speeds remain under 16 knots, winds can at times blow over 50 knots.

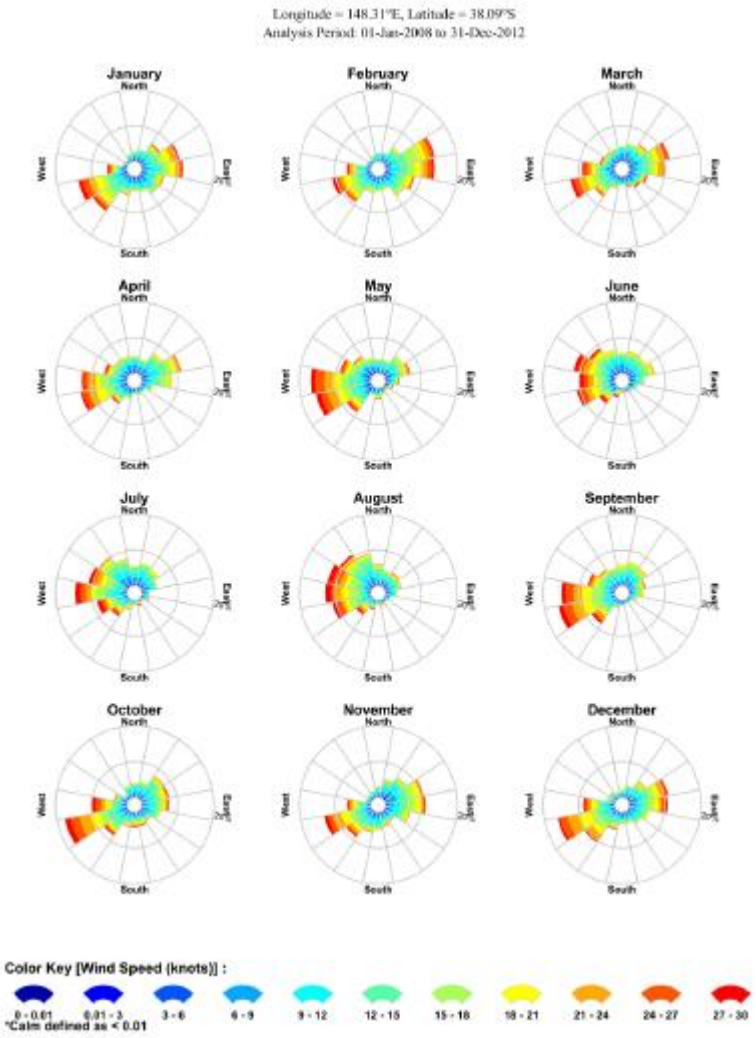


Figure 4-2 Monthly wind rose distributions

4.2.2 Bathymetry and Geology

4.2.2.1 Bathymetry

The seabed bathymetry across the Bass Strait region is highly variable. A steep inshore profile (0 to 20 m water depth) extends to a less steep inner (20-60 m water depth) and moderate profile (60 to 120 m water depth), concluding with a flat outer shelf plain (greater than120 m water depth). Seaward, the sediments are comprised primarily of sand (92%) and silt/clay (8%). They are composed of organic material, with a median of 64.5% calcium carbonate (GEMS, 2005).

The seabed in the operating area is essentially flat with gently undulating bathymetry with no steep slopes or bathymetric anomalies. The direction of shoaling along the pipeline route is towards the north-northeast (Fugro, 2005).

4.2.2.2 Seabed Geology

The following acoustic patterns and interpreted seabed types have been recognised in the operating area from the previous Longtom pipeline route survey (Fugro, 2005):

- Type A: Uniform moderate to highly reflective seabed – interpreted as fine to coarse sands with abundant shells and shell fragments, the major seabed type. Type A is present along the majority of the pipeline route.
- Type B: Moderately low reflectivity seabed – interpreted as fine to coarse sands with minor shells and shell fragments, present as relatively small, localised patches.

The main difference between seabed Types A and B is a decrease in shell concentration within Type B.

4.2.2.3 Shallow Geology

Surveys along the Longtom gas pipeline route show that overall, the shallow geology is characterised by a surface layer of fine to coarse unconsolidated sands with shells and shell fragments overlying more consolidated bedded sedimentary sequences (Fugro, 2005). This layer varies between 2.5 and 5.6 m in thickness, with an average of 2.5 m. This geology is indicative of a high-energy environment and is not conducive to forming more stable habitats where marine flora and fauna can establish itself.

4.2.3 Oceanography

The operating area is located within the Southeast Shelf Transition in the Commonwealth waters off Victoria within the South-east Marine Region (please refer to Figure 4-19). The South-east Marine Region extends from the far south coast of NSW, around Tasmania, west to Kangaroo Island in South Australia and covers approximately 1.63 million km^2 of temperate waters (DoE 2015a). The region is characterised for its low nutrient and primary productivity levels. Significant seafloor features within the region include the continental shelf, rocky reefs, sea-floor canyons and seamounts. These features often result in significant variation in water depth causing localised areas of relatively high productivity in comparison to the broader region (DoE 2015a).

The oceanography of the operating area is similar to that of the eastern Bass Strait region due to the absence of seafloor anomalies that may influence local oceanographic conditions.

4.2.3.1 Currents and Tides

Currents in eastern Bass Strait are tide and wind-driven. Tidal movements in eastern Bass Strait are predominantly in a northeast-southwest orientation, with a 12.4-hour cycle. The main tidal constituents in Bass Strait vary in phase by about 3 to 4 hours from east to west. Most of this phase change occurs between Lakes Entrance and Wilson's Promontory. Timing of the high tide, for example, can vary by up to 3 hours across this region (GEMS, 2005). Tides in the area from Lakes Entrance to Gabo Island are, however, relatively weak in comparison to other areas of Bass Strait.

Wind-driven currents in the project area may be caused by the direct influence of weather systems passing over the Strait (wind and pressure-driven currents) and the indirect effects of weather systems passing over the Great Australian Bight.

The Gippsland Basin is also influenced by the southern extremity of eddies belonging to the East Australian Current (EAC) that travels southward, carrying warm equatorial waters (Director of National Parks, 2013). The currents were shown to vary from month to month with current speeds of close to 1 m/s encountered in some areas (APASA, 2012). The EAC is up to 500 m deep and 100 km wide, and is strongest in summer when it can flow at up to 5 knots, and slower in winter flowing at 2-3 knots (Director of National Parks, 2013). The eddies rotate around warm central cores that persist for several months and can be up to 200 km across, forming more commonly off the southern NSW coast (Director of National Parks, 2013). Subsea currents of up to 1 knot or 0.5m/s can be experienced at the Longtom location but they are generally diurnal with a median bottom current of around 0.15m/s (Metocean Design Criteria 2006).

Waters of eastern Bass Strait are generally well mixed but surface warming sometimes causes weak stratification in calm summer conditions. Occasionally, mixing and interaction between varying water masses leads to variations in horizontal water temperature and temperature profiles.

4.2.3.2 Water Temperatures

Sea surface temperatures in the project area range from a minimum of 12.6°C in winter to a maximum of 18.4°C in summer (APASA, 2012).

4.2.3.3 Waves

Bass Strait is a high energy environment exposed to frequent storms and significant wave heights, with highest wave conditions generally associated with strong west to southwest winds caused by the eastward passage of low-pressure systems across Bass Strait.

4.2.3.4 Coastlines

The coastline within the EMBA, stretching east from Lakes Entrance to just west of the Cape Howe Marine National Park near the Victorian/NSW border is herein briefly described in terms of its physical attributes. These descriptions are based largely on the Oil Spill Response Atlas (OSRA) mapping and park notes (Parks Victoria, 2012). The description of the coastline is discussed moving in an easterly direction from Lakes Entrance. Further detail on marine sensitivities along the coastline is provided in Section 0.

The coastline from Lakes Entrance east to Point Hicks is dominated by largely uninterrupted wide sandy beaches with tall, vegetated sand dunes (the Ninety Mile Beach). Behind the sand dunes (east to Marlo) are a series of wetlands and lakes (Gippsland Lakes). These sandy beaches and dunes provide nesting sites for the shorebirds such as the Hooded Plover (*Thinorsis cucullatus*), which is found along the entire Victorian coastline.

Sub-tidal rocky reefs are found around Point Ricardo, Cape Conran, Pearl Point, Thurra River Estuary, Petrel Point, Rame Head, The Skerries (haul out site for approximately 11,500 Australian Fur Seals and 300 New Zealand Fur Seals) through to Little Rame Head, Quarry Head, Bastion Point and Gabo Island (near Cape Howe). Areas between these rocky reefs are dominated by sandy beaches. Gabo Island itself is dominated by sandy dunes and has Victoria's largest penguin colony (approximately 35,000 breeding penguins, about 50% of the state population) and is the haul out site for up to 50 Australian Fur Seals.

The Sydenham and Tamboon Inlet estuaries are only intermittently open (usually during spring flooding as a result of snow melts), with these estuaries providing nesting, roosting, and feeding sites for the colonies of several shorebird species.

Clinton Rocks is located immediately east of the Tamboon Inlet and is of state geological significance. Other intertidal rocky shorelines are present around the Thurra River estuary, east of the Mueller River estuary, Petrel Point and Sandpatch Point. Intertidal rocky habitats dominate the shoreline from Little Rame Head to Mallacoota Entrance. East of Mallacoota Entrance, the shoreline is once again dominated by sandy beaches.

The Giant Kelp Marine Forests of South East Australia ecological community is located on the coasts of Victoria, Tasmania and South Australia and is protected under the EPBC Act as a threatened ecological community. The ecological community is made up predominately of Giant Kelp (*Macrocystis pyrifera)* plants and reef associated fish and invertebrates that shelter, feed and reproduce within Giant Kelp Marine Forests (SEWPaC, 2012a).

The Giant Kelp Marine Forests of South East Australia ecological community is distinguished by Giant Kelp plants that have formed a forest with a closed or semi-closed canopy at or below the water's surface. Giant Kelp plants grow on rocky reefs at depths generally greater than eight metres below sea level and in water conditions that are cool, relatively nutrient rich and moderately calm (SEWPaC, 2012a).

4.3 Biological Environment

4.3.1 Benthic Communities

The seascape of the Gippsland Basin is composed of a series of massive sediment flats, interspersed with small patches of reef, bedrock and consolidated sediment (Wilson and Poore, 1987). The sediment flats, such as those present in the operating area, are generally devoid of emergent fauna but benthic invertebrates such as polychaetes, bivalves, molluscs and echinoderms are present (Wilson and Poore, 1987). There are also a number of burrowing species, which inhabit the soft seabed, including tubeworms, small crustaceans, nematodes, nemerteans and seapens (PBEES, 2001).

There is an absence of hard substrate or emergent reefs in the operating area. Surveys of benthic invertebrates in Bass Strait (Poore *et al*., 1985; Wilson and Poore, 1987) have shown:

- Crustaceans and polychaetes dominate the infaunal communities, many of which are unknown species.

- The high diversity of a wide range of invertebrate groups has been a recurrent observation of all surveys in Bass Strait and diversity is high compared with equivalent areas of the northern hemisphere.
- Many species are widely distributed across the Strait, suggesting heterogeneous sediments and many microhabitats.
- Some invertebrate groups are allied with fauna from Antarctic seas. In winter, when the east coast of Tasmania is supplied with water from the sub-Antarctic, the overlap with the East Australia current contributes to the high diversity.

Parry *et al*. (1990) also found high diversity and patchiness of benthos sampled off Lakes Entrance, where a total of 353 species of infauna was recorded. Crustaceans (53%), polychaetes (32%) and molluscs (9%) dominated sample results.

The relative homogeneity of seafloor sediment in the operating area and across all areas surveyed during the Longtom pipeline route selection process (Fugro, 2005) suggests that the diversity of benthic invertebrates in the operating area is low. There was no evidence of unusually high benthic invertebrate diversity in the sediment samples collected along the pipeline route. Sediment samples generally show a brown, coarse shelly sand, moderately well sorted with some shells.

4.3.2 Plankton

Plankton species, including both phytoplankton and zooplankton, are a key component in oceanic food chains. Phytoplankton are photosynthetic organisms that spend either part or all of their lifecycle drifting with the ocean currents. Phytoplankton biomass is greatest at the extremities of Bass Strait (particularly in the northeast) where water is shallow and nutrient levels are high.

Zooplankton are comprised of small protozoa, crustaceans (such as krill) and the eggs and larvae from larger animals. More than 170 species of zooplankton have been recorded in eastern and central Bass Strait, with copepods making up approximately half of the species encountered (Watson & Chaloupka, 1982). The high diversity may be due to considerable intermingling of distinctive water bodies and may be higher in eastern than in western Bass Strait. Although a high diversity of zooplankton has been recorded, Kimmerer and McKinnon (1984) found that seven dominant species make up 80% of individuals.

4.3.3 Fish and Shellfish

4.3.3.1 Commercial and Recreational Species

It is estimated that there are over 500 species of fish found in the waters of Bass Strait, including a number of species of importance to commercial and recreational fisheries (LCC, 1993). Representative species of recreational or commercial significance in Bass Strait are listed in Table 4-1.

Table 4-1 Major commercial fish species in eastern Bass Strait

Habitat	Typical Species
Pelagic	Pilchards (*Sardinops neopilchardus*) Anchovies (*Engraulis australis*) Sandy sprats (*Hyperlophus vittatus*)
Demersal and Benthic	200 species of bony fish including many of commercial value 50 species of sharks and rays, including gummy sharks (*Mustelus antarcticus*) and school sharks (*Galeorhinus galeus*)
Nearshore	School whiting (*Sillago bassensis*) Sand flathead (*Platycephalus bassensis*) Yank flathead (*P. speculator*) Jack mackerel (*Trachurus declivis*) Silver trevally (*Pseudocaranx dentex*) Blue warhoo (*Seriolella brama*) Yellowtail scad (*Trachurus novaezelandiae* and *Trachurus declivis*)
Mid Continental Shelf	Tiger flathead (*P. richardsoni*) John dory (*Zeus faber*) Jackass morwong (*Nemadactylus macropterus*) Common saw shark (*Pristiophorus cirratus*) and southern sawshark (*P. nudipinnis*) Snapper (*Pagrus auratus*)
Continental Slope	Blue grenadier (*Macruronus novaezelandii*) Spotted warehou (*Seriolella punctata*) and blue warehou (*S. brama*) Ling (*Genypterus blacoides*) Mirror dory (*Zenopsis nebulaosus*) Ocean perch (*Helicolenus* sp.) Blue eye trevalla (*Hyperglyphe antarctica*) Gemfish (*Rexea solandri*) Orange roughy (*Hoplosteths atlanticus*)

Species of shellfish of commercial and recreational importance include abalone, scallops, rock lobsters, prawns and squid. Abalone (*Haliotis rubra*) and Rock Lobster (*Jasus novaehollandiae*) occur mainly on rocky substrates, which are extensive on the coasts of Victoria, Tasmania and the Bass Strait islands. However, this habitat is absent in the operating area. Scallops (*Pecten fumatus*) occur on sandy substrates in a number of areas throughout Bass Strait.

Commercial fishing activity in the operating area and surrounds targeting the above species is discussed in Section 4.5.5.

4.3.3.2 Listed Species

Fish species that may occur in the EMBA that are listed as threatened under the EPBC Act are the Australian Grayling (*Prototroctes maraena*) and the Black Rockcod (*Epinephelus*

daemelii), both of which are listed as vulnerable. The remaining listed species that may occur in the EMBA are from the family signathidae (pipefish, seahorses and dragonfish). Table 4-2 identifies all listed fish species that may occur in the EMBA. A list of approved conservation advice and/or recovery plans for listed species, where they exist, with key threats relevant to petroleum activities, is shown in Table 4-3.

Table 4-2 EPBC Act listed fish potentially occurring in the EMBA

Scientific Name	Common Name	Threatened Species	Migratory Species	Marine Species	Conservation Advice / Recovery Plan	Type of Presence
Epinephelus daemelii	Black Rockcod	V			1	MO
Acentronura tentaculata	Shortpouch Pygmy Pipehorse			✓		MO
Cosmocampus howensis	Lord Howe Pipefish			✓		MO
Heraldia nocturna	Upside-down Pipefish			✓		MO
Hippocampus abdominalis	Big-belly Seahorse			✓		MO
Hippocampus breviceps	Short-head Seahorse			✓		MO
Hippocampus minotaur	Bullneck Seahorse			✓		MO
Histiogamphelus briggsii	Briggs' Crested Pipefish			✓		MO
Histiogamphelus cristatus	Rhino Pipefish			✓		MO
Hypselognathus rostratus	Knifesnout pipefish			✓		MO
Kaupus costatus	Deep-bodied Pipefish			✓		MO
Kimblaeus bassensis	Trawl Pipefish			✓		MO
Leptoichthys fistularius	Brushtail Pipefish			✓		MO
Lissocampus runa	Javelin Pipefish			✓		MO
Maroubra perserrata	Sawtooth Pipefish			✓		MO
Mitotichthys semistriatus	Halfbanded Pipefish			✓		MO
Mitotichthys tuckeri	Tucker's Pipefish			✓		MO
Notiocampus ruber	Red Pipefish			✓		MO
Phyllopteryx taeniolatus	Weedy Seadragon			✓		MO
Prototroctes maraena	Australian Grayling	V			2	KO
Solegnathus robustus	Robust Spiny Pipehorse			✓		MO
Solegnathus spinosissimus	Australian Spiny Pipehorse			✓		MO
Solenostomus cyanopterus	Robust Ghostpipefish			✓		MO
Stigmatopora argus	Spotted Pipefish			✓		MO
Stigmatopora nigra	Widebody Pipefish			✓		MO
Stipecampus cristatus	Ringback Pipefish			✓		MO

Scientific Name	Common Name	Threatened Species	Migratory Species	Marine Species	Conservation Advice / Recovery Plan	Type of Presence
Syngnathoides biaculeatus	Double-ended Pipehorse			✓		MO
Urocampus carinirostris	Hairy Pipefish			✓		MO
Vanacampus margaritifer	Mother-of-pearl Pipefish			✓		MO
Vanacampus phillipi	Port Phillip Pipefish			✓		MO
Vanacampus poecilolaemus	Australian Longsnout Pipefish			✓		MO

Threatened Species:
V Vulnerable

Type of Presence:
MO Species or species habitat may occur within area
KO Species or species habitat known to occur within area

Table 4-3 Conservation advice for threatened fish species and key threats potentially relevant to petroleum activities

Common Name	Conservation Advice or Recovery Plan		Key Threats potentially relevant to petroleum activities
Black Rockcod	1	Approved Conservation Advice for *Epinephelus daemelii* (black cod) (SEWPaC, 2012c)	None Identified
Australian Grayling	2	National Recovery Plan for the Australian Grayling *Prototroctes maraena*, 2008 (DSE, 2008)	None identified

The Australian Grayling, listed as 'vulnerable' under the EPBC Act, is a dark brown to olive-green fish growing to 19 cm. In Victoria, this species has been most frequently collected in the Tambo, Barwon, Mitchell and Tarwin river systems. It occurs widely in Tasmania and is known from the northern, eastern and southern coastal river drainages. The Australian Grayling spends most of its life in freshwater (including spawning), migrating between freshwater streams and the ocean, and as such it is generally accepted to be a diadromous (migratory between fresh and salt waters) species and not anadromous (migrating from saltwater to freshwater to spawn) (DSE, 2008). Part of the larval and/or juvenile stages are spent in coastal seas, where they remain for about six months before moving back to freshwater where they spend the rest of their lives. The Australian Graylings is generally short-lived, with most fish dying after their second year. Threats to the species are related mostly to impacts to its freshwater habitat rather than offshore habitat, including barriers to movement, river regulation and declining water quality.

The Black Rockcod, also listed as vulnerable, is a dark grey-black or blotched black and white cod species. It can grow to 200 cm in length, although most recent sightings of the species were 40 to 80 cm in length. The Black Rockcod generally inhabits near-shore rocky and offshore coral reefs and is distributed along inshore areas of the NSW coastline. Its entire range includes warm temperate and subtropical waters and therefore may be found in southern NSW however recordings in Victoria are rare. There is no known critical habitat for

this species in or around the operating area or the Gippsland Basin in general. Targeted fishing of the species is banned and the main threat is bycatch (SEWPaC, 2012c).

Macro-algal (seaweed) habitat in shallow waters provides the key habitat for most species of signathids (pipefishes, seahorses and seadragons). Kelp species such as *Macrocystis angustifolia* and *Eklonia radiata* and the seagrass *Heterozostera tasmanica* are the three most common species that provide essential resources for the signathids (of which 30 species are listed as possibly occurring within the EMBA). Generally, signathid species are associated with this vegetation that grows in sheltered to moderately exposed reef areas at a range of depths 0 to 50 m depending on the species (Edgar, 1997), but usually at shallow depths of between 5 to 25 m. The lack of suitable habitat in the operating area makes it unlikely that signathid species occur here.

4.3.4 Sharks and Rays

A number of chondrichthyans (sharks and rays) have been known to inhabit the Gippsland Basin. These include the Gummy Shark (*Mustelus antarcticus*), Port Jackson Shark (*Heterodontus portusjacksoni*), School Shark (*Galeorthchus milii*), White-spotted Spurdog (*Squalus acanthias*), Piked Spurdog (*Squalus megalops*), Common Sawshark (*Pristiophorus cirratus*), Draughtboard Shark (*Cephaloscyllium laticeps*), Southern Sawshark (*Pristiophorus nudipinnis*), Gulf Catshark (*Asymbolus vincenti*), Rusty Catshark (*Parascyllium ferrugineum*), Southern Eagle Ray (*Myliobatis australis*), Broadnose Sevengill Shark (*Notorynchus cepedianus*), Varied Catshark (*Parascyllium variolatum*) and the Australian Angel shark (*Squatina australis*) (Walker *et al*., 2001).

Shark species that may occur in the EMBA and that are listed as threatened under the EPBC Act are shown in Table 4-4 and include the Great White Shark (*Carcharodon carcharias*) (listed as vulnerable), the Whale Shark (*Rhincodon typus*) (listed as vulnerable) and the Grey Nurse Shark (*Carcharis Taurus – east coast population*) (listed as critically endangered). These three species are briefly discussed below on the basis that they are known to migrate through eastern Bass Strait.

The Grey Nurse Shark has been recorded from southern Queensland and around southeast Australia (NSW coast). The species is uncommon in Victorian, South Australian and Tasmanian waters. The Grey Nurse Sharks are known to migrate up and down the east coast and are known to aggregate according to sex, with females predominately occurring off central NSW while males predominate in southern Queensland waters. Biologically important areas for migration are known to occur on the NSW coast as far south as Eden. Grey Nurse Sharks prefer warm temperatures and occur either alone or in small to medium sized groups.

The Great White Shark is normally found in inshore waters around the areas of rocky reefs and seal colonies, such as Wilsons Promontory. Biologically important areas for juveniles are found in coastal waters of Gippsland in areas off Ninety Mile Beach, west of the operating area, and pupping grounds are likely to be frequented between the months of December and

June (Holliday, 2003). The distribution of this species extends over the operating area and through the EMBA.

Whale Sharks are oceanic and cosmopolitan in their distribution, generally found in warmer oceanic waters (where temperatures range from 21 to 25°C) and mainly in waters off the Northern Territory, Queensland and northern Western Australia. They are known to aggregate in the reef front waters adjacent to the Ningaloo Reef during the autumn months (mid-March through to early-June) (Colman, 1997). This behaviour is only known to occur in a few other places in the world. Whale Sharks are not known to aggregate in or near Bass Strait. However, there have been a few isolated reports of immature male Whale Sharks from the southeast coast of Australia from New South Wales, Victoria, South Australia and the western fringe of the Great Australian Bight (Last & Stevens, 1994). There is no critical habitat for this species in or around the operating area or the Gippsland Basin in general.

Two other species of shark were recorded as potentially migrating within the EMBA according to the EPBC Act Online Protected Matters Search Tool – the Shortfin Mako (*Isurus oxyrinchus*) and the Porbeagle/Mackerel Shark (*Lamna nasus*). There is no critical habitat for these species in or around the operating area or the Gippsland Basin in general.

Table 4-5 lists the approved conservation advice and/or recovery plans for listed species, where they exist, with key threats potentially relevant to petroleum activities.

Table 4-4 EPBC Act listed sharks potentially occurring in the EMBA

Scientific Name	Common Name	Threatened Species	Migratory Species	Conservation Advice / Recovery Plan	BIA	Type of Presence
Carcharhinus longimanus	Oceanic Whitetip Shark		✓			MO
Carcharias Taurus (east coast population)	Grey Nurse Shark (east coast population)	CE	✓	3	f, m	FLO
Carcharodon carcharias	Great White Shark	V	✓	4	b, f	BKO
Isurus oxyrinchus	Shortfin Mako		✓			LO
Lamna nasus	Porbeagle		✓			LO
Rhincodon typus	Whale Shark	V	✓	5		MO
Threatened Species: *V Vulnerable* *CE Critically Endangered* *Biologically Important Areas:* *b Breeding* *m Migration* *f Foraging*	*Type of Presence:* *MO Species or species habitat may occur within the area* *LO Species or species habitat likely to occur within the area* *FLO Feeding, foraging or related behaviour likely to occur within the area* *BKO Breeding known to occur within the area*					

Table 4-5 Conservation advice for threatened shark species and Key Threats

Common Name	Conservation Advice or Recovery Plan		Key Threats (potentially relevant to petroleum activities)
Grey Nurse Shark	3	Recovery Plan for the Grey Nurse Shark (*Carcharias Taurus*) (DoE, 2014a)	None identified
Great White Shark	4	Recovery Plan for the White Shark (*Carcharodon carcharias*) (SEWPaC, 2013a)	None identified
Whale Shark	5	Approved Conservation Advice for *Rhincodon typus* (Whale Shark) (TSSC, 2015a)	Vessel strike Habitat disruption from mineral exploration, production and transportation, Marine debris

4.3.5 Whales

A number of whale species occur in Bass Strait, most being seasonal visitors during migration. There are 25 whale species that may inhabit the waters within the EMBA according to the EPBC Act Online Protected Matters Search Tool, these are listed in Table 4-6. Table 4-7 lists the approved conservation advice and/or recovery plans for listed whale species, where they exist, with key threats potentially relevant to petroleum activities.

Four of these species are listed as threatened under the EPBC Act – the Blue Whale (*Balaenoptera musculus*) (listed as endangered), Southern Right Whale (*Eubalaena australis*) (listed as endangered), Sei Whale (*Balaenoptera borealis*) (listed as vulnerable) and Fin Whale (*Balaenoptera physalus)* (listed as vulnerable). These species are briefly discussed below on the basis that they are known to migrate through the Gippsland Basin. While they are known to migrate through the Gippsland Basin, there is little or no potential for interactions between Longtom activities and whales, other than during the short periods of offshore vessel-supported IMR. as all facilities (i.e., pipeline, umbilical and subsea trees) are situated on the sea floor. The drilling, installation and tie-in of future Longtom-5 would be the subject of a separate EP submission. As such, the potential presence of these whales in the area is considered in Section 6 insofar as it relates to vessel-supported IMR activities.

Table 4-6 EPBC Act listed whales potentially occurring in the EMBA

Scientific Name	Common Name	Threatened Species	Migratory Species	Marine Species	Conservation Advice / Recovery Plan	BIA	Type of Presence
Balaenoptera acutorostrata	Minke Whale			✓			MO
Balaenoptera bonaerensis	Antarctic Minke Whale		✓	✓			LO
Balaenoptera borealis	Sei Whale	V	✓	✓	6		FLO
Balaenoptera edeni	Bryde's Whale		✓	✓			MO
Balaenoptera musculus	Blue Whale	E	✓	✓	7	f*	LO
Balaenoptera physalus	Fin Whale	V	✓	✓	8		FLO
Berardius arnuxii	Arnoux's Beaked Whale			✓			MO
Caperea marginata	Pygmy Right Whale		✓	✓			FLO
Eubalaena australis	Southern Right Whale	E	✓	✓	9	m	KO
Globicephala macrorhynchus	Short-finned Pilot Whale			✓			MO
Globicephala melas	Long-finned Pilot Whale			✓			MO
Hyperoodon planifrons	Southern Bottlenose Whale			✓			MO
Kogia breviceps	Pygmy Sperm Whale			✓			MO
Kogia simus	Dwarf Sperm Whale			✓			MO
Megaptera novaeangliae	Humpback Whale		✓	✓	10	m	FKO
Mesoplodon bowdoini	Andrew's Beaked Whale			✓			MO
Mesoplodon densirostris	Blainville's Beaked Whale			✓			MO
Mesoplodon ginkgodens	Gingko-toothed Beaked Whale			✓			MO
Mesoplodon grayi	Gray's Beaked Whale			✓			MO
Mesoplodon hectori	Hector's Beaked Whale			✓			MO
Mesoplodon layardii	Strap-toothed Beaked Whale			✓			MO
Mesoplodon mirus	True's Beaked Whale			✓			MO
Physeter microcephalus	Sperm Whale		✓	✓			MO

Scientific Name	Common Name	Threatened Species	Migratory Species	Marine Species	Conservation Advice / Recovery Plan	BIA	Type of Presence
Tasmacetus shepherdi	Shepherd's Beaked Whale			✓			MO
Ziphius cavirostris	Cuvier's Beaked Whale			✓			MO

Threatened Species: *V Vulnerable* *E Endangered* *Biologically Important Areas:* *f Foraging* *m Migration* ** BIA for sub species*		*Type of Presence*: *MO Species or species habitat may occur within the area* *LO Species or species habitat likely to occur within the area* *KO Species or species habitat known to occur within the area* *FKO Foraging, feeding or related behaviour known to occur within area* *FLO Foraging, feeding or related behaviour likely to occur within area*

Table 4-7 Conservation advice for threatened whale species and Key Threats

Common Name	Conservation Advice or Recovery Plan		Key Threats (potentially relevant to petroleum activities)
Sei Whale	6	Approved Conservation Advice for *Balaenoptera borealis* (Sei Whale) (TSSC, 2015b)	Anthropogenic noise and acoustic disturbance Habitat degradation including pollution Pollution (persistent toxic pollutants) Vessel strike
Blue Whale	7	Conservation Management Plan for the Blue Whale, 2015-2025 (DoE, 2015b)	Noise interference Habitat modification from marine debris or chemical discharge Vessel strike
Fin Whale	8	Approved Conservation Advice for Balaenoptera physalus (Fin Whale) (TSSC, 2015c)	Anthropogenic noise and acoustic disturbance Pollution (persistent toxic pollutants) Vessel strike
Southern Right Whale	9	National Recovery Plan for the Southern Right Whale (*Eubalaena australis*) (DCCEEW, 2024a)	Entanglement Habitat loss or degradation Vessel strike Anthropogenic underwater noise
Humpback Whale (removed from Threatened Species list as of 26 February 2022).	10	Listing Advice for *Megaptera novaeangliae* (Humpback Whale) in effect from 26 February 2022. There is no longer an approved conservation advice for this species.	Noise interference Habitat degradation Entanglement Vessel disturbance and strike

Blue Whales are likely to be present around November to December as a result of migration in the vicinity of the operating area. They have extensive migration patterns that are not

known to follow any particular coastlines or oceanographic features (Bannister *et al*., 1996). The only known area of significance to the Blue Whale in south eastern Australian waters is the feeding area around the Bonney Upwelling and adjacent upwelling areas of South Australia and Victoria (DEH 2005a) shown as an 'annual high use area' on the southern continental shelf in Figure 4-3. While eastern Bass Strait is not known as a feeding or aggregation area for this mammal species, in the past, sightings of Blue Whales have occurred in southeast Victoria from February to March, but are reasonably rare in the Gippsland Basin (Bannister *et al*., 1996). There are two subspecies of Blue Whale that occur within Australian waters: Antarctic Blue Whale, and the Pygmy Blue Whale. The majority of Bass Strait and the coastal waters of Tasmania have been identified as possible foraging areas (BIA) for the Pygmy Blue Whale subspecies (DoE, 2015b). The relatively shallow water (50-55 m) of the operating area may reduce the potential for Blue Whales to be present, as Blue Whales are known to feed on seasonally abundant krill along the shelf break in western Victoria in depths around 100 m (Gill, 2002).

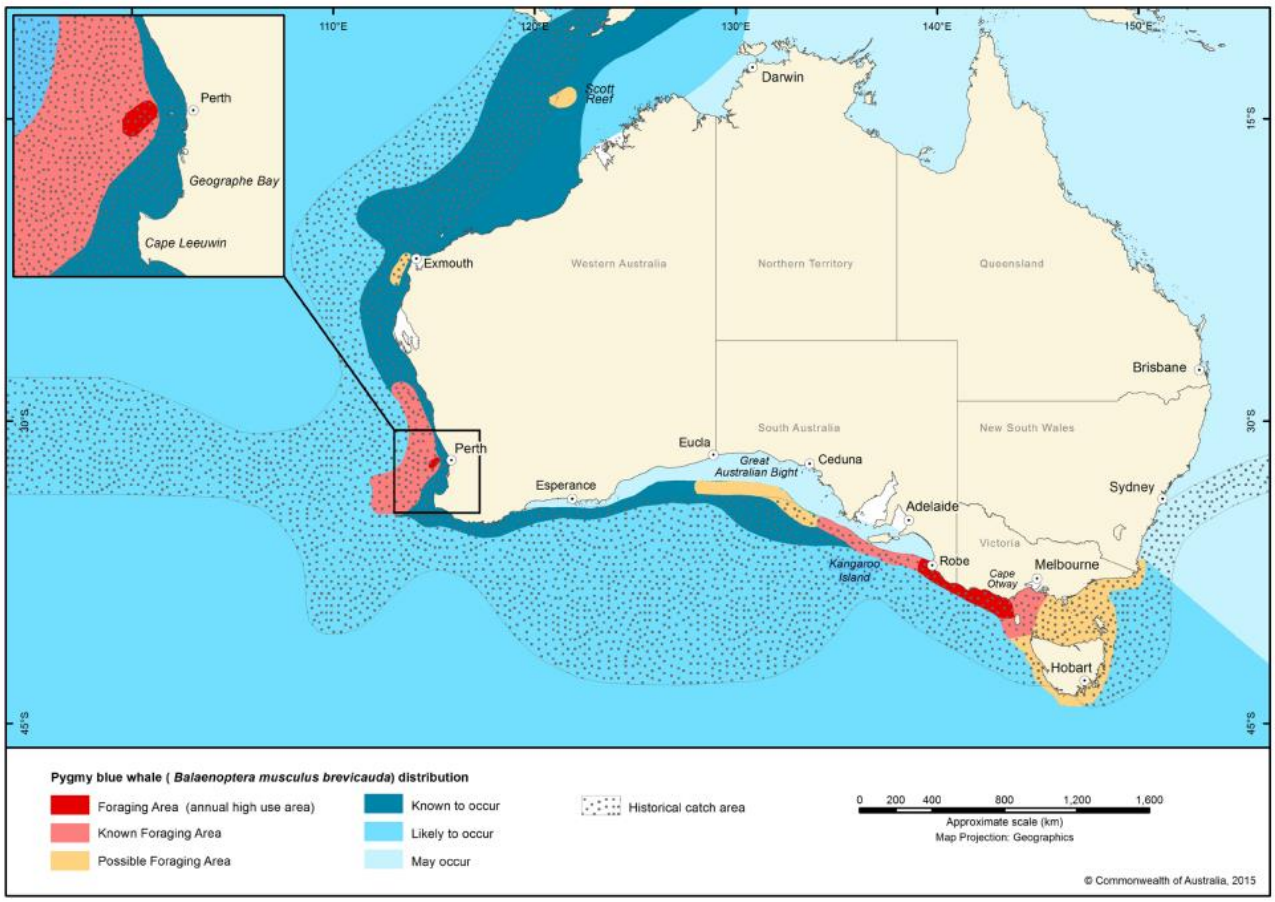


Figure 4-3 Pygmy Blue Whale distribution and foraging areas (DoE, 2015b)

Southern Right Whales may occur within Australian waters between April and November each year. There are two populations of the Southern Right Whale within Australian waters (eastern and western) (DCCEEW, 2024a).

The seasonal presence of the Southern Right Whale in Australia correlates with breeding behaviours. The peak abundance period occurs between May and October each year when the Southern Right Whale will predominately occur in shallow (< 10 m) coastal waters within 1 km of the coast (Charlton, *et al*., 2019, Smith, *et al*., 2019 cited in DCCEEW, 2024a). Southern Right Whales demonstrate strong fidelity to feeding and breeding areas (Kenney 2018 cited in DCCEEW, 2024a). Feeding has not been observed in coastal Australian waters although other parts of the Australian exclusive economic zone may be used for feeding (Torres *et al*. 2013 cited in DCCEEW, 2024a). A counter-clockwise migration between foraging and breeding areas has been suggested whereby movements from Australian coastal waters include directly southern and western migration pathways (DCCEEW, 2024a). Migration areas include the movement of whales along the coast (highlighting the importance of coastal habitat connectivity) and the movement from offshore areas, including foraging areas, to nearshore and coastal areas (DCCEEW, 2024a). Along with the reproductive biologically important area (BIA), a migration BIA has been defined for the Southern Right Whale in Australian waters (Figure 4-4). Small but growing numbers of calving and non-calving whales have been observed to regularly aggregate for short periods (days to weeks) along the Gippsland coast in Victoria (Stamation *et al*. 2020 cited in DCCEEW, 2024a). Although sighted along the Gippsland coast during migration, calving females are most often found off western Victoria near Warrnambool.

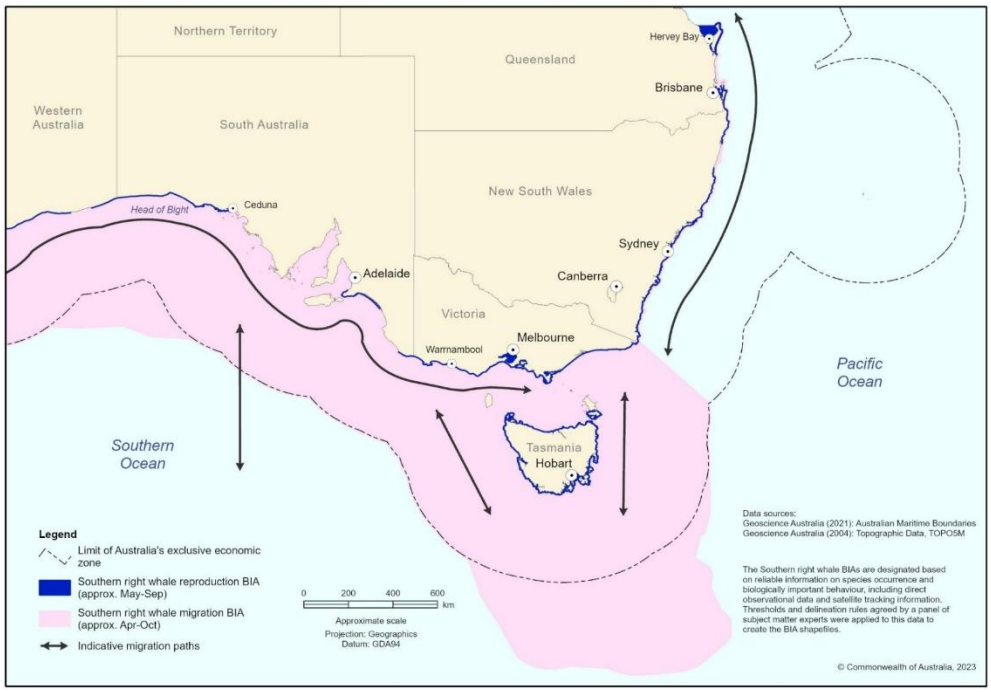


Figure 4-4 Southern Right Whale migration and reproduction BIAs in eastern Australia (DCCEEW, 2024a)

The Humpback Whale migrates annually along the east coast of Australia heading north to tropical breeding grounds from June to August, and south to the summer feeding grounds in Antarctica from September to November. The exact timing of the migration period can change from year to year and may be influenced by water temperature, the extent of sea ice,

predation risk, prey abundance and location of feeding grounds. While the main migration route of this species along the east coast of Australia is along the continental shelf to the east of Bass Strait, some animals migrate through Bass Strait and could pass through the region (DEH, 2005b). In February 2022 the Humpback Whale was removed from the Threatened Species list. The distribution of the Humpback Whale around Australia is shown in Figure 4-5 (TSSC, 2015d).

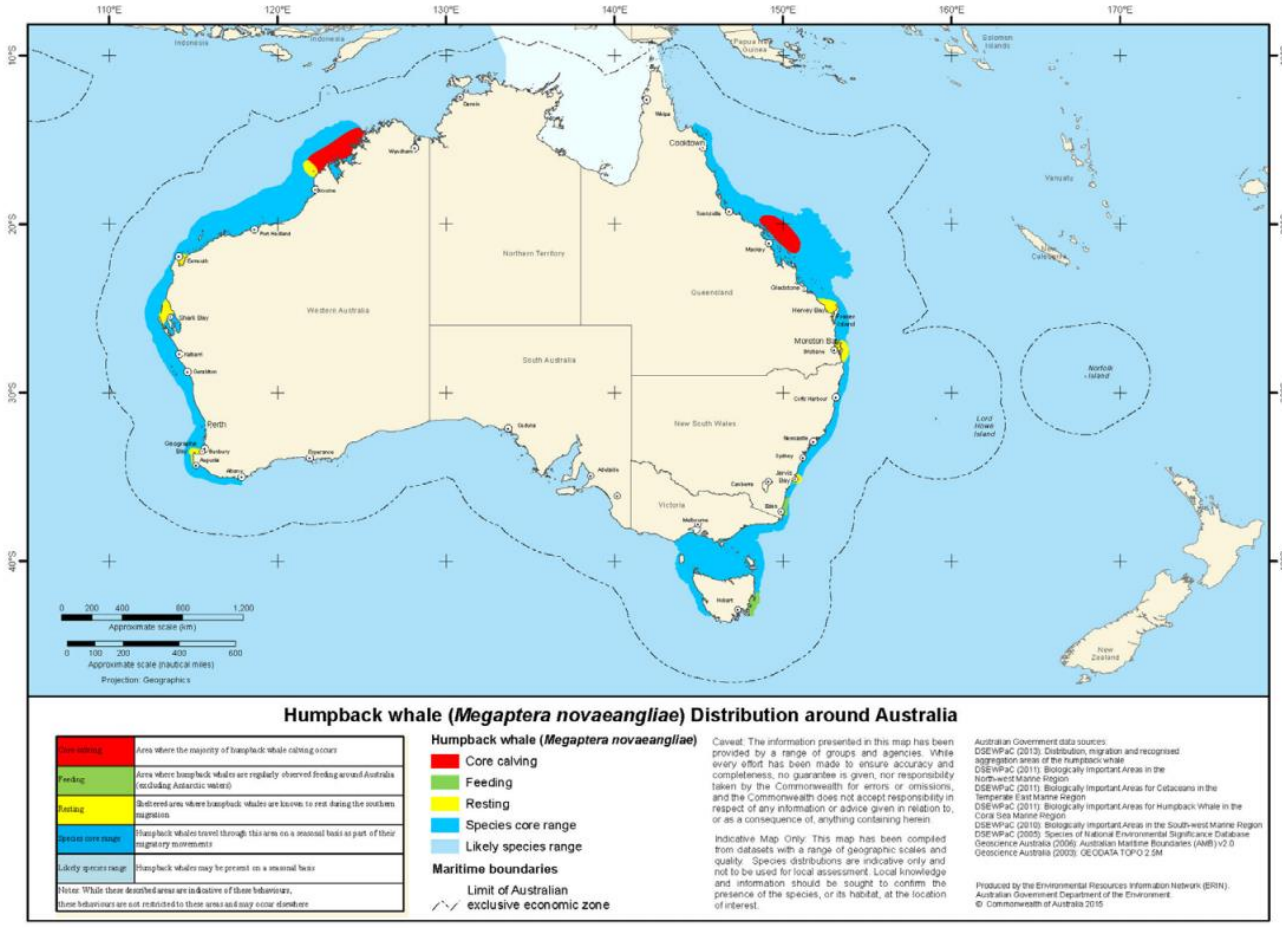


Figure 4-5 Humpback Whale distribution (TSSC, 2015d)

Sei Whales have generally the same migration pattern as most other baleen whales, including Blue and Fin whales, although the timing is generally later. Sei Whales are known to swim in small pods and their main breeding season is winter (April to August) Sei Whales are not often found near coasts and the species have been infrequently recorded in Australian waters. The Australian Antarctic waters are important feeding grounds for Sei Whales as are temperate cool waters (Horwood, 1987). Sei Whales have also been observed feeding on the continental shelf in the Bonney Upwelling region between November and May, suggesting the area may be used for opportunistic feeding (Gill *et al*., 2015).

The Fin Whale is the second largest whale species, after the Blue Whale. The distribution of Fin Whales in Australian waters is uncertain, but they have been recorded in Commonwealth waters off most states (the species is rarely found in inshore waters). Fin Whales generally feed at high latitudes, however depending upon prey availability and locality, it may also feed

in lower latitudes. It has been sighted in waters off the Bonney Upwelling in the summer and autumn months, suggesting that the region may be used for opportunistic feeding (Gill *et al*., 2015).

A summary of threatened cetacean activity in Bass Strait is presented in Table 4-8

Table 4-8 Summary of threatened whale activity in Bass Strait

Species/month	J	F	M	A	M	J	J	A	S	O	N	D
Blue Whales, Sei Whales, Fin Whales	Migrating, feeding										Migrating, feeding	
Humpback Whales (no longer a listed threatened species)						Northern migration			Southern migration			
Southern Right Whales					Southerly migration, calving							

4.3.6 Dolphins

There are eight dolphin species that may occur in the region according to the EPBC Act Online Protected Matters Search Tool, these are shown in Table 4-9 below:

Table 4-9 EPBC Act listed dolphins potentially occurring in the EMBA

Scientific Name	Common Name	Threatened Species	Migratory Species	Marine Species	BIA	Type of Presence
Delphinus delphis	Common Dolphin			✓		MO
Grampus griseus	Risso's Dolphin			✓		MO
Lagenorhynchus obscurus	Dusky Dolphin		✓	✓		LO
Lissodelphiss peronii	Southern Right Whale Dolphin			✓		MO
Orcinus orca	Killer Whale		✓	✓		LO
Pseudorca crassidens	False Killer Whale			✓		LO
Tursiops aduncus	Indo-Pacific Bottlenose Dolphin			✓	b	LO
Tursiops truncatus s. str.	Bottlenose Dolphin			✓		MO

Biologically Important Areas:
b breeding

Type of Presence:
MO Species or species habitat may occur within the area
LO Species or species habitat likely to occur within the area

Common Dolphins (*Delphinus delphis*) are recorded in all Australian waters and are not thought to be migratory. The species is associated with high topographical relief of the ocean floor, escarpments and upwelling areas, and there are no known key localities in Australia.

Risso's Dolphin (*Grampus griseus*) is distributed through all oceans, occurs inshore and offshore, but is generally considered pelagic and oceanic, and Fraser Island in Queensland has the only known 'resident' population in Australia.

The Dusky Dolphin (*Lagenorhynchus obscurus*) occurs only in the southern hemisphere with no recorded sightings from Victoria or Tasmania. There are no key localities for the species in Australia, and it occurs mainly in temperate and subantarctic zones (from about 55˚ to 26˚S) in inshore areas.

The Bottlenose Dolphin (*Tursiops truncatus*) is a cosmopolitan species found in all Australian waters (except the Northern Territory), and is coastal, estuarine, pelagic and oceanic in nature, with the closest key locality being Port Phillip Bay, Victoria.

With close resemblance to the Bottlenose Dolphin, the Indo-Pacific Bottlenose Dolphin (*Tursiops aduncus)* occur continuously around the Australian coast and are generally restricted to inshore areas such as bays and estuaries, nearshore waters, open coast environments, and shallow offshore waters (Hale *et al*. 2000; Ross 2006) Breeding, calving may occur in the coastal areas of NSW (BIA) but not extending into Victoria.

The remaining listed dolphins which may occur in the EMBA are oceanic, pelagic species. Of these the Killer Whale (*Orcinus orca*) is most likely to be encountered as they are recorded from all states, with concentrations reported around Tasmania. They are most often seen along the continental slope and on the shelf, particularly near seal colonies (Thiele & Gill 1999)).

The distribution of the False Killer Whale (*Pseudorca crassidens*) and the Southern Right Whale Dolphin (*Lissodelphiss peronii*) is less understood due to the paucity of sightings, however both species are known to have a large range. The False Killer Whales, recorded in Australia through strandings, prefer deep, tropical to temperate offshore waters (Bannister *et al*. 1996;).

The Southern Right Whale Dolphins are a pelagic species, generally occurring between the Subtropical and Subantarctic Convergences. They are usually found well offshore but when inshore are usually in deep water, or on the outer edges of the continental shelf. In the northern parts of its distribution, it is found associated with cold currents and upwelling conditions (Bannister *et al*., 1996).

4.3.7 Seals

Two seal species are identified in the EPBC Act database as occurring in the EMBA. These are shown in Table 4-10.

The Australian Fur-seal (*Arctocephalus pusillus*) has established five breeding areas on Tasmanian islands in Bass Strait (Shaughnessy, 1999), which are Tenth Island, Moriarty Rocks, West Moncoeur, Judgement Rocks and Reid Rocks, the latter two being the largest breeding colonies in Tasmania. The operating area is remote from these seal colonies, however seals do use the nearby oil and gas platform structures for resting and were

recorded during the Longtom installation campaign hauled out on the installation vessels. Satellite tracking of Australian Fur-seals in Bass Strait indicates that seals generally forage in waters slightly deeper than at the subsea facilities, with movements originating from Wilsons Promontory and The Skerries in east Gippsland (Arnould and Kirkwood, 2008 in Esso, 2012). The preferred habitats for Australian Fur-seals include rocky islands in exposed places close to the sea, on open slopes, shore platforms and reefs, pebbled beaches and caves (DELWP, 2018). The Australian Fur-seal diet consists of fish, cephalopods and seabirds and they give birth to live young from late October to late December (Shaughnessy, 1999). The operating area is not within close proximity to any breeding colonies.

The New Zealand Fur-seal (*Arctocephalus forsteri*) is found predominantly in coastal areas of New Zealand, South Australia and southern parts of Western Australia. In Tasmania, New Zealand Fur-seal numbers are comparatively low, and the species is mainly found off the south and west coasts with breeding restricted to Maatsuyker Islands and other remote islands to the south (DPIPWE, 2011). Breeding occurs during the summer months from early December through to January. The species breed ashore (generally on remote islands) and feed at sea, mostly on cephalopods and fish. The operating area is not within close proximity to any breeding colonies.

Table 4-10 EPBC Act listed seals potentially occurring in the EMBA

Scientific Name	Common Name	Threatened Species	Migratory Species	Marine Species	BIA	Type of Presence
Arctocephalus forsteri	New Zealand Fur-seal			✓		MO
Arctocephalus pusillus	Australian Fur-seal			✓		BKO

Type of Presence:
MO Species or species habitat may occur within the area
BKO Breeding known to occur within the area

4.3.8 Seabirds

The Victorian coast and islands of Bass Strait provide feeding, breeding and nesting habitats for many important coastal and migratory bird species. There are no islands or seabird colonies in the immediate vicinity of the operating area. Some species, such as cormorants, roost at Cape Conran (Norris and Mansergh, 1981), to the northeast of the operating area. Colonies of seabirds occur to the west of the operating area in Corner Inlet and on the islands around Wilsons Promontory, and to the east at the Skerries, Tullaberga Island and Gabo Island (Harris and Norman, 1981); all of which are over 100 km from the operating area.

Seventy-eight EPBC Act-listed bird species may occur within the EMBA. Of these, four are listed as critically endangered. These are the Curlew Sandpiper (Calidris ferruginea),

Eastern Curlew (*Numenius madagascariensis*), Swift Parrot (*Lathamus discolor*) and Orange-bellied Parrot (*Neophema chrysogaster*).

The Swift Parrot and Orange-bellied Parrot are listed marine species whose primary breeding habitat is forest. They breed in Tasmania and migrate to the mainland for winter. The Orange-bellied Parrot feeds almost exclusively on seeds and fruits, mainly of sedges and salt-tolerant coastal saltmarsh plants. They are threatened primarily from native predation and loss of habitat (DCCEEW, 2024d, DELWP, 2016).

The other two critically endangered listed bird species Curlew Sandpiper and Eastern Curlew are (listed marine and) migratory wetland species which breed in the northern hemisphere and migrate to the southern hemisphere for winter. Their primary threat is loss of wetland habitat, not only in Australia but in all their resting places on the migratory route from the northern to the southern hemisphere (DCCEEW, 2023a, DCCEEW, 2023b).

4.3.8.1 Albatross

There are sixteen species of albatross listed to occur in the EMBA, all of which are either endangered or vulnerable, with the majority being migratory species. The nearest breeding site to the operating area is Albatross Island, off the northwest coast of Tasmania, 405 km southwest of the operating area. Because albatrosses have a broad range of diets and foraging behaviours, their at-sea distributions are diverse and combined with their ability to cover vast oceanic distances, all Australian waters can be considered foraging habitat, though the most critical is the waters south of 25°S where most species spend the majority of their foraging time (DCCEEW, 2022a). Foraging BIAs which overlap the operating area have been identified for the Black-browed Albatross (*Thalassarche melanophris*), Bullers Albatross (*Thalassarche bulleri*), Campbell Albatross (*Thalassarche melanophris impavida*), Indian Yellow-nosed Albatross (*Thalassarche chlororhynchos bassi*), Shy Albatross (*Thalassarche cauta cauta*) and Wandering Albatross (*Diomedea exulans (sensu lato)*).

4.3.8.2 Petrels

There are seven listed petrel species which may occur in the EMBA. Similar to albatross, the petrels have a diverse foraging range, and all waters within Australian jurisdiction can be considered foraging habitat for this species. BIAs, for both foraging and breeding, have been identified for the White-faced Storm-petrel (*Pelagodroma marina*) however only the foraging BIA overlaps the operating area. Foraging BIAs have also been established for the Common Diving-petrel (*Pelecanoides urinatrix*) and Black Petrel (*Procellaria parkinsoni*) and so although not listed these two are included for completeness in the list below.

The Southern Giant Petrel (*Macronectes giganteus*) is listed as endangered and within Australia is limited to breeding colonies on Macquarie and Heard islands. It is a marine bird that occurs in Antarctic to subtropical waters and in summer mainly occurs over Antarctic waters. It feeds and it is widespread south as far as the pack-ice and onto the Antarctic continent (Marchant & Higgins 1990). Gould's Petrel (*Pterodroma leucoptera ;leucoptera*),

also endangered, is only known to breed in Australia on Cabbage Tree Island, offshore from Port Stephens in NSW. Its non-breeding and feeding range, however is extensive and recorded as far west as Eyre in Western Australia and therefore may occur within the EMBA (DEC NSW. 2006).

4.3.8.3 Plovers

Of the five plovers that are listed as occurring in the EMBA, the Eastern Hooded Plover (*Thinornis cucullatus cucullatus*) and the Greater Sand Plover (*Charadirius leschenaultia*) are listed as vulnerable. The Eastern Hooded Plover is a small Australian beach nesting bird. It mainly occurs on wide beaches backed by dunes with large amounts of seaweed and jetsam, creek mouths and inlet entrances. Its distribution is along beaches throughout the Victorian, Tasmanian and the majority of the South Australian coast and extending up to approximately Nowra in NSW. The Eastern Hooded Plover builds its nest above the high-water mark. Its greatest threat is disturbance by domestic dogs (DoE. 2014b).

The Greater Sand Plover is a migratory (wetland) shorebird which breeds in central Asia and spends the non-breeding season in Australia. Whilst in Australia, the species occurs in coastal areas of all the states, but most individuals occur along the north-west coast (Weller *et al*., 2020 cited in DCCEEW, 2023d). In Victoria, the species is mostly recorded from Corner Inlet, Western Port and Port Phillip Bay.

4.3.8.4 Scolopacidae

Within the scolopacidae family 17 of the 18 listed birds which may occur in the EMBA are listed as migratory wetland species. The critically endangered species have been described above. The Red Knot (*Calidris canutus*) was downgraded from endangered to vulnerable in January 2024 (DCCEEW, 2024b). Like the majority of the species in this group is a migratory wetland species which breeds in the northern hemisphere and migrates south for the winter. In Australia the Red Knot mainly inhabits intertidal mudflats, sandflats and sandy beaches of sheltered coasts. Its closest sight of importance to the operating area is in Corner Inlet (Bamford *et al*., 2008).

The Common Greenshank (*Tringa nebularia*) was recently listed as endangered based on changes in the estimated rate of population decline. These declines are thought to be due to reductions in the species' habitat in coastal stopover locations (DCCEEW, 2024f). The Common Greenshank is widespread in coastal regions, occurs in all types of wetlands, and has one of the widest distribution of any shorebird in Australia. In Victoria, the species can be found between the Gippsland Lakes and Port Phillip Bay and is widespread west to Streaky Bay (South Australia), with scattered records elsewhere along the coast (Higgins and Davies 1996 cited in DCCEEW, 2024f).

The Western Alaskan Bar-tailed Godwit (*Limosa lapponica baueri*) was also recently listed as endangered based on changes in the estimated rate of population decline. These declines are thought to be due to reductions in the species' intertidal mudflat habitat in

coastal stopover locations (Murray *et al*., 2014 cited in DCCEEW, 2024e). In Australia, Alaskan bar-tailed godwit mainly occurs along the north and east coasts (Clemens *et al*., 2021 cited in DCCEEW, 2024e). The subspecies is widespread in the Torres Strait and along the east and south-east coasts of Queensland, NSW and Victoria.

4.3.8.5 Others

Of the remaining species the Australasian Bittern, Eastern Bristlebird, and the Australian Painted Snipe are endangered. The Australasian Bittern is a secretive, stocky, heron-like bird, living primarily in freshwater wetlands and rarely in estuaries or tidal wetlands. It has a distribution between south-east Queensland to south-east South Australia and is unlikely to be impacted by operational activities (TSSC. 2019a).

The Eastern Bristlebird is a ground dwelling bird whose habitat primarily occurs as coastal, subcoastal and coastal escarpment scrubland / grassland / sedgeland and as open grassy forest on inland ranges and can extend to coastal dunes where feeding also occurs. Of the four populations known, the southern population is found in the Nadgee Nature Reserve on the Victoria/NSW border and in Croajingalong National Park. Its main threats are fragmentation of habitat, predation, particularly by feral species and especially after fire. This species is unlikely to be impacted by operational activities (DCCEEW, 2022c).

The Australian Painted Snipe has been recorded in wetlands in all states of Australia and no specific areas of importance are known around the operating area (SEWPaC, 2013b).

Table 4-11 lists conservation advice for threatened bird species and key threats potentially relevant to petroleum activities.

Table 4-11 EPBC Act-listed bird species that may occur within the EMBA

Scientific Name	Common Name	Threatened Species	Migratory Species	Marine Species	Conservation Advice / Recovery Plan	BIA	Type of Presence
Albatross							
Diomedia antipodensis	Antipodean Albatross	V	✓ (M)	✓	11	f	FLO
Diomedia antipodensis gibsoni	Gibson's Albatross	V		✓	11		FLO
Diomedia epomophora	Southern Royal Albatross	V	✓ (M)	✓	11		FLO
Diomedia exulans	Wandering Albatross	V	✓ (M)	✓	11	f	FLO
Diomedia sanfordi	Northern Royal Albatross	E	✓ (M)	✓	11		FLO
Phoebetria fusca	Sooty Albatross	V	✓ (M)	✓	11		LO

Scientific Name	Common Name	Threatened Species	Migratory Species	Marine Species	Conservation Advice / Recovery Plan	BIA	Type of Presence
Thalassarche bulleri	Buller's Albatross	V	✓ (M)	✓	11	f	FLO
Thalassarche bulleri platei	Northern Buller's Albatross	V		✓	11		FLO
Thassarche carteri	Indian Yellow-nosed Albatross	V	✓ (M)	✓	11	f	MO
Thalassarche cauta	Shy Albatross	V	✓ (M)	✓	11	f	FLO
Thalassarche chrysostoma	Grey-headed Albatross	E	✓ (M)	✓	11, 12		MO
Thalassarche eremita	Chatham Albatross	E	✓ (M)	✓	11		FMO
Thalassarche impavida	Campbell Albatross	V	✓ (M)	✓	11	f	FLO
Thalassarche melanophris	Black-browed Albatross	V	✓ (M)	✓	11	f	FLO
Thalassarche salvini	Salvin's Albatross	V	✓ (M)	✓	11		FLO
Thalassarche steadi	White-capped Albatross	V	✓ (M)	✓	11		FKO
Petrels							
Fregetta grallaria grallaria	White-bellied Storm-Petrel	V			13		LO
Halobaena caerulea	Blue Petrel	V		✓	14		MO
Macronectes giganteus	Southern Giant Petrel	E	✓ (M)	✓	11		MO
Macronectes halli	Northern Giant Petrel	V	✓ (M)	✓	11		FLO
Pelecanoides urinatrix	Common Diving-petrel				41	f	
Pelagodroma marina	White-faced Storm Petrel			✓	41	b, f	BKO
Procellaria parkinsoni	Black Petrel					f	
Pterodroma cervicalis	White-necked Petrel			✓	41		MO
Pterodroma leucoptera leucoptera	Gould's Petrel	E			15		MO
	Plover						
Charadrius bicinctus	Double-banded Plover		✓ (W)	✓			FKO
Charadrius leschenaultii	Greater Sand Plover	V	✓ (W)	✓	16		KO
Charadrius ruficapillus	Red-capped Plover			✓			FKO

Scientific Name	Common Name	Threatened Species	Migratory Species	Marine Species	Conservation Advice / Recovery Plan	BIA	Type of Presence
Thinornis cucullatus cucullatus	Eastern Hooded Plover	V		✓	17		KO
Thinornis rubricollis	Hooded Plover			✓			KO
Scolopacidae - Sandpipers							
Actitis hypoleucos	Common Sandpiper		✓ (W)	✓			KO
Calidris acuminata	Sharp-tailed Sandpiper	V	✓ (W)	✓	18		FKO
Calidris ferruginea	Curlew Sandpiper	CE	✓ (W)	✓	19		KO
Calidris melanotos	Pectoral Sandpiper		✓ (W)	✓			MO
Tringa nebularia	Common Greenshank	E	✓ (W)	✓	20		KO
Scolopacidae - Other							
Arenaria interpres	Ruddy Turnstone	V	✓ (W)	✓	21		FKO
Calidris alba	Sanderling		✓ (W)	✓			FKO
Calidris canutus	Red Knot	V	✓ (W)	✓	22		KO
Calidris ruficollis	Red-necked Stint		✓ (W)	✓			FKO
Calidris tenuirostris	Great Knot	V	✓ (W)	✓	23		FKO
Gallinago hardwickii	Latham's Snipe	V	✓ (W)	✓	24		KO
Gallinago megala	Swinhoe's Snipe		✓ (W)	✓			FLO
Gallinago stenura	Pin-tailed Snipe		✓ (W)	✓			FLO
Limosa lapponica	Bar-tailed Godwit		✓ (W)	✓			KO
Limosa lapponica baueri	Western Alaskan Bar-tailed Godwit (bauera)	E			25		KO
Numenius madagascariensis	Eastern Curlew	CE	✓ (W)	✓	26		KO
Numenius minutus	Little Curlew		✓ (W)	✓			FLO
Numenius phaeopus	Whimbrel		✓ (W)	✓			FKO
Shearwaters							
Ardenna grisea	Sooty Shearwater	V	✓ (M)	✓	27	f	LO
Ardenna pacifica	Wedge-tailed Shearwater				41	f	
Puffinus carneipes	Flesh-footed Shearwater		✓ (M)	✓	41	f	FLO

Scientific Name	Common Name	Threatened Species	Migratory Species	Marine Species	Conservation Advice / Recovery Plan	BIA	Type of Presence
Puffinus tenuirostris	Short-tailed Shearwater		✓ (M)	✓	41	f	BKO
Terns							
Sterna albifrons	Little Tern	V	✓ (M)	✓	28		BKO
Sterna bergii	Greater Crested Tern		✓ (M)	✓	41		BKO
Sterna caspia	Caspian Tern		✓ (M)	✓	41		BKO
Sterna fuscata	Sooty Tern			✓	41		BKO
Sterna nereis	Fairy Tern			✓			BKO
Sternula nereis nereis	Australian Fairy Tern	V		✓	29		KO
Sterna striata	White-fronted Tern			✓	41		FLO
Others							
Apus pacificus	Fork-tailed Swift		✓ (M)	✓			LO
Ardea ibis	Cattle Egret			✓			MO
Botaurus poiciloptilus	Australasian Bittern	E			30, 31		KO
Catharacta skua	Brown Skua			✓			MO
Dasyomis brachypterus	Eastern Bristlebird	E			32		KO
Eudyptula minor	Little Penguin			✓	41	f, b	BKO
Haliaeetus leucogaster	White-bellied Sea Eagle			✓	41		BKO
Himantopus himantopus	Black-winged Stilt			✓			KO
Hirundapus caudacutus	White-throated Needletail	V	✓ (T)	✓	33		KO
Larus novaehollandiae	Silver Gull			✓	41		BKO
Lathamus discolor	Swift Parrot	CE		✓	34, 35		KO
Merops ornatus	Rainbow Bee-eater			✓			MO
Monarcha melanopsis	Black-faced Monarch			✓			KO
Monarcha trivirgatus	Spectacled Monarch			✓			KO
Myiagra cyanoleuca	Satin Fly-catcher			✓			KO
Neophema chrysogaster	Orange-bellied Parrot	CE		✓	36		MO
Neophema chrysostoma	Blue-winged Parrot	V		✓	37		KO

Scientific Name	Common Name	Threatened Species	Migratory Species	Marine Species	Conservation Advice / Recovery Plan	BIA	Type of Presence
Pachyptila turtur	Fairy Prion			✓	41		KO
Pachyptila turtur subantartica	Fairy Prion (southern)	V			38		KO
Pandion haliaetus	Osprey			✓	41		KO
Rhipidura rufifrons	Rufous Fantail			✓			KO
Rostratula australis	Australian Painted Snipe	E		✓	39,40		KO

Threatened Species:
V Vulnerable
E Endangered
CE Critically Endangered
Migratory Species:
M Marine
W Wetland
T Terrestrial
Biologically Important Areas:
b Breeding
f Foraging

Type of Presence:
MO Species or species habitat may occur within the area marine overfly area
LO Species or species habitat likely to occur within the area marine overfly area
KO Species or species habitat known to occur within the area marine overfly area
FMO Foraging, feeding or related behaviour may occur within the area marine overfly area
FLO Foraging, feeding or related behaviour likely to occur within the area marine overfly area
FKO Foraging, feeding or related behaviour known to occur within the area marine overfly area
BKO Breeding known to occur within the area

Table 4-12 Conservation advice for threatened bird species and Key Threats

Common Name	Conservation Advice or Recovery Plan		Key Threats (potentially relevant to petroleum activities)
Antipodean Albatross	11	National Recovery Plan for Albatrosses and Petrels (DCCEEW, 2022a)	Marine pollution, contamination and debris Interactions with ships, including artificial lighting
Gibson's Albatross			
Southern Royal Albatross			
Wandering Albatross			
Northern Royal Albatross			
Sooty Albatross			
Buller's Albatross			
Northern Buller's Albatross			
Indian Yellow-nosed Albatross			
Shy Albatross			
Chatham Albatross			
Campbell Albatross			
Black-browed Albatross			

Common Name	Conservation Advice or Recovery Plan		Key Threats (potentially relevant to petroleum activities)
Salvin's Albatross			
White-capped Albatross			
Southern Giant Petrel			
Northern Giant Petrel			
Grey-headed Albatross			
	12	Approved Conservation Advice for *Thalassarche chrysostoma* (Grey-headed Albatross) (DEWHA, 2009)	Marine pollution, contamination and debris Interactions with ships, including artificial lighting
White-bellied Storm-Petrel	13	Lord Howe Island Biodiversity Management Plan (DECC NSW, 2007)	None identified
Blue Petrel	14	Approved Conservation Advice for *Halobaena caerulea* (Blue Petrel) (TSSC, 2015e)	None identified
Gould's Petrel	15	Gould's Petrel (*Pterodroma leucoptera leucoptera*) Recovery Plan (DEC NSW, 2006)	Oil spills Note: oil spills in the vicinity Cabbage Tree Island are not considered a threat because the Gould's Petrel does not feed in coastal waters however, oceanic oil spills may pose some risk (NSW DEC NSW, 2006)
Greater Sand Plover	16	Conservation Advice for *Charadrius leschenaultii* (Greater Sand Plover). (DCCEEW, 2023d)	Acute pollution including from oil spills
Eastern Hooded Plover	17	Approved Conservation Advice for *Thinornis rubricollis* (Hooded Plover, Eastern) (DoE, 2014b)	Oil spills Entanglements and ingestion of marine debris
Sharp-tailed Sandpiper	18	Conservation Advice for *Calidris acuminata* (Sharp-tailed Sandpiper). (DCCEEW, 2024h)	Acute pollution including from oil spills
Curlew Sandpiper	19	Approved Conservation Advice for *Calidris ferruginea* (Curlew Sandpiper) (DCCEEW, 2023a)	Habitat loss and degradation from pollution Environmental pollution
Common Greenshank	20	Conservation Advice for *Tringa nebularia* (Common Greenshank) (DCCEEW, 2024f)	Habitat loss, degradation and fragmentation Acute pollution
Ruddy Turnstone	21	Conservation Advice for *Arenaria interpres* (Ruddy Turnstone). (DCCEEW, 2024g)	Acute pollution including from oil spills
Red Knot	22	Approved Conservation Advice for *Calidris canutus* (Red Knot) (DCCEEW, 2024b)	Habitat loss and degradation from environmental Pollution Acute Pollution

Common Name	Conservation Advice or Recovery Plan		Key Threats (potentially relevant to petroleum activities)
Great Knot	23	Approved Conservation Advice for *Calidris tenuirostris* (Great Knot) (DCCEEW, 2024c)	Habitat loss and degradation from environmental Pollution Acute Pollution
Latham's Snipe	24	Conservation Advice for *Gallinago hardwickii* (Latham's Snipe). (DCCEEW, 2024i)	None identified
Western Alaskan Bar-tailed Godwit (baueri)	25	Approved Conservation Advice for *Limosa lapponica baueri* (Alaskan Bar-tailed Godwit) (DCCEEW, 2024e)	Habitat loss and degradation from pollution Acute pollution
Eastern Curlew	26	Approved Conservation Advice for *Numenius madagascariensis* (Eastern Curlew) (DCCEEW, 2023b)	Habitat loss and degradation from pollution Chronic and acute pollution
Sooty Shearwater	27	Conservation Advice for *Ardenna grisea (*Sooty Shearwater*)* (DCCEEW, 2023e).	None identified
Little Tern	28	Conservation Advice for *Sternula albifrons* (Little Tern). (DCCEEW, 2025b)	None identified
Australian Fairy Tern	29	Approved Conservation Advice for *Sternula nereis nereis* (Fairy Tern) (SEWPaC, 2011a)	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
Australasian Bittern	30 31	Approved Conservation Advice for *Botaurus poiciloptilus* (Australasian Bittern) (TSSC, 2019a) National Recovery Plan for the Australasian Bittern (*Botaurus poiciloptilus*). (DCCEEW, 2022b)	Reduced water quality as a result of increasing salinity, siltation and pollution Reduced water quality
Eastern Bristlebird	32	National Recovery Plan for Eastern Bristlebird (*Dasyornis brachypterus*) (DCCEEW, 2022c)	None identified
White-throated Needletail	33	Conservation Advice *Hirundapus caudacutus* White-throated Needletail. (TSSC, 2019b)	None identified
Swift Parrot	34 35	Approved Conservation Advice for *Lathamus discolour* (Swift Parrot) (TSSC, 2015f) National Recovery Plan for the Swift Parrot (Lathamus discolor) (DCCEEW, 2024d)	None identified
Orange-bellied Parrot	36	National Recovery Plan for the Orange-bellied Parrot (*Neophema chrysogaster*) (DELWP, 2016)	None identified
Blue-winged Parrot	37	Conservation Advice for *Neophema chrysostoma* (Blue-winged Parrot). (DCCEEW, 2023c)	None identified
Fairy Prion (southern)	38	Approved Conservation Advice for *Pachyptila turtur subantartica* (Fairy Prion Southern) (TSSC, 2015g)	None identified
Australian Painted Snipe	39 40	Approved Conservation Advice for *Rostratula australis* (Australian Painted Snipe) (SEWPaC, 2013b) National Recovery Plan for the Australian Painted Snipe (*Rostratula australis*) (DCCEEW, 2022d)	None identified

Common Name	Conservation Advice or Recovery Plan		Key Threats (potentially relevant to petroleum activities)
White-faced Storm-petrel	41	Wildlife Conservation Plan for Seabirds. (DAWE, 2020a)	Pollution, including marine debris, light pollution and chronic and acute pollution.

The Little Penguin is the smallest species of penguin in the world and are permanent residents on a number of inshore and offshore islands. The Australian population is large but not thought to exceed one million birds (DoE, 2015a). Bass Strait has the largest proportion (approximately 60%) of the known breeding colonies in Australia; however, breeding populations are also found on the New South Wales coast. Individuals exhibit strong site fidelity, returning to the same breeding colony each year to breed in the winter and spring months (Gillanders *et al*., 2013). Little Penguins spend most of their time at sea when not breeding. Male penguins return to coastal colonies between June and August (which is also breeding time) to ready their nests for the egg laying season, which usually peaks in September and October (NOO, 2002). The nearest colonies of Little Penguins to the operating area are located at Phillip Island in Western Port Bay (334 km to the west), Gabo Island (155 km to the east).

4.3.9 Reptiles

There are five reptile species listed under the EPBC Act as potentially occurring in the EMBA. These are shown in Table 4-13. Table 4-14 lists the approved conservation advice and/or recovery plans for listed turtle species, where they exist, with key threats potentially relevant to petroleum activities. One is known to regularly occur in Bass Strait, the Leatherback Turtle (*Dermochelys coriacea*) (listed as endangered), and is discussed further below. Four other potential, but rare, visitors to Bass Strait include the Loggerhead Turtle (*Caretta caretta*) (listed as endangered), Green Turtle (*Chelonia mydas*) (listed as vulnerable), Hawksbill Turtle (*Eretmochelys imbricata*) (listed as vulnerable) and Flatback Turtle (*Natator depressus*) (listed as vulnerable). No turtles are known to nest in the EMBA.

The Leatherback Turtle is the largest species of marine turtle, (DEWHA, 2008b). They follow warm water currents while migrating vast distances between their tropical nesting sites to the north of Australia and their temperate water feeding grounds to the south (where they are capable of inhabiting waters of 10 °C or possibly less). Juveniles (< 100 cm) are confined to tropical waters warmer than 26 °C and remain near the coastline (IUCN, 2003). There are no breeding beaches within Victoria or the EMBA and the closest known breeding beach was near Balina in northern NSW, however no nests have been recorded in eastern Australia since 1996 (DEWHA, 2008b). Their movement to temperate waters is generally associated with seasonal increases in sea surface temperatures (SSTs). In Victoria, most sightings occur between January and May when SSTs are 15 °C – 21 °C in northern Bass Strait. Nearly 50 % of Victorian sightings are from April and May.

Bass Strait is considered to have one of the three largest concentrations of feeding Leatherback Turtles in Australia (the others being central and southern New South Wales and across the Great Australian Bight) (C. Limpus pers. comm.).

Table 4-13 EPBC Act-listed turtle species that may occur within the EMBA

Scientific Name	Common Name	Threatened Species	Migratory Species	Marine Species	Conservation Advice / Recovery Plan	Type of Presence
Caretta caretta	Logger-head Turtle	E	✓	✓	41	BLO
Chelonia mydas	Green Tur-tle	V	✓	✓	41	FKO
Dermochelys coria-cea	Leather-back Turtle	E	✓	✓	41, 42	FKO
Eretmochelys im-bricata	Hawksbill Turtle	V	✓	✓	41	FKO
Natator depressus	Flatback Turtle	V	✓	✓	41	KO
Threatened Spe-cies: *V Vul-nerable* *E En-dangered*	*Type of Presence:* *KO Species or species habitat known to occur within the area* *FKO Foraging, feeding or related behaviour known to occur within the area* *BLO Breeding likely to occur within the area*					

Table 4-14 Conservation advice for threatened turtle species and Key Threats

Common Name	Conservation Advice or Recovery Plan		Key Threats (potentially relevant to petroleum activities)
Loggerhead Turtle	41	Recovery Plan for Marine Turtles in Australia, 2017-2027 (DoEE, 2017b)	Marine debris Chemical discharge Light pollution Habitat modification Vessel disturbance Noise interference
Green Turtle			
Hawksbill Turtle			
Flatback Turtle			
Leatherback Turtle			
	42	Approved Conservation Advice for *Dermochelys coriacea* (Leatherback Turtle) (DEWHA, 2008b).	As above

4.3.10 Introduced Marine Species

Introduced marine species are those that occur outside their natural or historical ranges. In the South-east Marine Region, 115 introduced marine species have been recorded (NOO, 2002). Limited information exists on the nature and extent of introduced marine species. The Australian Government National Introduced Marine Pest Information System (NIMPIS) provides information on marine pests in Australian Waters. NIMPIS indicates the presence of multiple established introduced species in Gippsland (DAWE, 2021), and it is assumed the species listed below also potentially exist within the EMBA.

Table 4-15 Introduced marine species recorded in Gippsland region (DAWE, 2021)

Scientific Name	Common Name	Notes on detections
Arcuatula senhousia	Asian Date or Bag Mussel	Detected Metung 2011 Detected Shallow Inlet 2009
Asterias amurensis	Northern Pacific Seastar	Detected Waratah Bay 2018 Detected Gippsland Lakes 2015 & 2019 Detected Tidal River 2012, 2013 & 2017
Astrocole scabra	Rough Seastar	Pearl Point 2010
Carcinus maenas	European Shore Crab	Detected Marlo 2021 Detected Gippsland Lakes 2009 Detected Port Welshpool 2021
Codium fragile spp fragile	Dead Man's Fingers	Detected Port Welshpool 2021
Grateloupia turuturu	Devil's Tongue Weed	Detected Port Welshpool 2021
Magallana (Crassostrea) gigas	Pacific Oyster	Detected Tidal River 2013
Theora lubrica	East Asian Bivalve	Detected Shallow Inlet 2009
Undaria pinnatifida	Japanese Kelp	Detected Port Welshpool 2018 & 2021
Varicorbula gibba	European Clam	Detected Shallow Inlet 2009

The New Zealand Screw Shell (*Maoricolpus roseus*) is a species that has a well-documented history in Bass Strait, although there are no records of it appearing in Port Phillip Bay or elsewhere in Victoria (and NIMPIS shows only one detected location at Eden, NSW). It is likely to have been introduced after 1920 with live oysters imported from New Zealand or within semi-dry ballast in timber vessels. It was first identified in southeast Tasmania and has since expanded its territory into eastern Bass Strait and further up the east coast of Australia (NOO, 2002). It forms extensive and dense beds on the sandy seafloor in eastern Bass Strait. The screw shell can tolerate water depths ranging from 1 to 130 m. An unusually high

abundance (more than 90% of the total biomass of infauna) of the invasive New Zealand Screw Shell was recorded by Heislers and Parry (2007) at Point Hicks in eastern Bass Strait. Where this introduced species was most abundant, the diversity of infauna was reduced, suggesting that this exotic species poses a serious threat to the high diversity of infauna that is characteristic of much of Bass Strait (Heislers and Parry, 2007). The New Zealand Screw Shell was previously (2018) considered common generally in water depths greater than 40 m along the Patricia Baleen pipeline corridor. However recent analysis of high definition ROV inspection footage at the facilities did not identify invasive species (Ierodiaconou *et al*., 2021 cited in Cooper Energy, 2024).

4.4 Cultural Environment

There are no EPBC Act listed World Heritage Properties or National Heritage Places within the operating area or within the EMBA. The only listed Commonwealth Heritage Place occurring within the EMBA is a lighthouse (i.e., Gabo Island Lighthouse) however this is not considered relevant.

4.4.1 First Nations Cultural Heritage

First Nations cultural values may include heritage sites and values that relate to First Nations people's traditional culture and customs. Cultural heritage refers to the knowledge, lore, practices, objects, places and people that are valued, culturally significant and connected to the identity of Country. Cultural heritage has been passed down from Ancestors to future generations and shapes identity and is fundamental to the wellbeing of First Nations people and connecting communities. Traditional Owners are custodians of culturally significant values that govern cultural practices, systems of belief, and maintain holistic relationships with Country (VAHC, 2025).

First Nations people hold strong connections to the south-east marine region and have occupied coastal land and waters for over 40,000 years (DoE, 2015a).

About 30,000 years ago an ice age began, which caused sea levels to drop about 120 m and created a continuous land mass that stretched between Papua New Guinea and Tasmania. Indigenous peoples occupied the plain that is now known as Bass Strait and moved back and forth between Victoria and Tasmania. When the ice melted – a process estimated to have taken 6,000 years – Bass Strait formed and became an almost impassable barrier by about 12,000 years ago (National Museum Australia 2022).

The coastal areas were amongst the most densely populated regions of pre-colonial Australia due to the richness and convenience of both terrestrial and marine. First Nations communities believe there is no distinction between the land and sea and consider it all to be a part of Country. Coastal waters were essential gathering places for people to live as well as launching places for expeditions to sea to gather resources. Through cultural traditions, First Nations people maintain cultural connection to ancestral lands and waters, termed Country and Sea Country and use coastal areas and waters for food resources and cultural practices and traditions and maintain cultural obligations to care for Country (GLaWAC 2025).

4.4.1.1 Relevant First Nations Groups

The Victorian Aboriginal Heritage Council's Registered Aboriginal Party map was used to determine the formally recognised First Nations people of the Victorian coastline (VAHC, 2024). The Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC) are the formally recognised Traditional Owners of the eastern coastline of Victoria (Gippsland Basin) from Port Welshpool to Marlo (VAHC, 2019) (Figure 4-6). The Gunaikurnai people have an approved non-exclusive Native Title area extending from West Gippsland near Warragul, east to the Snowy River and north to the Great Dividing Range; and 200 m offshore.

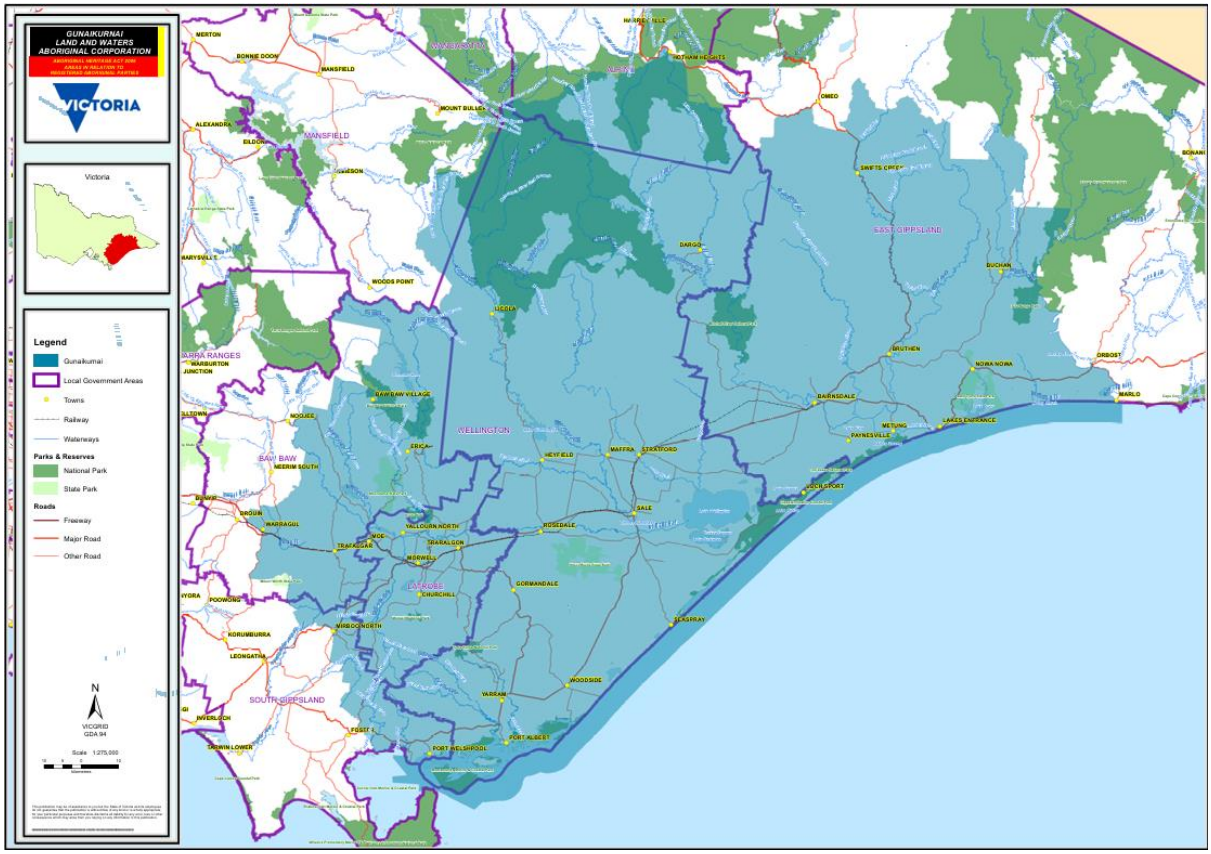


Figure 4-6 Map of GLaWAC RAP boundaries (VAHC, 2019)

In 2022 the Gunaikurnai Land and Waters Aboriginal Corporation signed an agreement with the Federal Government to begin the process of establishing a Sea Country Indigenous Protected Area from Nanjet, east of Wilsons Promontory, to Mallacoota, on the Victorian/NSW border (GLaWAC 2025). This voluntary agreement would see that the management of the sea, or land and sea, occurs in partnership with First Nations people and others in order to protect cultural and environmental values.

The coastal areas of Southeast NSW comprise a number of clans with many using various Yuin dialects. The NSW Aboriginal Land Council map was used to identify First Nations people of NSW (NSWALC, 2025) (Figure 4-7). Collectively they form the claimant group known as South Coast Peoples. Administratively community services are supported through 13 Local Aboriginal Land Councils (LALCs), each with its own board and CEO.

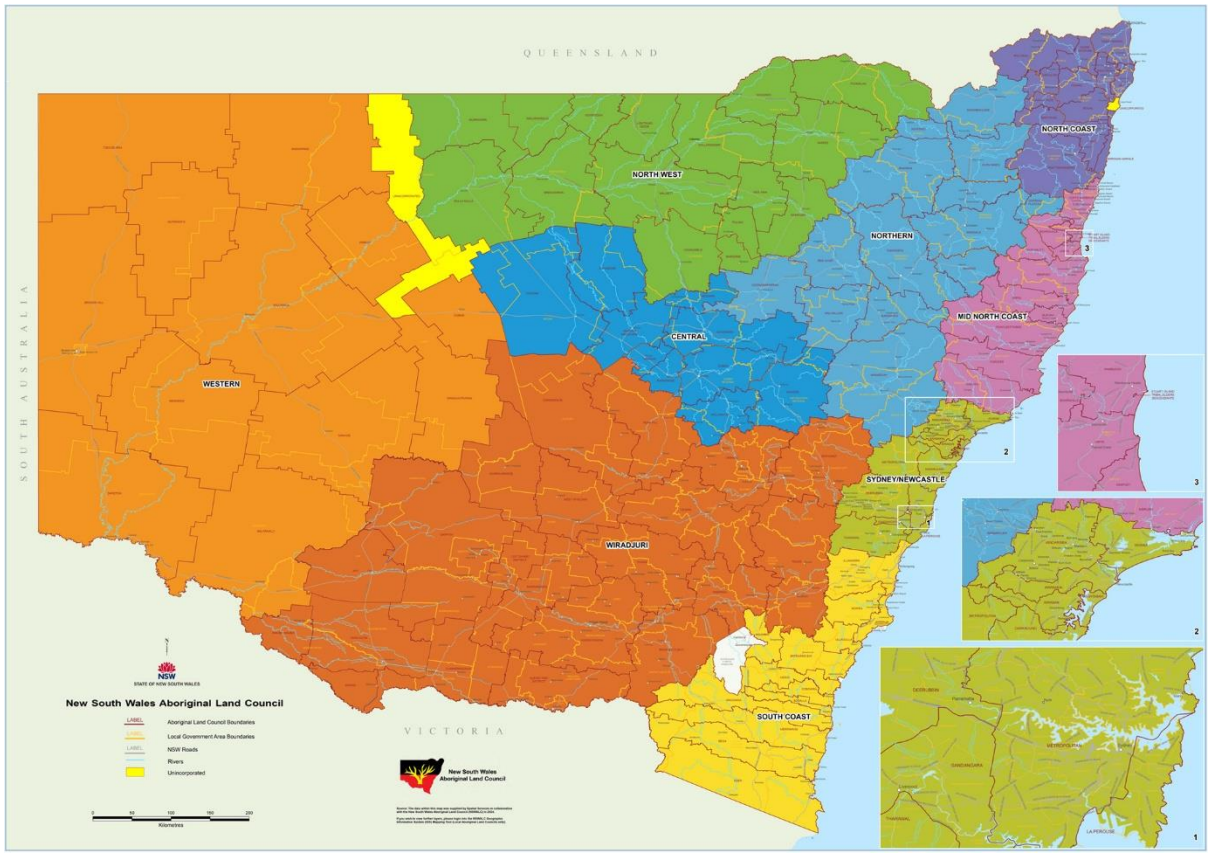


Figure 4-7 NSW Local Aboriginal Land Councils (NSWALC, 2025)

As shown in Figure 4-7 the South Coast LALCs of Eden, Bega and Merrimans are situated within the EMBA. The South Coast People have submitted a Native Title Determination Application relating to the lands and waters extending from Hacking River south to Towamba River; and 3 nm offshore.

4.4.1.2 Native Title

No native title claims, or determinations have been registered within the operating area. Within the EMBA, there is one Native Title determination with non-exclusive Native Title established in Victoria, and a one further Native Title claim along the NSW coast (Table 4-16).

Table 4-16 Native Title Claims and Determinations

Applicant	State	Status	Detail
South Coast People (NC2017/003)	NSW	Active	Claim covers 16,807.7 km^2 of the southern NSW coast from Eden to Sydney. Claim was accepted for registration 31 January 2018.
Gunaikurnai People (VCD2010/001)	Victoria	Determined	Determination covers 13,842 km^2 of the eastern Victorian coastline in the Gippsland region. Native Title was granted 22 October 2010.

Maps are reproduced with the kind permission of the National Native Title Tribunal (NNTT).

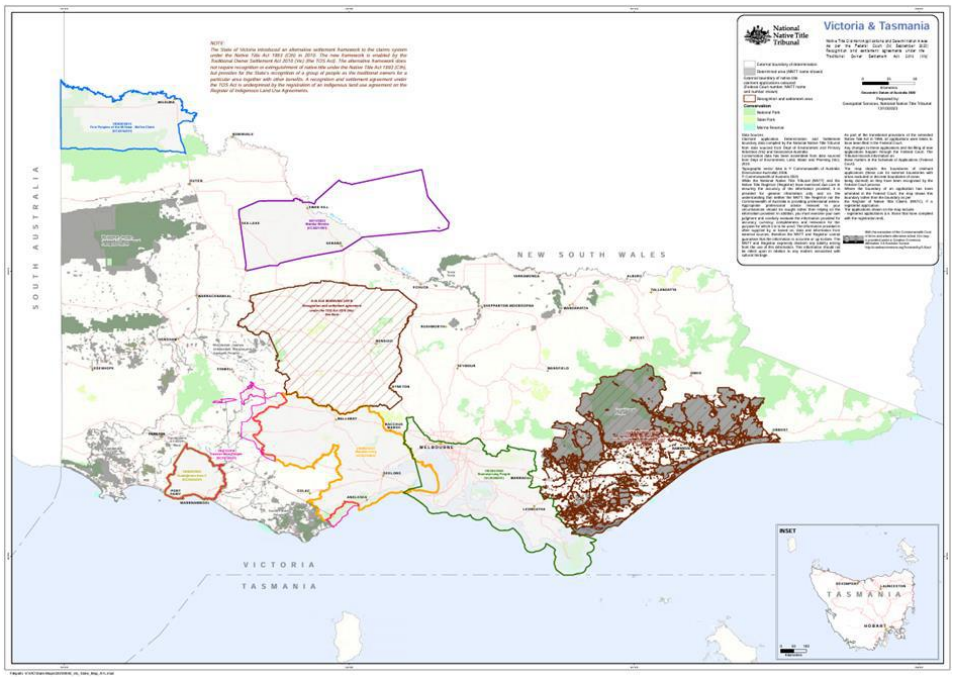


Figure 4-8 Native Title Applications and Determination Areas, Victoria & Tasmania (NNTT, 2025)

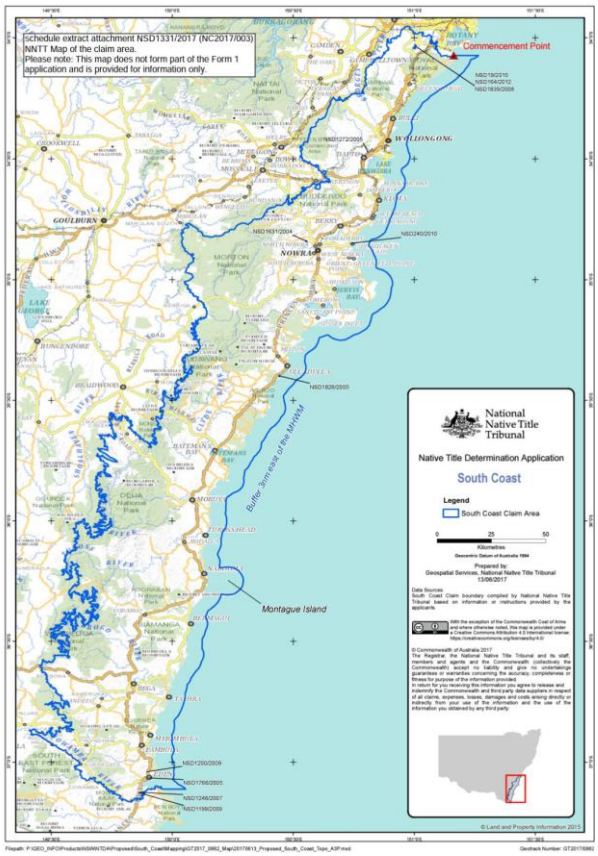


Figure 4-9 Native Title Determination Application, South Coast (NNTT, 2017)

4.4.2 Underwater Cultural Heritage

The Australasian Underwater Cultural Heritage Database (DCCEEW, 2024j) indicates there are no shipwrecks identified within the operating area.

However, there are approximately 57 historic shipwrecks within the EMBA, the majority of which are dotted along the Gippsland coastline. Approximately 16 are located at or near Lakes Entrance and another approximately 20 shipwrecks are located around Cape Howe on the border of NSW and Victoria. One shipwreck, the SS Federal located off Point Hicks, is in a protected zone (DoEE, 2019).

4.5 Socio-economic Environment

4.5.1 Settlements

The communities of Lakes Entrance, Orbost and Marlo are closest to the operating area (see Figure 4.4). They are located approximately 37 km northwest, 38 km north and 44 km northeast, respectively, in the Victorian East Gippsland Shire.

The population of East Gippsland Shire is approximately 47,700. Lakes Entrance and Orbost are two of the largest towns by population at approximately 8500 and 4000 respectively (East Gippsland Shire Council, 2021). Approximately 16%of the population is employed in health care and social assistance, approximately 10% in both the retail trade sector and construction and approximately 8% employed in both the accommodation and food services, and agriculture, forestry and fishing sectors (.idcommunity. 2021a).

In NSW within the EMBA, Eden is the largest settlement with a population of approximately 3,200 people. Eden is a part of the Bega Valley Shire with a population of approximately 36,000. Approximately 16% of the shire population is employed in health care and social assistance, approximately 10% each in retail trade, accommodation and food services, and construction and approximately 7% in both manufacturing and agriculture, forestry and fishing sectors (.idcommunity, 2021b).

4.5.2 Tourism and Recreation

4.5.2.1 Victoria

The key towns servicing the tourist trade of the region are Lakes Entrance, Metung, Loch Sport, Paynesville and Mallacoota, the (coastal) half-way point between Melbourne and Sydney. The Ninety Mile Beach is a key draw card to the region, with this stretch of sand and dunes separating the ocean from the Gippsland Lakes. Lakes Entrance has a fishing port that supports offshore commercial (South East Trawl) and recreational fishing. Gippsland Lakes (the southern hemisphere's largest network of inland waterways) being a key draw card for tourists, offering boating, fishing, water sports and nature-based tourism. The Gippsland Lakes consist of three lakes – Wellington, Victoria and King, fed by the Mitchell, Tambo and Nicholson rivers. In the year ending March 2019, the Gippsland region received approximately seven million visitors who spent an estimated $1 billion. Visitor expenditure

generated approximately 16,000 jobs for people employed in the tourism industry, which represents 12.6% of the region's total employment (Destination Gippsland, 2022).

Recreational fishing is a significant activity in the nearshore area along Ninety Mile Beach, comprising beach-based fishing and boat-based fishing. Rocky reefs near Marlo, Cape Conran and Lakes Entrance are the main sites for boat angling (and also recreational diving), with boat ramps located at Port Albert, Port Welshpool, McLoughlins Beach, Manns Beach and Lakes Entrance. Species such as Gummy Shark (*Mustelus antarcticus*) and Snapper (*Pagrus auratus*) are fished from the surf beaches and from boats, with other species targeted including Sand Flathead (*Platycephalus bassensis*), Black Bream (*Acanthopagrus butcheri*) and Australian Salmon (*Arripis trutta*). Most marine recreational fishing in the area is coastal, surf, inland lake and estuary fishing with only a small proportion of recreational boating activities venturing offshore.

Marine-based activities will intersect with the EMBA. However, marine-based tourism and recreation is unlikely to occur within the Operating Area given the depth of the water, lack of seabed features, and distance from the shore.

4.5.2.2 NSW

Tourism is a key contributor to the Bega Valley Shire economy with the year ending December 2023 recording an estimated 1,240,000 visitors, spending $515 million. This is estimated to have contributed to approximately 4,120 jobs (Bega Valley Shire Council. 2019). The coast is referred to as the Sapphire Coast and recreational fishing offered in the forms of game, reef, sport, estuary, rock and beach fishing are all popular from Eden. Tuna and kingfish fishing are popular as well as freshwater fishing, prawning, trapping and diving.

4.5.3 Offshore Energy Infrastructure

4.5.3.1 Oil and Gas

Within the Gippsland Basin a network of subsea pipelines transports oil and gas from platform and subsea facilities to onshore processing plants at Longford and Orbost (Figure 4-11).

The Patricia Baleen pipeline owned and operated by Amplitude Energy is partly located within the operating area.

Oil and gas developments located within the EMBA (Gippsland Basin) include developments owned and operated by Amplitude Energy and Esso Australia. The closest manned platform is Tuna operated by Esso Australia and located approximately 4 km southwest of the operating area.

Emperor Energy has recently submitted an Environment Plan for a proposed exploration well (Judith-2) in VIC/P74 approximately 5 km east of the operating area. However, Emperor Energy does not currently have any operational oil and gas developments in the Gippsland Basin.

4.5.3.2 Greenhouse Gas Storage

In August 2024 Esso Australia was granted a Greenhouse Gas Assessment Permit G-19-AP which covers an area of approximately 3,370 km^2 within the Gippsland Basin and overlaps the Longtom gas field production licence VIC/L29. Esso Australia does not currently have any operational carbon capture and storage developments in the Gippsland Basin.

4.5.3.3 Renewable Energy

The Offshore Electricity Infrastructure Bill was introduced in 2021 and was shortly followed (August 2022) by an announcement from the Australian Government proposing six areas for offshore renewable energy projects in Commonwealth waters.

The Australian Government has granted 12 feasibility licences for offshore wind projects off Gippsland's coast in Victoria. The declared offshore wind area covers approximately15,000 km2 extending from south of Wilsons Promontory to Lakes Entrance (DCCEEW, 2025c).

The operating area overlaps the eastern border of the OEI-01-2022 Part 1 declared offshore wind area in Gippsland. However, the operating area does not overlap any of the feasibility licence areas. Licence areas which overlap with the EMBA are FL-007 Gippsland Dawn and FL-011 Navigator North.

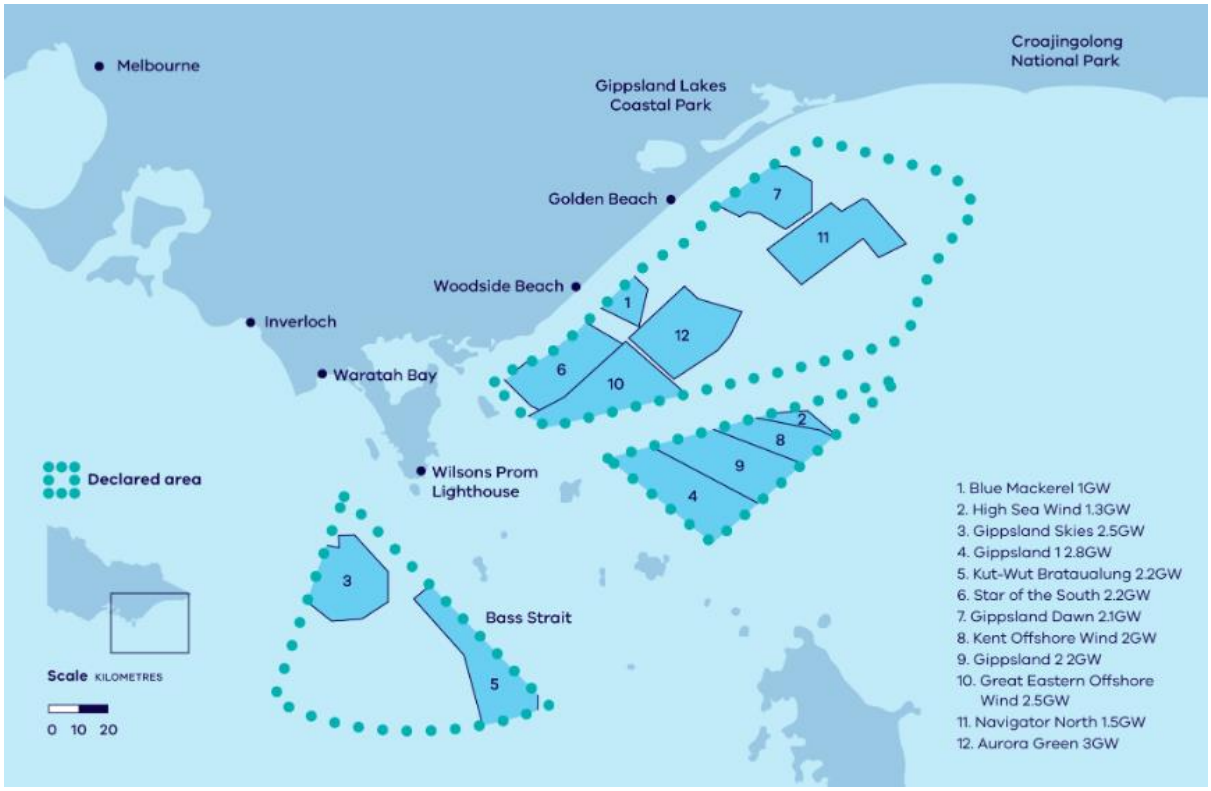


Figure 4-10 Offshore wind in Gippsland (DEECA, 2025)

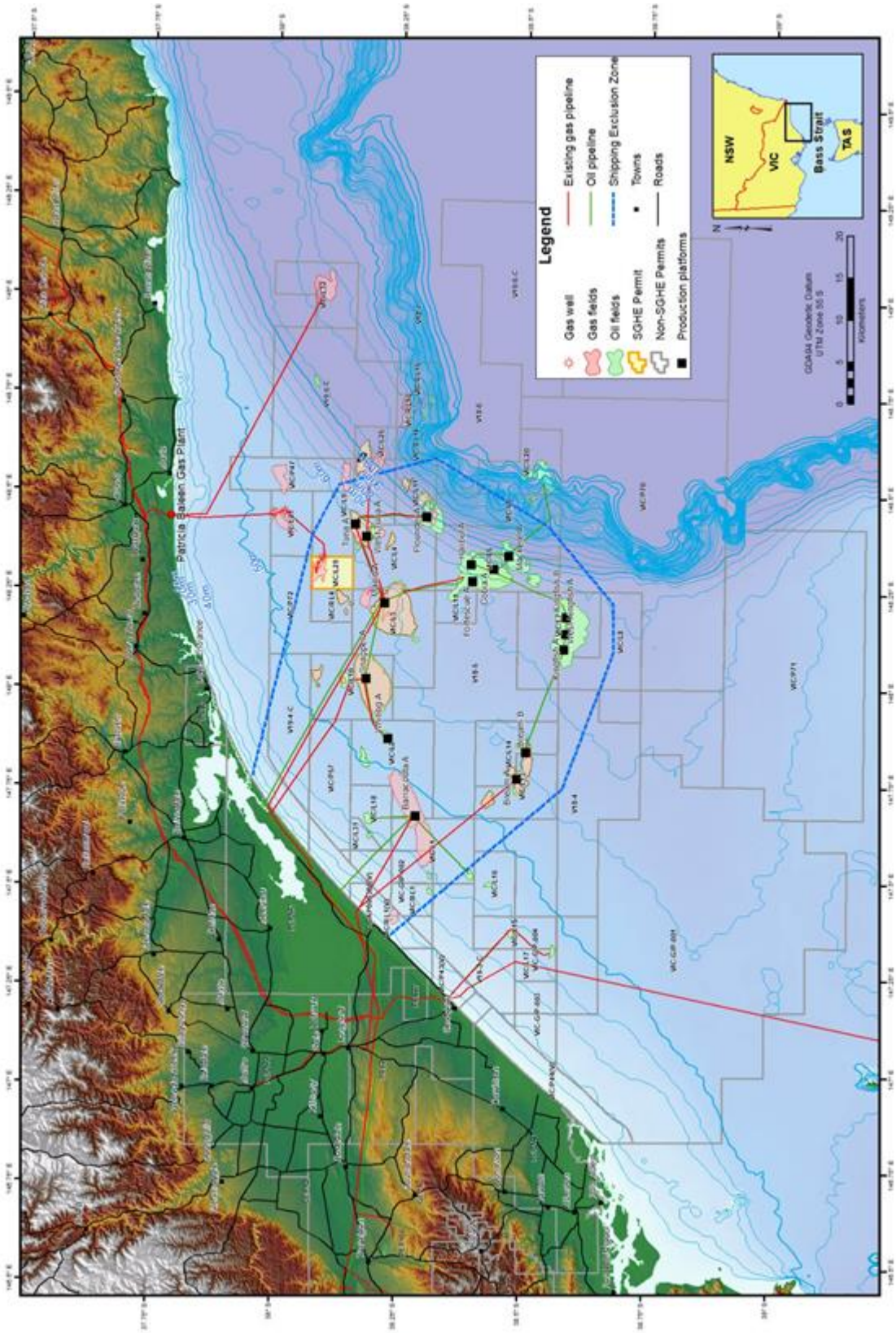


Figure 4-11 Existing oil and gas infrastructure in relation to VIC/L29

4.5.4 Shipping

The south-eastern coast of Australia is one of the countries busiest in terms of shipping activity and volumes. There are no main commercial shipping routes located within the operating area, however there is high vessel activity within the EMBA. By volume, most heavy shipping movements in Bass Strait are east-west and west-east between the major ports of Fremantle, Western Australia, and Melbourne and Sydney (NOO, 2002; 2004). An 'Area to be Avoided' (ATBA) exclusion zone exists around the operating oil and gas platforms in the Gippsland Basin, whereby unauthorised vessels larger than 200 gross tonnes are excluded. The production licence VIC/L29 is located within this ATBA (near the eastern boundary).

Two traffic separation schemes were implemented to enhance safety of navigation around the ATBA by separating shipping into one-direction lanes for vessels heading north eastwards and those heading south westwards. One separation area is located south of Wilson's Promontory, and the other south of the Kingfish B platform (DAFF, 2002) (see Figure 4-12). The operating area is located approximately 60 km northwest of the main shipping lane (located to the south of the Kingfish B platform) and therefore interaction between commercial shipping vessels and operating activities is expected to be negligible.

Other minor ports occur closer to the operating area, in Victoria, including the Port of Gippsland Lakes and the Port of Snowy River. These ports support commercial and recreational fishing industries as well as the tourism industry (Gippsland Ports, 2025).

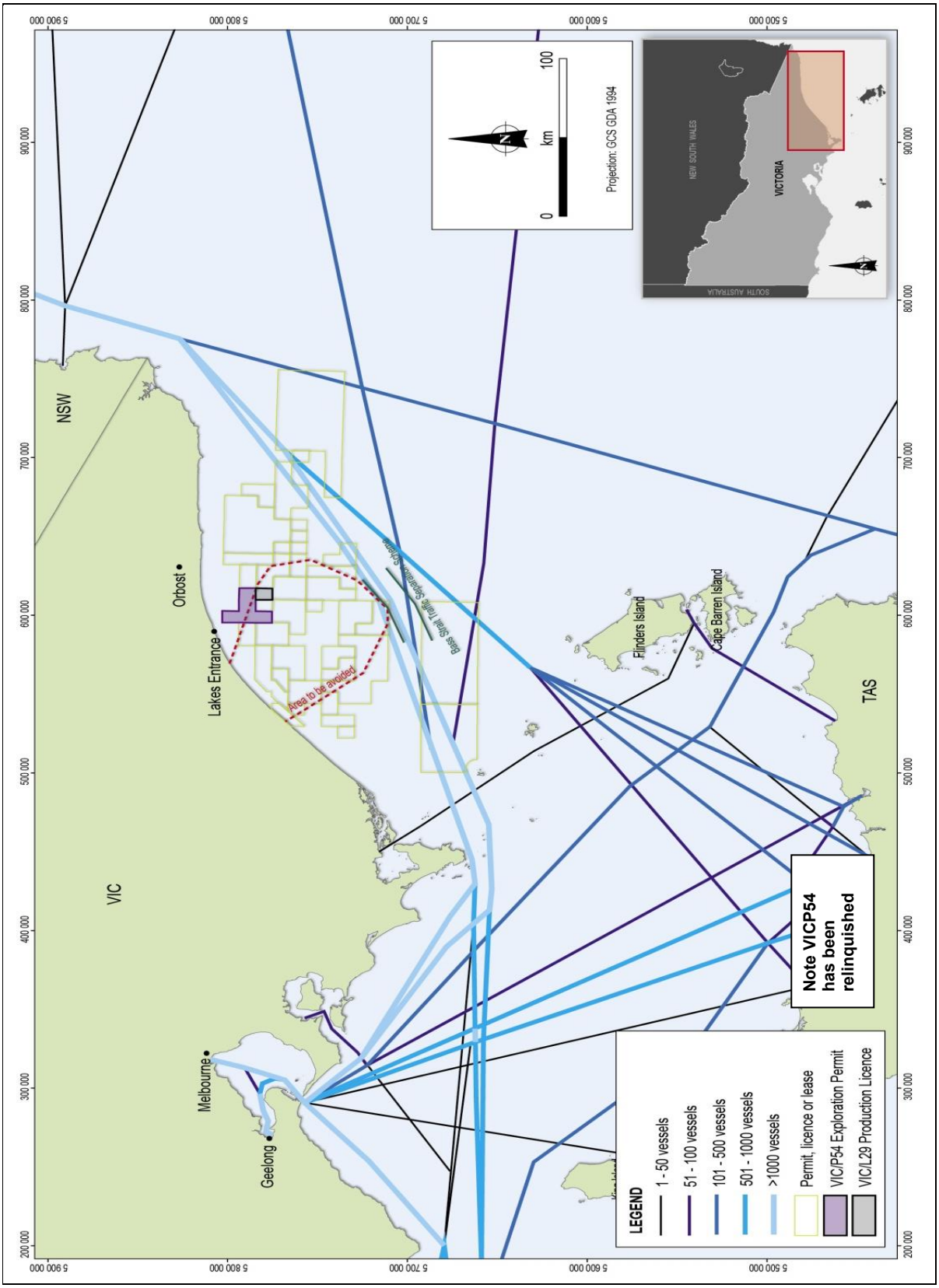


Figure 4-12 Shipping Routes and 'Area to be Avoided' in relation to VIC/L29

4.5.5 Commercial Fishing

4.5.5.1 Commonwealth-managed Commercial Fisheries

Commonwealth fisheries are managed by the Australian Fisheries Management Authority (AFMA) under the *Fisheries Management Act 1991*. AFMA jurisdiction covers the area of ocean from 3 nm from the coast out to the 200 nm limit (the extent of the Australian Fishing Zone (AFZ)). Nine Commonwealth-managed fisheries have management areas that intersect the operating area and the EMBA. To identify Commonwealth-managed fisheries that could be potentially impacted by the activity a review of fisheries data supplied by the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) from data collected by AMFA was conducted. This review identified four Commonwealth-managed fisheries with activity within the operating area and an additional four with activity within the EMBA (AFMA, 2025 and Butler *et al*., 2024). Details of these fisheries are provided in Table 4-17.

Those considered active within the operating area and therefore having a potential to interact with operating activities include the:

- Southern and Eastern Scalefish and Shark Fishery (SESSF) – Gillnet Hook and Trap Sector (Shark Gillnet sub-sector).
- SESSF – Commonwealth Trawl Sector (Otter-board Trawl and Danish-seine sub-sectors).
- SESSF – Scalefish Hook Sector.
- Small Pelagic Fishery (SPF)

The Eastern Skipjack Tuna Fishery has been inactive since the 2008-2009 fishing season and is not discussed further.

The other fisheries include the:

- Bass Strait Central Zone Scallop Fishery (BSCZSF).
- Southern Squid Jig Fishery.
- Southern Bluefin Tuna Fishery.
- Eastern Tuna and Billfish Fishery.

4.5.5.2 Victorian-managed Commercial Fisheries

Victorian state fisheries are managed by the Victorian Fisheries Authority (VFA) under the *Fisheries Act* 1995. VFA jurisdiction extends offshore to 3 nm with additional offshore constitutional settlements for specific fisheries beyond state boundaries into Commonwealth waters.

Eight Victorian-managed fisheries have management areas that intersect with the operating area and EMBA (VFA, 2025) (Table 4-18):

- Abalone Fishery.

- Rock Lobster Fishery (closely linked to the Giant Crab Fishery noting there is no Giant Crab fishing undertaken in eastern Victoria within the EMBA).
- Victorian Scallop Fishery.
- Sea Urchin Fishery.
- Victorian Wrasse (Ocean) Fishery
- Octopus (Eastern Zone) Fishery.
- Trawl (Inshore) Fishery.
- Pipi Fishery.

Only the Trawl (Inshore) Fishery which is closely linked to the SESSF – Commonwealth Trawl Sector has potential for activity within the operating area. Specific to the trawl fishing method, AFMA has jurisdiction over all trawl fishing for finfish in Victorian coastal waters, while the VFA is responsible for managing trawl fishing for bay bugs, eastern king prawns, sand crabs and school prawns (VFA, 2025).

Table 4-17 Commonwealth-managed fisheries with management areas overlapping the operating area and EMBA

Fishery	Main species targeted	Management Area Description	Fishery Description	Recent Fishing Activity	Management area overlap		Potential for interaction in the operating area
					Operating Area	EMBA	
Southern and Eastern Scalefish and Shark Fishery - Gillnet Hook and Trap Sector	Elephantfish (*Callorhinchus milii*) Gummy Shark (*Mustelus antarcticus*) Sawsharks (*Pristiophorus cirratus, P. nudipinnis*) School Shark (*Galeorhinus galeus*)	Most fishing using nets occurs in Bass Strait, whereas most fishing using hooks occurs off South Australia.	Method: Demersal gillnet, demersal longline, auto longline Fishing permits: In both 2022-23 and 2023-24 there were 60 gillnet and 13 shark hook permits with individual transferable quotas. Season: 12 month season beginning on 1 May.	There were 30 gillnet and 57 shark hook vessels active in the 2022-23 season and 31 gillnet and 68 shark hook vessels active in the 2023-24 season. Lakes Entrance is a primary landing port.	YES.	YES	YES <u>Shark Gillnet sub-sector</u> The operating area overlaps an area of reported medium to high fishing intensity (Figure 4-13). NO <u>Shark Hook sub sector</u> Although there is potential for overlap of fishing activity within the operating area reported fishing intensity in 2023-24 was concentrated around the Furneaux Island group in Tasmania.
Southern and Eastern Scalefish and Shark Fishery - Commonwealth Trawl Sector (CTS) and Scalefish Hook Sector(SHS)	Tiger Flathead (*Neoplatycephalus richardsoni*) Silver Warehou (*Seriolella punctata*) Gummy Shark (*Mustelus antarcticus)*	The CTS extends southward from Barranjoey Point in northern NSW to east of Kangaroo Island in South Australia. The SHS extends around south-eastern Australia to	Method: Otter-board trawl, Danish-seine, hook (dropline, demersal longline), trap (minor) Licences: In 2022-23 there were 57 trawl and 37 scalefish hook fishing rights and in 2023-24 there were	There were 30 trawl, 18 Danish-seine, and 21 scalefish hook vessels active during the 2022-23 season and 24 trawl, 18 Danish-seine and 13 scalefish hook vessels active during 2023-24.	YES.	YES	YES <u>Commonwealth Trawl Sector</u> The operating area overlaps an area of reported low to medium fishing intensity for the otter-board trawl sub-sector (Figure 4-14). The operating area overlaps an area of reported high fishing intensity for the Danish-seine sub-sector (Figure 4-15)

Fishery	Main species targeted	Management Area Description	Fishery Description	Recent Fishing Activity	Management area overlap		Potential for interaction in the operating area
					Operating Area	EMBA	
	Pink Ling (*Genypterus blacodes*) Eastern School Whiting (*Sillago flindersi*)	the border between South Australia and Western Australia.	36 trawl and 37 scalefish hook fishing rights. Season: 12 month season, beginning on 1 May	Effort in both species is widely distributed, however since the closure of SESSF waters deeper than 700m to trawling effort has become increasingly concentrated on the continental shelf (to 200m). Lakes Entrance is a primary landing port.			YES <u>Scalefish Hook Sector</u> The operating area overlaps the maximum area fished in 2023-24 (Figure 4-16).
Bass Strait Central Zone Scallop Fishery (BSCZSF)	Commercial scallop (*Pecten fumatus*). Doughboy scallop (*Chlamys asperrimus*) as bycatch	BSCZSF operates in central Bass Strait, between the zones managed by Victoria and Tasmania (that lie within 20 nm of their respective coasts) extending from the Victoria/NSW border, around southern Australia to the Victoria/South Australia border.	Method: Towed dredges Licences: 35 in both 2022 and 2023 with individual transferable quotas. Season: July to 31 December. Managed under a harvest strategy by setting of total allowable catch combined with	Fishery effort fluctuates significantly, dredge-hours were low in 2022 but increased in 2023. In 2022 and 2023 there were 7 and 9 boats in the fishery respectively. Reported fishing intensity in 2023 was primarily concentrated in western Bass Strait (on the eastern side of King Island).	NO.	YES	NO

Fishery	Main species targeted	Management Area Description	Fishery Description	Recent Fishing Activity	Management area overlap		Potential for interaction in the operating area
					Operating Area	EMBA	
			seasonal and area closures.				
Southern Squid Jig Fishery (SSJF)	Gould's squid (*Nototodarus gouldi*)	Located off NSW, Victoria, Tasmania and South Australia and in a small area of oceanic water off southern Queensland.	Method: Squid jig with high-powered lamps set to attract squid. Vessels typically operate at night in continental-shelf waters between depths of 60 m and 120 m. Fishing permits: 4800 SFRs* in both 2022 and 2023 (*SFRs: fishing rights that allow fishers to use a defined type and quantity of fishing gear). Season: 1 January to 31 December	There has been a variable but increasing trend in fishing effort in the SSJF since 2014. In 2022 and 2023 there were 6 and 8 active jig vessels respectively. Reported fishing intensity in 2023 was primarily concentrated off the east coast of Tasmania and south of Warrnambool.	YES.	YES	NO Although there is potential for overlap of fishing activity within the operating area the major landing ports are Portland and Queenscliff in western Victoria.
Eastern Tuna and Billfish Fishery	Yellowfin Tuna (*Thunnus albacares*)	Operates from Cape York in Queensland to the South	Method: mainly pelagic longlines but also minor line	The number of active longline vessels in the fishery has decreased substantially in the past	YES.	YES	NO No overlap of fishing activity is expected within the operating area

Fishery	Main species targeted	Management Area Description	Fishery Description	Recent Fishing Activity	Management area overlap		Potential for interaction in the operating area
					Operating Area	EMBA	
	Bigeye Tuna (*Thunnus obesus*), Albacore Tuna (*Thunuss alulunga*) Broadbill Swordfish (*Xiphias gladius*) Striped Marlin (*Kajikia audax*)	Australian/Victorian border. Fishing occurs in both the AFZ and adjacent high seas.	(trolling, rod and reel, handline Fishing permits: Longline boat SFRs:79 and minor-line boat SFRs: 83 in both 2022 and 2023 with individual transferable quotas. Season: 1 January to 31 December	two decades (from around 152 in 1999 to 34 in 2023). Catch increased slightly from 2022 to 2023. Reported fishing intensity in 2023 was concentrated along the coasts of NSW and Queensland, and the southeast coast of Tasmania.			as effort is concentrated along the coast of NSW and southern-central Queensland. AFMA indicates that as it is the continental shelf and slope waters that are targeted central Bass Strait is too shallow. However, the EMBA potentially overlaps an area of low to medium fishing intensity in the vicinity of the major landing port of Bermagui in southern NSW.
Southern Bluefin Tuna Fishery	Southern Bluefin Tuna (*Thunnus maccoyii)*	Covers all waters in the AFZ (out to 200 nm)	Method: Pelagic longline and purse seine Fishing permits: At the start of both the 2021-22 and 2022-23 seasons there were 85 owners of SFRs. Season: 12 month season, beginning on 1 December	There were eight active purse seine vessels and 22 longline vessels active in the 2021-22 season. There were six purse seine vessels and 24 longline vessels active in the 2022-23 season. Since 1992, most of the Australian catch has been taken by purse seine, targeting juvenile southern bluefin tuna (2 to 4 years of age) in the Great Australian Bight.	YES.	YES	NO No overlap of fishing activity is expected as effort is concentrated either along the east coast (longline) or in the Great Australian Bight (purse seine). AFMA indicates that as it is the continental shelf and slope waters that are targeted central Bass Strait is too shallow.

Fishery	Main species targeted	Management Area Description	Fishery Description	Recent Fishing Activity	Management area overlap		Potential for interaction in the operating area
					Operating Area	EMBA	
				This catch is transferred to aquaculture farming operations off the coast of Port Lincoln in South Australia, where the fish are grown to a larger size to achieve higher market prices.			
Small Pelagic Fishery (SPF)	Australian Sardine (Sardinops sagax) Blue Mackerel, (Scomber australasicus) Jack Mackerel, (Trachurus declivis) Redbait, (Emmelichthys nitidus)	Extends from the Queensland/NSW border, typically outside 3 nm, around southern Australia to a line at latitude 31° south (near Lancelin, north of Perth). The fishery has three subareas (east, west and sardine) each with separate stock-level total allowable catches.	Method: Midwater trawl and purse seine Fishing permits: In 2022-23 33 entities held quota SFRs. In 2023-24 28 entities held quota SFRs. Season: 12 month season, beginning on 1 May	There were four purse seine and two midwater trawl vessels in the 2022-23 season and five purse seine and three midwater trawl vessels in the 2023-2024 season. Midwater trawling has been the primary fishing method in the SPF in more recent years and most effort now occurs off the south coast of NSW with the primary landing ports being Eden and Ulladulla.	YES	YES	YES The operating area overlaps the maximum area fished in 2023-24 (Figure 4-17).

Table 4-18 Victorian-managed fisheries with management areas overlapping the operating area and EMBA

Fishery	Main species targeted	Management Area Description	Fishery Description	Recent Fishing Activity	Management area overlap		Potential for interaction in the operating area
					Operating Area	EMBA	
Abalone Fishery	Blacklip Abalone (*Haliotis rubra*), Greenlip Abalone (*Haliotis laevigata*).	Abalone are caught along the majority of the Victorian coastline and is split into three management zones; eastern, central and western	Method: Diving – hookah gear (air is supplied through an air-hose connected to an air compressor on the vessel) Licences: 71 access licences (across the three management zones) (June 2024) Season: 12 month season beginning on 1 April	The fishery extends into Commonwealth Waters and there is overlap between the eastern zone and the operating area and the central and eastern zones and the EMBA.	YES	YES	NO Abalone diving occurs close to shoreline, in waters <30m depth. Therefore, interaction within the operating area is highly unlikely. Interactions with the fishery would be limited to activities within the EMBA.
Rock Lobster Fishery	Southern Rock Lobster (Jasus edwardsii)	Extends along the Victorian coastline in two zones. Eastern zone: West from NSW border to Apollo Bay. Western zone: from Apollo Bay west to the border with South Australia.	Method: Baited commercial pots Licences: 95 (June 2024) Season: Closed season for females 1 June to 15 November, for males 15 September to 15 November	The fishery extends into Commonweath Waters and there is overlap between the eastern zone and both the operating area and the EMBA. Most of the catch comes from inshore waters < 100 m deep.	YES.	YES	NO Although there is potential for overlap of fishing activity with the operating area historically the area has not been subject to rock lobster fishing.

Fishery	Main species targeted	Management Area Description	Fishery Description	Recent Fishing Activity	Management area overlap		Potential for interaction in the operating area
					Operating Area	EMBA	
Victorian Scallop Fishery	Commercial Scallop (*Pecten fumatus*). Doughboy Scallop (*Chlamys asperrimus*) as bycatch	The waters of the Victorian scallop zone extend out to 20 nm from the high tide water mark, but exclude the bays and inlets along the coast where commercial fishing for scallops is prohibited.	Method: Towed dredges Licences: 88 (June 2024) Season: 12 month season beginning on 1 April	Fishery effort fluctuates significantly. Historically, the majority of the fishing activity in the Victorian zone has occurred in eastern waters, with most vessels launching from the ports of Lakes Entrance and Welshpool.	YES.	YES	NO Although there is potential for overlap of fishing activity with the operating area historically the area has not been subject to scallop fishing. The Victorian Scallop Fishermen's Association indicates a maximum fishing depth of about 45 m. Operating area water depth is deeper than current indicated maximum scallop fishing depth.
Sea Urchin Fishery	White Sea Urchin (*Heliocidaris erythrogramma*) Black, Long-spined Sea Urchin (*Centrostephanus rodgersii*)	Extends along the Victorian coastline in four zones: eastern, central Port Phillip Bay and western.	Method: Hand collection while diving Licences: Uncapped. Season: 1 July to 30 June More recently Black Sea Urchins have had a surge in abundance and extension of their range throughout southeastern	The fishery extends into Commonwealth Waters and there is overlap between the eastern zone the operating area and the central and eastern zones and the EMBA. Currently commercial fishing is only undertaken in the Port Phillip Bay and Eastern Zones.	YES.	YES	NO Given the water depth in the operating area the potential for interaction with the fishery is not considered likely. Interactions with the fishery would be limited to activities within the EMBA.

Fishery	Main species targeted	Management Area Description	Fishery Description	Recent Fishing Activity	Management area overlap		Potential for interaction in the operating area
					Operating Area	EMBA	
			Australia. To facilitate maximised harvest of black urchins, quota management arrangement were removed from 1 July 2024.				
Victorian Wrasse (Ocean) Fishery	Bluethroat Wrasse (*Notolabrus terticus*) Saddled Wrasse (*Notolabrus fucicola*) Rosy Wrasse (*Psuedolabrus psittaculus*) Senator Wrasse (*Pictilabrus laticlavius*) Southern Maori Wrasse (*Opthalmolepis lineolatus*)	Extends along the entire length of the Victorian coastline and out to 20 nm offshore, except for marine reserves. Three zones: east, central and west.	Method: Primarily hook and line Licences: 22 access licences (June 2024) Season: 12 month season	The fishery extends into Commonwealth Waters and the east zone overlaps both the operating area and EMBA. In the 2021 – 22 season no wrasse were reported as landed for the east zone.	YES.	YES	NO No overlap of fishing activity is expected within the operating area. Wrasse inhabit reefs at depths up to 160 m, therefore, interaction with the fishery is not considered likely.
Octopus (Eastern Zone) Fishery	Pale Octopus (*Octopus pallidus*) Maori Octopus (*Macroctopus maorum*)	Extends approximately from Seaspray to the Victorian/NSW border and out to 20 nm offshore,	Method: Unbaited 'shelter' pot LIcences: 11 (June 2024)	Fishery commenced on 1 August 2020.	YES.	YES	NO Although there is potential for overlap of fishing activity within the operating area, given the water depth interaction with the fishery is not considered likely. Interactions

Fishery	Main species targeted	Management Area Description	Fishery Description	Recent Fishing Activity	Management area overlap		Potential for interaction in the operating area
					Operating Area	EMBA	
	Gloomy Octopus (*Octopus tertricus*)	except for marine reserves.	Season: 12 month season				with the fishery would be limited to activities within the shallower coastal waters of the EMBA.
Trawl (Inshore) Fishery	Crustacean fishery for bay bugs, sand crabs, and eastern king and school prawns. Octopus as bycatch. Complements the larger SESSF - Commonwealth Trawl Sector, which primarily targets finfish see Table 4-17.	Extends along the entire length of the Victorian coastline. Two zones: eastern snapper zone and western snapper zone	Method: Trawl net or any other equipment specified on the licence Licences: 54 (June 2024) Season: 12 month season	See SESSF – Commonwealth Trawl Sector in Table 4-17	YES	YES	YES See Figure 4-18 and SESSF – Commonwealth Trawl Sector in Table 4-17
Pipi Fishery	Pipi (*Donax deltoides*)	Extends along the entire length of the Victorian coastline. Four zones: eastern, Venus Bay, western and Discovery Bay.	Method: Dip net Licences: 8 fishery access licences (June 2024) Season: 12 month season beginning on 1 July	The fishery doesn't extend into Commonwealth Waters and Pipi Fishery licences have only been issued for the Discovery Bay and Venus Bay zones.	YES	YES	NO Fishery targets the intertidal zone of high-energy sandy beaches where Pipi are found. Interactions with the fishery would be limited to activities within the EMBA.

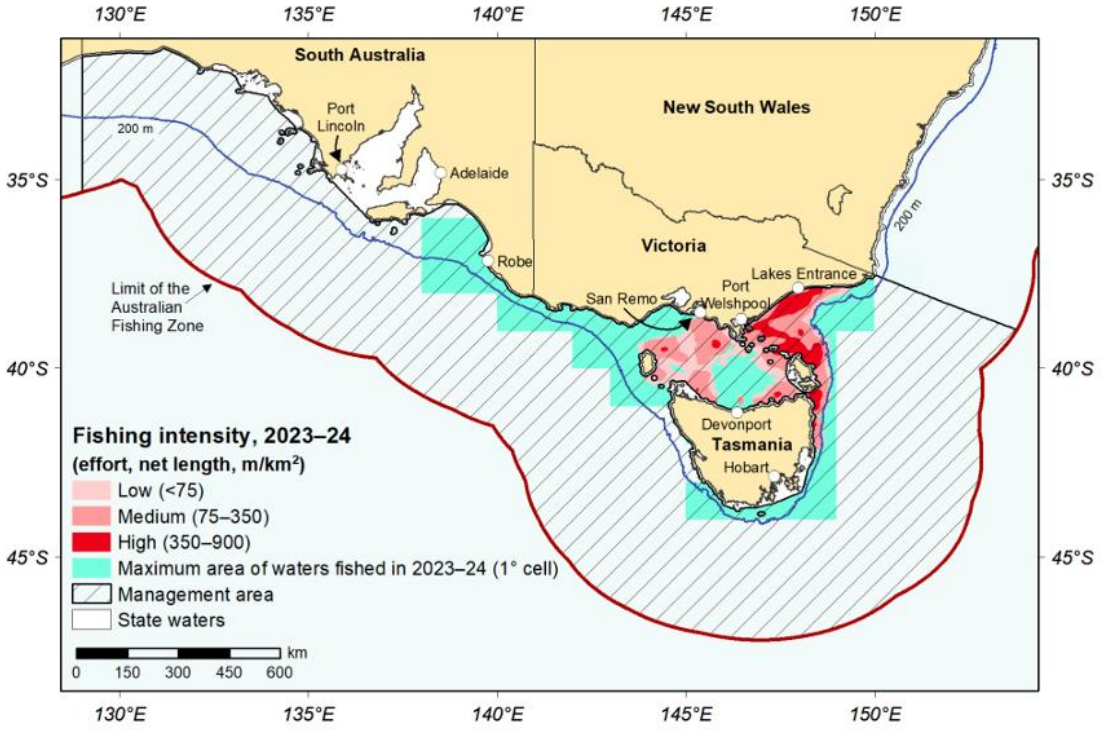


Figure 4-13 SESSF – fishing intensity in the Gillnet, Hook and Trap Sector for the Shark Gillnet sub-sector, 2023-24 (AFMA, 2025)

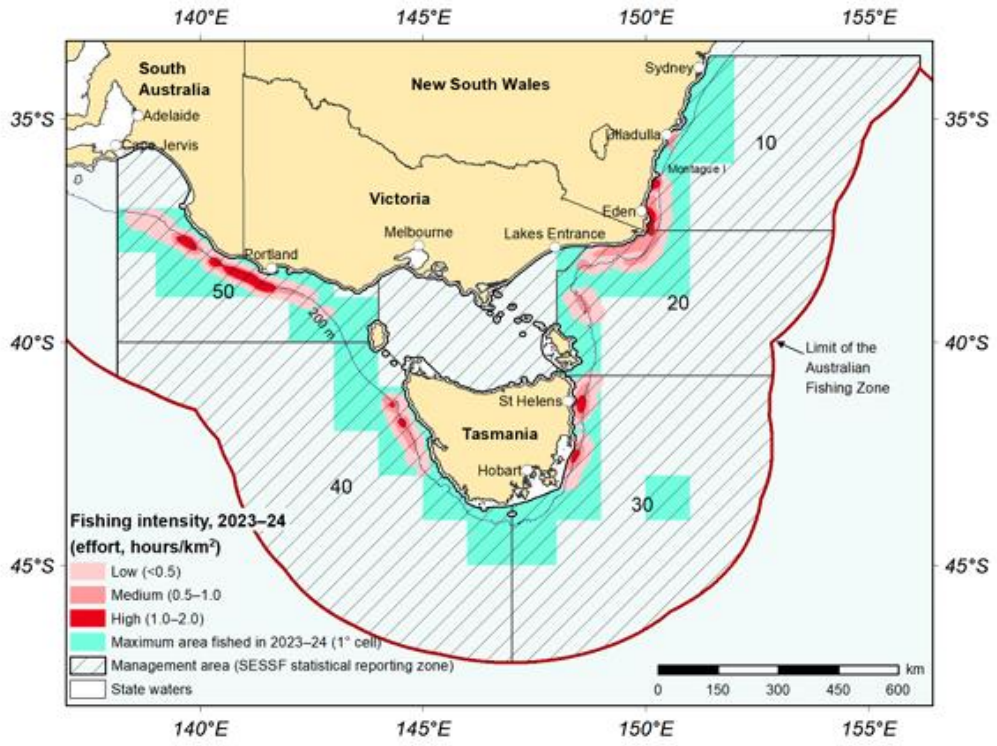


Figure 4-14 SESSF – fishing intensity in the Commonwealth Trawl Sector for otter-board trawl, 2023–24 (AFMA, 2025)

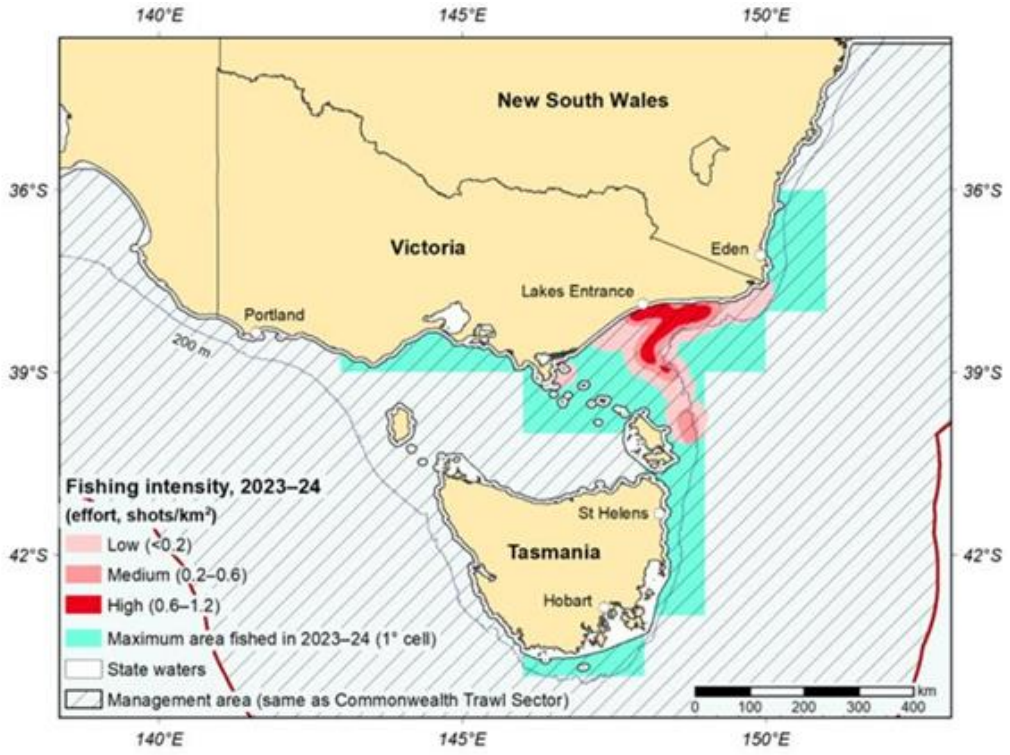


Figure 4-15 SESSF - fishing intensity in the Commonwealth Trawl Sector for Danish seine, 2023–24 (AFMA, 2025)

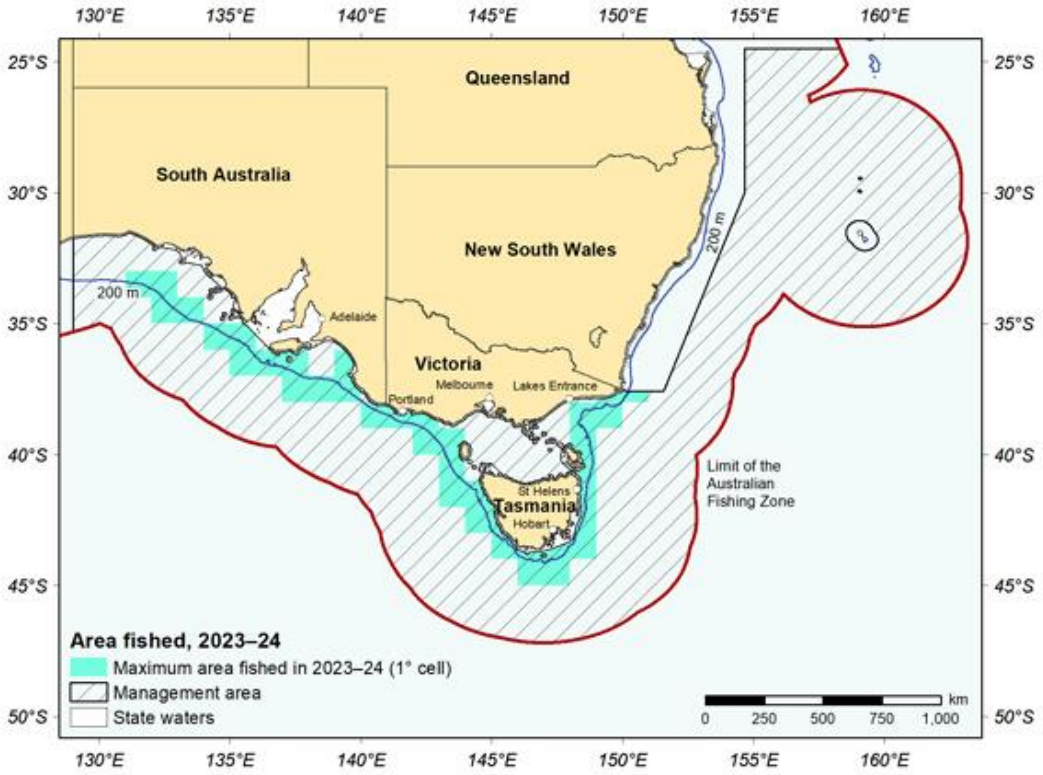


Figure 4-16 SESSF – maximum area fished in the Scalefish Hook Sector, 2023–24 (AFMA, 2025)

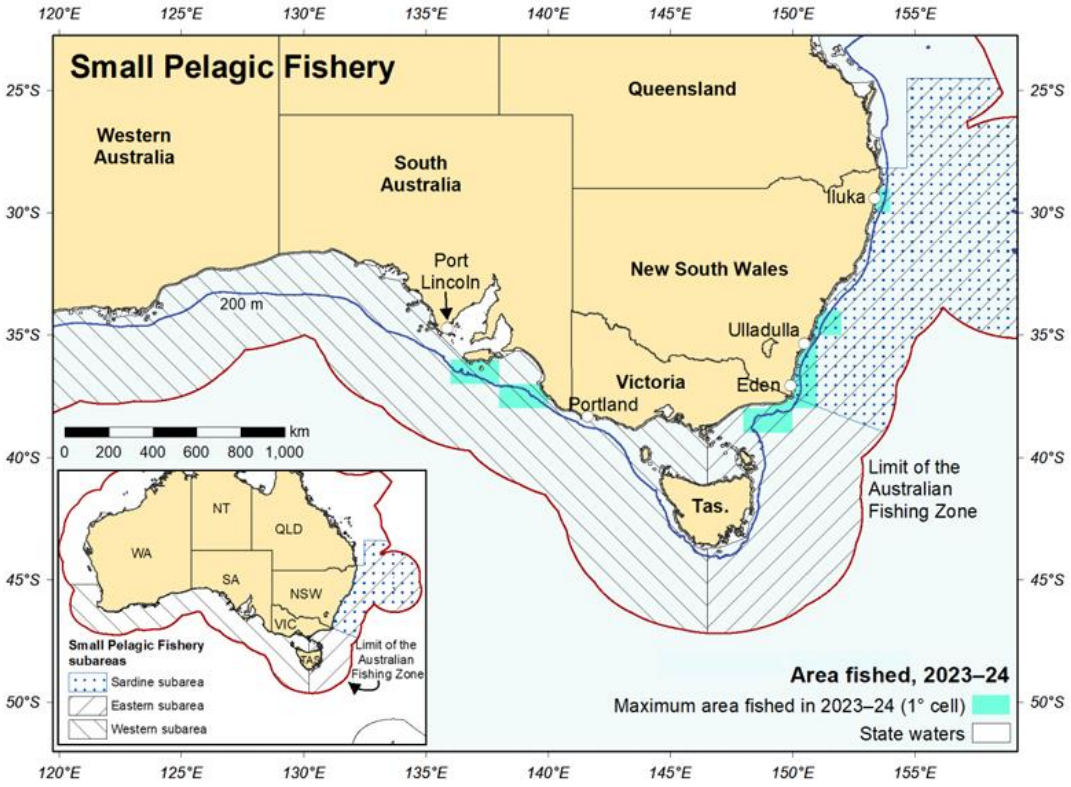


Figure 4-17 Small Pelagic Fishery – area fished, 2023–24 (AFMA, 2025)

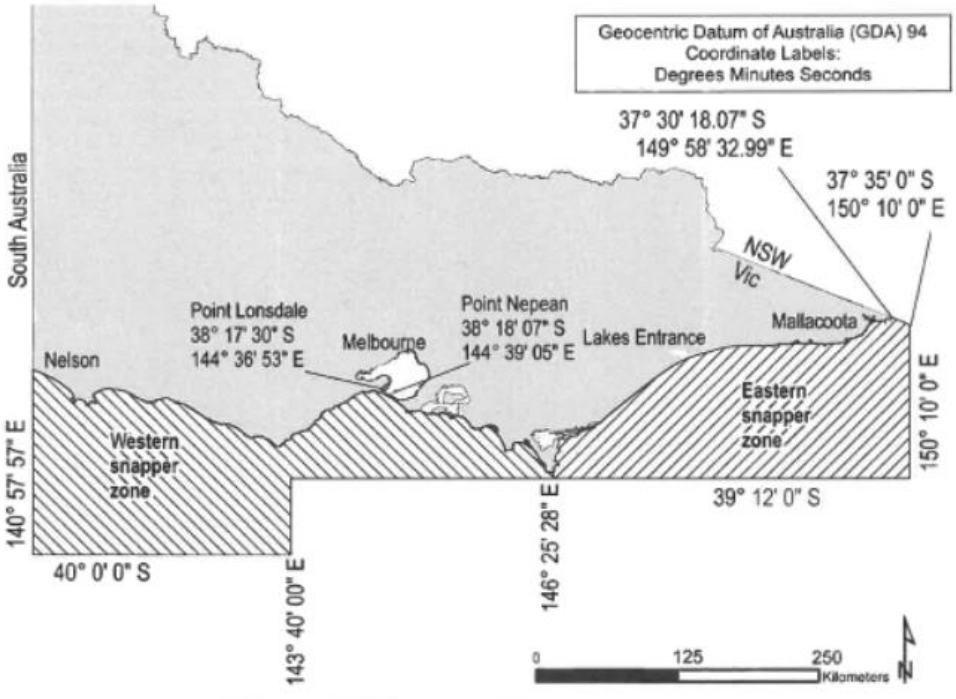


Figure 4-18 Victorian Trawl Fishery (VFA, 2025)

4.6 Conservation Values and Sensitivities

4.6.1 Protected Marine Areas

4.6.1.1 Australian Marine Parks

No Australian Marine Parks (AMPs) are located within either the operating area or EMBA (Figure 4-1). Figure 4-19 shows the AMPs situated in the south-west marine region.

East Gippsland

The East Gippsland Marine Park lies to the east and just beyond the fringe of the EMBA and covers 4137 km^2 of Commonwealth territory.

The reserve contains a large network of canyons, continental slope and escarpment at depths from 600 m to more than 4000 m. The upwelling of cooler water causes warm and temperate waters to mix, creating habitat for free-floating aquatic plants and phytoplankton communities. Oceanic seabirds are known to forage in these waters, including albatrosses, the White-faced Storm Petrel and Wedge-tailed Shearwater. Pygmy Blue Whales also forage in the park and Humpback Whales are known to pass through during their migrations (Director of National Parks, 2025). Table 4-19 describes the marine park, its values and assigned zones.

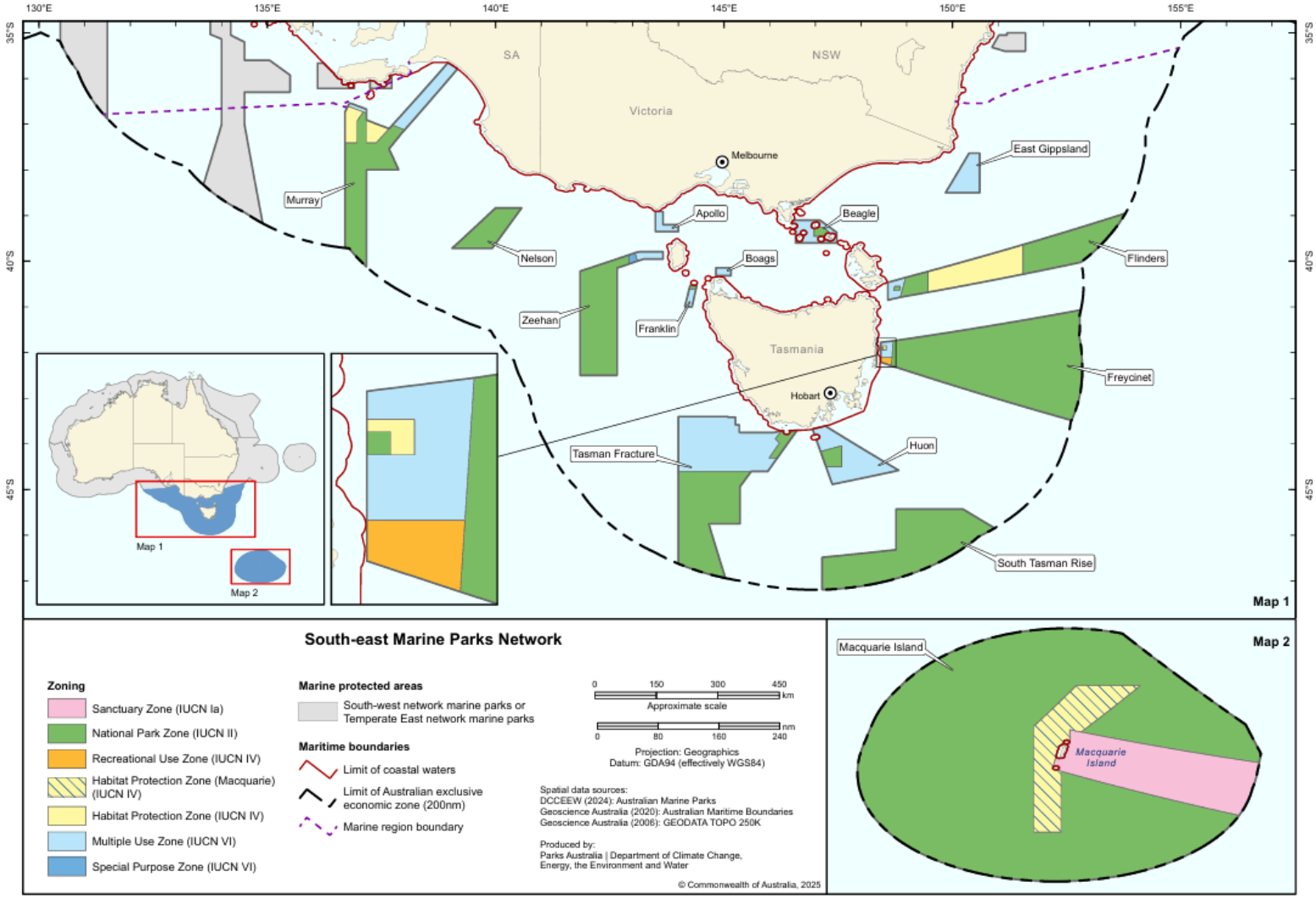


Figure 4-19 South-east Marine Parks Network (DCCEEW, 2025a)

Table 4-19 East Gippsland Marine Park Description and Values (Director of National Parks, 2025)

Proclaimed	28 June 2007 and came into effect on 1 September 2007			
Marine park IUCN category	IUCN VI			
Assigned zones in reserve:	IUCN Ia	IUCN II	IUCN IV	IUCN VI
				Multiple Use Zone 4137 km^2
Depth range	604 m – 5276 m			
Total area	4137 km^2 (413 700 ha).			
Major conservation values	Examples of habitats and communities associated with: • Deepwater ecosystems: o abyssal plain/deep ocean floor o canyon o escarpment o knoll/abyssal hill o upper slope Features with high biodiversity and productivity: • Upwelling east of Eden Important foraging area for: • Bullers, Wandering, Black-browed, Campbell, Indian Yellow-nosed and Shy Albatrosses; White-faced Storm Petrel; Wedge-tailed Shearwater; and Pygmy Blue Whale •			
Location	The East Gippsland Marine Park is located off the north-east corner of Victoria, on the continental slope and escarpment.			
General description of the reserve	The East Gippsland Marine Park contains representative samples of an extensive network of canyons, continental slope and escarpment at depths from 600 m to more than 4000 m. The geomorphic features of this reserve include rocky-substrate habitat, submarine canyons, escarpments and a knoll, which juts out from the base of the continental slope. The western section of the park intersects with the offshore edge of the upwelling east of Eden, which is defined as a key ecological feature, as it is an area of high productivity. The East Australian Current brings subtropical water from the north, and around Cape Howe the current forms large eddies, with a central core of warm water. Around the outside of the eddies, cooler, nutrient-rich waters mix with the warm water creating conditions for highly productive phytoplankton growth, which supports a rich abundance of marine life. During winter, upwellings of cold water may occur and bring nutrient-rich waters to the surface, boosting productivity. The park includes biologically important foraging areas for seven species of albatross, Wedge-tailed Shearwaters, White Faced storm Petrels and the Pygmy Blue Whale. Humpback Whales pass through during their migrations north and south along the eastern seaboard. The lower slope, in depths of 2,500 m to around 4000 m, supports a diverse invertebrate fauna, including Large Red Spiny King Crab, Squat Lobster, Finned Octopus, sea cucumbers, sea stars, sea spiders, shrimp, crinoids and sea whips, polychaetes and bivalves.			

Beagle

The Beagle Marine Park, located approximately 150 km southwest of the operating area, lies off Wilson's Promontory west of the EMBA and covers 2,928 km^2 of Commonwealth territory. The park represents an area of shallow continental shelf ecosystems in the major biological zone that extends around south-eastern Australia to the east of Tasmania. The park surrounds Tasmania's Kent Group Marine Park and the Hogan and Curtis Island groups and provides a feeding ground for a variety of seabirds including albatrosses, petrels and Little Penguin, and Australian Fur Seals. Table 4-20 describes the marine park, its values and assigned zones.

Table 4-20 Beagle Marine Park Description and Values (Director of National Parks, 2025)

Proclaimed	28 June 2007 and came into effect on 1 September 2007			
Marine park IUCN category	IUCN VI			
Assigned zones in reserve:	IUCN Ia	IUCN II	IUCN IV	IUCN VI
		National Park Zone 479 km^2		Multiple Use Zone 2448 km^2
Depth range	46 m – 77 m			
Total area	2928 km^2 (292 800 ha)			

Major conservation values	Ecosystems, habitats and communities associated with:
	• the Southeast Shelf Transition and the Twofold Shelf and Flinders bioregion and associated with sea-floor features:
	  ○ basin
	  ○ plateau
	  ○ shelf
	  ○ sill
	Important area for:
	• White Shark, Southern Right Whale and Pygmy Blue Whale
	Important foraging area for many seabirds including:
	• Bullers, Shy, Black Browed, Campbell, Indian Yellow-nosed and Wandering Albatrosses, White-faced Storm Petrel, Common Diving Petrel, Short-tailed Shearwater and Little Penguin,
	Cultural and heritage sites:
	• the wrecks of the cargo ship SS Cambridge and steamship SS Queensland
	• Humpback Whales and Short-tailed Shearwaters (mutton birds) are culturally significant species, as their seasonal movements are in songlines and dreaming for some First Nations groups.			

Location	The Beagle Marine Park lies entirely within Bass Strait, with its north-western edge abutting Victorian waters south-east of Wilson's Promontory. It is a shallow-water reserve surrounding a collection of Bass Strait islands.			
General description of the reserve	The Beagle Marine Park represents an area of shallow continental shelf ecosystems in depths of about 50–70 m that extends around south-eastern Australia to the east of Tasmania. The sea floor that it covers formed part of the Ancient Land Bridge between /Lutrawita/Tasmania and the mainland during the last ice age 10 000 years ago. First Nations communities hold knowledge, oral traditions, stories and songlines that connect to the times of the land bridge that have been passed down through the generations, giving unique insights into the flooding of this Country.			

	Its boundary encloses Tasmania's Kent Group Marine Park and the Hogan and Curtis Island groups. In the centre of the park, spanning much of the distance between the Kent Group and Hogan Island Group, are mesophotic (middle-light) reefs that rise 2 m to 5 m above the seabed. They are thought to be relict coastal dunes that formed on the Ancient Land Bridge. Rubble fields, comprised of broken bryozoan skeletons and dead and alive scallops, occur in the centre of the park and function as reefs in the hard substrate limited environment of Bass Strait. They provide important habitat for sessile filter feeding invertebrates including bryozoans, hydroids and sponges. The shallower eastern section of the park is dominated by linear ridges less than 1 m in height that extend several kilometres. These low-profile ridges are sometimes covered by shell hash and gravel that support a diverse sessile filter feeding invertebrate community dominated by bryozoans and sponges. The deeper, south-western part of the park is sediment-dominated and contains extensive mobile dune fields less than 1 m high with patches of Doughboy Scallops. The park includes biologically important foraging areas for many seabirds, including six species of albatross, petrels, Short-tailed Shearwater and Little Penguin. There are also biologically important areas in the park for White Shark, Southern Right Whale and Pygmy Blue Whale. Two historic shipwrecks occur in the park: the SS Queensland − an iron screw steamship which sank following a collision in 1876 and the SS Cambridge, a British cargo ship which sank in 1940 after hitting a World War II mine.

4.6.1.2 State Marine Protected Areas

There are no state marine protected areas within the operating area, however, there are multiple sites located within the EMBA which are described below. The state marine protected areas closest to the operating area are all located along the coast a significant distance away, as illustrated in Figure 4-20.

Point Hicks Marine National Park, Victoria

Point Hicks Marine National Park adjoins the Point Hicks Lighthouse reserve and Croajingolong National Park in East Gippsland. The park is approximately 4,000 ha in size. The reefs here are among Victoria's most interesting and beautiful, with fauna including intertidal and shallow subtidal invertebrates, diverse sessile invertebrates living on subtidal reefs, kelps and sponges, and a high diversity of reef fish, such as Butterfly Perch, Silver Sweep, Long-finned Pike and Banded Morwongs. Point Hicks Marine National Park represents Victoria's warmer eastern marine environment. Many marine species occurring here will not survive in the cooler waters further west (Parks Victoria, 2025). Point Hicks Marine National Park also contains the remains of two shipwrecks (the *SS Kerangie* and *SS Saros*), providing a drawcard for recreational divers (Parks Victoria, 2012).

Table 4-21 Distances to key protected areas in the region

Location	Distance
Gippsland Lakes Coastal Park	54 km to the northwest
Point Hicks Marine National Park	87 km to the east-northeast
Croajingolong National Park	106 km to the east-northeast
Cape Howe Marine National Park	158 km to the east-northeast
Gabo Island Lighthouse Reserve	155 km to the northeast
Cape Conran Coastal Park	50 km to the northeast
Beware Reef Marine Sanctuary	52 km to the northeast
Beowa National Park	175 km to the northeast
Nadgee Nature Reserve	157 km to the northeast
Mallacoota Inlet	140 km to the northeast
The Skerries (Croajingolong National Park)	112 km to the northeast
Beagle Marine Park	153 km to the southwest
East Gippsland Marine Park	148 km to the east

Note: Distances measured from the Longtom-3 subsea well surface location.

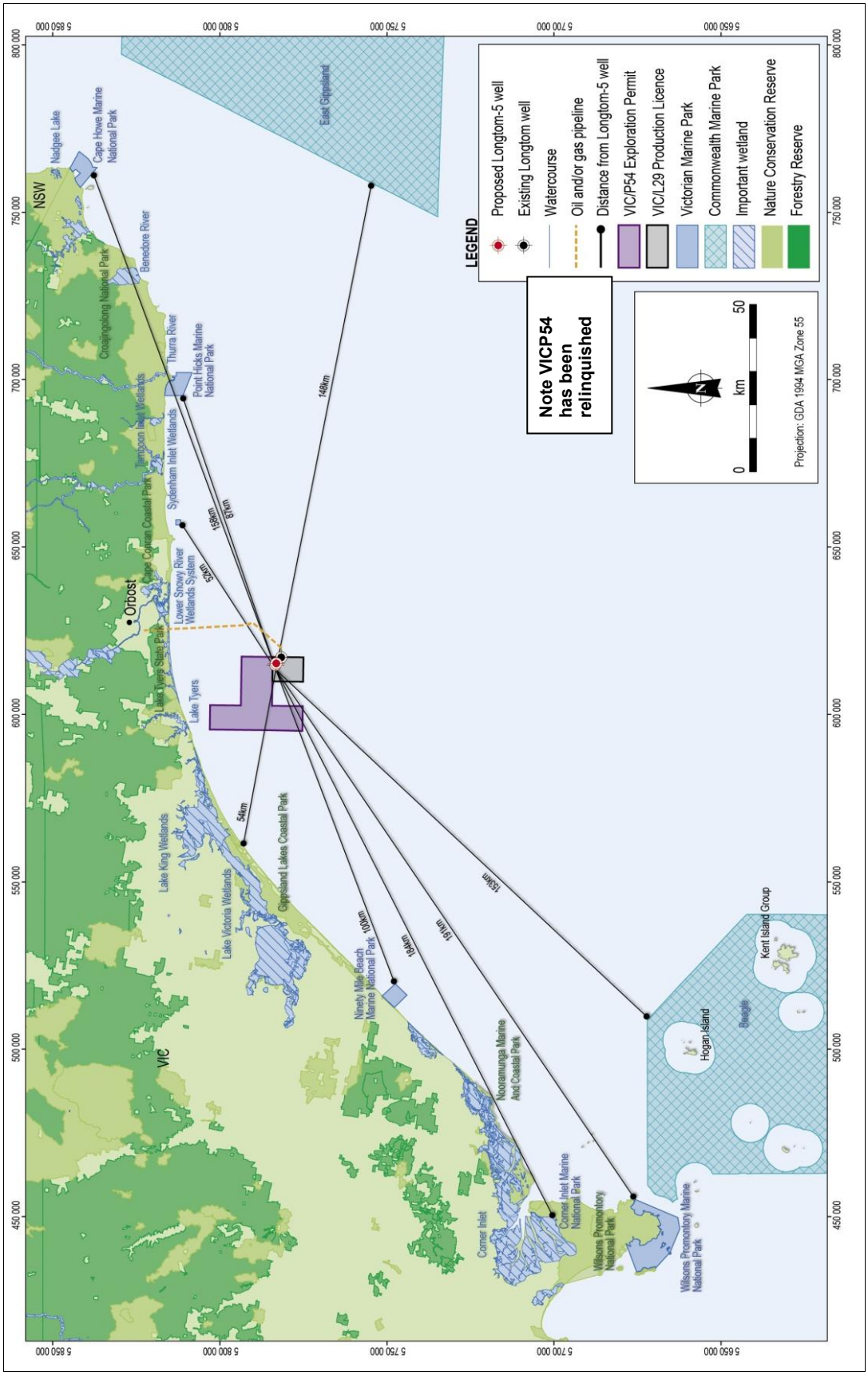


Figure 4-20 Commonwealth and Victorian marine protected areas in relation to VIC/L29

Croajingolong National Park, Victoria

Croajingolong National Park follows the coast of far-eastern Victoria for 100 kms and . covers approximately 88,000 ha. In 2020 Australia voluntarily withdrew the park from the UNESCO Man and the Biosphere Program (DCCEEW, 2025d). The park features eucalypt forest, rainforest and heathland. and is home to more than 300 animal species and over 1,000 native plant species. The diverse coastal landscapes feature rocky outcrops, large stretches of sandy beaches, coastal dunes and freshwater rivers, making the park a popular destination for hiking and walking, swimming, diving, snorkelling and sea kayaking (Parks Victoria, 2025). The Skerries, comprise three small rocky islands 100 m offshore from Wingan Inlet. The islands are the largest Australian Fur Seal colony in Victoria (Parks Victoria, 2025).

Cape Howe Marine National Park, Victoria

Cape Howe Marine National Park is located on the eastern border of NSW near Gabo Island, and is the fourth largest marine park in Victoria covering 4,060 ha. The marine animals and plants in the park reflect its location and include many species associated with both the warmer waters of the East Australian Current as well as cooler waters from the west. As such there are a number of species of fish including sharks and rays that are not often seen in other parts of Victoria.

Cape Howe Marine National Park contains extensive shallow and deep subtidal reefs interspersed by large areas of soft sediments and beds of shells. The park supports a variety of fish, such as Eastern Blue Groper, Purple Wrasse, Blue-Throated Wrasse and Herring Cale. Kelp forests that form a major habitat for reef species were once extensive in the park but in recent years have been heavily impacted by overabundant native Black-spined Sea Urchins that have increased in numbers due to a warming and strengthening East Australian Current.

Southern Right Whales and Humpback Whales regularly occur in the park. Little Penguins are common too, foraging from the rookery at Gabo Island. Both Australian and New Zealand Fur Seals are found within the park.

Bordering the park is Croajingolong National Park with sand dunes formed from pink granite and purple sandstones which outcrop near Cape Howe. There is also a small intermittent estuary, the outflow from Lake Wau Wauka, running directly into the park (Parks Victoria, 2025).

Cape Conran Coastal Park, Victoria

The Cape Conran Coastal Park covers an area of 11,700 ha and protects an important section of East Gippsland's 'wilderness coast'. The park includes extensive heathlands, wetlands riparian and forest vegetation and is home to a number of threatened bird species including the Little Tern and White-bellied Sea Eagle. Dolphins can be observed year-round and whales on their annual migration from May to October. Extensive sites containing Aboriginal middens and other artefacts at Cape Conran, and elsewhere along the park coast, provide physical evidence of First Nations peoples' long association with, and widespread use of, shellfish in the area (Parks Victoria, 2005).

Beware Reef Marine Sanctuary, Victoria

Beware Reef Marine Sanctuary, located approximately 5 km southeast of Cape Conran, comprises a 1 km long granite outcrop covering an area of 220 ha and rises from a depth of approximately 28 m. It is exposed at low tide, providing a resting area for Australian Fur Seals. The reef is covered by outcrops of bull kelp (*Durvillaea* sp.) and supports a diverse range of marine life, including seahorses and Leafy Seadragons (Parks Victoria, 2012). The reef is a popular location for recreational divers, with the remains of three shipwrecks adding interest to the many fish species hosted by the reef, including boarfish, morwongs, trumpeters and wrasses, with wobbegong and Port Jackson sharks also found in the sandy hollows.

Gippsland Lakes Coastal Park, Victoria

Gippsland Lakes Coastal Park is a narrow coastal reserve covering 17,600 ha along approximately 90km of Ninety Mile Beach from Seaspray to Lakes Entrance. An interconnected area of wetlands and coast, the park consists of the Boole Poole Peninsula, Bunga Arm and many other small islands. The diverse terrestrial and marine environments, offer numerous recreational activities; oceanside bushwalks, swimming, boating, kayaking and canoeing, and surf and lake fishing (Parks Victoria, 2025).

The park is jointly managed by the Victorian state government and the Gunaikurnai people, recognising that the Gunaikurnai people hold Native Title and maintain a strong connection to Country.

Beowa National Park (formerly Ben Boyd National Park), NSW

Beowa National Park, formerly Ben Boyd National Park, spans 47km of rocky coastline and sheltered inlets along the south coast of NSW. The park is separated into two areas, split by Twofold Bay; the Pambula-Haycock area in the north and the Green Cape area in the south. Open forest and woodland cover most of the park reflecting its location in the driest, windiest part of the state's coastline. The park's varied habitat supports a highly diverse bird population including the Hooded Plover and the endangered Gould’s Petrel and about 50 species of mammal. More than 50 Aboriginal sites have been recorded in Beowa National Park including middens, rock shelters, campsites and long-distance travel routes. These cultural sites continue to provide the local Aboriginal community with traditional and spiritual links to this part of their Country. (NSW NPWS, 2025).

Nadgee Nature Reserve, NSW

This reserve is located in the south eastern corner of NSW between Wonboyn Lake and the Victorian border and covers 20,671 ha. The reserve is adjacent to Beowa National Park to the north and Croajingalong National Park to the south. Dry open forest areas occur widely throughout this reserve with patches of rainforest occurring in creek catchments and low shrubby heaths being encountered at Mt Nadgee and along the coast. It contains the only declared coastal wilderness area in NSW and the most isolated beaches and undisturbed estuaries in NSW. The fresh and salt water wetlands and estuaries are important for the maintenance and populations of many fish species. The near-coastal areas are significant breeding and foraging habitat for various seabirds. Many Aboriginal sites have been

recorded in the reserve, providing a detailed record of Aboriginal occupation of this part of the coast. (NSW NPWS. 2003).

4.6.2 Key Ecological Features

4.6.2.1 Upwelling East of Eden

The Upwelling East of Eden is defined as a key ecological feature (KEF) as it is an area of high productivity and aggregations of marine life. The KEF is located along the eastern Victorian and southern NSW coasts but this feature displays seasonal and annual variation.

Dynamic eddies of the East Australian Current cause episodic productivity events when they interact with the continental shelf and headlands. The episodic mixing and nutrient enrichment events drive phytoplankton blooms that are the basis of productive food chains including zooplankton, copepods, krill and small pelagic fish.

The upwelling supports regionally high primary productivity that supports fisheries and biodiversity including top order predators, marine mammals and seabirds. This area is one of two feeding areas for Blue Whales and Humpback Whales, known to arrive when significant krill aggregations form. The area is also important for seals, other cetaceans, sharks and seabirds. (DoE, 2015a).

4.6.2.2 Big Horseshoe Canyon

The Big Horseshoe Canyon is the easternmost arm of the Bass Canyon systems. The steep, rocky slopes provide hard substrate habitat for attached large megafauna. Sponges and other habitat forming species provide structural refuges for benthic fishes, including the commercially important Pink Ling. It is the only known temperate location of the stalked crinoid *Metacrinus cyaneu* (DoE, 2015a).

4.6.3 Wetlands

4.6.3.1 Wetlands of International Importance

Wetlands of International Importance are identified as Ramsar-listed wetlands which are representative, rare or unique wetlands, or are important for conserving biological diversity (SEWPaC, 2011b). There are no Wetlands of International Importance within the operating area. However, there is one Ramsar site, Gippsland Lakes, which overlaps the EMBA.

Gippsland Lakes

The nearest Ramsar site to the operating area is the Gippsland Lakes, located on the coast of the Ninety Mile Beach, 54 km northwest.

The Gippsland Lakes Ramsar site was listed in December 1982 and covers an area of 60,015 ha. The lakes are a series of large, shallow, coastal lagoons approximately 70 km in length and 10 km wide, separated from the sea by sand dunes (SEWPaC, 2011c).

The surface area of the lakes is approximately 364 km^2 and the three main water bodies are Lakes Wellington, Victoria, and King. The Gippsland Lakes form the largest navigable inland waterway in Australia and create a distinctive regional landscape of wetlands and flat coastal plains of considerable environmental significance. The Ramsar site contains 11 Ramsar wetland habitat types including most notably, coastal lagoons, subtidal seagrass and algal beds, and a range of saline, brackish and freshwater marsh environments. The site supports a broad range of ecosystem services including nationally and internationally threatened wetland species, waterbird breeding and fish spawning sites. Cultural and socio-economic values are equally diverse, noting the particular importance of the site in a regional context in terms of recreational activities such as boating, recreational fishing and holiday tourism (DCCEEW, 2025e). A summary of critical components, processes and services/benefits of the Gippsland Lakes Ramsar site is shown in Table 4-22 and the limits of acceptable change (LAC) for the Ramsar site are described in Table 4-23. An addendum to the Ecological Character Description (ECD) of the Gippsland Lakes Ramsar site (Hale, 2023) recommends the addition of the critical component: Diversity and abundance of native fish, on the basis that the Gippsland Lakes support an abundance and diversity of native fish in addition to commercially and recreationally important species (Warry and Hindell, 2012 cited in Hale, 2023). The addendum also recommends a number of revisions to the LACs, which are shown in Table 4-23.

Table 4-22 Gippsland Lakes Ramsar site: Summary of critical components, processes and services/benefits (BMT WBM. 2011a)

Critical components	Critical processes	Critical services/benefits

Wetland habitats: grouped as follows
• (C1) marine subtidal aquatic beds (seagrass/aquatic plants).
• (C2) coastal brackish or saline lagoons (open water phytoplankton-dominated habitats).
• fringing wetlands that can occur within the site as–
  ○ (C3) predominantly freshwater wetlands
  ○ (C4) brackish wetlands
  ○ (C5) saltmarsh/ hypersaline wetlands.
Wetland flora and fauna:
• (C6) abundance and diversity of waterbirds.
• (C7) presence of threatened frog species (green and golden bell frog; growling grass frog).
• (C8) presence of threatened wetland flora species.
	Hydrological regime: (P1) patterns of inundation and freshwater flows into the wetland system, groundwater influences and marine inflows that affect habitat structure and condition.
	Waterbird breeding functions: (P2) critical breeding habitats for a variety of waterbird species.
		Threatened species: (S1) the site supports an assemblage of vulnerable or endangered wetland flora and fauna that contribute to biodiversity.
		Fisheries resource values: (S2) the site supports key fisheries habitats and stocks of commercial and recreational significance.

Supporting Components	**Supporting Processes**	**Supporting services/benefits**
Other wetland habitats: supported by the site (sand/pebble shores, estuarine waters, etc.). **Other wetland fauna**: supported by the site (for example, fish, aquatic invertebrates).	**Climate**: patterns of temperature, rainfall and evaporation. **Geomorphology**: key geomorphologic/ topographic features of the site. **Coastal and shoreline processes**: hydrodynamic controls on coasts and shorelines through tides, currents, wind, erosion and accretion. **Water quality**: water quality influences aquatic ecosystem values, noting the key water quality variables for Gippsland Lakes are salinity, dissolved oxygen, nutrients and sediments. **Nutrient cycling, sediment processes and algal blooms**: primary productivity and the natural functioning of nutrient cycling/flux processes in waterbodies. **Biological processes**: important biological processes such as primary productivity.	**Tourism and recreation**: the site provides and supports a range of tourism and recreational activities that are significant to the regional economy. **Scientific research**: the site supports and contains features important for scientific research.

Table 4-23 Gippsland Lakes Ramsar site: Limits of acceptable change (LAC) (BMT WBM. 2011a and Hale, 2023)

Number	Indicator for Critical Component / Process/Service for the LAC	Relevant timescale[1]	Limit(s) of Acceptable Change	Spatial scale/temporal scale of measurements	Underpinning baseline data	Secondary critical C,P,S addressed through LAC
Critical components						
C1	Marine sub-tidal aquatic beds (for example, within Lake King, Lake Victoria, Lake Tyers, Bunga Arm and Lake Bunga)	Long Term	~~Total seagrass extent will not decline by greater than 50 per cent of the baseline value of Roob and Ball 1997 (that is, 50 per cent of 4330 hectares = 2165 hectares) in two successive decades at a whole of site scale.~~ ~~Total mapped extent of dense and moderate *Zostera* will not decline by greater than 80 per cent of the baseline values determined by Roob and Ball (1997) in two successive decades at any of the following locations:~~ ~~Fraser Island~~ ~~Point Fullerton, Lake King~~ ~~Point King, Raymond Island, Lake King~~ ~~Gorcrow Point – Steel Bay, Lake Victoria~~ ~~Waddy Island, Lake Victoria~~ Replaced in Hale, 2023 with: Total seagrass extent will not decline below 2000 hectares for a period of greater than 20 continuous years. Greater than 15 percent of the total seagrass extent will have a density of “medium” or “dense”.	Sampling to occur at least twice within the decade under consideration. Baseline mapping against which this LAC can be tested is within Roob and Ball 1997. Note that the seagrass assessment by Hindell (2008) did not produce mapping but did use similar sampling sites to Roob and Ball.	Level B – Recent quantitative data describes seagrass condition at various sites but over a limited timeframe. There is no available seagrass condition data prior to listing.	P1
C2	Coastal brackish or saline lagoons (for example, Lake King, Lake Victoria, Lake Wellington, Lake Tyers)	~~Long Term~~	~~No change in wetland typology from the 1980 classification of Corrick and Norman (1980), as presented in Figure 2-3.~~ Deleted in Hale, 2023	~~To be determined based on expert review.~~	Level B – VMCS mapping data describes wetland extent. This is coarse scale mapping and should be considered as indicative only.	P1, S2

Number	Indicator for Critical Component / Process/Service for the LAC	Relevant timescale[1]	Limit(s) of Acceptable Change	Spatial scale/temporal scale of measurements	Underpinning baseline data	Secondary critical C,P,S addressed through LAC
		Long Term	A long-term change in ecosystem state at Lake King, Lake Victoria or Lake Tyers from relatively clear, seagrass- dominated estuarine lagoons to turbid, algae dominated system (characteristic of Lake Wellington) will represent a change in ecological character.	To be determined based on expert review.		
		Short Term	No single cyanobacteria algal bloom event will cover greater than 10 per cent of the combined area of coastal brackish/saline lagoons (that is, Lake King, Victoria, Wellington and Tyers) in two successive years.	Algal bloom extent (per cent lakes area and location) and number should be reported annually, but assessed on an ongoing basis.	Level A – The occurrence of cyanobacteria algal blooms are well documented. The extent of algal blooms historically has not been assessed, including at the time of site declaration.	
C3	Fringing wetlands – predominantly freshwater marsh at Macleod Morass and Sale Common	Long Term	No change in wetland typology from the 1980 classification (Corrick and Norman 1980; See Figure 2-3). In this regard, the conversion of vegetation communities at Sale Common and Macleod Morass from a predominantly freshwater character (for example, giant rush, common reed, cumbungi) to those of a brackish water character (brackish or swamp scrub/saltmarsh species) will represent a change in ecological character.	To be determined based on expert review.	Level B – VMCS mapping data describes wetland extent during 1980. This is coarse scale mapping and should be considered as indicative only. There is no available community data prior to listing.	P1, P2, C6, C7, C8
			~~The total mapped area of freshwater marshes (shrubs and reed wetland types) at Sale Common and Macleod Morass will not decline by greater than 50 per cent of the baseline value outlined in VMCS for 1980 (that is, 50 per cent of 402 hectares = 201 hectares) in two successive decades.~~ Replaced in Hale, 2023 with: A habitat mosaic will be maintained at Sale Common and Macleod Morass that comprises open water, freshwater emergent native vegetation (sedges, rushes and reeds) and woody vegetation (swamp scrub and floodplain woodland), with no habitat comprising more than 70 percent of the total wetland area for more than five successive years.	Sampling to occur at least twice within the decade under consideration.		

Number	Indicator for Critical Component / Process/Service for the LAC	Relevant timescale[1]	Limit(s) of Acceptable Change	Spatial scale/temporal scale of measurements	Underpinning baseline data	Secondary critical C,P,S addressed through LAC
		Short Term	~~In existing freshwater wetland areas, the annual median salinity should not be greater than one grams per litre in two successive years. Note that where ambient water quality characteristics fall outside the range of these baseline levels, and ecosystem health indicators shows no signs of impairment, the LAC may need to be adjusted accordingly.~~ Replaced in Hale, 2023 with: In existing freshwater wetland areas (Sale Common and the upper portion of MacLeod Morass), the annual median salinity should not be > 1 ppt in two successive years.	Annual median based on at least eight sampling periods per year, encompassing wet and dry periods.	Level C – No available baseline data. Value based on species salinity tolerances.	
C4	Fringing wetlands – brackish marsh (for example, Dowd Morass; The Heart Morass; Clydebank Morass, Lake Coleman {Tucker Swamp})	Long Term	For all fringing brackish wetlands: No change in wetland typology from the 1980 classification (Corrick and Norman 1980).	To be determined based on expert review.	As for C3.	P1, P2, C6, C7, C8
		~~Medium Term~~	~~For Dowd Morass and the Heart Morass:~~ ~~The annual median salinity will be less than four grams per litre in five successive years.~~ ~~Note that where ambient water quality characteristics fall outside the range of these baseline levels, and ecosystem health indicators shows no signs of impairment, LAC may need to be adjusted accordingly.~~ Deleted in Hale, 2023	~~Annual median based on at least eight sampling periods per year, encompassing wet and dry periods.~~	~~Level C – No available baseline data. This value is based on species tolerances and requirement for salinity to be less than four grams per litre to allow reproduction (refer Tilleard and Ladson 2010).~~	
		Long Term	~~The total area of common reed at Dowd Morass will not decline by greater than 50 per cent of the 1982 baseline value (that is, 50 per cent of 480 hectares = 245 hectares) outlined in Boon *et al.* (2007) in two successive decades.~~ Replaced in Hale, 2023 with: A habitat mosaic will be maintained at Dowd Morass that comprises open water, common reed and swamp paperbark, with no habitat comprising more than 70 percent of the total wetland area for more than five successive years.	Sampling to occur at least twice within the decade under consideration.	Level A – Boon *et al*. (2007) provides good quality mapping data relevant to time of listing.	

Number	Indicator for Critical Component / Process/Service for the LAC	Relevant timescale[1]	Limit(s) of Acceptable Change	Spatial scale/temporal scale of measurements	Underpinning baseline data	Secondary critical C,P,S addressed through LAC
C5	Fringing wetlands – saltmarsh/hypersaline marsh (for example, Lake Reeve)	Medium Term	No change in wetland typology from the 1980 classification (Corrick and Norman 1980). ~~The total mapped area of salt flat, saltpan and salt meadow habitat at Lake Reeve Reserve will not decline by greater than 50 per cent of the baseline value outlined in VMCS for 1980 (that is, 50 per cent of 5035 hectares = 2517 hectares) in two successive decades.~~ Replaced in Hale, 2023 with: Total saltmarsh extent across the entire Ramsar site will not decline below 3585 hectares.	To be determined based on expert review. Sampling to occur at least twice within the decade under consideration.	As for C3.	P1, C6

Number	Indicator for Critical Component / Process/Service for the LAC	Relevant timescale[1]	Limit(s) of Acceptable Change	Spatial scale/temporal scale of measurements	Underpinning baseline data	Secondary critical C,P,S addressed through LAC
C6	Abundance and diversity of waterbirds	Medium Term	~~The number of standard 20-minute searches (within any ten-year period) where waterbird abundance is less than 50 individuals will not fall below 50 per cent of the 'baseline' value (based on Birds Australia count data – 1987-2010), for the following species:~~ ~~black swan = 15 per cent of surveys~~ ~~chestnut teal = 10 per cent of surveys~~ ~~Eurasian coot = 11 per cent of surveys.~~ ~~The absence of records in any of the following species in five successive years will represent a change in character: red-necked stint, sharp-tailed sandpiper, black swan, chestnut teal, fairy tern, little tern, musk duck, Australasian grebe, grey teal, Eurasian coot, great cormorant, red knot, curlew sandpiper.~~ Replaced in Hale, 2023 with: Mean maximum counts (calculated over a minimum of five years) will not drop below the following population thresholds (Wetlands International relevant population): Black swan = 0.3% Chestnut teal (ducks) – 2.5% Eurasian coot (coots & rails) – 0.15% Fairy tern (terns) – 1.5% Little tern (terns) – 0.5% Little black cormorant (fishers) – 0.01% Straw-necked ibis (large wading) – 0.05% Median abundance (derived from at least three annual surveys {summer counts} over a 10-year period) falls below the 20th percentile baseline value. *Note: An adequate baseline will need to be established to assess this LAC (for example, at least three annual surveys (summer counts) over a 10-year period).*	Sampling to be undertaken at least twice a year over any 10 year period at stations containing favourable habitat for these species (see Table E8 for locations). Surveys should consist of standardised 20 minute counts. Sampling to be undertaken at least twice a year (during summer) at stations containing favourable habitat for these species (see section 3.4.1 for important locations). Recommended baseline monitoring program should include: A combination of aerial and ground surveys. Representative coverage of primary habitats within the site.	Level A – Birds Australia data, while standardised in terms of sampling effort per site, is not standardised in terms of frequency of sampling events at any given sampling location. Data should be considered indicative only. Level A – Records for these species are reliable. Birds Australia and DSE data can be used to assess this qualitative LAC. There are no baseline data available for this LAC.	P1, P2

Number	Indicator for Critical Component / Process/Service for the LAC	Relevant timescale[1]	Limit(s) of Acceptable Change	Spatial scale/temporal scale of measurements	Underpinning baseline data	Secondary critical C,P,S addressed through LAC
C7	Presence of threatened frogs	Medium Term	~~The site will continue to support suitable habitat for growling grass frog and green and golden bell frog. In this regard, the LAC for Component 3 applies.~~ ~~There is insufficient data to develop a LAC relating directly to site usage by these species, which represents a critical information gap. Should baseline data become available in the future, the following LAC will apply: a significant reduction (greater than 25 per cent over a period of 5 years) in the local adult population within the site, especially for important local populations (for example, within Macleod Morass, Sale Common, Ewings Marsh, Roseneath wetlands (Morley Swamp and Victoria Lagoon), the Heart Morass and freshwater pools on Rotamah Island).~~ Replaced in Hale, 2023 with: Green and golden bell frog and growling grass frog are recorded breeding at least one location within the Ramsar site every five years.	Refer to C3. Recommended baseline monitoring program should comprise a minimum two annual sampling periods separated by at least one year (and within a 5 year period).	Level C – Surveys for these species have been opportunistic. The most recent record for growling grass frog is 2007, whereas the green and golden bell frog was recorded at the site in 1998. There are no empirical data describing abundances at the site.	P1
C8	Presence of threatened wetland flora species	Long Term	~~The three threatened flora species (*Rulingia prostrata*, *Thelymitra epipactoides* and *Xerochrysum palustre*) continue to be supported within the boundaries of the Gippsland Lakes Ramsar site.~~ Replaced in Hale, 2023 with: The threatened flora species swamp everlasting (*Xerochrysum palustre*) continues to be supported within the boundaries of the Gippsland Lakes Ramsar Site	Based on opportunistic searches.	Level C – Setting of empirical limits of acceptable change is not possible at present, given the absence of quantitative estimates of population size of threatened species within the site, and more importantly the viability of populations (and their key controls) within the site.	P1
C9	Native fish diversity and abundance	-	Native fish within the Ramsar site will represent each of the following life history strategies: estuarine dependent, estuarine opportunists, marine migrants, diadromous and obligate freshwater species (Hale, 2023)	-	-	-
Critical processes						

<table>
<tr><th>Number</th><th>Indicator for Critical Component / Process/Service for the LAC</th><th>Relevant timescale[1]</th><th>Limit(s) of Acceptable Change</th><th>Spatial scale/temporal scale of measurements</th><th>Underpinning baseline data</th><th>Secondary critical C,P,S addressed through LAC</th></tr>
<tr><td>P1</td><td>Hydrological regime</td><td>Short Term – Medium Term</td><td>~~Wetland wetting frequency, flushing frequency and flushing volume are maintained as follows:~~
<table><tr><th>Wetland</th><th>Wetting Frequency</th><th>Flushing Frequency</th><th>Required Flushing Volume</th></tr><tr><td>Sale Common</td><td>Annual with 100 per cent reliability</td><td>2-3 times/decade</td><td>4 GL</td></tr><tr><td>Dowd Morass</td><td>5-7 times/decade</td><td>2-3 times/decade</td><td>15GL</td></tr><tr><td>The Heart Morass</td><td>5-7 times/decade</td><td>2-3 times/decade</td><td>15GL</td></tr></table>~~From Tilleard and Ladson (2010); note that larger flushing volumes (~20GL) are identified as being needed for Dowd and the Heart Morasses following saline flood events in the Lake Wellington system (for example, when the wetlands are filled with saline water from Lake Wellington and this corresponds with low flows in the Latrobe River).~~ Replaced in Hale, 2023 with: Sale Common shall not remain dry for more than 36 continuous months. Dowd and Heart Morass shall not remain dry for greater than 60 continuous months.</td><td>Refer to LAC for details. Values measured at existing gauging stations in the lower reaches of the Rivers or otherwise in the wetlands themselves.</td><td>LAC have been identified for these wetlands on the basis that they are the best indicators of freshwater flows into the broader Gippsland Lakes system.
Level C – LAC based on Tilleard and Ladson (2010) ‘Hydrological Analyses to Support Determination of Environmental Water Requirements in the Gippsland Lakes’. This is a threshold-based LAC that is based on modelling and ecological assessments.
Note that these values should be considered as indicative only at this stage, and should be constantly reviewed.
Tilleard and Ladson (2010) indicate no work has been done for wetlands on the Mitchell (Macleod Morass); McLennan Straits (Morley Swamp, Lake Betsy); or Jones Bay.</td><td>C1 – C8
S1, S2</td></tr>
</table>

Number	Indicator for Critical Component / Process/Service for the LAC	Relevant timescale[1]	Limit(s) of Acceptable Change	Spatial scale/temporal scale of measurements	Underpinning baseline data	Secondary critical C,P,S addressed through LAC
P2	Waterbird breeding	Short Term	~~Abandonment or significant decline (greater than 50 per cent) in the productivity of two or more representative breeding sites (based on two sampling episodes over a five year period) within any of the following site groupings:~~ ~~Lake Coleman, Tucker Swamp and Albifrons Island – Australian pelican.~~ ~~Bunga Arm and Lake Tyers – little tern and fairy tern.~~ ~~Macleod Morass, Sale Common and Dowd Morass – black swan, Australian white ibis, straw-necked ibis, and little black cormorant.~~ Replaced in Hale, 2023 with: Successful breeding of all of the following indicator species within the Ramsar site at least once every five years: Australian fairy tern, Australian white ibis, Australian pelican, black swan, chestnut teal, little black cormorant, little tern and royal spoonbill.	Recommended baseline monitoring program should comprise a minimum two annual sampling periods separated by at least one year (and within a 5 year period).	Level C – The use of the site by these species is well documented. However, there are no empirical data describing breeding rates. Baseline data will need to be collected to assess this LAC.	C6
Critical services/benefits						
S1	Threatened species	N/A	~~No LAC are proposed for painted snipe and Australasian bittern at the current time until greater information is available about patterns of usage and populations in the Ramsar site. Other threatened species are dealt with in the critical components above.~~ Replaced in Hale, 2023 with: Presence of the following threatened bird species within the Gippsland Lakes Ramsar site annually: • Australasian bittern • Hooded plover	N/A	Level C – Site records are not recent, uncommon and the location within the Ramsar boundary not known.	P1, C3

Number	Indicator for Critical Component / Process/Service for the LAC	Relevant timescale[1]	Limit(s) of Acceptable Change	Spatial scale/temporal scale of measurements	Underpinning baseline data	Secondary critical C,P,S addressed through LAC
		Long Term	Australian grayling continues to be supported in one or more of the catchments draining into the Gippsland Lakes.	Setting of more empirical limits of acceptable change not possible at present, given the absence of quantitative population data for this species for any of the rivers and creeks that drain into the site.	Level C – This species has been recorded in the major drainages that drain into the site. Juveniles have an apparent obligate estuarine phase, and therefore must use the site in order for this species to persist in these drainages. There are no data describing the population status of this species in these drainages.	P1, C1, C2
S2	Fisheries resource values	Medium Term	Total annual black bream commercial fishing catch per unit effort will not fall below the 10th percentile historical baseline value of 6.1 (see Section 3.8.2) in a five successive year period.	Median measured over five years.	Level B – While some commercial fish data has been accessed and reviewed as part of the current study, the abundance and usage of the Gippsland Lakes by key fish species of commercial and recreational significance is not well quantified. The baseline data used in this LAC has limited duration (five years), and is unlikely to be representative of patterns in abundance over longer timeframes. This LAC will need to reviewed and refined.	C1, C2, C3, C4, C5
			Sub-optimal black bream spawning conditions should not occur in any successive five year period within key spawning grounds (that is, mid-lower estuaries and adjacent waters of main lakes) during the peak spawning period (October to December). Based on Tilleard (2009), optimal conditions are as follows:	Annual median value for the period October to December.		
			Water column salinity is maintained in brackish condition (for example, between 17-21 grams per litre median value) in the middle of the water column in the mid-lower estuaries and adjacent waters of the main lakes	As above.		

Number	Indicator for Critical Component / Process/Service for the LAC	Relevant timescale[1]	Limit(s) of Acceptable Change	Spatial scale/temporal scale of measurements	Underpinning baseline data	Secondary critical C,P,S addressed through LAC
			The salt wedge is located within the mid-lower section of the estuarine river reaches or just out into the main lakes as opposed to far upstream or well-out into the Lakes.		Level C – based on conditions outlined in Tilleard (2009).	

C – component, P – process , S/B – service/benefit

Corner Inlet

The Corner Inlet Ramsar site is located on the south-east coast of Victoria outside the EMBA. It is bounded to the west and north by the South Gippsland coastline, in the south-east by a series of barrier islands and sandy spits lying end to end and separated by narrow entrances, and to the south by the hills of Wilsons Promontory. Corner Inlet includes the chain of barrier islands, multiple beach ridges, lagoons and swamps, tidal creeks, tidal deltas, and tidal washovers. The mainland coast and several sandy islands are covered with mangroves, saltmarshes, sandy beaches and very extensive intertidal mudflats. The area contains the only extensive bed of the Broad-leafed Seagrass in Victoria. The islands of Corner Inlet, although not rich in plant diversity, are of high biogeographical significance as a result of their geological history and connectivity to the mainland during ice ages. The islands also contain significant areas of saltmarsh and mangroves, both of which are communities of very limited distribution. Corner Inlet supports more than 390 species of marine invertebrates and 390 species of native flora. The Ramsar site also has a high diversity of bird species with thirty-two wader species recorded. Corner Inlet provides extensive tidal flats that are exposed at low tide, which are important feeding areas for waders. It is estimated that nearly 50 % of the overwintering migratory waders in Victoria occur in Corner Inlet. Corner Inlet was used traditionally by Indigenous people and many archaeological sites including scarred trees, burial sites, artefact scatters, shell middens and camps have been found (DCCEEW, 2025e). The critical components, processes and benefits of the wetland are provided in Table 4-24. The limits of acceptable change for the critical components /processes are described in Table 4-25.

Table 4-24 Corner Inlet summary of critical components, processes and benefits (BMT WBM, 2011b).

Critical Components	Critical Processes	Critical Services/Benefits
Several key **wetland mega-habitat types** are present: • seagrass • intertidal sand or mud flats • mangroves • saltmarshes • permanent shallow marine water (C2). Abundance and diversity of **waterbirds**	**P1. Waterbird breeding** is a key life history function in the context of maintaining the ecological character of the site, with important sites present on the sand barrier islands	S1. The site supports **nationally threatened fauna species** including: • orange-bellied parrot • growling grass frog • fairy tern • Australian grayling S2. The site supports **outstanding fish habitat values** that contribute to the health and sustainability of the bioregion
Supporting Components	**Supporting Processes**	**Supporting Services/Benefits**
Important **geomorphological features** that control habitat extent and types include: • sand barrier island and associated tidal delta system • the extensive tidal channel network • mudflats and sandflats. **Invertebrate megafauna** in seagrass beds and subtidal channels are important elements of biodiversity and control a range of ecosystem functions. The **diverse fish communities** underpin the biodiversity values of the site	**Climate**, particularly patterns in temperature and rainfall, control a range of physical processes and ecosystem functions Important **hydraulic and hydrological processes** that support the ecological character of the site includes**:** • Fluvial hydrology. Patterns of inundation and freshwater flows to wetland systems • Physical coastal processes. • Hydrodynamic controls and marine inflows that affect habitats through tides, currents, wind, erosion and accretion. • Groundwater. For those wetlands influenced by groundwater interaction, the level of the groundwater table and groundwater quality. **Water quality** underpins aquatic ecosystem values within wetland habitats. The key water quality parameters for the site are salinity, turbidity, dissolved oxygen and nutrients. Important **biological processes** include nutrient cycling and food webs.	The site supports **recreation and tourism values** (scenic values, boating, recreational fishing, camping, etc.) that have important flow-on economic effects for the region. The site provides a range of values important for **scientific research**, including a valuable reference site for future monitoring.

Table 4-25 Corner Inlet limits of acceptable change for critical components (BMT WBM, 2011b)

Number	Indicator for Critical Component / Process/Service for the LAC	Relevant timescale[5]	Limit(s) of Acceptable Change	Spatial scale/temporal scale of measurements	Underpinning baseline data	Secondary critical C,P,S addressed through LAC
Critical Components						
C1	Seagrass extent	Long Term	• Total mapped extent of dense Posidonia will not decline by greater than 10 percent of the baseline value outlined by Roob *et al*. (1998) at a whole of site scale (baseline = 3050 hectares; LAC = mapped area less than 2745 hectares) on any occasion. (Note: the small degree of allowable change recognises that this seagrass species is a critical habitat resource and generally shows low natural variability.) • Total mapped extent of the dense and medium density Zosteraceae will not decline by greater than 25 percent of the baseline values outlined by Roob *et al*. (1998) at a whole of site scale on two sampling occasions within any decade. • Dense Zostera - Baseline = 5743 hectares (LAC = mapped area less than 4307 hectares) • Medium Zostera - Baseline = 1077 hectares (LAC = mapped area less than 807 hectares) (Note: the moderate degree of allowable change recognises that these seagrass species generally show moderate degrees of natural variability)	Sampling to occur at least twice within the decade under consideration. Note that the seagrass assessment by Hindell (2008) did not produce mapping but did use similar sampling sites to Roob *et al*.	Recent quantitative data describes seagrass condition at various sites but over a limited timeframe. It is thought that the Roob *et al*. (1998) study underestimated the total available seagrass habitat (J. Stevenson, Parks Victoria, pers. comm. February 2011), hence a 10 per cent change from this baseline value would represent a larger actual change from the true baseline. ***Note***: Prior to declaration, *Posidonia* covered approximately 44 per cent (11,900 hectares) of the site (Poore 1978). Morgan (1986) estimated that *Posidonia* meadows covered 11,900 hectares in 1965 and 9,000 to 9,500 square kilometres in 1983–84. There is uncertainty regarding these mapping data and therefore empirical LACs have not been developed from these data.	S2

[5] *Short Term – measured in years; Medium Term – five to 10 year intervals; Long term – 10+ year intervals.*

Number	Indicator for Critical Component / Process/Service for the LAC	Relevant timescale[5]	Limit(s) of Acceptable Change	Spatial scale/temporal scale of measurements	Underpinning baseline data	Secondary critical C,P,S addressed through LAC
	Mangrove forest extent	Long term	Based on EVC mapping, it is estimated that mangroves presently cover an area of 2137 hectares within the site (see Section 3.3.1). A 10 percent reduction in the total mapped mangrove area, observed on two sampling occasions within any decade, is an unacceptable change. (LAC – mapped area less than 1924 hectares). (Note: the small degree of allowable change recognises that mangroves are a critical habitat resource and generally shows low natural variability)	Sampling to occur at least twice within the decade under consideration.	No available data to determine changes in extent over time. It is unlikely that this has changed markedly since Ramsar listing. Note that there are uncertainties regarding the quality of existing mapping, and therefore the baseline value should be considered as indicative only.	S2
	Saltmarsh extent	Long term	Based on EVC mapping, it is estimated that intertidal saltmarsh presently covers an area of 6500 hectares within the site (see Section 3.3.1). A 10 percent reduction in the total mapped saltmarsh area, observed on two sampling occasions within any decade, is an unacceptable change (LAC – mapped area less than 5850 hectares). (Note: the small degree of allowable change recognises that saltmarsh is a critical habitat resource and generally show low natural variability)	Sampling to occur at least twice within the decade under consideration.	No available data to determine changes in extent over time. It is unlikely that this has changed markedly since Ramsar listing. The note regarding data quality for mangroves applies also to saltmarsh.	S2
	Shallow subtidal waters	Long term	A greater than 20 percent reduction in the extent of subtidal channel (areas mapped by NLWRA = 16 349 hectares), observed on two sampling occasions within any decade, will represent a change in ecological character (LAC – mapped area less than 13 079 hectares). (Note: the moderate degree of allowable change recognises that shallow subtidal waters represent a critical habitat resource, generally show low natural variability, but data reliability is low)	Sampling to occur at least twice within the decade under consideration.	NLWRA mapping data describes wetland extent. This is coarse scale mapping and should be considered as indicative only. ***Note***: there is a need to develop a condition-based LAC for this critical component. While some water quality data exists, this is presently insufficient to derive a LAC (i.e. whether a change in water quality represents a true	S2

Number	Indicator for Critical Component / Process/Service for the LAC	Relevant timescale[5]	Limit(s) of Acceptable Change	Spatial scale/temporal scale of measurements	Underpinning baseline data	Secondary critical C,P,S addressed through LAC
					change in ecological character of the wetland)	
	Inlet waters (intertidal flats)	Long term	A greater than 20 percent reduction in the extent of permanent saline wetland – intertidal flats (areas mapped by DSE = 40 479 hectares, see Figure 3-1), observed on two sampling occasions within any decade, will represent a change in ecological character (LAC – mapped area less than 36 431 hectares). (Note: the moderate degree of allowable change recognises that intertidal flats represent a critical habitat resource and generally show low natural variability. A loss of intertidal flat would also result in changes in seagrass)	Sampling to occur at least twice within the decade under consideration.	VMCS mapping data describes wetland extent. This is coarse scale mapping and should be considered as indicative only. ***Note***: there is a need to develop a condition-based LAC for this critical component. While some water quality data exists, this is presently insufficient to derive a LAC (i.e. whether a change in water quality represents a true change in ecological character of the wetland)	S2
C2	Abundance and of waterbirds	Short term (All species)	Mean annual abundance of migratory bird species - Birds Australia (2009c) notes that there is a maximum annual abundance of migratory species of 42 811 birds, with a mean annual abundance of migratory species being 31 487 birds (deriving from 28 years of data collection to September 2008). The annual abundance of migratory shorebirds will not decline by 50 per cent of the long-term annual mean value (that is, must not fall below 15 743 individuals) in three consecutive years. (Note: the large degree of allowable change recognises that these species can show high levels of natural variability, and that limitations of existing baseline data) change recognises that these species can show high levels of natural variability, and that limitations of existing baseline data)	At least four annual surveys (summer counts) within the decade under consideration.	Bird count data are available from a variety of programs, most notably Birds Australia monitoring programs	P2

Number	Indicator for Critical Component / Process/Service for the LAC	Relevant timescale[5]	Limit(s) of Acceptable Change	Spatial scale/temporal scale of measurements	Underpinning baseline data	Secondary critical C,P,S addressed through LAC
		Short term (individual species)	Mean annual abundance of migratory species that meet the one per cent criterion will not be less than 50 per cent of the long-term annual mean value in five years of any ten year period. These values are follows: • curlew sandpiper – baseline = 2588 birds, LAC = 1294 birds • bar tailed godwit – baseline = 9727 birds, LAC = 4863 birds • eastern curlew – baseline = 1971 birds, LAC = 985 birds • pied oystercatcher – baseline = 893 birds, LAC = 446 birds • sooty oystercatcher – baseline = 285 birds, LAC = 142 birds • double-banded plover– baseline = 523 birds, LAC = 261 birds There are insufficient baseline data to determine long-term average abundance of fairy tern and Pacific gull. (Note: the large degree of allowable change recognises that these species can show high levels of natural variability, and that limitations of existing baseline data)	At least five annual surveys (summer counts) within the decade under consideration.	Bird count data are available from a variety of programs, most notably Birds Australia monitoring programs	P2
Critical Processes						
P1	Waterbird breeding	Short Term	A greater than 50 per cent decrease in nest production at two or more monitoring stations (based on two sampling episodes over a five year period) within any of the following locations and species: • Clomel Island - fairy tern, hooded plover, Caspian tern, crested tern • Dream Island - fairy tern, hooded plover, crested tern	Recommended baseline monitoring program should comprise a minimum two annual sampling periods separated by at least one year (and within a five year period).	The use of the site by these species is well documented. However, there are no empirical data describing nest or egg production rates. Baseline data will need to be collected to assess this LAC.	C2

Number	Indicator for Critical Component / Process/Service for the LAC	Relevant timescale[5]	Limit(s) of Acceptable Change	Spatial scale/temporal scale of measurements	Underpinning baseline data	Secondary critical C,P,S addressed through LAC
			• Snake Island and Little Snake Island - pied oystercatcher			
Critical Services/Benefits						
S1	Threatened Species	N/A	For orange-bellied parrot and growling grass frog, an unacceptable change will have occurred should the site no longer support these species.	Based on multiple targeted surveys at appropriate levels of spatial and temporal replication (at least four annual surveys in preferred habitats) over a 10 year period.	Most site records are based on opportunistic surveys	P1, C3
		Short Term	For Australian grayling, an unacceptable change will have occurred should all of the drainages that drain into Corner Inlet no longer support this species.	Based on four annual surveys in a 10 year period at multiple sites located in all major catchments.	This species has been recorded in the major drainages that drain into the site. There are no data describing the population status of this species in the site. Abundance data are available for drainages that discharge into the site (Ecowise 2007; O'Connor *et al*. 2009). O'Connor *et al*. (2009) notes that collection of this species is difficult and requires targeted survey techniques. Few targeted empirical surveys have been undertaken in the site's drainages to date	P1, C1, C2
S2	Fish abundance (using fish catch of key species as a surrogate)	Medium term	An unacceptable change will have occurred if the long term (greater than five years) median catch falls below the 20th percentile historical baseline values in standardised abundance or catch-per unit effort of five or more commercially significant species (relative to baseline) due to altered	Annual fish catch measured over a greater than five year period.	Commercial fish catch data. Note that there are presently no fisheries-independent baseline data (collected using empirical, systematic methods) describing	S2

Number	Indicator for Critical Component / Process/Service for the LAC	Relevant timescale[5]	Limit(s) of Acceptable Change	Spatial scale/temporal scale of measurements	Underpinning baseline data	Secondary critical C,P,S addressed through LAC
			habitat conditions within the site. The 25th percentile pre-listing baseline commercial catch per unit effort values for the site are as follows (units are tonnes per annum per number of boats): • Australian salmon 379 • rock flathead 316 • southern sand flathead 373 • greenback flounder 514 • southern garfish 1452 • yelloweye mullet 740 • gummy shark 167 • King George whiting 1347		patterns in the distribution and abundance of key species. Therefore, the limits of acceptable change should be treated with caution, noting socio-economic factors should be taken into account when assessing catch data underpinning this LAC.	

4.6.3.2 Nationally Important Wetlands

A wetland may be considered nationally important if it meets at least one of the following criteria (DCCEEW, 2025f):

1. It is a good example of a wetland type occurring within a biogeographic region in Australia.
2. It is a wetland which plays an important ecological or hydrological role in the natural functioning of a major wetland system/complex.
3. It is a wetland which is important as the habitat for animal taxa at a vulnerable stage in their life cycles, or provides a refuge when adverse conditions such as drought prevail.
4. The wetland supports 1% or more of the national populations of any native plant or animal taxa.
5. The wetland supports native plant or animal taxa or communities which are considered endangered or vulnerable at the national level.
6. The wetland is of outstanding historical or cultural significance.

There are no nationally important wetlands within the operating area. However, those sites which overlap the EMBA are shown in Figure 4-20 and listed below:

- Benedore River, Victoria
- Ewing's Marsh (Morass), Victoria
- Lake Bunga, Victoria
- Lake King Wetlands, Victoria
- Lake Tyers, Victoria
- Lower Snowy River Wetlands System, Victoria
- Mallacoota Inlet Wetlands, Victoria
- Sydenham Inlet Wetlands, Victoria
- Tamboon Inlet Wetlands, Victoria
- Thurra River, Victoria
- Nadgee Lake, NSW

5 Environmental Risk Assessment Methodology

This section describes the process by which SGHE has identified and assessed impacts and risks and developed impact and risk reduction measures for prevention and mitigation. Regulation 21 (5) of the OPGGS (E) Regulations requires that an EP include the details of environmental impacts and risks for the activity.

Environmental risk assessment consists of four broad steps, as outlined in HB 203:2012 (Managing Environment-related Risk) and AS/NZS 31000: 2009 (Risk management – Principles and guidelines). SGHE has used these guidelines as the basis for formulating its own risk assessment protocol (CORP-HSE-027). The key components of this protocol are summarised below.

5.1 Identifying the hazards, impacts and risks

All components of the petroleum activity were identified and described in Section 2 of this EP.

The aim of this first step is to compile a comprehensive list of risks based on the hazards (planned or unplanned) that could result in an environmental impact.

A hazard is an occurrence that can have an adverse impact on the environment and is associated with the proposed activity.

The activity – hazard interactions are summarised in Table 6-1, and each of the identified hazards are described in more detail in each of the summary tables in Section 6.

5.2 Analysing the risk

Risk analysis requires an assessment of the likelihood of a hazard occurring, and the consequences of that hazard on the environment. The likelihood of a hazard occurring must be assessed considering the:

- Frequency of the event / occurrence expressed as the amount of times the event has occurred in a given time (i.e., infrequently in the industry); and / or
- Probability of a specific consequence expressed as a percentage measurement of the event happening in a given time (i.e. x% chance of occurrence).

5.2.1 Determining Likelihood

The likelihood category is determined based on the worst credible risk and is the likelihood of a specific consequence being realised. SGHE determines the likelihood with consideration of the existing controls and effectiveness of those controls that are in place, the nature of materials or substances that contribute to the impact and the frequency with which the activity or event may occur and the probability that the specific consequence eventuates.

Table 5-1 outlines the qualitative measures used to determine the likelihood of an impact occurring.

Table 5-1 Qualitative measures for determining likelihood of impact

Level	Description	Description	Guide Range
A	Almost Certain	The event is expected to occur once a year	Every year
B	Likely	The event will probably occur between once a year and once in ten years. Will happen at least once during the life of the facility.	Every 3 years
C	Moderate	The event will probably occur between once in ten years and once in a hundred years. Unlikely but may happen during the life of the facility.	Every 30 years
D	Unlikely	The event will probably occur between once a century and once every thousand years. Very unlikely to occur during the life of the facility. Scenario occurs occasionally world wide	Every 300 years
E	Rare	The event will probably occur less frequently than every thousand years. Virtually impossible. Remote occurrence worldwide.	Every 3,000 years

Note: Facility life is considered to be 20 years.

5.2.2 Determining Consequence

The consequence category is also determined based on the worst credible risk. For example, the quantities, concentration and toxicity of the release, time scale of release and the sensitivity of the receiving environment all need to be considered. Consequence is the outcome of an event and it is important to note that there may be a range of outcomes.

The consequence category is expressed as a measure of the:

- Size of the impact and the timeframe for recovery (e.g., localised, rapid recovery within days to months); or
- Durationof the impact and timeframe for recovery (e.g., long term impact, recovery measured in decades).

These parameters determine the consequence that the event poses and enable a qualitative measure from ‘insignificant’ to ‘catastrophic’ as shown in Table 5-3 to be selected.

5.2.3 Determining Risk Level

Risk evaluation helps to prioritise the risks (i.e. determine if the risk of an event or incident is acceptably low), or if management actions are required to further reduce the risk to as low as reasonably practicable (ALARP).

The SGHE risk matrix (Table 5-2) has been used to analyse the impacts arising from the project activities. The environmental risk ranking is determined by a combination of the expected frequency (or likelihood, as given in Table 5-1) of the impact (or consequence, as given in Table 5-3) leading to the worst case credible risk from the risk matrix provided in Table 5-2.

Management actions to treat the impacts and risks are incorporated into the individual risk assessments (Section 6). SGHE management actions aim to reduce the environmental impacts and risks of all its activities to ALARP and to an acceptable level.

Table 5-2 Qualitative risk analysis matrix – level of risk

		Consequence				
		1 Insignificant	2 Minor	3 Moderate	4 Major	5 Catastrophic
Likelihood	A: Almost certain	S	H	H	H	H
	B: Likely	M	S	H	H	H
	C: Moderate	L	M	S	H	H
	D: Unlikely	L	L	M	S	H
	E: Rare	L	L	L	M	S

For credible hazards SGHE has also determined the consequence and likelihood with no project specific controls in place to provide an inherent understanding of the issues. This allows the importance of the controls to be better understood and ensures that the ALARP effort is appropriate to the nature and scale of the impact.

Table 5-3 Qualitative measures for determining consequence

Consequence level/descriptor				
1 – Insignificant	**2 – Minor**	**3 - Moderate**	**4 – Major**	**5 - Catastrophic**
Environmental Effects				
No lasting effect. Low-level impacts on biological or physical environment. Limited damage to minimal area of low significance.	Minor effects on biological or physical environment. Minor short-medium term damage to small area of limited significance.	Moderate effects on biological or physical environment but not affecting ecosystem function. Moderate short-medium term widespread impacts (e.g. oil spill causing impacts on shoreline).	Serious environmental effects with some impairment of ecosystem function (e.g. displacement of a species). Relatively widespread medium-long term impacts.	Very serious environmental effects with impairment of ecosystem function. Long term, widespread effects on significant environment (e.g. unique habitat, National Park). Large clean-up costs.
Social / Cultural Heritage				
Low-level social or cultural impacts. Low-level repairable damage to commonplace structures.	Minor medium-term social impacts on local population. Minor damage to structures/ items of some significance. Minor infringement of cultural heritage. Mostly repairable.	Ongoing social issues. Permanent damage to structures/ items of cultural significance, or significant infringement of cultural heritage/ sacred locations.	On-going serious social issues. Significant damage to structures/ items of cultural significance, or significant infringement and disregard of cultural heritage.	Very serious widespread social impacts. Irreparable damage to highly valued structures/items/ locations of cultural significance. Highly offensive infringements of cultural heritage.
Public concern restricted to local complaints. Ongoing scrutiny/ attention from regulator.	Minor, adverse local public or media attention and complaints. Significant hardship from regulator. Reputation is adversely affected with a small number of site-focused people.	Attention from media and/or heightened concern by local community. Criticism by NGOs. Significant difficulties in gaining approvals. Environment credentials affected.	Significant adverse national media/ public/ NGO attention. May lose licence to operate or not gain approval. Environment/ management credentials are significantly tarnished.	Serious public or media outcry (international coverage). Damaging NGO campaign. Licence to operate threatened. Reputation severely tarnished. Share price may be affected.

5.3 HAZID Workshops

A series of hazard and risk identification workshops (HAZID) have been conducted over the life of the project. Environmental hazards relating to the scope of this EP are formally reviewed, re-assessed and re-ranked annually. The HAZID involving SGHE personnel and appropriate contractors is facilitated by the SGHE HSEC Manager. All current and planned Longtom operations and the associated hazards and risks have also been reviewed and re-assessed during the preparation of this EP 5-yearly revision.

Prior to the tie-in of Longtom-5, a further workshop will be held involving SGHE personnel and key contractors to again review the hazards identified in the preparation of this revision, to confirm the controls in place and to identify any additional risk reduction measures to ensure the risks are managed to ALARP and an acceptable level.

5.4 Demonstrating ALARP

In general, risk management and acceptance should be based around the ALARP Principle (Figure 5-1). The ALARP Principle is that at some point in the risk reduction process the cost involved in reducing the risk further will be grossly disproportionate to the benefit gained. The ALARP Principle makes note of the fact that infinite time, effort and money could be spent attempting to reduce a risk to zero and that this is not practical or appropriate.

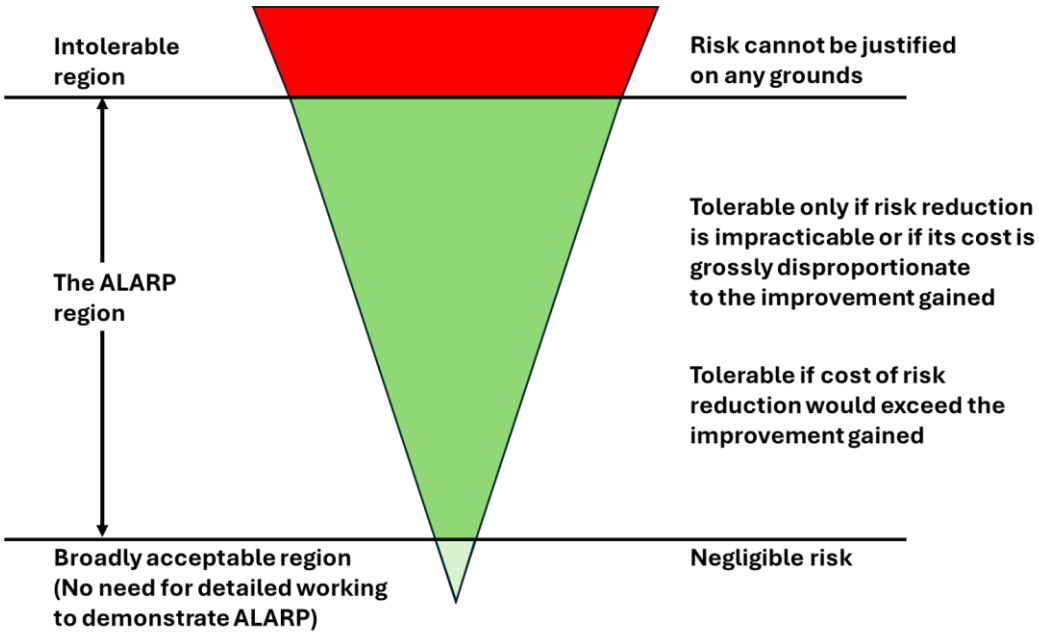


Figure 5-1 The ALARP Principle triangle

As part of the ALARP and acceptability assessment SGHE has examined the controls for effectiveness. Individual controls have been qualitatively assigned effectiveness's of Very High,

High or Moderate. During the HAZID workshop and the review of ALARP the controls are also reviewed to ensure that the overall effectiveness is sufficient, that there are sufficient layers of protection and independence of the controls. Finally, as part of the ALARP assessment hazards are reviewed for potential additional risk reduction measures.

Hazards that are deemed to be:

- Low risk - requires no special risk reduction effort but the principles of ALARP and continuous improvement still apply, such that obvious improvement opportunities should be taken where they are applicable and practicable. This level of risk equates to 'negligible' in the ALARP triangle. It is an expectation that effective planning and management system tools are used to manage tasks and operations at all levels of risk.
- Moderate or significant risk - requires additional preventative measures where possible and where the cost of the control does not disproportionately outweigh the benefit. This level of risk equates to 'tolerable' in the ALARP triangle. All reasonably practicable measures must be taken to reduce the risk.
- High risk - requires additional preventative measures to reduce the risk to an acceptable level (i.e., tolerable or negligible in the ALARP triangle). This level of risk is not considered justifiable under normal conditions. Additional preventative measures must be identified to reduce the risk to ALARP or lower.

The descriptions for the categories of risk presented in the ALARP triangle and the associated management requirements are also listed in Table 5-4.

Table 5-4 Definition of risk

ALARP Definition	Risk Level	Risk Definition
Broadly acceptable - no requirement for detailed working to demonstrate ALARP	Low (L)	Generally acceptable – manage by routine procedures.
Tolerable risk - only if further risk reduction is impracticable or its cost is grossly disproportionate to improvement gained	Moderate (M)	ALARP – management responsibility must be specified. Reduce risk where possible, monitor and review.
	Significant (S)	ALARP – senior management attention and sign off needed, reduce risk as a priority, closely monitor and review.
Unacceptable risk	High (H)	Unacceptable – detailed research and management planning required to reduce the level of risk.

Table 5-5 presents the ALARP 'Hierarchy of Control', which is the preferred order of control methods. This hierarchy is applied when considering additional safeguards/controls or improving existing safeguards/controls to ensure a risk is ALARP (i.e., applied to any residual risk that is not at Risk Level 1). Elimination is the first control method to be considered, with protective control methods considered last.

Table 5-5 ALARP hierarchy of control

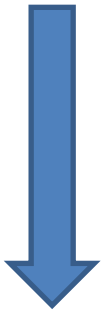
Control	Effectiveness	Example
Eliminate		Refueling of helicopters only carried out from onshore eliminates the risks of an aviation spill from offshore.
Substitute		The use of low-toxicity hydraulic fluids that perform the same task as a higher-toxicity additive.
Engineering		Designing the pipeline and subsea equipment to withstand impacts of trawl gear.
Isolation		Soundproofing of plant, erection of physical barriers, etc.
Administrative		The use of job hazard assessments (JHAs) to assess and minimise the environmental risks of an activity.
Protective		The provision and use of personal protective equipment (PPE).

Table 5.5 has been used to help demonstrate the ALARP Principle for each of the environmental hazards resulting from the petroleum activities, which are assessed in Section 6.

The level of effort involved with demonstrating and assessing whether the hazard is at ALARP has been commensurate with the level of risk, the inherent consequences of the hazard and a comparison with the impacts and actions from other marine users in the area. For example, low risk–low inherent consequence hazards that are also created by other marine users (such as commercial fishing and merchant vessel activities) and that are accepted by the community have been subject to a lower level of assessment effort than a high risk–high consequence hazard from a non-routine marine activity.

In general, the ALARP process has been based on assessing the hazard, confirming the effectiveness of the controls and determining if there is anything additional that could be done to control the hazard. In identifying additional controls, the ‘Hierarchy of Control’ principle has been used.

Figure 5-2 summarises the risk assessment process.

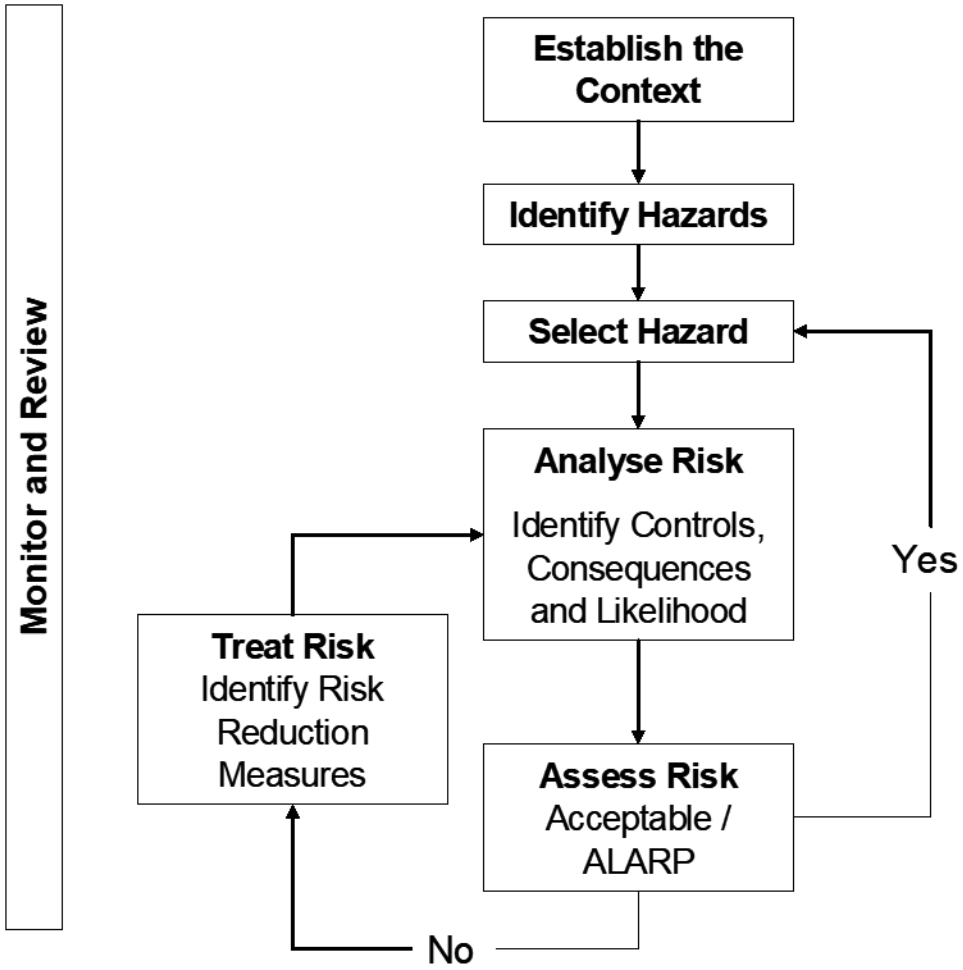


Figure 5-2 The risk assessment process

For hazards, such as accidental hydrocarbon release, the Pipeline Safety Case and Well Operations Management Plan (WOMP) will also be applicable to the demonstration of ALARP.

The Pipeline Safety Case addresses these hazards and demonstrates that the safety risks have been managed to ALARP for NOPSEMA acceptance. As the potential safety consequences of these events are likely to exceed the environmental consequences, (note multiple fatalities on the SGHE risk matrix are classed as a catastrophic consequence) the measures implemented and described in the safety case to manage the risk to ALARP will also help manage the environmental risks to ALARP. The Pipeline Safety Case and compliance with the safety case is one of the key controls in preventing some of the more significant hazards associated with Longtom operations. The Pipeline Safety Case addresses the adequacy of the design, the operating procedures and systems and the training and competency of site personnel at the Orbost Gas processing Plant.

The WOMP addresses well integrity and demonstrates that well integrity risks are managed to ALARP for NOPSEMA acceptance. Well integrity, preventing hydrocarbon releases from the wells and having well control / blowout contingency plans will also help manage the environmental risks associated with the Longtom wells. The WOMP and compliance with the

WOMP is therefore also one of the key control measures that also manages the environmental risk.

Risk reduction measures (RRMs) identified during the risk assessment process generally have the following questions asked of them to determine if they are practicable and should be implemented:

1. Will they reduce the level of risk?
2. Will they not introduce additional risks?
3. Are they supported by industry codes, standards and practices?
4. Will they be supported by personnel?
5. Will they be cost effective?

If the answer is yes to all then the RRM should be implemented. Conversely if the answer is no to most of them then it should be rejected. Ones that are unclear may require additional assessment and review and should be kept for further consideration.

5.5 Demonstrating Acceptability

The risk assessment process must also demonstrate that that all identified environmental impacts and risks of the project are of an 'acceptable level'. This is done by comparing the impact and risks with defined acceptable levels. SGHE has defined what they consider to be broadly acceptable risks (low risk), tolerable risks (moderate and significant risk) and unacceptable risks (high risk) in Table 5-4.

SGHE assesses acceptability based on, but not limited to, the following factors:

- ALARP has been demonstrated.
- Consideration of the level of risk and the SGHE risk matrix (Table 5-2 and Table 5-4) i.e. Is the level of risk High? (If so, it is considered unacceptable)
- Consideration of the potential extent of the impact on the environment.
- Consideration of Legislative and other Requirements i.e. activities are compliant with Australian legislation and 'other requirements' including relevant EPBC Act listed species recovery plans or approved conservation advices.
- Consideration of SGHE policy, standards and procedures i.e. impacts and risks are consistent with SGHE systems and relevant internal requirements.
- Comparison with other oil and gas industry standards, best practices, environment plans and developments.
- Comparison with other activities/industries that are currently taking place in the area / or similar areas and which are accepted by the community (i.e. the fishing and shipping industries).
- Results from consultation with relevant persons.

5.6 Monitor and Review

The final part of the risk assessment process is to monitor and review the performance of the controls, to ensure that the assessment is valid and that the controls have reduced the risk to ALARP and are of an acceptable level and continue to be so.

To this end, SGHE has defined and developed environmental performance standards for each of the identified credible hazards and their control measures. Environmental performance standards have been set at a level to ensure control measures perform at the level relied upon to demonstrate the related impact or risk is reduced to ALARP and at an acceptable level.

Similarly to the ALARP demonstration, a greater focus has been on the development of effective performance standards for the high risk/high consequence activities than for the low risk/low consequence activities. In all cases, the performance standards have been selected/reviewed for usefulness and have also been assessed against the SMART (Specific, Measurable, Achievable, Relevant, Time-based) principle. The environmental performance objectives, standards and measurement criteria for the project are detailed in Section 7.

5.7 Communicate and Consult

As described in Section 3 communication and consultation with relevant persons is ongoing and will continue to be maintained for future activities.

Consultation with relevant persons will be undertaken in accordance with the consultation process described in Section 3.

6 Environmental Risk Assessment

This section outlines the environmental risk assessment (ERA) for the activities, using the methodology described in Section 4.6.3.2 and in accordance with Regulations 21 (5) and 21(6) of the OPGGS (E) Regulations.

The prevention and mitigation measures, as well as the ALARP and acceptability justifications for each hazard, have been developed using the combined experience of SGHE staff and environmental advisors to SGHE.

The hazards in Table 6-1 have been identified and assessed for impacts and risks.

Table 6-1 Activity – Hazard Interactions

Activity	Hazard (Aspect)												
	Physical presence		Planned discharges		Planned emissions			Unplanned interactions		Accidental release			
	Interaction with other marine users	Seabed disturbance	Subsea discharges	Routine vessel discharges – sewage and putrescible waste, treated bilge, cooling water and brine	Noise	Light	Atmospheric	Interaction with marine fauna	Introduction of invasive marine species	Waste (hazardous and non-hazardous)	Loss of containment – hazardous and non-hazardous substances	Loss of containment - marine diesel fuel	Loss of containment – reservoir hydrocarbons
Longtom non-production phase	X						X						X
Longtom operations	X		X				X				X		X
Vessel-supported IMR	X	X	X	X	X	X	X	X	X	X	X	X	X

SGHE has provided an inherent risk ranking for each of the hazards to comply with NOPSEMA's guidance to present the risk pre-treatment. SGHE has considered the 'inherent risk' to mean the risk from the activity if the project specific controls were not in place. Removing all controls in the assessment of inherent risk is not considered practical or appropriate, for example, to avoid a vessel diesel spill, vessels must comply with marine legislation and have controls in place, as described in Section 6.5.3, if they are to operate. For this reason, SGHE has assessed the inherent risk of each hazard with the inherent controls or considerations in mind (see 'basis of inherent risk assessment' section in each of the risk assessment tables).

SGHE has used the boundary of the EMBA (see Figure 4.1) for the purposes of assessing the environmental impacts of the project.

6.1 Physical Presence

This section describes the project's impacts and risks from the physical presence of the Longtom facilities (and associated offshore vessels and IMR activities).

6.1.1 Interaction with other marine users

The physical presence of the offshore facilities may have an adverse effect on other users of the area, such as commercial fishing vessels. To assess and manage this risk, a consultation process with the relevant stakeholders was undertaken during the design and construction of the Longtom facilities.

6.1.1.1 Description of Environmental Impacts

The known and potential environmental impacts relating to the presence of the offshore facilities are:

- Damage to fishing equipment (i.e., interference with demersal trawl gear).
- Reduction in fishing grounds by the safety exclusion zone around the Longtom-3 and Longtom-4 subsea wellheads. Note that this may have some positive impacts on the environment due to the exclusion of fishing activities.
- Impact on navigation – not considered credible given location within ATBA and the nature of the subsea development.

Damage to fishing equipment and reduction in fishing grounds

Fishing gear such as otter-board or Danish seine trawl nets and anchors have the highest potential for snagging on subsea equipment associated with the project. Squid and pelagic fishing involves no contact of gear with the seabed and therefore these will be largely unaffected.

Based on data supplied by AFMA, the operating area is located in an area of low to moderate fishing activity, as defined by DNV Guidelines and Recommended Practices No. 13 (Interference between pipelines and trawl gear, September 1997). The highest level of fishing activity is from trawl and Danish seine fishermen, with otter-board trawl fishing accounting for approximately

10% of the total activity. Consultation with scallop fishermen indicates that the operating area is not in an area of frequent scallop recruitment and previous scallop fishing.

To protect the offshore infrastructure from damage, a permanent 500-m safety exclusion zone has been established around the Longtom-3 and Longtom-4 wells, as is standard practice in offshore gas fields. This exclusion zone represents a very small percentage of the total fishing grounds in eastern Bass Strait.

Exclusion zones for fishing around pipelines are generally not practical. They are extremely difficult to enforce, particularly where applied to long, narrow corridors. Furthermore, as offshore production facilities increase in an already developed oil and gas basin, the network of pipelines results in a very complex maze of exclusion corridors if these were to be imposed. For example, there are now over 800 km of subsea pipelines linking production facilities and transferring oil and gas to shore in the offshore Gippsland Basin.

The entire subsea pipeline route is located over sandy seabed, where, over time these sections of pipeline become partially buried by natural bed sediment transport (sand movements), especially during storm events. This in itself decreases the likelihood of interference with gillnet or trawl gear.

The umbilical was trenched between Longtom-3 and Longtom-4, except for short sections adjacent to the tie-ins at each end. The trench has been naturally backfilled. In other areas the umbilical was installed on the sea floor and sections have self-buried.

Localised disturbance to habitat

The project is located in an area of low to medium trawl fishing activity. It is not expected that fish species will be exposed to harmful noise levels; however should behavioural changes to fish occur, they will be localised and temporary as the maintenance activities will be of short duration.

There is a large area of unrestricted fishing ground available to fishermen away from the wellheads that can be used during the short period of maintenance.

While the establishment of the petroleum safety zones may have had a minor negative impact to fishermen, they are likely to be a positive impact to fish species through the provision shelter and protection.

Navigation impacts

The Longtom facilities are situated largely in the Bass Strait ATBA that prohibits vessels over 200 tonnes hence there is no real impact on the navigation of merchant shipping.

Most IMR activities will occur within the existing safety exclusion zone around the subsea wellheads. Vessels supporting IMR activities could potentially impact other users of the marine environment such as fishermen however this potential would only be for a limited period. Stakeholders will be notified prior to IMR activities commencing and the presence of vessels in the area.

All offshore vessels are equipped with navigation equipment and will display all required navigation lighting to minimise navigation hazards to passing vessels. Given the infrequent

occurrence and short duration of the vessel-supported IMR activities and the existing ATBA and petroleum safety zones, the risk of significant disruption to other users is minimal.

6.1.1.2 Impact and Risk Assessment

Table 6-2 outlines the risk assessment for impacts on other users due to the presence of offshore facilities.

Table 6-2 Disruption/displacement of other marine users risk assessment

Hazard duration	Permanent for the petroleum safety exclusion zone, temporary (infrequent and short duration) for IMR activities.	
Extent of hazard	Localised (within the petroleum safety zone and immediate vicinity of the IMR activity).	
Basis of Inherent Risk Assessment		
• The project is located in an area of low to medium trawl fishing activity. • IMR activities will be of short duration (approximately one week every year) and occur mostly within the petroleum safety zones. • The pipeline is designed to be over trawlable. • The Longtom-3 and Longtom-4 petroleum safety zones are within the ATBA – hence they have no significant impact on commercial shipping • Provision of digital information to fishers and the government on the location of the Longtom wellheads and pipeline. Hydrographic charts have subsequently been updated with Longtom facilities. • Automatic identification System (AIS) vessel data is used to monitor vessels in the area and there is very limited activity, with vessels observed to be passing through on route elsewhere. • The area associated with the two petroleum safety zones is very small in relation to the rest of the available fishing grounds.		
Inherent impact and risk analysis and ranking		
Consequence	**Likelihood**	**Inherent impact**
Insignificant (1)	Moderate (C)	Low
Project specific environmental controls and checks that will take place	<u>Prevention</u> • Longtom-5 design - would be located within the existing Longtom-3 petroleum safety zone – effectiveness considered very High in terms of preventing any additional impact to marine users. • Consultation will be maintained with commercial fishing groups regarding operations, and IMR activities – effectiveness considered Moderate. • AIS vessel data is used to monitor prohibited vessel incursion into the Petroleum Safety Zones. If vessel ownership is able to be determined SGHE attempts to contact the owner (or alternatively a representative organisation such as SETFIA) – effectiveness considered Moderate. <u>Mitigation</u> • A survey will be undertaken following maintenance activities to ensure, as far as practicable, no junk or debris is left on the seabed – effectiveness considered Moderate.	
Residual risk analysis and ranking		
Consequence	**Likelihood**	**Residual Impact**
Insignificant (1)	Unlikely (D)	Low

Demonstration of ALARP	
The key preventative controls are the design (particularly that Longtom-5 will be within the existing Longtom-3 petroleum safety zone) and the consultation to date, the effectiveness of these controls is considered very high in preventing community impact. The ROV surveys will help ensure that all construction equipment is removed and that any issues are identified further prevent or minimise the impact. Given the low level of impact the controls are considered sufficient, suitably robust, independent and effective to ensure the residual risk is Low and ALARP. The following ALARP analysis confirms that all reasonable risk treatment options have been considered to reduce the environmental impact of the offshore facilities on marine fauna/seabed, and the risk is deemed to be **ALARP**. Adopting further risk reduction measures will incur costs that are grossly disproportionate to the benefits gained. A 'Low' residual risk ranking is **broadly acceptable** according to the SGHE definition of risk.	
Eliminate	Not applicable.
Substitute	Not applicable.
Engineering	The subsea pipeline has been designed to be over trawled and to withstand impacts of trawl gear.
Isolation	A 500-m permanent petroleum safety exclusion zone has been gazetted around Longtom-3 and Longtom-4, whilst excluding commercial fishing activities in this area this reduces the risk of fishing equipment getting pinned on the Longtom facilities.
Administrative	A survey will also be undertaken following maintenance activities to ensure no junk is left on the seabed.
Protective	Not applicable.
Demonstration of Acceptability	
The operating area is located in an area of low to medium fishing activity. Fisheries consultation undertaken to date shows minimal direct impact on fishermen or access to grounds. The Longtom-3 and Longtom-4 safety zones are within the ATBA hence there is no impact on commercial shipping. There are numerous other oil and gas developments in Bass Strait. Longtom being a subsea development poses less of an impact than a conventional platform. Oil and gas infrastructure in the area has been accepted for the last 40 years. All legislative and other requirements have been met and the activity is consistent with SGHE policy and meets relevant management standards and procedures. This risk is considered **acceptable** given it will pose no real impact on commercial shipping and the impact to commercial fishing has already been made and any ongoing impact is expected to be insignificant.	
Monitoring	
Consultation with key stakeholders prior to any offshore campaigns identified in the consultation log and complaints (if any) investigated.	

6.1.2 Seabed disturbance

IMR activities may result in seabed disturbance causing a loss or change to benthic habitats and communities, primarily from the placement of stabilising sand or grout bags or concrete mattresses.

6.1.2.1 Description of Environmental Impacts

The known and potential environmental impacts relating to the presence of the offshore facilities are:

- Seabed infrastructure acts as an artificial habitat for benthic fauna colonisation.
- The petroleum safety zone around the Longtom-3 and Longtom-4 wells acts as a 'marine reserve' and protects the environment as commercial fishing is excluded.
- Displacement of a small area of seabed habitat caused by minor excavation or during the placement of sand bags or mattresses to stabilise subsea equipment (e.g., pipeline freespan).

Benthic fauna colonisation

The Longtom subsea infrastructure provides an artificial environment for marine organisms, resulting in an increase in the abundance of benthic fauna. This increase in species diversity and abundance is considered a **positive** impact, given that there are no known sensitive seabed habitats or features in the operating area. The wellheads and main structures are all contained within a petroleum safety exclusion zone (gazetted around Longtom-3 and Longtom-4), which also means that they are protected from commercial fishing (i.e., the area provides a haven for marine species that are susceptible to impacts from commercial fishing).

Temporary disturbance to benthic habitats and communities

The seabed in the operating area may be disturbed by minor excavation for access, the lifting of the umbilical for inspection and the placement of sand bags or mattresses to reduce the freespan of the pipeline.

There are no sensitive benthic habitats in this part of Bass Strait and the area has been, and would be, rapidly recolonised. Any impacts to epibenthos along the flowline would be both localised and short-lived.

An ROV survey will be undertaken to ensure, where practicable, that no junk or debris is left on the seafloor following IMR campaigns.

Underwater cultural heritage

As described in Section 4.4.2, no shipwrecks have been identified within the operating area.

Analysis of sea-level changes during the last ice age indicates that sea levels, at their lowest point, dropped to about 120 m below current levels (Australian National Museum, 2022). The water depth in the operating area is approximately 55 m suggesting that some of this area now inundated will have been land in the past, and may have supported human occupation, of which archaeological evidence may have survived. Since sea levels have risen, the region has been subject to significant sedimentation resulting in submerged palaeolandscapes which are no longer visible in the surface (i.e., seabed) morphology.

No Indigenous cultural heritage has been identified during previous development, or consultation with relevant persons; therefore, at the time of writing this EP, presence of known Indigenous cultural heritage within the operating area is not expected. Localised, shallow seabed disturbance would not affect the potential cultural heritage value of any submerged landscapes which may be present.

6.1.2.2 Impact and Risk Assessment

Table 6-3 outlines the risk assessment for impacts on the seabed due to seabed disturbance.

Table 6-3 Seabed disturbance assessment

Hazard duration	Temporary for IMR activities.	
Extent of hazard	Localised to immediate facility footprint and petroleum safety zones.	
Basis of Inherent Risk Assessment		
• There are no known sensitive seabed habitats in the operating area. • There are no known shipwrecks in the operating area. • There is no known Indigenous cultural heritage within the operating area. • Subsea infrastructure acts as an artificial habitat for benthic fauna colonisation. • The wellheads and key structures are all contained within petroleum safety exclusion zones thus helping protect the environment from commercial fishing activities. • The impact has already occurred for Longtom 3, 4 and the pipeline.		
Inherent risk analysis and ranking		
Consequence	**Likelihood**	**Inherent impact**
Insignificant (1)	Moderate (C)	Low
Project specific environmental controls and checks that will take place	Prevention • Engineering design to ensure equipment is stable on the sea floor and the area of disturbance is minimised as far as practicable - effectiveness considered High. • Engineering design of freespan rectification ensures area of disturbance is minimised as far as practicable – effectiveness considered High • IMR and installation procedures take into account seabed relief, sensitive seabed features and underwater cultural heritage – effectiveness considered High. Mitigation • If seabed anomalies are identified qualified marine archaeologists are engaged and DCCEEW notified when required – effectiveness considered High • An ROV survey will be undertaken to ensure, where practicable, IMR debris is retrieved - effectiveness considered Moderate.	
Residual risk analysis and ranking		
Consequence	**Likelihood**	**Residual Impact**
Insignificant (1)	Unlikely (D)	Low
Demonstration of ALARP		
The key preventative controls are the design of the facilities to ensure stability and the design of IMR campaigns, in particular freespan rectification, to ensure seabed disturbance is minimised, the effectiveness of these controls is considered High in preventing environmental impact. The ROV surveys will help ensure that all IMR equipment is removed and that any issues are identified further prevent or minimise the impact. Given the low level of inherent impact the controls are considered sufficient, suitably robust, independent and effective to ensure the residual risk is Low and ALARP. The following ALARP analysis confirms that all reasonable risk treatment options have been considered to reduce the environmental impact of the offshore facilities on marine fauna/seabed, and the risk is deemed to be **ALARP**. There are no other feasible risk treatment options. A 'Low' residual risk ranking is **broadly acceptable** according to the SGHE definition of risk.		

The petroleum safety zones around the Longtom-3 and 4 wellheads will act as a marine reserve as these areas will be protected from commercial fishing activities – this may lead to an actual net benefit to the environment	
Eliminate	Not applicable in terms of the Longtom facilities and associated IMR activities but damage from commercial fishing activities will be eliminated within the petroleum safety zones.
Substitute	Selection of the most environmentally appropriate small structures to rectify stability issues.
Engineering	Engineering design to ensure equipment is stable on the sea floor and the area of disturbance resulting from inspection and any necessary maintenance or repair is minimised as far as practicable.
Isolation	Not applicable.
Administrative	Not applicable.
Protective	Not applicable.
Demonstration of Acceptability	
The impact of the offshore facilities on marine fauna/seabed, particularly the lifting of the umbilical for inspection and the placement of small structures to reduce the freespan of the pipeline, is very low and significantly less than the impact from commercial fishing in the area which use scallop dredges and trawls. The potential disturbance to benthic communities and fauna in the water column is considered to be minimal, if any, and highly localised for the operations phase of the project. Benthic communities in Bass Strait are expected to rapidly recolonise any permanently displaced areas and settle on the new infrastructure. The zone affected is small, of low environmental sensitivity and is protected by the Longtom-3 and Longtom-4 petroleum safety exclusion zones. There are numerous other oil and gas developments in Bass Strait (20 production facilities). Longtom being a subsea development poses less of an impact than a conventional platform. Oil and gas infrastructure in the area has been accepted for the last 40 years. All legislative and other requirements have been met and the activity is consistent with SGHE policy and meets relevant management standards and procedures. There have been no concerns raised during stakeholder consultation regarding the impacts to marine fauna/seabed by the offshore facilities. This risk is considered **acceptable** given the insignificant consequence and as there are no known sensitive seabed habitats in the project area.	
Monitoring	
No physical seabed sampling or monitoring is necessary based on the absence of sensitive seabed habitats. Survey data will be checked for seabed anomalies which require review by a qualified marine archaeologist.	

6.2 Planned Discharges

This section describes the impacts and risks from subsea discharges during operation and IMR activities, and routine IMR-support vessel discharges.

6.2.1 Subsea Discharges

This section describes the project's impacts and risks from planned subsea discharges, including:

- Discharge of hydraulic fluid during operation (not applicable during the non-production phase).
- Discharge of testing fluid during IMR activities.

6.2.1.1 Hazard

Hydraulic Fluid

Hydraulic fluid is used to control subsea valves. The original selected hydraulic fluid was MacDermid Oceanic HW525. Oceanic HW525 is a water-based fluid, with 25% MEG and additional additives to provide a higher degree of protection against wear, corrosion and microbiological degradation and is the most commonly used hydraulic fluid in Bass Strait. The product was considered to be D ranked on the United Kingdom Offshore Chemical Notification Scheme (OCNS) ranking. Due to the biodegradability of the lubricant, a molybdenum-based chemical, the OCNS ranking was changed to an "A". In early 2015 the decision was made to replace HW525 with Transaqua HT2. HT2 is a D rated hydraulic fluid with no substitution warnings and is compatible with the Longtom facilities and HW525. The umbilical contains a significant quantity of liquid and based on normal operations the complete replacement of HW525 with HT2 will take some time. Options to expedite the change-out were assessed however no practicable method was identified, the risk of the umbilical containing HW525 and operations continuing to use HW525 until flushed with HT2 was assessed to be ALARP. During the current non-production phase there is no practical ability to flush the HW525 out with HT2. To flush the HW525 would require electrical continuity from the Orbost Gas Processing Plant, agreement with the gas plant operator to operate the hydraulic pumps, agreement with the Patricia Baleen pipeline operator to use their umbilical and an offshore vessel campaign. Given there is no current discharge of HW525, it has been rejected as a practicable option.

During operations, a small amount (between 1 and 7 litres) of hydraulic fluid is discharged from the wellhead or HIPPS each time a valve or choke is activated remotely via the umbilical control as described above. This is normal for subsea gas production facilities throughout the world. It is estimated that the monthly discharge is up to approximately 200 L per month, depending on the frequency of valve operations. When no valves are actuated, there is no hydraulic fluid discharged in this manner. In addition to the operational discharge of hydraulic fluid described above, some small amount of seepage across valves also takes place in these systems. This seepage rate is generally low and spread out across the subsea facilities. Cameron (now OneSubsea) are the designers and fabricators of the Longtom Subsea Control Modules (SCM) and undertake leak tests on their components as part of their quality assurance checks. The specification for these SCMs allows for a leakage of up to 1.2 L per day per SCM prior to offshore deployment. A leak of hydraulic fluid to the marine environment was detected from the subsea facilities in 2009. A full description of the cause of the leak and remedial actions was provided in Incident Investigation Report (Document Number: LONG-HSE-051) to the then DPI now the DJPR.

A series of onshore tests were carried out in late June 2010 to try and identify the location of the leak. Tests indicated that the leakage was in one of the SCMs. There are three SCMs, one at the HIPPS, one at the Longtom-3 well and another at the Longtom-4 well. Subsequent offshore investigations in 2012 confirmed the location and nature of the leak as being a leaking solenoid valve in the Longtom-4 SCM. Whilst the solenoid valve hasn't been replaced, software changes have significantly reduced or stopped this specific leak, during normal operations typically less than 200 L of hydraulic fluid per month appears to be leaking and some to all of this may be the

general seepage across all the various solenoid valves and the SCMs. During operations the consumption of hydraulic fluid is monitored and recorded monthly to confirm the nature of the leak. Longtom restart planning is underway and this will include integrity inspections and repairs of existing equipment such that all risks are appropriately managed.

With the Longtom facilities currently in a non-production phase there is no discharge of hydraulic fluid.

Testing Fluid

During the 3-yearly well integrity tests subsea discharges may also occur. No release would occur if valves are opened/closed using the pressure in the well and pressure in the pipeline. If an external power pack is used to apply pressure some of the injected MEG solution (80:20 MEG/water) or some gas could be released. Discharges would be of low volumes (i.e. in the order of 10 – 100 litres depending on the activity) non-continuous and expected to disperse rapidly in the offshore environment.

6.2.1.2 Description of OCNS, CHARM and the SGHE Chemical Selection Process

All products which are used in the North Sea offshore oil industry have to be evaluated under the requirements of international legislation established by the Oslo Paris (OSPAR) Convention in order to monitor their environmental impact. The OSPAR Convention has enabled the set-up of some of the most stringent chemical control legislation in the world. Under the Convention, a list of 'environmentally acceptable' substances has been published and are known as the 'PLONOR' list (OSPAR List of Substances/Preparations Used and Discharged Offshore which Are Considered to Pose Little or No Risk to the Environment (PLONOR) (Reference number: 2004-10)).

Under the Convention, organic based compounds are subject to the Chemical Hazard Assessment and Risk Management model known as CHARM. The CHARM model calculates the ratio of the Predicted Effect Concentration against the No Effect Concentration and is expressed as a Hazard Quotient (HQ), which is then used to rank the product. The HQ is converted to a colour banding (see Table 6-4), which is then published on the Definitive Ranked Lists of Approved Products (by the United Kingdom Offshore Chemical Notification Scheme - OCNS). The CHARM model requires the biodegradation, bioaccumulation and toxicity of the product to be calculated. Testing the effect of the product on three different species of aquatic organism is carried out including algae, crustaceans and fish.

Table 6-4 The OCNS HQ and Colour Bands

Minimum HQ Value	Maximum HQ Value	Colour Banding	Hazard
>0	<1	Gold	Lowest Hazard
>1	<30	Silver	
>30	<100	White	
>100	<300	Blue	
>300	<1000	Orange	

>1000		Purple	Highest Hazard

Products not applicable to the CHARM model (i.e., inorganic substances, hydraulic fluids or chemicals used only in pipelines) are assigned an OCNS grouping A – E, with A being the greatest potential environmental hazard and E being the least (see Table 6-5). Products that only contain substances termed PLONORs (Pose Little or No Risk) are given the OCNS E grouping. Data used for the assessment includes toxicity, biodegradation and bioaccumulation.

SGHE selects new chemicals only after undertaking a thorough chemical selection process that includes a risk assessment process (CORP-HSE-0093) that considers the requirements of the OSPAR Convention (as described above) and the review of various alternatives. Chemicals should be “D or E” or “Gold or Silver” rated and their potential impact and risk must be described and assessed. The risk assessment must be signed off by the SGHE HSEC Manager before use.

New chemicals will be added to an approved list of chemicals and this will be audited.

Table 6-5 The OCNS Environmental Ranking System for Inorganic Substances

OCNS Grouping	Result for Aquatic Toxicity (mg/l)	Result for Sediment Toxicity(mg/l)
A	<1	<10
B	>1 – 10	>10 – 100
C	>10 – 100	>100 – 1,000
D	>100 – 1,000	>1,000 – 10,000
E	>1,000	>10,000

6.2.1.3 Description of Environmental Impacts

In the original development of the Longtom EP HW 525 was taken to be a “D” rated chemical. The impacts from valve operations and from the ongoing leak were considered to be insignificant and that they posed little immediate or long term risk of impact to the marine environment. This was based on HW525 being “D” rated, of low toxicity, not bioaccumulating and that it would disperse rapidly.

Since this analysis was done the OCNS ranking of HW525 has changed to an “A” based on the toxicity of the molybdenum-based chemical used as the lubricant. The exact chemical is the proprietary information of Macdermid but is likely to be molybdenum disulfide or similar and it constitutes less than 0.25% of the hydraulic fluid. The Molybdenum lubricant has an aquatic toxicity of 0.85 mg/l (EC50 72h Skeletonema). The chemical will not bioaccumulate and its primary degradation begins within days-weeks and it is ultimately biodegradable within months.

The largest release of hydraulic fluid occurs when a HIPPS valve is closed and this is approximately 7 L in approximately 30 seconds. While the leak has an ongoing discharge rate of 0.3 L per hour, based on a monthly discharge of 200 L, note that this value includes the general seepage across the SCMs.

ROV footage of the main Longtom-4 leak, prior to the logic change, showed the dyed fluid rapidly mixing and dispersing with the current and eddies generated around the subsea structures.

Subsea currents of up to 1 knot or 0.5m/s can be experienced at the Longtom location but they are generally diurnal with a median bottom current of around 0.15m/s.

Dispersion modelling for the largest release rate from the HIPPS indicates that within 200 metres the concentration will be below the toxicity value given above for the lubricant and that the plume width is only a few meters. Whilst some impact might be experienced within the immediate vicinity of the leak, the chemical will be rapidly diluted and due to the nature of the release (only during operations - intermittent and typically less than once a month for HIPPS valves) marine organisms will not be continuously exposed to any significant level. Note the aquatic toxicity of 0.85mg/l is based on 72 hours of exposure while the HIPPS release is only about 30 seconds. Based on the modelling for the HIPPS discharge the ongoing leak can also be considered to be rapidly dispersed to below levels that would pose any significant risk. Note that this dispersion modelling is relatively conservative as it has also not taken into account the turbulence generated around the subsea equipment, evident from the ROV footage and hence a greater level of dispersion is likely to occur.

The greatest risk at the project location would be to plankton and pelagic fish, given the absence of other habitat types in the operating area. Given the small volumes, low-toxicity fluids and high energy marine environment, the consequence of this impact is considered to be insignificant, as subsea discharges are expected to rapidly dissipate and dilute. Water quality will return to existing ambient levels following completion of IMR activity. A localised and temporary change in water quality as a result of subsea discharges is unlikely to result in impacts to marine fauna.

With the Longtom facilities currently shutdown there is no discharge of hydraulic fluid and consequently no impact.

6.2.1.4 Risk Assessment

Table 6-6 outlines the risk assessment for the subsea discharges.

Table 6-6 Subsea discharges risk assessment

Hazard duration	Valve releases and seepage will occur throughout the operation of the Longtom facilities as will the minor leak. The hazard is not present during the non-production phase. Discharge of testing fluid is infrequent and short term.
Extent of hazard	Limited to the immediate area around the release point.
Basis of Inherent Risk Assessment	
• Hydraulic fluid is the only chemical that is routinely discharged to the marine environment. All other chemicals are contained within the subsea facilities. • The monthly volume of hydraulic fluid discharged through valve operations is small (typically between 0 and 200 L). • The volume of hydraulic fluid lost via general seepage and the leak is also small (typically less than 200 L) • The hydraulic fluid does not bioaccumulate and will disperse rapidly to below significant levels. • There are no known sensitive environments or biological communities in the operating area.	
Inherent risk analysis and ranking	

Consequence	Likelihood	Inherent Risk
Insignificant (1)	Likely (B)	Low
Project specific environmental controls and checks that will take place	Prevention • Longtom Pipeline Safety Case including: - Equipment design and validation (both in terms of ensuring the design is appropriate and that releases are minimised) – effectiveness considered Very High - Process controls, alarms and trips – effectiveness considered Moderate. - Training and competency of personnel to operate and maintain the facilities appropriately, including 24-hour continuous monitoring of production parameters – effectiveness considered Moderate. - Procedures for operating and maintenance activities– effectiveness considered Moderate. • The original hydraulic fluid - HW525 does not bioaccumulate – effectiveness considered Moderate. • HW525 will be progressively replaced with Transaqua HT2. • Testing fluid to be selected / approved for use by SGHE- effectiveness considered Moderate Mitigation • Not applicable.	
Residual risk analysis and ranking		
Consequence	**Likelihood**	**Residual Risk**
Insignificant (1)	Moderate (C)	Low
Demonstration of ALARP		
The key preventative controls are the design of the facilities and the low toxicity of the selected chemical the effectiveness of both these controls are considered at least high in preventing environmental impact. In the event of failure there are additional controls such as the process control system, alarms and trip and the presence of operators who would identify the problem and take action to prevent or minimise the loss of containment, their combined effectiveness is also considered high. The controls are considered sufficient, suitably robust, independent and effective to ensure the residual risk is Low and ALARP. The following ALARP analysis also confirms that all reasonable risk treatment options have been / or are being considered to reduce the environmental impact of hydraulic fluid discharges. The risk is currently deemed to be **ALARP,** while further risk reduction measures are further assessed options. A 'Low' residual risk ranking is **broadly acceptable** according to the SGHE definition of risk.		
Eliminate	Hydraulic fluid cannot be eliminated. It is required to operate the subsea valves at the wellheads. The valves need to be regularly tested to ensure they remain operational, meet critical function testing requirements and to alter Longtom production. Minor leakage across all the solenoid valves and SCMs also occurs due to their design and specification. Cameron (now OneSubsea) is the manufacturer of the SCMs, and have an allowable leak of around 1 L per SCM per day. This cannot be eliminated. The leak at Longtom-4 has been largely eliminated by a software change and during the current non-production phase there is no release. Undertaking an offshore campaign to specifically replace the solenoid valve has been examined as a risk reduction measure (RRM), Whilst this could stop the leak it wouldn't stop the general leakage and it has been rejected as the sole reason for an offshore campaign. The risk from the leaking hydraulic fluid is very low. Undertaking a campaign will in itself introduce additional	

	risks that are considered to outweigh the benefit, these risks include all the environmental risks associated with vessel operations, safety risks associated with the campaign potentially including diver related issues and the operations also pose a risk of damaging the existing facilities leading to a commercial risk of loss of production. Replacing subsea equipment due to a leak of this nature is not considered normal industry practise and is unlikely to be supported. The cost of bringing in an offshore support vessel to carry out the works is likely to be at least several million dollars and as such the RRM is not considered cost effective. If a dive campaign is required for Longtom-5 or a dive support vessel is in Bass Strait for another job then opportunities to replace the solenoid will be examined. Shutting down the leaking equipment was also considered and whilst it may reduce the hydraulic fluid leak it was rejected as not being practical. The leaking solenoid valve cannot be individually isolated from onshore; the only means would have been to shut in the entire Longtom and Patricia Baleen fields until an offshore campaign could be organised. As has already been discussed this itself was rejected as not being practical. Shutting the Longtom field in would have had a very significant impact on SGHE financially and would pose a High risk. Additionally, if hydraulic pressure was not maintained sea water ingress through the leak could occur resulting it significant subsea equipment damage. A shut in for this type of leak is not standard industry practice and would not be supported by SGHE personnel or the operators of the Orbost Gas Processing Plant. It was not considered a cost-effective option. A repair of this system will be examined as part of the restart process as an offshore campaign will be required to check and confirm pipeline integrity and to repair the failed electrical umbilical.
Substitute	Whilst the selected hydraulic fluid (HW525) was a category 'D' OCNS chemical with low environmental impact, it was revised to an ‘A’ rated chemical due to the biodegradability of the molybdenum-based lubricant in 2014. SGHE have assessed alternatives and the plan is to progressively replace HW525 with Transaqua HT2, which is a D rated chemical, when production is restarted. During the current non-production phase there is no practical ability to flush the HW525 out with HT2. To flush the HW525 would require electrical continuity from the Orbost Gas Processing Plant, agreement with the gas plant operator to operate the hydraulic pumps, agreement with the Patricia Baleen pipeline operator to use their umbilical and an offshore vessel campaign. Given there is no current discharge of HW525, it has been rejected as a practical option.
Engineering	The subsea valves and control system have been installed and there is no practical way to re-engineer the system. The design is standard and was based on the existing Patricia Baleen umbilical – there was no opportunity to install a closed hydraulic system.
Isolation	The onshore inventory can be isolated from the umbilical and the pumps stop on low discharge pressure. During major outages the pumps are also stopped to reduce/prevent the leak.
Administrative	The volumes of hydraulic fluid discharged are monitored, recorded and compared with that predicted monthly.
Protective	Not applicable.
Demonstration of Acceptability	
Discharged hydraulic fluid will rapidly mix and disperse in the marine environment to levels that are not expected to have any impact on the marine environment. The selected hydraulic fluid (HW525) was a category 'D' OCNS chemical, which was considered to have a low environmental impact. While the ranking has changed to an ‘A’, due to the biodegradability of the lubricant the impact on the environment is still considered low.	

The ocean currents and depth of operations (approximately 57 m) will cause all fluid to be dispersed quickly through the water column in the high energy environment of Bass Strait. Hydraulic fluid is commonly discharged by the oil and gas industry and subsea systems are generally designed as open systems. HW525 is still used by many other operators. All legislative and other requirements have been met and the activity is consistent with SGHE policy and meets relevant management standards and procedures. There have been no concerns raised regarding the discharge of hydraulic fluid during stakeholder consultation and the previous EP was accepted by the NOPSEMA. The leak at Longtom-4 has been virtually eliminated by the software change and is probably significantly less than the general leakage across all the solenoid valves and SCMs that occurs. This risk is considered currently **acceptable** given the small volumes discharged, the insignificant consequence that could eventuate and that this fluid is used by other oil and gas operators. Restart planning will confirm the integrity of the subsea facilities and examine options to repair the minor hydraulic fluid leak. As has already been discussed HW525 will be progressively replaced with Transaqua HT2.
Monitoring
During the current non-production phase there is no planned discharge of hydraulic fluid and no monitoring. During operations the total volume of hydraulic fluid consumed and discharged is recorded every month.

6.2.2 Routine Vessel Discharges

Vessels will be present within the operating area in support of IMR activities for approximately one week every year. Vessel activities will result in the discharge of the following:

- Sewage from the ablution and laundry facilities – the volume of sewage discharge is dependent on the number of people on board the vessel. Approximately 0.04 m^2 sewage will be generated per person, per day (EMSA 2017). Sewage will be treated prior to discharge to the marine environment.
- Putrescible waste from the galley – people on-board of vessels will generate putrescible waste which will be macerated and discharged to the marine environment. Discharges are estimated to be in the order of 1–2 kg per person per day.
- Deck drainage and bilge: Uncontaminated deck rainwater is directed overboard via open drains. Main deck and hull machinery space drains are routed to wastewater tank, then pumped to waste oil settling tank. Oil and water are separated, with the skimmer collecting oily residue, directed to a waste oil tank and sent ashore for disposal. Treated water is discharged overboard and continuously monitored by an oily-water monitor, ensuring no discharge over 15 ppm. The fuel transfer point is located within a bunded area, drains blocked with scupper plugs, spills cleaned using absorbent materials. Note there will be no offshore refuelling and hence this source is not applicable to this EP.
- Cooling water – seawater is used as a heat exchange medium for the cooling of machinery engines. The seawater goes through a heat exchanger that transfers heat from the vessel engines and machinery to the seawater. It is anticipated that low volumes of cooling water (varying with vessel size but estimated at approximately 50m^3/day) will be discharged after passing through the heat exchange system.
- Brine – brine is created through the vessel's desalination process which supplies water for drinking, showers, cooking and so forth. This is achieved through reverse osmosis (RO) or distillation resulting in the discharge of seawater with a slighted elevated salinity

(approximately 10% higher than seawater). The volume of discharge is dependent on the number of people on board the vessel that require fresh (or potable) water

6.2.2.1 Description of Environmental Impacts

The discharge of treated sewage will temporarily add to the nutrient load (particularly nitrogen and phosphorus) of the surrounding waters immediately around the vessels, though the discharge stream will be rapidly diluted and dispersed by currents.

The biological oxygen demand (BOD) of the treated effluent is unlikely to lead to oxygen depletion of the receiving waters (Black *et al.,* 1994), as it will be treated prior to release. Surface currents will also assist with oxygenation of the discharge once it is released.

Woodside conducted sewage monitoring (2014) and determined that a 10 m^3 sewage discharge reduced to approximately 1% of its original concentration within 50 m of the discharge location. In addition, monitoring at distances 50, 100, and 200 m downstream of the platform and at five different water depths confirmed that discharges were rapidly diluted and elevations in water quality monitoring parameters (e.g. total nitrogen, total phosphorous, and selected metals) were not recorded above background levels at any station. During vessel-supported IMR activity, the amount of sewage to be discharged per day will be significantly lower than 10 m^3. Therefore, the extent of impact is expected to be localised to the discharge location.

Similarly, the discharge of macerated food wastes would result in a localised and temporary increase in the nutrient load of the surface waters. This may in turn act as a food source for scavenging marine fauna or seabirds, whose numbers will temporarily increase as a result. However, the rapid consumption of this food waste by scavenging fauna, and physical and microbial breakdown, ensures that the impacts of putrescible waste discharges are insignificant.

Cooling water discharged directly overboard will have an exit temperature several degrees higher than that of the receiving waters. Once in the water column, cooling water will remain in the surface layer, where turbulent mixing and heat transfer with surrounding waters will occur. The environmental receptors with the potential to be exposed to an increase in temperature include plankton and transient pelagic marine fauna including whales, sharks, fish, and reptiles.

Modelling undertaken for the BHP Petroleum Pyrenees FPSO Development in the Exmouth Basin (BHP, 2005) shows that based on a discharge of 100,000 m^3/day at a water temperature of 25°C above that of the surrounding ocean, there is a 50% probability of the temperature of surface water within 25 to 50 m of the discharge point exceeding the ambient temperature by more than 2°C decreases to 1% probability within about 60 to 85 m of the discharge point, depending on seasonal variations in the water current.

Modelling of continuous waste water discharges (including cooling water) undertaken by Woodside for its Torosa South-1 drilling campaign in the Browse Basin found that discharge water temperature decreases quickly as it mixes with the receiving waters, with the discharge water temperature being less than 1°C above background levels within 100 m (horizontally) of the discharge point, and will be within background levels within 10 m vertically (Woodside, 2008). Note: These studies were undertaken for facilities and are therefore considered conservative. As such, impacts to most receptors are expected to be negligible even within the mixing zone.

It is estimated that the temperature of discharged brine water is only several degrees Celsius (1°C - 6°C) above background water temperature with a salinity of about 40,000 ppm (normal seawater is 35,000 ppm). Upon release, brine water will sink through the water column where it will be rapidly mixed with receiving waters and dispersed by ocean currents. Therefore, any potential impacts are expected to be limited to the area surrounding the source of the discharge where concentrations are highest.

Models developed by the US EPA for temporary brine discharges from vessels assuming no ocean current (i.e. 0 m/s) found that brine discharges from the surface dilute 40-fold at 4 m from the source (Woodside, 2014). Thus, brine discharges from a vessel within the operational area, where ocean currents range from 0.5 m/s to 1.0 m/s, are likely to dilute in a shorter distance.

Walker and McComb (1990) found that most marine species are able to tolerate short-term fluctuations in water salinity in the order of 20-30%, and it is expected that most pelagic species passing through a denser saline plume would not suffer adverse impacts. As such, impacts to receptors are expected to be negligible.

Scale inhibitors and biocide are likely to be used in the heat exchange and desalination process to avoid fouling of pipework. Scale inhibitors are low molecular weight phosphorous compounds that are water-soluble, and only have acute toxicity to marine organisms about two orders of magnitude higher than typically used in the water phase (Black *et al*., 1994). The biocides typically used in the industry (such as sodium hypochlorite) are highly reactive and degrade rapidly and are very soluble in water (Black *et al*., 1994). These chemicals are inherently safe at the low dosages used, as they are usually ‘consumed’ in the inhibition process, ensuring there is little or no residual chemical concentration remaining upon discharge (Xuejun *et al*. 2017).

Woodside’s wastewater discharge modelling (Woodside, 2008) also found that most of the discharged volume remains in the upper water column (in the upper 10 m) due to the neutral buoyancy of the discharge, but a small proportion penetrates below the water surface, where it rapidly dissipates through the water column. Results showed that a concentration of a component within the discharge stream is reduced to 1/100th of its original concentration at no less than 50 m from the discharge point under any condition (Woodside, 2008).

Given the rapid dilution (and limited exposure to changes in temperature, elevated salinity and low levels of chemicals), direct impacts to transient marine fauna are not expected (Langford, 1990), with direct impacts limited to planktonic organisms that are unable to avoid or move through the discharge plume. Indirect impacts transient fauna may be experienced where those species rely on planktonic organisms as a food source. Plankton communities have a naturally patchy distribution in both space and time and have evolved to respond rapidly to such environmental perturbations (ITOPF 2011), and no particular values or sensitivities linked to planktonic foraging or increased planktonic abundance have been identified as having the potential to be affected by this discharge.

6.2.2.2 Risk Assessment

The following tables outline the impact and risk assessments for routine vessel discharge.

Table 6-7 Sewage discharge risk assessment

Hazard duration	During inspection, maintenance and repair activities (short-term).	
Extent of hazard	Expected to be largely localised (50 m radius from the vessel, top 10 m of water column).	
Basis of Inherent Risk Assessment		
• MARPOL-approved sewage treatment plant (STP) fitted to vessels. • The Longtom facilities are located in approximately 57 m of water and 40 km offshore in a relatively high energy environment (current and waves) – sewage and grey water will be rapidly dispersed. • There are no known sensitive environments or biological communities in the operating area. • Vessel-based activities will be of short duration (approximately one week every year). • There will be no discharge of sewage within 12 nm of any coastline.		
Inherent risk analysis and ranking		
Consequence	**Likelihood**	**Inherent Impact**
Insignificant (1)	Unlikely (D)	Low
Project specific environmental controls and checks that will take place	Prevention • Not applicable Mitigation • Vessels comply with MARPOL Annex IV which requires a valid International Sewage Pollution Prevention Certificate – effectiveness considered Moderate.	
Residual risk analysis and ranking		
Consequence	**Likelihood**	**Residual Impact**
Insignificant (1)	Rare (E)	Low
Demonstration of ALARP		
The key control is compliance with MARPOL Annex IV requirements and this will ensure that any sewage discharge is managed and treated to minimise environmental impact. Given the nature and scale of the activity and the low inherent consequence and risk this control is considered sufficiently effective to ensure the residual risk is Low and ALARP. The following ALARP analysis confirms that all reasonable risk treatment options have been considered to reduce the environmental impact of sewage and grey water, and the risk is deemed to be **ALARP**.A 'Low' residual risk ranking is **broadly acceptable** according to the SGHE definition of risk.		
Eliminate	The generation of sewage and grey water by personnel on the vessel cannot be eliminated. This discharge is permitted under MARPOL Annex IV and is consistent with industry codes and standards.	
Substitute	Not applicable	
Engineering	STPs will be installed on the vessels. Bacteria in the waste stream will be killed in the treatment process, reducing the risk of sewage discharge overboard to ALARP.	
Isolation	The alternative to the treatment and discharge of sewage offshore would require the storage and transfer of sewage to shore for disposal. Typical offshore vessels are not designed to store sewage and grey water for extended durations and to do so would introduce a health and safety hazard to crew. Transfer to shore for treatment is not viable given the health and safety hazards associated with storage, transfer and disposal. This would involve undue logistics effort and costs given the minor impact of its	

	offshore discharge. On this basis, the only viable option is to treat the sewage and discharge offshore.
Administrative	Not applicable.
Protective	Not applicable.
Demonstration of Acceptability	
In order to ensure marine pollution is kept to acceptable levels, offshore petroleum operations are required to comply with MARPOL. The ocean currents and depth of the operations will cause any increase in nutrient loading to be dispersed quickly through the water column. There are numerous other oil and gas developments in Bass Strait (20 production facilities) which generate sewage and grey water. Commercial fishing activities and merchant vessels also discharge sewage and grey water. There have been no indications to date of any significant impact on the environment from such activities in Bass Strait. All legislative and other requirements have been met and the activity is consistent with SGHE policy and meets relevant management standards and procedures. There have been no concerns raised during any consultation regarding sewage and grey water discharges. Given that the project is located some 40 km offshore in a high energy environment, and that vessel operations are of a short duration, this risk is considered **acceptable**.	
Monitoring	
The availability of the Sewage Treatment Plant will be checked daily during offshore campaigns, included as a line item on the daily report and will be recorded and included in the annual EP Compliance Report.	

Table 6-8 Putrescible waste discharge risk assessment

Hazard duration	During inspection, maintenance and repair activities (short-term).	
Extent of hazard	Localised (50 m radius from the vessel, top 10 m of water column).	
Basis of Inherent Risk Assessment		
• The Longtom facilities are located in approximately 57 m of water and 40 km offshore in a relatively high energy environment (current and waves). This will lead to rapid dispersion. • There are no known sensitive environments or biological communities in the project area. • Vessel-based activities will be of short duration (approximately one week in every year).		
Inherent risk analysis and ranking		
Consequence	**Likelihood**	**Inherent impact**
Insignificant (1)	Unlikely (D)	Low
Project specific environmental controls and checks that will take place	Prevention • Vessels will comply with MARPOL Annex IV and V. • Macerated food waste will not be discharged overboard within 12 nm of any coastline. • Cooking oils and greases will be collected in containers and transported back to shore for disposal. • All non-food galley wastes (e.g., packaging) will be transported back to shore for recycling or disposal. Mitigation The galley macerator will macerate food scraps to a diameter of less than 25 mm before being disposed of overboard, in compliance with MARPOL Annexes IV and V. If the macerator fails, all food waste will be bagged and sent ashore for disposal.	
Residual risk analysis and ranking		

Consequence	Likelihood	Residual Risk
Insignificant (1)	Rare (E)	Low
Demonstration of ALARP		
The key control is compliance with MARPOL Annex IV and V requirements and this will ensure that any putrescibles wastes are managed and treated to minimise environmental impact. Given the low inherent consequence and risk this control is considered sufficiently effective to ensure the residual risk is Low and ALARP. The following ALARP analysis confirms that all reasonable risk treatment options have been considered to reduce the environmental impact of putrescible waste, and the risk is deemed to be **ALARP**.A 'Low' residual risk ranking is **broadly acceptable** according to the SGHE definition of risk.		
Eliminate	The generation of putrescible waste by personnel cannot be eliminated. This discharge is permitted under MARPOL Annex V.	
Substitute	The substitute to discharging putrescible waste at location is to bag it and back-load for onshore disposal. This presents unacceptable health and hygiene for crews and onshore disposers due to rapid decomposition of organic matter in hot environments. This would also introduce a potential requirement for additional supply vessels to visit the offshore location, to back load the waste for disposal, thus introducing additional environmental risks during the campaign.	
Engineering	A MARPOL Annex V-compliant macerator is or will be installed on the vessels.	
Isolation	The project area is located > 12 nm from shore.	
Administrative	Not applicable.	
Protective	Regardless of the distance from shore, all food waste will be macerated prior to discharge. The macerators will be maintained in accordance with the PMS. In the event of macerator failure, all food waste will be bagged and shipped to shore for disposal.	
Demonstration of Acceptability		
In order to ensure marine pollution is kept to acceptable levels, offshore petroleum operations are required to comply with MARPOL. The vessel will be required to have a macerator certified to MARPOL requirements. The ocean currents and depth of the operations will cause any increases in nutrient loading to be dispersed quickly through the water column. There are numerous other oil and gas developments in Bass Strait (20 production facilities) which generate putrescibles waste. Commercial fishing activities and merchant vessels also discharge putrescibles waste. All legislative and other requirements have been met and the activity is consistent with SGHE policy and meets relevant management standards and procedures. There have been no concerns raised during consultation regarding discharge of putrescible wastes. The risk of food/galley wastes having a significant negative impact on the marine environment is low. Given that the project is located some 40 km offshore in a relatively high energy environment, and that vessel operations are of a short duration, this risk is considered **acceptable**.		
Monitoring		
The availability of the macerator will be checked daily during offshore campaigns, included as a line item on the daily report and will be recorded and included in the annual Environmental Performance Report.		

Table 6-9 Deck drainage and bilge discharge risk assessment

Hazard duration	During inspection, maintenance and repair activities (short-term).	
Extent of hazard	Localised.	
Basis of Inherent Risk Assessment		
• The Longtom facilities are located in approximately 57 m of water and 40 km offshore in a relatively high energy environment (current and waves). This will lead to rapid dispersion. • There are no sensitive environments or biological communities in the project area. • Vessel-based activities will be of short duration (approximately one week in every year). • Vessels will comply with MARPOL Annex I and have an International Oil Pollution Prevention Certificates and accepted SOPEP.		
Inherent risk analysis and ranking		
Consequence	**Likelihood**	**Inherent Risk**
Insignificant (1)	Moderate (C)	Low
Project specific environmental controls and checks that will take place	Prevention • Vessels will comply with MARPOL Annex I and have an International Oil Pollution Prevention Certificates and accepted SOPEP – effectiveness considered High. • Hydrocarbon and chemical storage areas are bunded and chemicals are stored in chemical storage lockers – effectiveness considered moderate. • Areas where spills could occur are drained to a bilge tank and discharged via an oily water separator. Discharges are monitored via an oil in water meter and no discharge of >15 ppm oil in water is allowed. • Fixed and mobile equipment is maintained in accordance with the PMS – effectiveness considered moderate. Mitigation • SOPEP including. - Vessel crew regularly undertake spill response training drills. - Spills to deck will be cleaned up immediately using SOPEP kits. - SOPEP kits will be stored in various locations around the vessel and will be maintained fully stocked. - Scupper plugs will be readily available for use in the event of a deck spill to prevent contaminants draining directly overboard. Effectiveness considered moderate	
Residual risk analysis and ranking		
Consequence	**Likelihood**	**Residual Risk**
Insignificant (1)	Unlikely (D)	Low
Demonstration of ALARP		
The key preventative controls are vessel in compliance with MARPOL Annex I, vessel to have, an International Oil Pollution Prevention Certificates and an accepted SOPEP. These controls, checked as part of the pre-mobilisation audit will ensure that the vessel is designed, managed and operated to minimise environmental impact. In addition the SOPEP and associated equipment and procedures will ensure that in the event of any spill it will be treated and captured to minimise the impact. Given the low inherent consequence and risk these controls are considered sufficiently effective to ensure the residual risk is Low and ALARP.		

The following ALARP analysis confirms that all reasonable risk treatment options have been considered to reduce the environmental impact of contaminated deck/bilge water, and the risk is deemed to be **ALARP**. No further reasonable mitigation measures exist. A 'Low' residual risk ranking is **broadly acceptable** according to the SGHE definition of risk.	
Eliminate	The elimination of chemicals, oils, fuels and lubricants etc is not possible due the need to maintain safe operations. However, the chemicals and volumes stored on board should be managed and are expected to be relatively minor.
Substitute	Not applicable
Engineering	Engineering control in place such as the installation of a MARPOL-compliant oily water system on the vessels.
Isolation	Spills on decks are isolated through the use scupper plugs and SOPEP materials, such as absorbent 'sausages' and 'kitty litter'. Spills from fixed equipment, such as engines and generators, are enclosed and spills captured via bilges that drain via the oily water separator. Mobile equipment or chemicals will be stored and handled within temporary bunding.
Administrative	The vessels will have current and valid International Oil Pollution Prevention Certificates. Spill drills will be regularly undertaken by the vessel crew.
Protective	Fixed and mobile equipment is maintained in accordance with the PMS.
Demonstration of Acceptability	
In order to ensure marine pollution is kept to acceptable levels, vessels must meet their MARPOL international and class requirements. Bass Strait currently has over 20 oil and gas production platforms and these have associated support vessels that also generate deck / bilge discharges. There have been no indications to date of any significant impact on the environment from such activities. All legislative and other requirements have been met and the activity is consistent with SGHE policy and meets relevant management standards and procedures. There have been no concerns raised during consultation regarding discharge of putrescible wastes. No significant environmental impacts are expected from the occasional release of contaminated deck /bilge water given the low level of contamination, low volumes and large dilution effects when entering the marine environment. This risk is therefore considered **acceptable**.	
Monitoring	
The availability of the oily water analyser will be checked daily during offshore campaigns, included as a line item on the daily report and will be recorded and included in the annual Environmental Performance Report.	

Table 6-10 Cooling water and brine discharge risk assessment

Hazard duration	During inspection, maintenance and repair activities (short-term).	
Extent of hazard	Localised (100 m radius from the vessel, top 10 m of water column).	
Basis of Inherent Risk Assessment		
• The Longtom facilities are located in approximately 57 m of water and 40 km offshore in a relatively high energy environment (current and waves). Temperature and salinity changes in the vicinity of the surface discharge will be quick to dissipate, and rapidly be restored to ambient water quality on completion of the activity. • MARPOL Annex V Regulations for the Prevention of Pollution by Garbage from Ships requires vessels to use 'cleaning agents and additives' which are not a 'harmful substance' in accordance with criteria in Appendix to MARPOL Annex III nor contain a component that is carcinogenic, mutagenic or reprotoxic. • There are no sensitive environments or biological communities in the project area. • Vessel-based activities will be of short duration (approximately one week in every year).		
Inherent risk analysis and ranking		
Consequence	**Likelihood**	**Inherent Risk**
Insignificant (1)	Rare (E)	Low
Project specific environmental controls and checks that will take place	<u>Prevention</u> The cooling water and reverse osmosis (RO) desalination systems will be maintained in accordance with the PMS.	
Residual risk analysis and ranking		
Consequence	**Likelihood**	**Residual Risk**
Insignificant (1)	Rare (E)	Low
Demonstration of ALARP		
Maintenance of the cooling water and RO desalination systems was the only project specific control identified which could reduce the inherently low consequence and risk of cooling water and brine discharges. This control and the inherent conditions under which these discharges occur are considered sufficiently effective to ensure the residual risk is Low and ALARP. The following ALARP analysis confirms that all reasonable risk treatment options have been considered to reduce the environmental impact of hazardous waste, and the risk is deemed to be **ALARP**. No further reasonable mitigation measures exist. A 'Low' residual risk ranking is **broadly acceptable** according to the SGHE definition of risk.		
Eliminate	These discharges are essential to the operation of the vessel and cannot be eliminated.	
Substitute	Not applicable	
Engineering	Not applicable	
Isolation	Not applicable	
Administrative	No specified treatment or discharge criteria for RO brine or machinery / engine cooling water under MARPOL.	
Protective	The cooling water and RO desalination systems will be maintained in accordance with the PMS.	
Demonstration of Acceptability		

Maintenance of the cooling water and RO desalination systems was identified as the only control which could further reduce the inherently low consequence and risk of cooling water and brine discharges. Temperature and salinity changes in the vicinity of the surface discharge will be quick to dissipate, and rapidly be restored to ambient water quality on completion of the activity. There are numerous other oil and gas developments in Bass Strait (20 production facilities) which generate cooling and brine water discharges. Commercial fishing activities and merchant vessels also discharge cooling and brine water, and in considerably larger volumes, than a single offshore support vessel. There have been no indications to date of any significant impact on the environment from such activities in Bass Strait. All legislative and other requirements have been met and the activity is consistent with SGHE policy and meets relevant management standards and procedures. There have been no concerns raised during any consultation regarding cooling and brine water discharges. The potential impact to the environment from cooling and brine water discharge is low and considered to be **acceptable**, given the open-ocean nature of the receiving environment, low volumes discharged and intermittent nature of the vessel-based activities.
Monitoring
The functionality of the cooling water and RO desalination systems will be checked daily during offshore campaigns, included as a line item on the daily report and will be recorded and included in the annual Environmental Performance Report.

6.3 Planned Emissions

6.3.1 Noise emissions

The following activities have the potential to create underwater noise:

- Vessel and ROV thrusters
- Helicopter movements (very unlikely / infrequent, helicopters are not anticipated to be required for operations and IMR activities.)
- Geophysical survey sources.

Vessels

The main source of underwater noise from a vessel is through the use of dynamic positioning (DP) thrusters to maintain position. The impact of ROV thrusters is considered insignificant in comparison.

McCauley (1998) measured underwater noise from a support vessel holding its position using bow-thrusters as 182 dB re 1µPa @ 1 m and 137 dB re 1µPa at 405 m. Levels of 120 dB re 1µPa extended for a distance of approximately 3 - 5 km from the source.

JASCO Applied Sciences (2023 cited in Cooper Energy 2024) modelled an IMR vessel under dynamic positioning (DP) at the Patricia Baleen and Sole wells. The modelling indicated levels of 120 dB re 1µPa extended to a maximum distance of 200 m and 110 m for a vessel located at the Patricia Baleen and Sole wells respectively.

Under normal conditions (i.e. when vessels are idling or moving between sites), source levels would be between 165 - 180 dB re 1 µPa @ 1 m (OSPAR 2009).

Helicopters

Strong underwater sounds are detectable for only brief periods when a helicopter is directly overhead (Richardson *et al*. 1995). Sound emitted from helicopter operations is typically below 500Hz and sound pressure in the water directly below a helicopter is greatest at the surface but diminishes quickly with depth. Richardson *et al*. (1985) reports 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.

Geophysical Survey Sources

The geophysical sources that may be used, include:

- Sub bottom profiler (SBP)
- Side scan sonar (SSS)
- Single/Multi beam echo sounder (SBES/MBES)

Source levels of equipment proposed for use are outlined in Table 6-11 below.

Table 6-11 Source levels of equipment proposed for use

Acoustic Noise Source	Frequency Range (kHz)	Estimated Peak Sound Pressure Level (SPL) (dB re 1µPa @ 1 m)	Estimated Sound Exposure Level (SEL) (dB re 1 µPa^{2}s @ 1 m)
SSS	120-410	226	Unknown
SBES/MBES	200-300	220	Unknown
SBP (CHIRP)	1-12	205	190
SBP (Pinger)	2-12	214	196
SBP (Boomer)	0.3-5	212	172
SBP/UHR (Sparker)	0.05-4	222	183.3

6.3.1.1 Description of Environmental Impacts

Generally elevated underwater noise can affect marine organisms in three main ways (Richardson *et al.* 1995; Simmonds *et al.* 2004):

- By causing direct physical effects (injury) on hearing or other organs (Temporary Threshold Shift (TTS) or Permanent Threshold Shift (PTS))
- By marking or interfering with other biologically important sounds (including vocal communication, echolocation, signals and sounds produced by predators or prey)
- Through disturbance leading to behavioural changes.

A number of marine mammals (e.g. whales, dolphins, seals) including species listed as either threatened and/or migratory under the EPBC Act have the potential to occur within the operating area. The Pygmy Blue Whale has possible foraging habitat (BIA) (DoE, 2015b) overlapping the operating area. The only known area of significance to the Pygmy Blue Whale in south eastern Australian waters is the Bonney Upwelling and adjacent upwelling areas of South Australia and Victoria (DEH 2005a), which is more than 600 km to the west of the operating area. While eastern Bass Strait is not known as a feeding or aggregation area for this mammal species,

sightings have occurred in southeast Victoria from February to March, but are reasonably rare in the Gippsland Basin (Bannister *et al*., 1996). The Southern Right Whale migration BIA overlaps the operating area. A counter-clockwise migration between foraging and breeding areas has been suggested whereby movements from Australian coastal waters include directly southern and western migration pathways (DCCEEW, 2024a). The seasonal presence of the Southern Right Whale in Australia correlates with breeding behaviours. The peak abundance period occurs between May and October each year when the Southern Right Whale will predominately occur in shallow (< 10 m) coastal waters within 1 km of the coast. Small but growing numbers of calving and non-calving whales have been observed to regularly aggregate for short periods (days to weeks) along the Gippsland coast in Victoria (DCCEEW, 2024a). Although sighted along the Gippsland coast during migration, calving females are most often found off western Victoria near Warrnambool.

In the operating area, the marine fauna most at risk from acoustic disturbance from vessels are cetaceans, particularly baleen whales (including Blue and Southern Right Whales), as the auditory bandwidth of these whales (ranging from 7 Hz to 22 kHz (Southhall *et al.* 2007)) overlaps with the low frequency broadband noise produced by thrusters during vessel positioning and movement. Underwater noise levels from vessels are above 120 dB re 1µPa, the currently accepted noise threshold, for non-impulsive or continuous sounds, above which avoidance and or behavioural changes commence (NMFS, 2024b). Noting that the NMFS 2024b threshold was derived based on studies examining behavioural responses to drilling and dredging (NOAA, 2005 and 2009 cited in NMFS 2024b).

Previous literature reviews (e.g., Southall *et al*, 2007) identified varying responses for most marine mammals between SPLs of 140–180 dB re 1 µPa. For low frequency whales the data indicated no or very limited responses at a received level of 90– 120 dB re 1 µPa, with an increasing probability of avoidance and behavioural effects from 120– 160 dB re 1 µPa. With regard to an exploration drilling program within the Otway Basin, advice provided by Brandon Southall to Beach Energy when asked "what, in your opinion, for this particular project, could be the sound levels which could cause effects starting at ‘response’ and ending at ‘disturbance/displacement’ for blue whales, and thus displace them from food” responded that based on studies on feeding Blue Whales off California the response change points were in the 130–140 dB re 1 µPa range (Beach Energy 2020)

Beach Energy’s subsequent analysis of Blue Whale observations during the Otway drilling program reported that of the 127 Blue Whales that were observed within the 3 km radius management zone (where received noise levels may exceed 120 dB re 1 µPa), 55% of whales were observed moving towards the noise source, whereas 45% were observed moving away. Whale densities were similar close to the noise source as at increasing distance from the noise source. These observations were interpreted as indicating the whales were not being displaced by the activity underwater sound (Beach Energy 2023) suggesting that behavioural threshold for marine mammals is highly conservative.

During 2023 Cooper Energy undertook IMR activities in the Gippsland region (Cooper Energy, 2024). Modelling undertaken by JASCO Applied Sciences for Cooper Energy indicated that behavioural threshold for marine mammals may be received at distances approximately 5.3 km

from the vessel whilst on DP (Cooper Energy 2024). Over the course of a 33-day period of in-field and in-transit activities there were approximately 435 whales sighted by marine mammal observers on board the vessel. Sightings were primarily of Humpback Whales undertaking their southerly migration, including adults with calves. Whales were observed at distances between 0.05 km and 6.2 km from the vessel. Behaviours observed included fast and slow travel, milling and surface active (e.g. fin slapping and breaching), with the majority being surface active and slow travel within 3 km of the vessel. The whales that were observed were not noticeably disturbed by the underwater sound generated by the activity; this may be another indicator that the behavioural threshold for marine mammals is highly conservative.

Sound levels just-capable of resulting in TTS or PTS are referred to as “onset” levels; e.g., an exposure just-capable of producing TTS is referred to as the onset-TTS exposure. The cumulative Sound Exposure Level for non-impulsive sound sources over a 24-hour period (SEL_{24h}) PTS (referred to as “AUD INJ Onset Criteria” in NMFS, 2024a) and TTS thresholds for low frequency cetaceans from the 2024 Update to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (NMFS, 2024a) are 197 dB re 1µPa^2 s and 177 dB re 1µPa^2 s respectively. Underwater noise levels from vessels are below the PTS threshold but above the TTS threshold. Noting that JASCO Applied Sciences (2023 cited in Cooper Energy 2024) modelling indicated that levels of 179 dB re 1µPa^2 s extended to a maximum distance of 30 m and 40 m from a vessel located at the Patricia Baleen and Sole wells respectively.

The nature of helicopter operations covered under this EP means that exposure to sound from this source for an extended period is not credible, and as such, comparison against the cumulative Sound Exposure Level criteria is not relevant. Observed behavioural effects when helicopters are flying below 150 m, include reduced surface time, diving and sudden changes in direction. Behavioural changes have been shown to be more common in resting whales than in whales that were actively feeding or breeding and most of the whales’ reactions to airborne noise seemed to be short-lived (GREMM, 2019).

Only the frequency range of the impulsive SBP source overlaps the hearing range of the low frequency cetaceans, the baleen whales. The higher frequency impulsive source levels from the SSS and MBES are outside the auditory range for baleen whales. SBP is below the 216 dB re 1 µPa (peak) TTS and 222 dB re 1 µPa (peak) PTS (AUD INJ Onset Criteria) threshold (NMFS, 2024a) so any impact from SBP will be limited to behavioural disturbance. The behavioural criteria used by NMFS (2024b) for impulsive sounds is a threshold of 163 dB re 1 µPa.

To date, no studies modelling or measuring the noise discharged from geophysical surveys have been conducted. However, much work has been done of the noise attenuation from seismic surveys. The intensity of sound emitted during a seismic survey drops rapidly with increasing distance and depending on local conditions, and can be reduced to background intensity within a few tens of kilometres (APPEA, 2013). Since the source levels of geophysical surveys are much lower than that of a seismic survey (the typical SPL of a seismic airgun array is approximately 230 dB re 1µPa @1m), it is expected that the intensity of sound levels from the geophysical survey will also decrease rapidly, reaching ambient levels quicker than that of a seismic survey (due to a lower source level). Furthermore, the geophysical sources have a directionally focused

beam platform which predominantly points downwards at the seafloor. Therefore, it is expected that the loss due to absorption and spread will increase with increasing horizontal distance. Furthermore, surveys will be of short duration (1 – 2 days) in any one location within the operating area.

It is possible that IMR activity would occur during the Pygmy Blue Whale foraging period and/or the Southern Right Whale migration period, however due to the lack of sightings within Bass Strait and in the vicinity of the operating area this is uncertain.

The parts of the Southern Right Whale migration BIA overlapping the operating area do not include defined coastal migration corridors or bottlenecks resulting from physical and other barriers. (DCCEEW, 2024a). Although the area affected by sound levels may cause behavioural responses, Southern Right Whales would be able to move through or around the location without any obstacles.

Sound levels may cause a Pygmy Blue Whale (if present) to deviate from its path however as the operating area is not within a known foraging area and is very small compared to the total area of the foraging BIA, the impact is considered insignificant.

The noise produced during any infrequent inspection, maintenance or repair activities is expected to be similar to the already existing noise in Bass Strait associated with vessels servicing petroleum facilities as well as from commercial fishing and shipping operations. This noise has existed for the past fifty years since the first development of offshore petroleum production facilities in the Gippsland Basin.

Anecdotal evidence from ongoing ExxonMobil operations in the Bass Strait observes that pinnipeds (seals) congregate and rest on the legs of offshore facilities, and at times on the sea deck of platforms and on vessels; they do not appear to be impacted by sound emissions from the platform or supply vessel operations.

Whales may be present in the operating area, however the interaction will not occur in a biologically important habitat for whale species, defined as breeding, calving, or resting areas, or confined migratory routes or feeding areas (DEWHA, 2008a). Although within a possible foraging area (BIA) for the Pygmy Blue Whale and migration BIA for the Southern Right Whale these behaviours do not typically involve individuals remaining in one location for extended periods of time. It is likely that whales would avoid the immediate area due to an aversive response to the sound and this aversion is relied upon as a form of mitigation to prevent whales from approaching or being approached closely enough to cause acoustic injury from intense or prolonged sound exposure (DEWHA, 2008a). The potential impacts of underwater noise on marine mammals is expected to be localised, short term in nature and minimal in impact.

6.3.1.2 Risk Assessment

Table 6-12 outlines the risk assessment for underwater noise.

Table 6-12 Underwater noise risk assessment

Hazard duration	Intermittent for short durations during inspection, maintenance and repair activities.	
Extent of hazard	Localised (vicinity of the vessels/ROV/helicopters).	
Basis of Inherent Risk Assessment		
• Vessel-based activities will be of short duration (approximately one week every year). • Whilst engaged in petroleum activities (i.e. within the 500m zone) vessels will be stationary or slow moving.		
Inherent risk analysis and ranking		
Consequence	**Likelihood**	**Inherent Risk**
Minor (2)	Unlikely (D)	Low
Project specific environmental controls and checks that will take place	Prevention Vessels and helicopters will comply with the EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans (and Australian National Guidelines for Whale and Dolphin Watching 2017), where practicable. A 500 m 'shutdown zone' will be maintained around the SBP, SSS and MBES for Southern Right Whales and Pygmy Blue Whales, consistent with EPBC Act Policy Statement 2.1 Interaction between offshore seismic exploration and whales: Industry guidelines.	
Residual risk analysis and ranking		
Consequence	**Likelihood**	**Residual Risk**
Minor (2)	Rare (E)	Low
Demonstration of ALARP		
The key preventative control relating to vessel and helicopter noise is the adherence to the Regulations and Australian National Guidelines for Whale and Dolphin Watching 2017. These Guidelines were developed jointly by all state and territory governments through the Natural Resource Management Ministerial Council and, although more relevant for tourism activities, provide a list of requirements that are generally adopted by the oil and gas industry to minimise the risk of cetacean strike occurring, this also has the effect of ensuring distance from vessel propellers and helicopter rotor blades that cause sound emissions. The overall effectiveness of this control is considered high in preventing environmental impact. This control, together with the inherent nature of the vessel activity (i.e. slow moving or stationary) and helicopter activity (i.e. no take-off or landing) is considered sufficient, suitably robust, independent and effective to ensure the residual risks are Low and ALARP. The 500 m shutdown zone defined in the Policy Statement assumes that noise levels from a seismic survey will have reduced to levels below which PTS in cetaceans can occur within that distance. Since the noise emissions from geophysical survey sources are lower than those from a seismic survey, this is considered a highly conservative measure which reduces the residual risk to Low and ALARP. The following ALARP analysis confirms that all reasonable risk treatment options have been considered to reduce the environmental impact of noise emissions and the risk is deemed to be **ALARP**. There are no other feasible risk treatment options. A 'Low' residual risk ranking is **broadly acceptable** according to the SGHE definition of risk.		
Eliminate	Not applicable. The use of vessels and helicopters for inspection, maintenance or repair activities cannot be eliminated.	
Substitute	Not applicable.	

Engineering	Not applicable.
Isolation	The Guidelines describe strategies to ensure whales and dolphins are not harmed during offshore interactions with people including designation of 'no approach' and 'caution' zones. The Policy Statement defines standards and procedures to ensure seismic surveys do not interfere with whales including designation of precaution zones.
Administrative	Not applicable.
Protective	Not applicable.
Demonstration of Acceptability	
The potential impacts of underwater noise on marine mammals is expected to be localised, short term in nature and minimal in impact. The residual risk was assessed as Low. All legislative and other requirements have been met. The potential noise levels generated by this activity have been evaluated and will not be inconsistent with the National Recovery Plan for the Southern Right Whale (DCCEEW, 2024a) specifically Actions 2 and 3 of Action Area A5: Actions within and adjacent to Southern Right Whale BIAs and HCTS [habitats critical to survival] should demonstrate that it does not prevent any Southern Right Whale from utilising the area or cause auditory impairment and the risk of behavioural disturbance is minimised, and the Conservation Management Plan for the Blue Whale (DOE, 2015b), specifically Action 3 of Action Area A.2: Anthropogenic noise in biologically important areas will be managed such that any Blue Whale continues to utilise the area without injury, and is not displaced from a foraging area. The activity is consistent with SGHE policy and meets relevant management standards and procedures. Significant anthropogenic activities have occurred within Bass Strait for at least the last 40 years, including commercial fishing, commercial shipping and oil and gas development and any cetaceans passing through the project area will have already been exposed to similar interactions. There have been no concerns raised regarding noise emissions during stakeholder consultation. Given that the activity is not taking place within biologically important habitat and vessel-based maintenance activities will be infrequent and of short duration, this risk is considered **acceptable**.	
Monitoring	
It will be noted in the daily report and over-flight report when cetaceans were sighted in the caution zone and interaction management actions implemented. It will be noted in the daily report when during geophysical surveys the shutdown zone was implemented.	

6.3.2 Light emissions

Deck floodlights and maritime navigational lighting, kept on 24 hours a day for maritime safety purposes (Part 30 (Prevention of Collisions) of the Marine Orders made under the *Navigation Act 2012*) will result in some light emission during maintenance, inspection and repair activities. Lighting will typically consist of bright white (i.e. metal halide, halogen, fluorescent) lights, and are not dissimilar to other offshore activities in the region, including other oil and gas facilities, fishing and shipping.

6.3.2.1 Description of Environmental Impacts

Seabirds may be attracted to vessels at night due to the light glow. Bright lighting can disorientate birds, thereby increasing the likelihood of seabird injury or mortality through collision with facilities / infrastructure, or mortality from starvation due to disrupted foraging at sea (Wiese *et al*.). Bright lights can also impact on migrating birds.

Nesting birds may be disorientated where lighting is adjacent to rookeries. This is evident in young fledglings leaving breeding colonies for the first time, in particular Wedge-tailed Shearwaters. Light pollution is a particular issue for Wedge-tailed Shearwaters due to their nocturnal habits.

Light pollution is identified as a threat within the Wildlife Conservation Plan for Seabirds (DAWE, 2020a) and the National Recovery Plan for Albatrosses and Petrels (DCCEEW, 2022a).

Given the short duration (i.e., one week in every year) of IMR activity, distance from the shoreline and no nesting, roosting, or resting areas were identified for seabirds, the consequence is considered to be insignificant.

Other marine life may also be attracted to the vessels as a result of an attraction to light sources by prey items (e.g. worms, squid, plankton) that can aggregate directly under downward facing lights.

Whilst marine turtles may occur within the operating area, there are no identified BIAs or nesting sites for marine turtles and therefore there is likely to be no impact to turtles from artificial light associated with the inspection, maintenance and repair activities.

There is no evidence to suggest that artificial light sources adversely affect the migratory, feeding or breeding behaviours of cetaceans. Cetaceans predominantly utilise acoustic senses to monitor their environment rather than visual sources (Simmonds *et al.*, 2004) so light is not considered to be a significant factor in cetacean behaviour or survival.

6.3.2.2 Risk Assessment

Table 6-13 outlines the risk assessment for lighting.

Table 6-13 Lighting inherent risk assessment

Hazard duration	During inspection, maintenance and repair activities (short-term).	
Extent of hazard	Localised (significant light glow not visible beyond several kilometres).	
Basis of Inherent Risk Assessment		
• The operating area is located 30 km from shore and not near any sensitive seabird nesting grounds. • There are no turtle rookeries in Bass Strait. • Vessel-based activities will be of short duration (approximately one week in every year).		
Inherent risk analysis and ranking		
Consequence	**Likelihood**	**Inherent Risk**
Insignificant (1)	Unlikely (D)	Low
Project specific environmental controls and checks that will take place	<u>Prevention</u> • Not applicable <u>Mitigation</u> • Lighting will be limited to that required for safe work and navigation, and in accordance with Marine Order 30 – Prevention of collisions.	
Residual risk analysis and ranking		

Consequence	Likelihood	Residual Risk
Insignificant (1)	Rare (E)	Low
Demonstration of ALARP		
. Given the nature and scale of the activity and the low inherent consequence and risk, limiting lighting to that required for safe work and navigation is considered sufficiently effective to ensure the residual risk is Low and ALARP. An assessment for artificial light and consideration of risk treatment options was undertaken as per the National Light Pollution Guidelines for Wildlife (DCCEEW 2023f). The following ALARP analysis confirms that all reasonable risk treatment options have been considered to reduce the environmental impact of artificial lighting, and the risk is deemed to be **ALARP**.A 'Low' residual risk ranking is **broadly acceptable** according to the SGHE definition of risk.		
Eliminate	The use of navigational lights and other lights to enable 24-hour operations to be undertaken cannot be eliminated.	
Substitute	Not adopted. The National Light Pollution Guidelines for Wildlife suggests replacing external lighting on vessels with lighting that is flashing, intermittent, or motion triggered, or of a particular spectral signature and/or intensity, may have the potential to further reduce the impact of artificial light on marine fauna. However, retrofitting external lighting would be costly and the implementation of these additional engineering controls is considered to be of limited environmental benefit and would not result in a reduction of residual risk.	
Engineering	Not Adopted. The National Light Pollution Guidelines for Wildlife suggests measures such as curfews for managing artificial lighting around rookeries during fledging periods or near nocturnal foraging and roosting areas in coastal habitats however these are not applicable to this activity (see Isolation below).	
Isolation	The project area is located 30 km from shore, most significant impacts are associated with operating within close proximity of shorelines that support light sensitive species.	
Administrative	Navigation, radar equipment and lighting meets Marine Order 30 requirements.	
Protective	Not applicable	
Demonstration of Acceptability		
The potential impacts of light emissions from a vessel within the operating area are localised and short term in nature and insignificant in consequence. The residual risk was assessed as Low. There are numerous other permanent oil and gas installations in Bass Strait (20 production facilities) which generate light emissions. Commercial fishing activities and merchant vessels also use similar navigational lights or other lighting for safety purposes. There have been no indications to date of any significant impact on the environment from such activities in Bass Strait. Compared with commercial squid fishing the light spill and impact on the environment from an IMR vessel operating at Longtom 1 week a year is considered insignificant. All legislative and other requirements have been met. The light emissions generated by the activity have been evaluated and the risk from the activity is considered low and will not be inconsistent with the Wildlife Conservation Plan for Seabirds and the National Recovery Plan for Albatrosses and Petrels. The activity is consistent with SGHE policy and meets relevant management standards and procedures. There have been no concerns raised during the consultation process regarding light emissions. Given that the project is located 30 km offshore and that vessel operations are infrequent and of short duration, this risk is considered **acceptable**.		

Monitoring
No monitoring of light emissions is necessary.

6.3.3 Atmospheric emissions

Atmospheric emissions from the Longtom activity includes non-greenhouse gases, such as NO_X and SO_X, and greenhouse gases (GHGs), such as CH_4, CO_2 and N_2O.

Greenhouse gas

A GHG assessment was conducted to estimate the GHG emissions generated from the Longtom activity. The GHG assessment covers all emissions scopes – scopes 1, 2 and scope 3, defined as below:

- Scope 1 emissions are the direct GHG emissions released into the atmosphere as a result of the activity. During both the non-production phase and operations these include:
    - fugitive emissions from offshore operations
    - embedded emissions from offshore operations.
- Scope 2 emissions are the indirect GHG emissions from the consumption of purchased electricity, steam, heat or cooling, which are produced outside the boundary of the activity. Given there is no purchased electricity/energy involved, there will be no scope 2 emissions.
- Scope 3 emissions are the indirect GHG emissions, other than the scope 2 emissions, generated as a result of the activity. Scope 3 emissions include:
    - Fuel consumption from vessel activity within the Operating Area
    - Production and processing of Longtom gas and condensate at Orbost Gas Processing Plant (i.e., operated by Amplitude Energy)
    - End-use of Longtom gas and condensate (i.e., usage by customers)

The GHG emissions sources and scope included in the assessment and relevant to the activity are summarised in Table 6-14. Emissions were estimated using the methodology, and Energy Content and Emission Factors in NGER (Measurement) Determination 2008. ROV equipment used during IMR activities is powered by the vessel; therefore, its emissions are already accounted for by the vessel. Emissions from employee commuting (road travel and fixed wing aircraft) were assumed to be immaterial. Emissions from Orbost Gas Processing Plant sourced from Cooper Energy (2024).

Table 6-14 GHG emissions sources

Scope	Non-production Phase (3 years of the next 5-year period	Operations (2 years of the next 5-year period)	Vessel- supported IMR (1 week in every year)
Scope 1	Fugitive emissions Embedded emissions	Fugitive emissions Embedded emissions	
Scope 3		Production and processing (Amplitude Energy-operated Orbost Gas Processing Plant) End-use gas and condensate (third party)	Vessels (including ROV)

Table 6-15 Approximate GHG emissions predicted for the next 5-years

Activity type	Emissions source	Annual average ($ktCO_2$-e)	Cumulative ($ktCO_2$-e)
Scope 1 for next 5-years			
Non-production Phase	Fugitive emissions	0.028	0.084
Operations	Fugitive emissions	0.028	0.056
Total for next 5-years		0.028	0.14
Scope 3 for next 5-years			
IMR activity	Vessel fuel consumption[1]	0.196	0.98
Orbost Gas Processing Plant operations	Aggregated sources (from Cooper, 2024)	62.9 (only post restart))	125.8
End-use (third party)	Gas usage (customers)[2]	360.71 (only post restart)	721.42
	Condensate usage (customers)[2]	22.75 (only post restart)	45.5
Total for next 5-years		444.55	893.7

[1]Five campaigns using an average of 65 t MDO (as per 2023 IMR campaign) over the next 5-years.
[2]Based on a restart forecast production rate of 7 PJ/year gas and 64.6 kbbl/year condensate.

A very small component of the of the total emissions (~<1%) is predicted to be contributed by the activities covered under this EP. The majority of emissions are expected to be downstream of production and processing and are associated with the use of the products.

6.3.3.1 Description of Environmental Impacts

Air quality

The use of fuel (specifically marine diesel) to power vessels and generators during IMR activities will result in emissions such as sulphur oxides (SOx) and nitrous oxides (NOx).

Emissions will be small in quantity and will dissipate quickly into the surrounding atmosphere, therefore any localised reduction in air quality is not expected to result in any measurable effect.. The combustion of fuels in such a remote locality will not impact on the nearest coastal settlements, and is not out of the ordinary with other industrial combustion processes occurring at the oil and gas platforms of Bass Strait and their onshore processing facilities (e.g. the Orbost Gas Processing Plant and Longford Plants oil and gas processing facility) or from commercial fishing and shipping activities. Offshore winds will rapidly disperse any atmospheric emissions.

Anthropogenic climate change

Scope 1 direct GHG emissions are estimated to be 0.028 $ktCO_2$-e per year, and Scope 3 indirect GHG emissions are estimated to be 444.55 $ktCO_2$-e per year. Combined these emissions represent less than 0.1% of national Australian emissions (when compared to Australia's 2022-23 inventory (DCCEEW 2025g) - net greenhouse gas emissions from all sectors were 453.4 $MtCO_2$-e. Noting that the energy sector was the largest source of GHG emissions in 2022–23 comprising 398.0 Mt CO2-e).

Human activities have been identified as the principal cause of global warming due to emissions of GHGs. These emissions result from the net accumulation of global GHGs in the atmosphere

particularly over recent decades. Though the impacts on the climate cannot be attributed to one specific sector or activity, each contribution of GHGs may be considered as relative.

SGHE accepts the Intergovernmental Panel on Climate Change assessment of the science related to climate change and the Paris Agreement's goal to limit global temperature rises to well below 2°C by the end of this century.

Australia's 2030 target is both a single year commitment to reduce emissions to 43% below 2005 levels, and a multi-year emissions budget from 2021 to 2030. Both targets are legislated in the *Climate Change Act 2022*. They form part of Australia's nationally determined contribution to the United Nations Framework Convention on Climate Change. Australia's 2030 emissions budget target is 4,377 $MtCO_2$-e (2021 – 2030) (DCCEEW, 2024k).

In the context of Australia's remaining carbon budget; both the direct and indirect emissions associated with the Gippsland operations are considered insignificant.

6.3.3.2 Risk Assessment

Table 6-16 outlines the risk assessment for atmospheric emissions.

Table 6-16 Atmospheric emissions risk assessment

Hazard duration	GHG emissions (long term) During inspection, maintenance and repair activities (short-term).	
Extent of hazard	GHG emissions- global Localised (local air shed).	
Basis of Inherent Risk Assessment		
• Scope 1 emissions are insignificant and reported via NGERS. • Use of Marine Diesel Oil (MDO) which has low sulphur content, hence minimising the generation of SOx. Since 1 January 2020, all ships and vessels globally have been required to use fuels containing a maximum of 0.50 % sulphur under MARPOL Annex VI (AMSA, 2025). • Engines are maintained in accordance with the planned maintenance system (PMS) to ensure operation at maximum efficiency. • Vessel-based activities will be of short duration (approximately one week every year).		
Inherent risk analysis and ranking		
Consequence	**Likelihood**	**Inherent Risk**
Insignificant (1)	Unlikely (D)	Low
Project specific environmental controls and checks that will take place	<u>Prevention</u> • Longtom facilities are designed to minimise scope 1 emissions and inspection and repair campaigns are conducted to maintain equipment integrity – effectiveness considered High <u>Mitigation</u> • Vessels will be required to comply with MARPOL Annex VI which requires (as appropriate to vessel class) a valid International Air Pollution Prevention (IAPP) Certificate and one Engine International Air Pollution Prevention (EIAPP) certificate for each diesel engine of ≥130 kW – effectiveness considered Moderate.	
Residual risk analysis and ranking		

Consequence	Likelihood	Residual Risk
Insignificant (1)	Rare (E)	Low
Demonstration of ALARP		
Scope 1 emissions from Longtom are very small and considered insignificant. Scope 3 emissions are dominated by the end user and societal use that is outside SGHE control. The key control for vessel emissions is compliance with MARPOL Annex VI requirements, and this will ensure that emissions to air from fuel combustion are managed and treated to minimise environmental impact. Given the nature and scale of the activity and the low inherent consequence and risk this control is considered sufficiently effective to ensure the residual risk is Low and ALARP. The following ALARP analysis confirms that all reasonable risk treatment options have been considered to reduce the environmental impact of atmospheric emissions, and the risk is deemed to be **ALARP**.A 'Low' residual risk ranking is **broadly acceptable** according to the SGHE definition of risk.		
Eliminate	SGHE is planning a vessel campaign to fix the minor bubble leak at Longtom 3. Note that these emissions are a small component of the existing scope 1 emissions and that vessel fuel related emissions will likely be an order of magnitude greater. SGHE have a Production Licence and Field Development Plan that requires Longtom gas to be developed for societal use. Permanently ceasing production and eliminating scope 3 emissions is not considered practicable. Eliminating vessel campaigns is not practicable and is a requirement of the WOMP, Safety Case and EP to maintain integrity. The use of non-hydrocarbon powered vessels is not practicable. There is a lack of vessels that do not use hydrocarbons and currently it would not be commercially viable to implement this measure. The generation of air emissions from fuel combustion cannot be eliminated. Emissions from vessels will be as permitted under MARPOL Annex VI.	
Substitute	Low sulphur fuels will be utilised as per MARPOL Annex VI. SGH is investing in solutions to reduce its energy consumption and GHG emissions and is seeking to transition to a lower carbon economy including an aspiration to net zero emissions (SGH, 2024).	
Engineering	Engines are maintained in accordance with the planned maintenance system (PMS) to ensure operation at maximum efficiency. Inspection campaigns are inherently designed and planned to minimise the offshore durations (costs) and hence reduce fuel emissions as far as practicable.	
Isolation	The operating area is located 30 km from shore.	
Administrative	Vessels will hold International Air Pollution Prevention (IAPP) Certificate and one Engine International Air Pollution Prevention (EIAPP) certificate for each diesel engine of ⩾130 kW, as applicable. SGH Energy & Emissions Aspiration: *To play our part in meeting the Paris Agreement's goal to limit global temperature rises to well below 2°C.* SGHE GHG emissions reported annually as a subsidiary of Seven Group Holdings as per the requirements of the *National Greenhouse and Energy Reporting Act 2007*	
Protective	Not applicable.	
Demonstration of Acceptability		
Scope 1 and 3 emissions are insignificant in the context of Australia's remaining carbon budget and emissions from the end users of Longtom gas.		

In order to ensure marine pollution is kept to acceptable levels, offshore petroleum operations are required to comply with MARPOL. Offshore winds will rapidly disperse and dilute any gaseous emissions. The consequence of these emissions is expected to be insignificant and the residual risk assessed as Low. The combustion of fuels in such a remote locality will not impact on the nearest coastal settlements, and is not out of the ordinary with other industrial combustion processes occurring at the oil and gas platforms of Bass Strait and their onshore processing facilities or from commercial fishing and shipping activities. There have been no concerns raised during any consultation regarding atmospheric emissions. Given that the project is located some 40 km offshore and that vessel operations are of a short duration, the risk is considered **acceptable**.
Monitoring
Emissions are monitored and reported under NGERS. Production rates are also monitored and reported to NOPTA. Bunker receipts confirm sulphur content of fuel supplied and fuel consumption included as line item on daily report.

6.4 Unplanned Interactions

6.4.1 Interactions with marine fauna

The movement of offshore vessels has the potential to result in a collision with marine fauna. Noise impacts from offshore vessel activities are addressed separately in Section 6.3.1.

The vessel-related activities required to support ongoing operations are conservatively expected to be approximately one week every year. During either of these activities there is the potential for the vessels to strike marine fauna, however whilst conducting petroleum activities the vessels will be operating at low speeds (≤ 2 knots) or on DP.

6.4.1.1 Description of Environmental Impacts

Marine megafauna are at the most risk from this hazard and thus are the focus of this evaluation.

Several marine turtle species including species listed as either threatened and/or migratory under the EPBC Act may occur within the operating area, however no critical habitat or BIAs for turtles have been identified. The presence of turtles in the operating area is considered only remotely likely.

A number of marine mammals (e.g. whales, dolphins, seals) including species listed as either threatened and/or migratory under the EPBC Act have the potential to occur within the operating area. The Pygmy Blue Whale has possible foraging habitat (BIA) (DoE, 2015b) overlapping the operating area. The only known area of significance to the Pygmy Blue Whale in south eastern Australian waters is the Bonney Upwelling and adjacent upwelling areas of South Australia and Victoria (DEH 2005a), which is more than 600 km to the west of the operating area. While eastern Bass Strait is not known as a feeding or aggregation area for this mammal species, sightings have occurred in southeast Victoria from February to March, but are reasonably rare in the Gippsland Basin (Bannister *et al*., 1996). The Southern Right Whale migration BIA overlaps the operating area. A counter-clockwise migration between foraging and breeding areas has been suggested whereby movements from Australian coastal waters include directly southern

and western migration pathways (DCCEEW, 2024a). The seasonal presence of the Southern Right Whale in Australia correlates with breeding behaviours. The peak abundance period occurs between May and October each year when the Southern Right Whale will predominately occur in shallow (< 10 m) coastal waters within 1 km of the coast. Small but growing numbers of calving and non-calving whales have been observed to regularly aggregate for short periods (days to weeks) along the Gippsland coast in Victoria (DCCEEW, 2024a). Although sighted along the Gippsland coast during migration, calving females are most often found off western Victoria near Warrnambool.

Marine mammals travelling through the area are at less risk from vessel strike than those species that are resting or feeding. A vessel strike may lead to wounding and/or mortality. Vessel strikes generally occur when there is high vessel traffic operating at fast speeds. Speed appears to be a key issue affecting the frequency of incidents (Vanderlaan & Taggert, 2007), with 89% of ship strikes examined involving vessels travelling in excess of 14 knots (Laist *et al.,* 2001). Vessels typically used to support these activities do not have the same limitations on manoeuvrability and would not be moving at these speeds when conducting activities inside the operatiing area. Vessel noise should alert marine mammals to their presence and they would have time to react and avoid a collision.

The Australian and New Zealand Fur-seals are highly agile species that haul themselves onto rocks, oil and gas platform structures and offshore vessels. As such, it is likely that they would avoid any collision with moving vessels.

Peel *et al.* (2016) reviewed vessel strike data (1997-2015) for marine species in Australian waters and identified the following:

- Whales including the Humpback, Pygmy Blue, Antarctic Blue, Southern Right, Dwarf Minke, Antarctic Minke, Fin, Bryde's, Pygmy Right, Sperm, Pygmy Sperm and Pilot species were identified as having interacted with vessels. The Humpback Whale exhibited the highest incidence of interaction followed by the Southern Right Whale. A number of these species may be observed in the waters in the vicinity of the operating area.
- Dolphins including the Australian Humpback, Common Bottlenose, Indo-Pacific Bottlenose and Risso's dolphin species were also identified as interacting with vessels. The Common Bottlenose Dolphin exhibited the highest incidence of interaction. A number of these species may be observed within the vicinity of the operational area.
- There were no vessel interaction reports during the period for either the Australian or New Zealand Fur-seal. There have been incidents of seals being injured by boat propellers around areas where they rest or congregate including oil and gas platform structures, however all indications are rather than 'boat strike' these can be attributed to be the seal interacting/playing with a boat, with experts indicating the incidence of boat strike for seals is very low.

The duration of fauna exposure to support vessel strike is limited to the duration of works under this EP; expected to be approximately one week every year. If a fauna strike occurred and resulted in death, it is not expected that it would have a detrimental effect on the overall population. Consequently, the potential consequence level from fauna strike is considered to be

minor as this type of event may result in a localised, short-term impact to species of recognised conservation value but is not expected to affect the population or local ecosystem function.

Due to restricted area of operation and the slow speed of IMR support vessels when operating in this area, if contact is made with species, the impact due to vessel strike is expected to be non-life threatening and the likelihood of vessel strike and associated severe injury or death of an individual is considered rare to non-credible during these activities.

No impacts to marine fauna from vessel collisions have occurred to date during Longtom activities. Vessels involved in inspection, maintenance and repair activities would only be required for a short duration and would adhere to the Australian National Guidelines for Whale and Dolphin Watching (DoEE, 2017a) where practicable. However, in considering the potential for mammals to be playful /interactive with slow moving vessels or vessels in DP mode and the possibility of seals being in the area, the likelihood of vessel interaction with mammals and associated severe injury or death of an individual is considered unlikely during these activities.

6.4.1.2 Risk Assessment

Table 6-17 outlines the risk assessment for vessel collisions with marine fauna.

Table 6-17 Vessel collisions with marine fauna risk assessment

Hazard duration	Intermittent for short durations during inspection, maintenance and repair activities.	
Extent of hazard	Localised (the immediate area around the vessel).	
Basis of Inherent Risk Assessment		
• There are no known critical feeding, aggregation, breeding or migration areas for cetaceans or other marine megafauna in the project area. • Vessel-based activities will be of short duration (approximately one week every year). • Whilst engaged in petroleum activities (i.e. within the 500m zone) vessels will be operating at low speed (≤ 2 knots) / on DP.		
Inherent risk analysis and ranking		
Consequence	**Likelihood**	**Inherent Risk**
Minor (2)	Unlikely (D)	Low
Project specific environmental controls and checks that will take place	<u>Prevention</u> Vessels will comply with the EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans (and Australian National Guidelines for Whale and Dolphin Watching 2017), where practicable.	
Residual risk analysis and ranking		
Consequence	**Likelihood**	**Residual Risk**
Minor (2)	Rare (E)	Low
Demonstration of ALARP		
The key preventative control relating to vessel interaction with cetaceans is the adherence to the Regulations and Australian National Guidelines for Whale and Dolphin Watching 2017. These Guidelines were developed jointly by all state and territory governments through the Natural Resource Management Ministerial Council and, although more relevant for tourism activities, provide a list of requirements that are generally adopted by the oil and gas industry to minimise the risk of cetacean strike occurring. The overall effectiveness of this control is considered high in		

preventing environmental impact. Note: Both the lack of visibility of seals in the water and number of seals in close proximity to oil and gas offshore installations make applicability of these guidelines to seals impracticable. Furthermore fauna interaction management actions as described in the guidelines will not prevent seals approaching / playing with vessels. This control, together with the inherent nature of the vessel activity (i.e. slow moving or stationary) is considered sufficient, suitably robust, independent and effective to ensure the residual risk is Low and ALARP. The following ALARP analysis confirms that all reasonable risk treatment options have been considered to reduce the environmental impact of vessel collision and the risk is deemed to be **ALARP**. There are no other feasible risk treatment options. A 'Low' residual risk ranking is **broadly acceptable** according to the SGHE definition of risk.	
Eliminate	Not applicable. The use of vessels for these activities cannot be eliminated.
Substitute	Not applicable.
Engineering	Not adopted. Grates on vessel tunnel thrusters would prevent entrapment of marine mammals, in particular seals which are known to approach / play with vessels while stationary on DP. Smaller support vessels (such as those used to deploy ROVs) do not generally have grates on tunnel thrusters however it is more common for larger platform supply vessels or installation vessels. Adding grates to bow thrusters can significantly impact efficiency of vessels leading to increased fuel usage and air emissions, particularly for small vessels. Further, grates lead to increased potential for marine growth (which further reduces efficiency of thrusters). Retrofitting of grates to vessels requires dry docking at significant cost.**
Isolation	The Guidelines describe strategies to ensure whales and dolphins are not harmed during offshore interactions with people including designation of 'no approach' and 'caution' zones.
Administrative	Cetacean vessel strike incidents will be reported in the National Ship Strike Database in accordance with relevant conservation management plans / advices (see Section 8.7.2 Incident Recording and Reporting).
Protective	Not applicable.
Demonstration of Acceptability	
The potential impacts of a vessel collision are expected to be localised, short term in nature and minor in consequence. The residual risk was assessed as Low. All legislative and other requirements have been met. The potential for vessel collision has been assessed and appropriate mitigation measures implemented such that the risk from the activity is considered low and will not be inconsistent with the actions in the National Recovery Plan for the Southern Right Whale (DCCEEW, 2024a) and the Conservation Management Plan for the Blue Whale (DOE, 2015b). The activity is consistent with SGHE policy and meets relevant management standards and procedures. There have been no concerns raised regarding vessel collision during stakeholder consultation. Given that the activity is not taking place within biologically important habitat and vessel-based activities will be infrequent and of short duration, this risk is considered **acceptable**.	
Monitoring	
It will be noted in the daily report when cetaceans were sighted in the 'caution' zone and the interaction management actions implemented.	

** Bow thruster guards are not a mandatory requirement for vessels on this activity. However, where a vessel without thruster guards is planned to be used for the activity and is required to dry dock for IMS inspection or cleaning, the additional fitment of thruster guards shall be considered as part of the docking process. As part of this consideration, a risk assessment will be completed to consider additional hazards

that could be introduced to the vessel (including failure of the thruster guard and ingestion into the thruster, or hull damage due to guard failure). With the agreement of the vessel owner and where the assessment shows that there is no additional risk, the opportunity will be taken to install bow thruster guards whilst the vessel is in dry dock.

6.4.2 Introduction of Invasive Marine Species

Vessel activities have the potential to result in the introduction of invasive marine species to the project area, through ballast water discharge containing foreign species and vessel hull and equipment biofouling.

6.4.2.1 Description of Environmental Impacts

Ballast Water

Vessels are not expected to take on, nor discharge, ballast water while working on Longtom infrastructure. Any ballast water exchange would comply with the Australian Ballast Water Management Requirements (DAWE, 2020b) and if required, it would only be undertaken more than 12 nm from land, given the Longtom location.

Any risk of introducing invasive marine species would likely be from attachment to vessel hulls and biofouling.

Biofouling

Biofouling is the accumulation of aquatic micro-organisms, algae, plants and animals on vessel hulls and submerged surfaces. Regular anti-fouling of the hull is required to prevent this build up. The main chemical used in the anti-fouling agent, tributyltin (TBT), persists in the environment by attaching itself to muds (accumulating in sediments) and in high concentrations can have toxic effects on marine organisms through bioaccumulation. The impact of TBT leaching off a single vessel in open waters has been found not to be detrimental to marine life (Fabris *et al*., 1995) and remains under the ANZECC & ARMCANZ Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000) TBT trigger value of 0.0004 µg/L for the protection of 99% of species in marine waters.

Standard procedures for minimising the introduction or translocation of invasive marine species into the waters of eastern Bass Strait include the treatment of vessels with anti-fouling paints and compliance with Australian Government biosecurity legislation.

Invasive Marine Species Invasion

Successful invasive marine species invasion requires the following three steps (AQIS, 2011):

1. Colonisation and establishment of the marine pest on a vector (e.g., vessel hull) in a donor region (e.g. home port).
2. Survival of the settled marine species on the vector during the voyage from the donor to the recipient region (e.g. project area).
3. Colonisation (e.g. dislodgement or reproduction) of the marine species in the recipient region, followed by successful establishment of a viable new local population.

Invasive marine species are likely to have little or no natural competition or predation, thus outcompeting native species for food or space, preying on native species or changing the nature of the environment. It is estimated that Australia has over 250 established marine pests, and it is estimated that approximately one in six introduced marine species becomes pests (AMSA, n.d.).

Marine pest species can also deplete fishing grounds and aquaculture stock, with between 10% and 40% of Australia's fishing industry being potentially vulnerable to marine pest incursion (AMSA, n.d). For example, the introduction of the North Pacific Seastar in Victorian and Tasmanian waters was linked to a decline in scallop fisheries. Marine pests can also damage marine and industrial infrastructure, such as encrusting jetties and marinas or blocking industrial water intake pipes. The accumulation on vessel hulls can slow the vessels down and increase fuel consumption.

Successful invasive marine species invasion during project activities is highly unlikely to occur as:

1. **Colonisation and establishment of the marine pest on the vessel hull or in ballast water in a donor region:** SGHE will ensure that vessel hulls have been recently cleaned, with anti-fouling paint applied and has a valid Statement of Compliance issued under the *International Convention on the Control of Harmful Anti-Fouling Systems on Ships* (IMO, 2001). Where the vessel has relocated to Bass Strait, the vessel will be required to comply with all legislative requirements for the management of ballast water including the Australian Ballast Water Management Requirements. SGHE will ensure the vessel poses a Low level of biofouling risk by assessing the risk using their IMS risk assessment process and implementing additional controls as necessary prior to mobilisation.
2. **Survival of the settled marine species on/in the vessel during the voyage from the donor to the recipient region:** This is unlikely to occur as all contracted vessels undergo regular anti-fouling of the hull to prevent the build-up of barnacles and other organisms that increase the drag of the vessel, leading to increased fuel consumption.
3. **Colonisation of the marine species in the recipient region, followed by successful establishment of a viable new local population:** Successful colonisation in the recipient region would be difficult given the nature of the benthic habitats near the operating area (i.e. predominantly bare sands with patchy occurrences of hard substrate) and location outside of coastal waters where the risk of IMS establishment is considered greatest (BRS, 2007).

6.4.2.2 Risk Assessment

Table 6-18 outlines the risk assessment for invasive marine species.

Table 6-18 Invasive marine species risk assessment

Hazard duration	Long-term (in the event of IMS introduction and establishment).
Extent of hazard	Localised (seabed near vessel) to far-reaching (driven by ocean currents and reproductive techniques).
Basis of Inherent Risk Assessment	
• Ballast water discharge is not expected (however if required it would comply with the Australian Ballast Water Management (ABWM) Requirements (DAWE, 2020b), see below).	

- Vessel Master obtains biosecurity clearance to enter Australian territory through pre-arrival information reported through Maritime and Aircraft Reporting System (MARS).
- Vessel-based activities will be of short duration (approximately one week in every year).

Inherent risk analysis and ranking		
Consequence	**Likelihood**	**Inherent Risk**
Moderate (3)	Unlikely (D)	Moderate
Project specific environmental controls and checks that will take place	Prevention Vessel is compliant with the Australian Biofouling Management Requirements Version 2 (ABM Requirements) (DAFF, 2023). SGHE will ensure vessels pose a low biofouling risk by assessing the risk in accordance with the National Biofouling Management Guidelines for the Petroleum Production and Exploration Industry (NBMG) (DAWR, 2009) and implementing control / mitigation measures as necessary in line with their IMS RA procedure. Immersible retrievable-equipment will also be managed in accordance with these Guidelines. – effectiveness considered High. Vessel holds Ballast Water Management Plan (BWMP) and Ballast Water Management Certificate (BWMC) and maintains a Ballast Water Record System, in accordance with the *International Convention for the Control and Management of Ships' Ballast Water and Sediments* (Ballast Water Management Convention) (IMO, 2004) – effectiveness considered High. Vessel Master will adhere to the ABWM Requirements for ballast water exchange – effectiveness considered High. Mitigation Not applicable.	

Residual risk analysis and ranking		
Consequence	**Likelihood**	**Residual Risk**
Moderate (3)	Rare (E)	Low

Demonstration of ALARP

The key preventative control for biofouling risk is vessel compliance with the ABM Requirements (DAFF, 2023). Additionally, vessels will be assessed for biofouling risk in accordance with the NBMG. Biofouling risk is assessed and documented through the SGHE IMS RA procedure. Only vessels with low risk rankings will be permitted to work on the activity, unless no objection from the Principal Officer Invasive marine Species, Agriculture Victoria (the Principal Officer) has been gained.

Consistent with the 'best practice' approach set out in the *IMO Guidelines for the Management of Ships Biofouling* (IMO Guidelines) (IMO, 2012) the risk assessment considers many parameters of the vessel including (where relevant):

- Transport method (dry verses wet haulage)
- Presence and age of antifouling coating
- Evidence of in-water inspection by divers or inspection in dry dock and cleaning of hull
- Presence and operation of internal seawater treatment systems if applicable
- Duration of stay in overseas or interstate coastal waters
- Location of activity/operations (operational area), timings and durations.

Where the initial indicative assessment result is anything other than 'Low Risk', consultation on the the risk assessment is undertaken with the Principal Officer. If the Principal Officer is satisfied that no further action is necessary the vessel is deemed acceptable for use.

If the risk assessment result is uncertain or high risk, or further action is recommended by the Principal Officer following the consultation, an IMS Expert is engaged to conduct a more detailed assessment and determine whether additional controls can be implemented to reduce the vessel risk status to 'Low Risk'.

If this process still results in an uncertain or high risk then an alternative vessel must be sought for the activity unless the Principal Officer provides no objection.

Controls to prevent the introduction of IMS through contaminated ballast water are managed by regulatory requirements. The Ballast Water Management Convention requires signatory flag states to ensure that ships flagged by them comply with standards and procedures for the management and control of ships' ballast water and sediments. The Convention aims to prevent the spread of harmful aquatic organisms from one region to another and halt damage to the marine environment from ballast water discharge, by minimising the uptake and subsequent discharge of sediments and organisms.

The Convention requires all vessels designed to carry ballast water to implement a ballast water management plan and to carry out ballast water management procedures in accordance with approved methods. Specifically these are:

- Use of a ballast water management system
- Ballast water exchange in an acceptable area (at least 12nm from land and in at least 50 m water depth)
- Use of low-risk ballast water
- Retention of high-risk ballast water on board
- Discharge to an approved ballast water reception facility.

A management certificate is required for all vessels to which the Convention applies. This certificate verifies that the vessel has been surveyed to a standard compliant with the Convention.

All vessels that carry ballast water must maintain a ballast water record system.

The ABWM Requirements describe the obligations on vessel operators with regards to the management of ballast water and sediments when operating in Australian seas. The acceptable area for a ballast water exchange between an offshore oil and gas installation and an Australian port is in areas that are no closer than 500 m from the offshore installation and no closer than 12 nm from the nearest land.

Compliance with regulatory requirements for the management of ballast water and ensuring all vessels are assessed as posing a low biofouling risk through the screening via the IMS RA procedure and in accordance with national guidelines is considered sufficiently effective to ensure the residual risk is Low and ALARP.

The following ALARP analysis confirms that all reasonable risk treatment options have been considered to reduce the environmental impact of invasive marine species, and the risk is deemed to be **ALARP**. No further reasonable mitigation measures exist. A 'Low' residual risk ranking is **broadly acceptable** according to the SGHE definition of risk.

Eliminate	The use of a vessel that remains permanently or near-permanently partly submerged in water is unavoidable, and thus hull fouling and the uptake of marine organisms in ballast water cannot be eliminated. Use of local vessel will be preferred to eliminate the requirement for vessels to mobilise to and from Bass Strait.
Substitute	Not adopted. Use of a purpose-built Longtom specific vessel is not practicable.
Engineering	Not applicable.
Isolation	No ballast water exchange would occur within 12 nm of land and any ballast water exchange would comply with the ABWM Requirements.

Administrative	SGHE will ensure that vessels selected have an approved BWMP and BWMC and maintain a Ballast Water Record System. Vessels to comply with Australian Government biosecurity legislation including the ABWM Requirements and the ABM Requirements. Biofouling risk in accordance with NBMG is assessed and documented through the IMS RA Procedure and only vessels with low-risk rankings will be permitted to work on the activity, unless otherwise agreed. A premobilisation audit will be undertaken to confirm vessel acceptability (see Section 8.9.1).
Protective	Not applicable.
Demonstration of Acceptability	
Ballast water discharge is not expected, however should it be required, it will comply with the ABWM Requirements. No discharge of ballast water at Longtom will be planned. Bass Strait currently has over 20 oil and gas production platforms with associated maintenance vessels, in addition to shipping traffic and commercial fishing all of which also pose a risk of introduction and establishment of invasive marine species. These are all currently accepted activities within Bass Strait. All legislative and other requirements have been met and the activity is consistent with SGHE policy and meets relevant management standards and procedures. Concerns from relevant stakeholders have been addressed through the consultation process, any new relevant stakeholder objections, claims or issues will be considered in line with the ongoing consultation. Victorian and commonwealth government agriculture departments will continue to be consulted with and notified of any vessel activities to ensure IMS risks are appropriately managed. The risk of the introduction or spread of invasive marine species to Bass Strait is low and considered to be **acceptable**.	
Monitoring	
Vessel ballast uptakes and discharges (if any) while in Australian waters will be recorded in the daily logs.	

6.5 Accidental Releases

This section describes the project's risks of accidental releases which can be categorised as follows:

- Waste (hazardous and non-hazardous)
- Loss of containment – hazardous and non-hazardous substances
- Loss of containment – marine diesel fuel
- Loss of containment – reservoir hydrocarbons

6.5.1 Waste (hazardous and non-hazardous)

The handling and storage of materials and waste on board support vessels has the potential for accidental over-boarding of hazardous and non-hazardous materials and waste. Small quantities of hazardous and non-hazardous materials (solids) will be used, and wastes created, handled, and stored on board until transferred to port facilities for disposal at licensed onshore facilities. However, accidental releases to sea may occur for example due to rough ocean conditions.

6.5.1.1 Description of Environmental Impacts

If accidentally released overboard solid waste can injure or kill fish or marine birds through ingestion or entanglement (e.g., high-order fish mistaking plastics for jellyfish, rope getting caught around the necks of turtles and seabirds). Impacts would be restricted in exposure and quantity and would be limited to individual fauna and not have impacts to local population levels.

It could also wash ashore contributing to shoreline litter.

6.5.1.2 Risk Assessment

Table 6-19 outlines the risk assessment for accidental release of waste.

Table 6-19 Accidental release of waste risk assessment

Hazard duration	Short to medium (litter may be present for many months).	
Extent of hazard	Localised (seabed near vessel) to far-reaching (ocean current-driven waste or windblown litter).	
Basis of Inherent Risk Assessment		
• No waste (other than sewage and putrescible waste, treated bilge, and cooling water and brine, refer to Section 6.2.2) is planned to be discharged offshore. • The Longtom facilities are located in approximately 57 m of water and 40 km offshore in a relatively high energy environment (current and waves). This will lead to rapid dispersion. • There are no sensitive environments or biological communities in the operating area. • Vessel-based activities will be of short duration (approximately one week in every year).		
Inherent risk analysis and ranking		
Consequence	**Likelihood**	**Inherent Risk**
Insignificant (1)	Moderate (C)	Low
Project specific environmental controls and checks that will take place	<u>Prevention</u> • Vessels will be required to comply with MARPOL Annex V and hold an International Convention for the Prevention of Pollution from Ships Certificate – effectiveness considered High. • The vessel will implement a Waste Management Plan, which at a minimum will specify: - The responsibilities of the Vessel Master, Offshore Manager, Waste Coordinator and crew with regard to waste management. - Waste will be segregated according to recyclability (e.g., timber, plastic, glass, cardboard, steel, batteries, fluorescent tubes, used oil filters). - Waste segregation units (bins, drums, sacks or skips) must be used, and must be fully secured, watertight, undamaged and rust-free, stored in a vertical position, and clearly labelled. Lids must be kept on at all times to prevent wind-blown debris from escaping, and liquid waste must be stored in drip trays. - Waste must be disposed of via a supply vessel only. - Waste Transfer Notes must be maintained.	

	- A Garbage Record Book must be maintained (by the vessel). Effectiveness considered High. <u>Mitigation</u> An ROV survey of the seabed will check for (and retrieve) dropped objects where practicable following IMR campaigns – effectiveness considered Moderate.

Residual risk analysis and ranking		
Consequence	**Likelihood**	**Residual Risk**
Insignificant (1)	Unlikely (D)	Low

Demonstration of ALARP	
The key preventative controls are vessel in compliance with MARPOL Annex V, vessel to have an International Convention for the Prevention of Pollution from Ships Certificate and a Waste Management Plan. These will ensure that wastes are managed and disposed of appropriately to minimise environmental impact. Additionally, the ROV survey will ensure that any waste ending up on the sea bed is identified and where practicable it is removed to minimise the impact. Given the low inherent consequence and risk this control is considered sufficiently effective to ensure the residual risk is Low and ALARP. The following ALARP analysis confirms that all reasonable risk treatment options have been considered to reduce the environmental impact of accidental release of waste, and the risk is deemed to be **ALARP**. No further reasonable mitigation measures exist. A 'Low' residual risk ranking is **broadly acceptable** according to the SGHE definition of risk.	
Eliminate	The elimination of consumable products onboard the vessel is not possible – waste will be generated. Any unused project consumables will be returned to suppliers or store for future use.
Substitute	Not adopted. Some substances only become hazardous when inappropriately disposed of (such as batteries, fluorescent tubes), and the use of these items cannot be substituted (e.g. light fittings throughout the vessel would need to be switched to alternative lighting methods, which is not commensurate with the low risk of these use of these materials).
Engineering	Not applicable.
Isolation	Waste will be stored in suitable receptacles to minimise the potential for accidental loss overboard.
Administrative	Waste management and housekeeping.
Protective	Not applicable

Demonstration of Acceptability
Vessels must meet the requirements of MARPOL and their waste management plan. Waste (other than sewage and putrescible waste, treated bilge, and cooling water and brine) will not be discharged overboard and will be transferred onshore. Oil and Gas supply vessels, merchant shipping and commercial fishing activities take place in Bass Strait and these could all potentially discharge waste to the marine environment, their activities are all currently accepted by the community. All legislative and other requirements have been met and the activity is consistent with SGHE policy and meets relevant management standards and procedures. No concerns have been raised to SGHE regarding inappropriate waste disposal during the consultation process. The risk to the environment from accidental release of waste is low and considered to be **acceptable**, given the high energy environment, water depth and short duration of the activities.
Monitoring

Weight/volume of the various waste streams is measured, recorded and reported in the waste manifest and daily logs.

6.5.2 Loss of containment - hazardous and non-hazardous substances

Minor spills may occur from a ROV hydraulic hose leak or an umbilical leak.

There is the potential for accidental release of hydraulic fluid in the event of equipment failure or a hydraulic hose rupture during ROV deployment.

The umbilical provides hydraulic fluid, MEG, potentially Low Dose Hydrate Inhibitor (LDHI) and methanol offshore. A failure of the umbilical, due to impact, fatigue or corrosion at the tie-ins, or subsea facilities may result in the accidental release of some or all of these and could be of an ongoing minor nature or terminal and result in total shutdown of the Longtom facilities. A loss of containment from the buried sections, protected from external damage, of the stainless steel umbilical is not considered credible and is not discussed further. The uses of hydraulic fluid, MEG, LDHI and methanol are described below.

Hydraulic fluid

Details of the hydraulic fluid currently used for operations is given in Section 6.1.1.

MEG and LDHI

MEG is pumped offshore via the umbilical and injected at the subsea tree chokes to help prevent hydrate formation and subsequent potential blockage of the pipeline. During the detailed design of the pipeline and the development of the hydrate management plan, the addition of LDHI to the MEG was also considered.

LDHI could be added to the MEG at a concentration of approximately 1.5%, however to date this has not been necessary and is very unlikely to ever be required. The LDHI (Baker Hughes HIW 85574) was assessed by OCNS as having a Silver CHARM ranking, while the MEG is ranked as ‘E’ and is on the PLONOR list.

These chemicals are contained within the pipeline system and pumped from onshore. They would only be released in the event of umbilical or subsea equipment failure.

Methanol

Small amounts of methanol are injected via the control umbilical for start-ups and in the case of relieving hydrate blockage. Methanol is also included on the PLONOR list as a category ‘E’ chemical (CAS Ref: 67-56-1) and is therefore considered to have little or no environmental effect when discharged to the marine environment. Methanol is contained within the enclosed system and returned to shore. It could only be released in the event of umbilical or subsea equipment failure.

6.5.2.1 Description of Environmental Impacts

Operations

In the event of an umbilical failure, the amount of hydraulic fluid, MEG and methanol that would be lost would be limited to approximately 2000 L before process parameters onshore (i.e., low

pressure alarms) would automatically shut down the chemical and hydraulic pumps. There would be no further leakage as the accumulated pressure (hydrostatic pressure) within the umbilical would be vented to sea. Based on their OCNS rating their impact is considered minor.

IMR

Small volumes, typically around 10-20 L, of hydraulic fluid could be lost in the event of major equipment failure or hose damage. The environmental impact is considered minor.

The maintenance and repair of an umbilical may be undertaken by lifting the umbilical to the surface (using a vessel crane) and cutting into it to allow a repair to take place. This would result in the release of umbilical fluids however this would be contained on board the vessel. Even if the maximum volumes of fluids were released to the marine environment, the environmental impact would be minor and limited to a temporary change in water quality in the vicinity of the release, based on the low volumes and the dilution and dispersion that occur on release.

6.5.2.2 Risk Assessment

Table 6-20 outlines the risk assessment for the loss of containment of hazardous and non-hazardous substances.

Table 6-20 Loss of containment of hazardous and non-hazardous substances risk assessment

Hazard duration	Short term release.	
Extent of hazard	Limited to the area around the release point.	
Basis of inherent impact and risk Assessment		
• ROVs are typically designed to prevent hydraulic fluid leaks, with the hoses and fittings all rated for the operating pressures to ensure their availability. The ROV hydraulic supply system would typically have a low-pressure shutdown that would operate in the event of a loss of containment, shutting down the supply and limiting the volume of hydraulic fluid lost to the environment. • The umbilical was appropriately designed and has been pressure tested. • There is no planned discharge of MEG or methanol. • There are no known sensitive environments or biological communities in the operating area. • The hydraulic fluid, MEG and methanol selected for operations are water soluble and have low toxicity.		
Inherent risk analysis and ranking		
Consequence	**Likelihood**	**Inherent Risk**
Minor (2)	Unlikely (D)	Low
Project specific environmental controls and checks that will take place	<u>Prevention</u> • ROV hydraulic system design including, pressure rating of hoses, hydraulic fluid is stored and supply systems / maintenance areas located within bunded areas on board the vessel – effectiveness considered High. • Pre-installation and pre-dive checks conducted – effectiveness considered Moderate. • The ROV is maintained and tested in accordance with the PMS - effectiveness considered High. • Longtom Pipeline Safety Case including:	

	- Equipment design and validation including process controls, alarms and trips – effectiveness considered Very High. - Training and competency of personnel to operate and maintain the facilities appropriately – effectiveness considered Moderate. - Procedures for operating and maintenance activities. – effectiveness considered Moderate. - Maintenance and testing of equipment including shutdown systems – effectiveness considered Moderate. • The hydraulic fluid selected for operations - HW525 was a category 'D' OCNS chemical with an assumed low environmental impact – effectiveness was considered High however it was subsequently changed to an A rated chemical. HW525 will therefore be progressively replaced with Transaqua HT2 which is a category 'D' OCNS chemical – see Section 6.1.1 for more detail. • MEG and methanol are category 'E' OCNS chemicals with low environmental impact – effectiveness considered High. <u>Mitigation</u> • ROV hydraulic fluid to be selected / approved for use by SGHE- effectiveness considered Moderate. • ROV system design via isolation of feed supplies in the event of a major hydraulic leak - effectiveness considered High. • SOPEP material is available on board IMR vessel and personnel are trained in its use – effectiveness considered Moderate. • Shut down of (umbilical) chemical and hydraulic pumps onshore at the gas plant – effectiveness considered High.

Residual risk analysis and ranking		
Consequence	**Likelihood**	**Residual Risk**
Minor (2)	Rare (E)	Low

Demonstration of ALARP	
The key preventative controls are the design of the subsea facilities, the operating and maintenance systems, processes and procedures conducted in line with the Pipeline Safety Case and WOMP requirements, the overall effectiveness of these controls is considered very high in preventing environmental impact. In the event of a loss of containment these systems will also ensure that the leak is mitigated and minimised (particularly the shutdown systems) and the low toxicity of the chemicals also ensures that any consequence is minor. The controls are considered sufficient, suitably robust, independent and effective to ensure the residual risks are Low and ALARP. The key preventative control is the design, operation and maintenance of the ROV system, these items will all be checked as part of the pre-mobilisation audit to confirm ROV acceptability. Mitigative controls include the SGHE chemical selection process, the design of the ROV system to isolate the hydraulic tanks and the vessel having a SOPEP. These controls are considered sufficiently effective, robust and independent to ensure the residual risk is Low and ALARP.The following ALARP analysis confirms that all reasonable risk treatment options have been considered to reduce the environmental impact of the accidental release of hydraulic fluid, MEG and methanol, and the risk is deemed to be **ALARP**. There are no other feasible risk treatment options. A 'Low' residual risk ranking is **broadly acceptable** according to the SGHE definition of risk.	
Eliminate	Not applicable. Hydraulic fluid, MEG and methanol cannot be eliminated. The use of ROVs is standard practice and essential to ensure safe operations. Hydraulic fluid is required for ROV operation.
Substitute	SGHE has assessed alternatives and the plan is to progressively replace HW525 with Transaqua HT2, which is a D rated chemical, when production is

	restarted. During the current non-production phase there is no practical ability to flush the HW525 out with HT2. To flush the HW525 would require electrical continuity from the gas plant, agreement with the gas plant operator to operate the hydraulic pumps, agreement with the Patricia Baleen pipeline operator to use their umbilical and an offshore vessel campaign. Given that failure of the umbilical offshore is very unlikely and given there is no additional pressure source in the hydraulic lines any release would be limited to a small volume and temporary, it has therefore been rejected as a practical option at this time. Substitution of the ROV hydraulic fluids with a more environmentally sensitive fluid may be possible and will be examined once the ROV operator has been identified. However, this may not be possible without extensive testing to ensure the ROV materials are compatible with the hydraulic fluid and hence may not be practicable.
Engineering	The subsea facilities have been installed and there is no practical way to re-engineer the system. The design has been checked and the system pressure tested. The ROV system is designed to prevent hydraulic fluid leaks. The hoses and fittings are all rated for the operating pressures.
Isolation	Shut down of (umbilical) chemical and hydraulic pumps at the onshore gas plant. In the event of major equipment or ROV hydraulic hose failure, isolations will prevent continued loss of hydraulic fluid being fed from the pumps and supply system.
Administrative	A 500-m petroleum safety exclusion zone exists around Longtom-3 and Longtom 4 to help prevent interference. The ROV will be subject to pre-dive checks to determine the status and readiness of commencing the dive, this will check for leaks. The ROV is subject to regular maintenance and inspections in accordance with the PMS.
Protective	Not applicable.
Demonstration of Acceptability	
The loss of containment of hydraulic fluid, MEG and methanol from the umbilical would not lead to a significant risk due to the localised nature of release and the rapid dilution of chemicals. The chemicals are category ‘D’ or ‘E’ OCNS chemicals, which are considered to have a low environmental impact. Hydraulic fluid, MEG and methanol are standard chemicals used in the control of subsea facilities and to control hydrates. It is common practice to inject them into subsea facilities and other operators in Bass Strait use similar products in this same manner. HW525 will be progressively replaced with Transaqua HT2. The ROV will be inspected and maintained routinely to ensure no discharges of hydraulic fluids. The relatively small amount of hydraulic fluid that would be lost in the event of hose or equipment damage will have a minimal impact to the marine environment. Once the ROV operator has been identified, it is proposed that the ROV fluid is reviewed and approved in accordance with the SGHE Chemical Selection Process.All legislative and other requirements have been met and the activity is consistent with SGHE policy and meets relevant management standards and procedures. ROV campaigns are regularly conducted in Bass Strait and to SGHE’s understanding there have been no community concerns regarding their operation to date. There have been no concerns raised regarding the accidental release of hydraulic fluid, MEG or methanol during stakeholder consultation. The supply of these chemicals to subsea facilities via an umbilical and the use of ROVs are both standard practices, the volumes of fluids used are not expected to cause any significant environmental issues, and given the minor consequences of any release, this risk is considered **acceptable**.	

Monitoring
The total volume of MEG and methanol used is monitored at the onshore gas plant. The operations of the ROV and its fluid levels will be checked daily during offshore campaigns, ROV fluid loss to the marine environment included as a line item on the daily report and will be recorded and included in the Annual Environmental Performance Report.

6.5.3 Loss of containment - marine diesel fuel (vessel collision)

Offshore vessel activity has the potential to result in a spill of marine diesel oil (MDO) if there is a major equipment failure or accident offshore. Vessels using HFO or IFO will not be utilised. No refuelling will take place during IMR activities and the worst case spill is assumed to be a typical tank volume.

6.5.3.1 Description of Environmental Impacts

General Impacts

The following information regarding the impacts of an MDO spill on the marine environment is sourced from APASA.

In many circumstances a spill of a similar quantity of MDO can be of greater environmental consequence than a spill of a similar quantity of light condensates.

MDOs usually have a very narrow boiling point range unless doctored with heavy fuel oil which in the trade is called ‘dirty diesel’. Most commercial MDOs supplied to offshore vessels are a kept within a tight technical specification and most operators refrain from using dirty diesel in the offshore industry.

Diesel fuel oils are dominated by n-alkane hydrocarbons that give diesel its unique compression ignition characteristics and usually consist of carbon chain C11-C28 but may vary depending upon specifications (e.g., winter vs. summer grades). Many MDOs can contain approximately 3-7% by volume of hydrocarbons that are classified as ‘persistent’ under IOPC Fund definition (i.e., greater than 5% boiling above 370°C). It is common for the residues of diesel spills after weathering to contain n-alkanes, iso-alkanes and naphthenic hydrocarbons. Minor quantities of PAHs will be present.

When spilt at sea, MDOs will spread and thin out quickly and more than half of the oil volume can be lost by evaporation within 12 hours depending upon sea temperature and winds. MDOs also have low viscosities and can result in hydrocarbons becoming physically dispersed as fine droplets into the water column when winds exceed 10 knots. Droplets of diesel oil that are naturally or chemically dispersed will be sub-surface and will behave quite differently to surface oil. Diesel droplets will now move 100% with the currents under water but on the surface are affected by both wind and currents. Natural dispersion of MDOs will reduce the hydrocarbons available to evaporate into the air.

Although evaporation reduces the level of hydrocarbons on the water surface, it increases the level of hydrocarbons able to be inhaled. This increased hydrocarbon vapour exposure can affect any air breathing animal including whales, dolphins, seals and turtles.

The different MDO product compositions, together with different environmental conditions during marine spills (sea temperature, wind and sea states) can vary the quantities of hydrocarbons lost to the atmosphere due to evaporation (but generally ranges between 40-65%). Dispersion into the sea by the action of wind and waves can result in 25 to 50% of the loss of hydrocarbons from surface slicks and dissolution (solubility of hydrocarbons) can account for 1-10% loss from the surface.

The environmental effects of MDOs spills are not as visually obvious as those of heavier fuel oils or crude oils. MDOs are considered to have a higher aquatic toxicity in comparison to many other crude oils and condensates due to the types of hydrocarbons present and that dispersed droplets of diesel can be more bio-available to marine organisms. MDOs have a high potential to bio-accumulate in organisms and have high water solubility along with a higher potential to naturally entrain into the water column than HFOs.

Due to their higher solubility and ease of entrainment/dispersion into the water column, MDO spills can have a greater ecological impact in comparison to other floating oil slicks. MDOs are also known to taint seafood. According to the International Maritime Organisation (IMO) (ESPH 16/6/1 September 2010), diesel oil has a GESAMP (Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection) rating of 3 for acute toxicity (damage to living organisms) and 4 for bioaccumulation/tainting (4 = high potential to bioaccumulate, 5 is the highest).

Diesel oil in the water column can adhere to fine-grained suspended sediments that can settle out and result in oiled sediments being deposited on the seabed. MDO spills that reach shorelines are usually still mobile residues and will penetrate shoreline sediments due to the low viscosity of the oil and have direct consequences on in-faunal organisms.

The impacts of hydrocarbons on marine mammals and other marine species are discussed in Section 6.5.4.1.

Diesel Spill Modelling

SGHE commissioned RPS to conduct hydrocarbon spill modelling for the following scenario:

Vessel collision incident – a release of 80 m^3 of MDO (80,000 L/503 bbls) from a typical fuel tank over 6 hours and tracked until it reaches a minimum oil thickness threshold of 0.0001 mm) and 0.01 mm.

- It is unlikely that more than one tank would be ruptured in a vessel collision given the typical safety features of the vessels (e.g., double hulls and internal fuel tank configurations) and the fact that the vessels will be within the Bass Strait ATBA and the Longtom-3 and 4 safety zones when conducting the majority of the petroleum activity.
- SGHE has investigated the typical storage volumes and tank configurations of various offshore support vessel companies (e.g., Bass Trek, Silver Star, Bhagwan Dryden, Harvest Shine, Seven Eagle) (see Table 2-10) and concluded that 80 m^3 would represent the contents of a typical fuel tank. In reality this volume of diesel is unlikely to be lost as the tanks can be managed and product pumped from one to another. Additionally, in the event of a tank failure, water will tend to flow in while diesel will flow out until an equilibrium is

achieved (i.e., if the hole is half way up the tank then only half the contents would likely be lost). In recognition that larger quantities may occur in the tanks of larger vessels that may be involved in repair campaigns (such as the Seven Eagle) additional Adios modelling and review of similar EPs has also been conducted to assess the potential impacts, see Figure 6-3.

- AMOSC has stated that a spill of 80 m^3 of MDO is highly unlikely, and that spills are more likely going to be related to refuelling rather than collisions. A loss of containment during refuelling is considered to be less than 8 m^3, see below.

Other scenarios considered, but discounted from diesel modelling, included:

- Refuelling incident – no offshore refuelling will take place at Longtom.
- Catastrophic vessel collision incident – a large release of about 1,000 m^3 of MDO (1 million L/6,289 bbls). This was not considered credible based on;
  - The location of the Longtom wells within the Bass Strait ATBA
  - The design and configuration of typical AHTS vessels.
  - AMOSC advice to SGHE that spills of this size should not be considered credible given the low speed and nature of the work undertaken by the vessels.

Table 6-21: Summary of parameters used in stochastic vessel diesel spill modelling

Parameter	Description
Number of spill simulations	100 simulations throughout the year
Hydrocarbon Type	MDO
Release Type	Surface release
Total spill volume	80 m^3 of MDO over 6 hours
Release Depth	Surface
Release duration	6 hours
Simulation length	30 days

MDO Characteristics

The MDO is a light-persistent fuel oil used in the maritime industry. It has a density of 829.1 kg/m3 (API of 37.6) and a low pour point (-14 ^oC). The low viscosity (4 cP) indicates that this oil will spread quickly when released and will form a thin to low thickness film on the sea surface, increasing the rate of evaporation. Approximately, 5% (by mass) of the oil is categorised as a group II oil (light-persistent) based on categorisation and classification derived from AMSA (2015) guidelines. The classification is based on the specific gravity of hydrocarbons in combination with relevant boiling point ranges.

Table 6-22 details the physical properties of MDO, while Table 6-23 presents the boiling point ranges of the MDO used in this study. Figure 6-1 shows weathering graphs for an 80 m3 release of MDO over 6 hours (tracked for 30 days) during three static wind conditions.

The prevailing weather conditions will influence the weathering and fate of the MDO. Under lower wind-speeds (5 knots), the MDO will remain on the surface longer, spread quicker, and in turn increase the evaporative process. Conversely, sustained stronger winds (>15 knots) will generate

breaking waves at the surface, causing a higher amount of MDO to be entrained into the water column and reducing the amount available to evaporate.

Table 6-22 Physical properties of the Marine Diesel Oil

Characteristic	Marine Diesel Oil
Density (kg/m^3)	829.1
API	37.6
Dynamic viscosity (cP)	4.0
Pour Point (ºC)	-14
Wax Content (%)	1
Hydrocarbon property category	Group II
Hydrocarbon property classification	Light – Persistent

Table 6-23 Boiling point ranges of the Marine Diesel Oil

Characteristic	Not Persistent			Persistent
	Volatile	Semi-volatile	Low volatility	Residual
Boiling point (ºC)	< 180	180 - 265	265 - 380	>380
Marine Diesel Oil	6.0	34.6	54.4	5.0

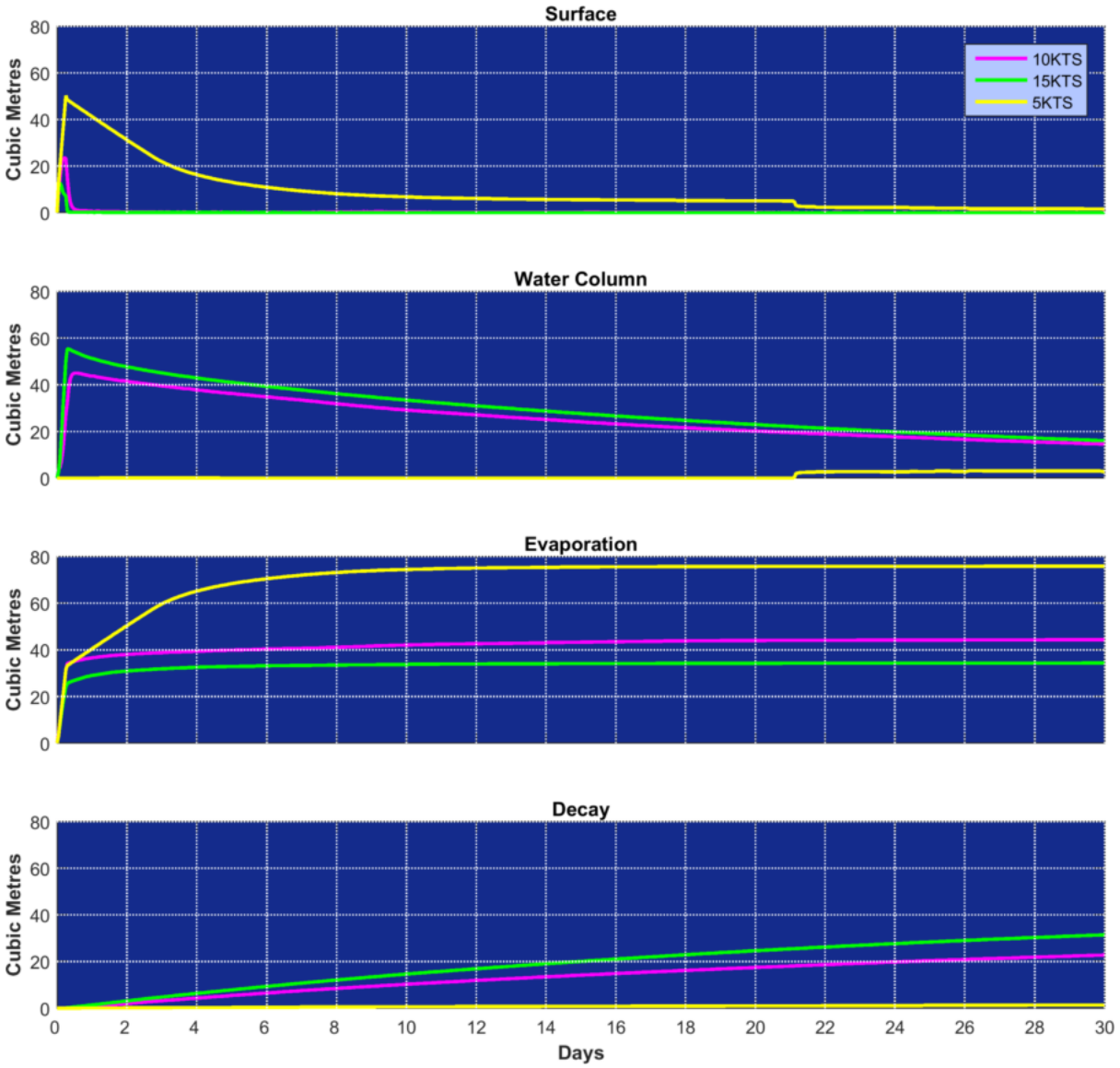


Figure 6-1 Predicted weathering and fates graph for Marine Diesel Oil

Model results

Key results from the stochastic modelling are:

- No shoreline contact was predicted for the scenario;
- The maximum distance from the release location predicted for low (> 0.5 g/m^2) and moderate surface (> 10 g/m^2) exposure was 52 km (east-northeast) and 6 km (east) respectively while no exposure at the high (>25 g/m^2) threshold was observed (Figure 6-2);
- Zones of low and moderate potential surface exposure were shown to extend predominantly south-southwest and east-northeast of the release location;
- The modelling demonstrated no time-averaged dissolved hydrocarbon exposure above 6ppb for any of the receptors assessed;
- Instantaneous dissolved hydrocarbon exposure > 6ppb was predicted to remain in offshore waters, extending approximately 30 km (east-northeast) from the release location.

- Potential time-averaged entrained hydrocarbon exposure > 100 ppb was demonstrated only in close proximity to the release location.
- Potential instantaneous entrained hydrocarbon exposure was predicted at low, moderate and high levels. Potential instantaneous low (>10 ppb) entrained hydrocarbon exposure was predicted for Victorian and southern NSW state waters and extending offshore to the East Gippsland AMP in Commonwealth waters.

Potential instantaneous moderate (>100 ppb) and high (>500 ppb) entrained hydrocarbon exposure was limited to Commonwealth waters in a band parallel with the East Gippsland coast.

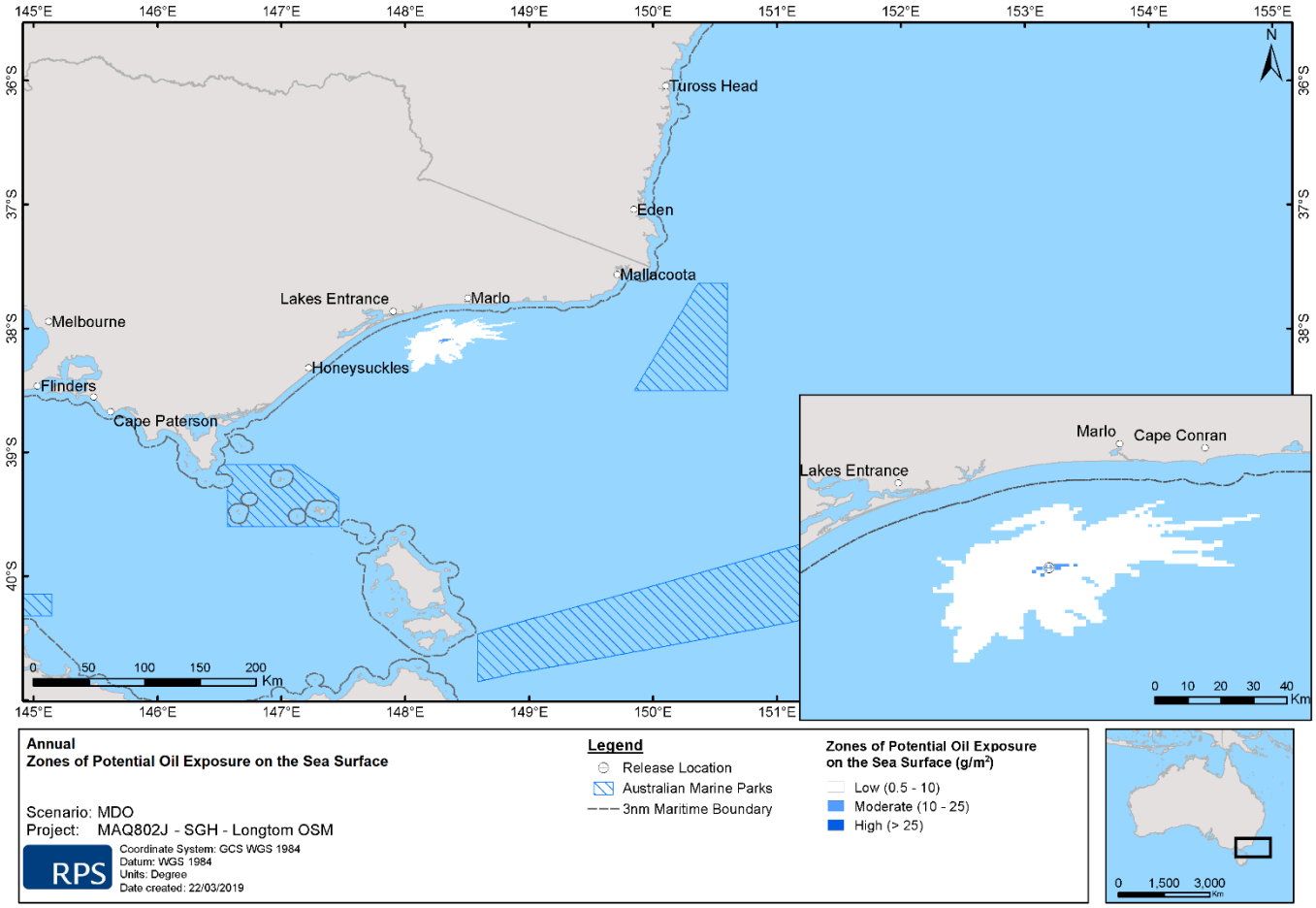


Figure 6-2 Zones of potential MDO exposure on the sea surface.

To assess the impact from potentially larger releases of diesel and consistent with other vessel related EPs ADIOS2 was utilised to assess oil budgets following the release. This shows, Figure 6-3, that under typical Bass Strait conditions releases of both 80m^3 and 220m^3 will tend to evaporate and disperse within 48hrs, leaving no remaining oil. Based on this and the stochastic modelling, no shoreline impact is therefore expected in the event of a larger (220m^3) tank volume being released and the modelling for the 80m^3 release as shown in Figure 6-2 is considered representative of the potential extent of an MDO spill.

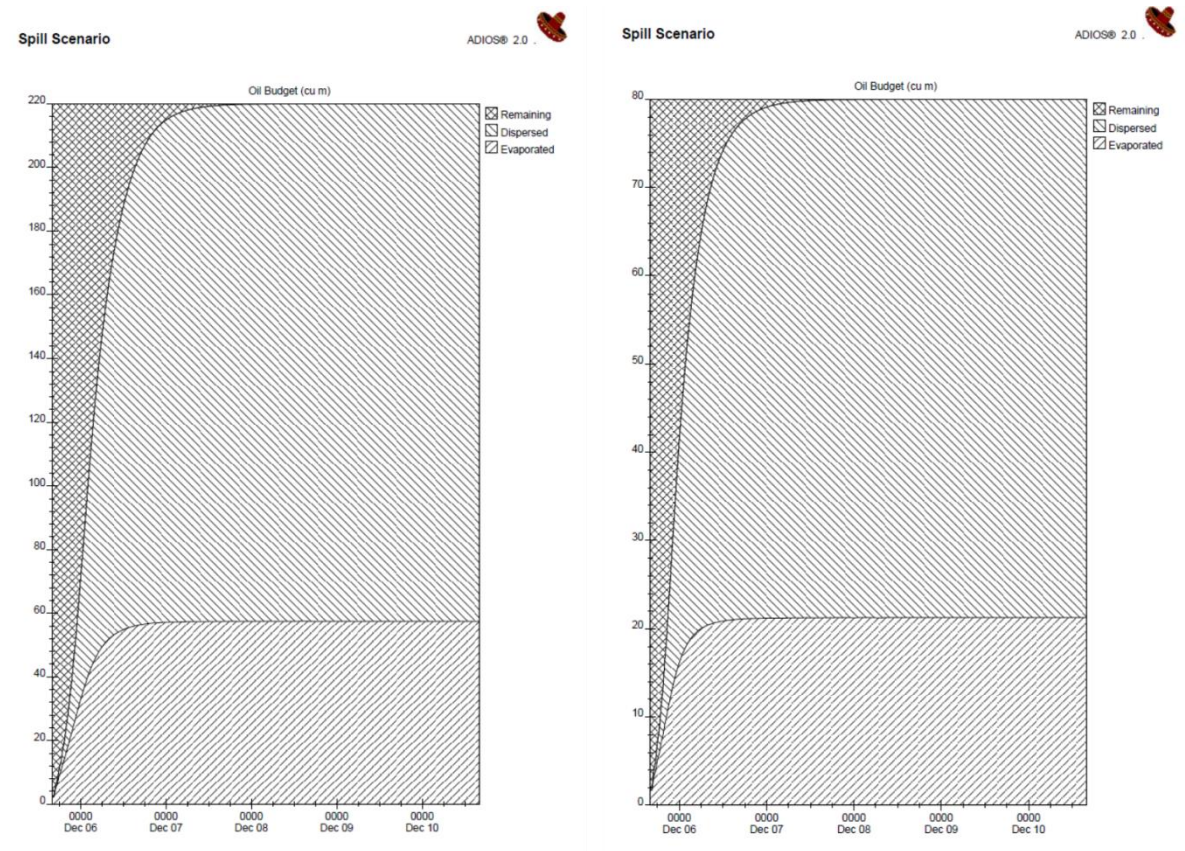


Figure 6-3 ADIOS Oil Budgets for marine diesel spills

In addition to the use of Adios, SGHE has examined the diesel spill modelling conducted by other operators in Bass Strait and their risk assessments as provided in the published EPs. Esso Australia modelled a 280m^3 MDO release at their Kipper subsea facility in an adjacent production licence (Esso Australia, 2020). This modelling predicted no shoreline contact at either the moderate 100 g/m^2 or low 10 g/m^2 thresholds and a maximum distance from release location of 17 km for surface exposure at the moderate 10 g/m^2 threshold. Due to rapid weathering MDO sea surface exposure was predicted for only 4 – 5 days after release. The risk ranking was assessed as Level 4, the lowest level.

Cooper Energy (now Amplitude Energy) modelled a 250m^3 MDO release at a location within the Sole field at a similar distance from the east Gippsland coast to the Longtom wells (Cooper Energy, 2018). The modelling predicted no shoreline contact at the ‘environmental

impact' threshold of 100 g/m^2 and surface hydrocarbon exposure at greater than the environmental impact threshold 10 g/m^2 within 38km of the release location. Due to the evaporative nature of MDO oil exposure was predicted to fall below visible levels within approximately 7 days. The risk was assessed as Low.

6.5.3.2 Risk Assessment

Table 6-24 outlines the risk assessment for MDO spills.

Table 6-24 MDO Spill risk assessment

Hazard duration	Temporary (duration of IMR activities).	
Extent of hazard	EMBA is relatively widespread, however it should be noted that the predicted impact for a single spill trajectory would be far smaller.	
Basis of Inherent Risk Assessment		
• The subsea facilities are located within the Bass Strait shipping ATBA and are not close to any shipping lane thus minimising interactions with third-party vessels. • A 500-m petroleum safety exclusion zone exists around Longtom-3 and Longtom 4 and vessel monitoring confirms the area is not heavily trafficked. • The Longtom facilities are located in approximately 57 m of water and 40 km offshore – hence running aground is not credible during Longtom activities. • Maintenance activities will be of short duration (approximately one week in every year). • Class certification and maintenance of vessel fuel tanks. • Vessels will maintain navigation watch 24 hours per day, bridge will be manned and petroleum activities only take place during appropriate weather windows.		
Inherent risk analysis and ranking		
Consequence	**Likelihood**	**Inherent risk**
Moderate (3)	Unlikely (D)	Moderate
Project specific environmental controls and checks that will take place	Prevention • Vessel design, class, certification and maintenance which will be confirmed for appropriateness during pre-mobilisation audit – effectiveness considered Very High. • Vessel manned by competent, trained and experienced marine crew with appropriate qualifications, which will be confirmed during pre-mobilisation audit – effectiveness considered High. • No refuelling at Longtom – effectiveness considered High. • Automatic Identification System (AIS) vessel data is used to identify prohibited vessel entry into the Petroleum Safety Zones. If vessel ownership is able to be determined SGHE attempts to contact the owner (or alternatively a representative organisation such as SETFIA) – effectiveness considered Moderate. Mitigation • SOPEP material is available on board and personnel are trained in its use – effectiveness considered Moderate. • Utilisation of the SOPEP, OPEP and ERP in the event of a spill to sea – effectiveness considered Moderate. • Source control e.g. pumping between tanks, ballasting and other vessel measures - effectiveness considered Moderate.		

Residual risk analysis and ranking		
Consequence	**Likelihood**	**Residual Risk**
Minor (2)	Rare (E)	Low

Demonstration of ALARP	
The key preventative control is that all vessels will be subject to a pre-mobilisation audit to confirm vessel acceptability, this will check vessel class, certification, that the systems and processes are in place and in use to prevent a diesel spill and the marine crew. In addition, there will be no offshore refuelling. Mitigative controls include the vessel having a SOPEP with crew trained in its use and the SGHE Oil Pollution Emergency Plan. These controls are considered sufficiently effective, robust and independent to ensure the residual risk is Low and ALARP. The following ALARP analysis also confirms that all reasonable risk treatment options have been considered to reduce the environmental impact of invasive marine species, and the risk is deemed to be **ALARP**. No further reasonable mitigation measures exist. A 'Low' residual risk ranking is **broadly acceptable** according to the SGHE definition of risk.	
Eliminate	Not applicable – offshore vessels are required.
Substitute	Not applicable – offshore vessels must be powered, electric powered or wind powered vessels are not credible.
Engineering	Vessels are equipped with sophisticated navigation aids and competent marine crew, allowing them to avoid collisions with other vessels. Fuel tanks are designed to contain fuel and minimise the risk of loss of containment Fuel can also be transferred between tanks in the event of a spill from one tank.
Isolation	Tanks can be isolated from each other.
Administrative	The Longtom wells are located within safety exclusion zones and most of the Longtom facilities are within the Bass Strait ATBA. These both limit the risk of other vessels being in the vicinity.
Protective	Not applicable.

Demonstration of Acceptability
The subsea facilities are located within the Bass Strait shipping ATBA and within a 500-m petroleum safety exclusion zone, thus minimising the likelihood of potential interaction with third-party vessels. Fishing, merchant vessel traffic and other oil and gas operations currently take place in Bass Strait that could also result in a diesel leak and these are all currently accepted by the community. All legislative and other requirements have been met and the activity is consistent with SGHE policy and meets relevant management standards and procedures. Concerns from relevant stakeholders have been addressed through the consultation process, any new relevant stakeholder objections, claims or issues will be considered in line with the ongoing consultation. The oil spill modelling has indicated that there is a low likelihood of the diesel reaching shore. Given that any IMR support vessels would be located approximately 40 km offshore, a vessel accident is considered unlikely to pose a significant threat to the near-shore or coastal environment. Hydrocarbons lost in the unlikely event of a spill would consist of light hydrocarbons (diesel) that are highly evaporative. Potential impacts are likely to be short-lived, therefore this risk is considered **acceptable**.

Monitoring
No ongoing monitoring is required. In the event of a spill monitoring will be undertaken as per the requirements set out in the OPEP and OSMP.

6.5.4 Loss of containment – reservoir hydrocarbons (subsea equipment damage)

The Worst Case Discharge Scenario (WCDS) from production of the Longtom gas field is an uncontrolled well release (blowout) open hole release from the potential future Longtom-5 well. The three Longtom wells access different compartments of the same reservoir and have very similar hydrocarbon characteristics, see Section 6.5.4.2. Longtom 5 was selected for the modelling, as the compartment of the reservoir planned to be intersected may still be at a high / un-depleted pressure and as such would generate the highest discharge rate. The only mechanism that has been identified that could lead to a full bore blowout from an operational well is if a large vessel drags its anchor across one of the Longtom trees, ripping it off and the surface controlled subsea safety valve (SCSSV) fails to close. Given the location of the Longtom wells within the Bass Strait ATBA and the distance from a shipping lane anchor drag is an extremely unlikely event. The SCSSV has been designed and installed to prevent a full bore release in this instance and is subject to regular testing.

Blowouts generally occur during drilling or workover operations, rather than during production operations. The likelihood of a blowout occurring during production is significantly less likely than the risk of blowout during drilling. Data from SINTEF indicates that less than 5% of blowouts in the North Sea occur during operations and that the frequency of a blowout or release from an operational well (excluding external causes) is 5.5×10^{-6}/yr (OGP, 2010). External causes such as fishing impact are not a credible cause of failure of the Longtom well due to the design's snag resistance exceeding the capacity of the fishing vessels in the area.

In the event of a blowout, the loss of containment could continue until the well could be killed or a relief well could be drilled to plug the damaged well. Whilst a well kill may be possible from onshore, an offshore relief well could take several months to be completed. The use of a capping stack is not considered credible based on the water depth and that the blowout will be predominantly gas. However, this option would be re-assessed in the event of a subsea failure and as capping technology changes.

A pipeline failure or rupture could also lead to a loss of containment, however in this instance the wells would be shut-in and only the contents of the pipeline would be lost. A study into the total liquids inventory in the Longtom-Patricia Baleen pipeline concluded that volume of a spill from the pipeline would be in the range of 485-503 bbls, depending on production rates and times required for detection and to isolate the pipeline. During the non-production phase with the wells and HIPPs valve closed the loss of containment would be orders of magnitude less. The pipeline contents are significantly smaller than the loss that could result from a blowout and as the connection between the Longtom pipeline and Patricia Baleen pipeline is a similar distance offshore to the Longtom 5 well, separate oil spill modelling has not been considered necessary.

6.5.4.1 Environmental Impacts

A subsea release (Figure 6-4) would form a jet consisting of high velocity fluid confined to a narrow cone. The initial momentum of the jet phase would dissipate rapidly within about 1 m from the release point. By this time distinct droplets and bubbles form and the hydrocarbons

start to rise as a plume—a collection of bubbles and droplets act in concert to drag significant volumes of the adjacent seawater upwards in the water column. The plume will reach the surface in a matter of minutes driven by the buoyancy of the oil droplets. The resulting surface slick will spread into a thin film due to the radial outflow of entrained water near the surface. Gas and volatile hydrocarbon components will then be lost to the atmosphere through evaporation.

Cross-flowing currents can complicate the above process in several ways. First, the plume will tend to bend over, resulting in a horizontal offset in the surfaced oil slick. Second, the rising bubbles or droplets can be sieved downstream according to size, with the largest bubbles rising on the upstream side of the plume and the smallest rising on the downstream side. If the cross-flow current is strong enough, the sieving process will disrupt the establishment of the plume, in which case the oil or bubbles will rise individually. Both these effects of cross-currents will influence how long the oil/gas takes to rise to the surface and where it surfaces. The above processes act to reduce concentrations in the water column. The hydrocarbon gasses (mainly methane) may dissolve into the water column to saturation level, however, this would rapidly degrade to carbon dioxide and water through microbial activity.

The potential impacts associated the uncontrolled release of hydrocarbons to the marine environment (sea surface and water column) include physiological impacts to marine fauna species through smothering, ingestion and inhalation, as well as impacts on marine and coastal habitats.

Oil spill risk assessment modelling was undertaken to assess the impact and risk to environmentally sensitive receptors identified in Section 4.

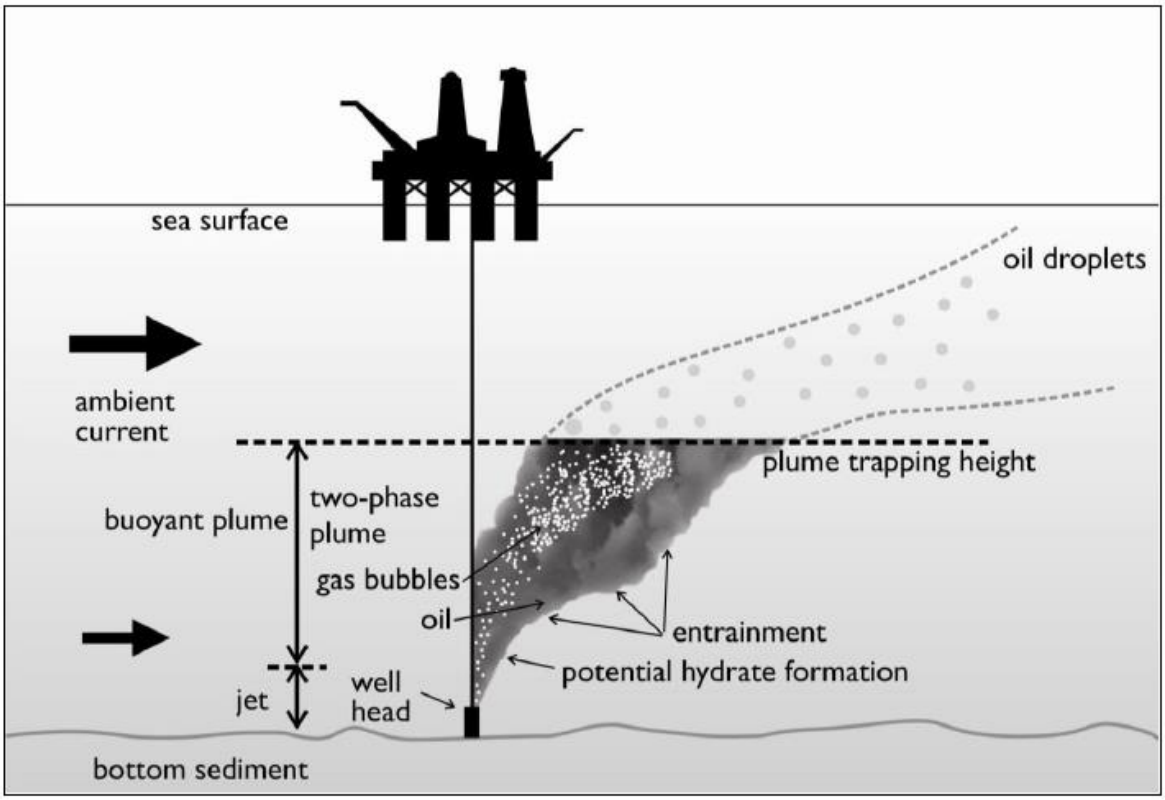


Figure 6-4 Illustration of how oil behaves when spilt to the marine environment

6.5.4.2 Gas Condensate Characteristics

Longtom Condensate was used for the loss of well control scenario. This condensate has an API of 51.2, density of 777.4 kg/m3 (at 15ºC) with low viscosity (1.1 cP) (refer to Table 6-25), classifying it as a Group I oil according to the International Tankers Owners Pollution Federation (ITOPF, 2014) and USEPA/USCG classifications. The Longtom Condensate comprises a significant portion of volatiles and semi to low volatiles (75.8% total) with little residual components (3%) (refer to Table 6-26). This means that the Longtom Condensate will evaporate readily when on the water surface, with limited persistent components to remain on the water surface over time.

Figure 6-5 displays the weathering of the Longtom Condensate simulated under three static wind conditions (5, 10 and 15 knots). Results are based on a 900 bbl subsea release of Longtom Condensate over 24 hours, tracked for 30 days. Rapid evaporation occurs during the first 24 hours of the simulation with approximately 75% of the total volume lost to the atmosphere by end of day-1. The Longtom Condensate is predicted to readily entrain into the water column under wind speeds greater than 10 knots.

Table 6-25 Physical properties of Longtom Condensate

Characteristic	Longtom Condensate
Density (kg/m^3)	777.4
API	51.2
Dynamic viscosity (cP)	1.1

Characteristic	Longtom Condensate
Pour Point (ºC)	-9
Wax Content (%)	
Hydrocarbon property category	Group I
Hydrocarbon property classification	Non-persistent oil

Table 6-26 Boiling point ranges of the Longtom Condensate

Characteristic	Not Persistent			Persistent
	Volatile	Semi-volatile	Low volatility	Residual
Boiling point (ºC)	< 180	180 - 265	265 - 380	>380
Condensate	61.5	14.3	21.2	3.0

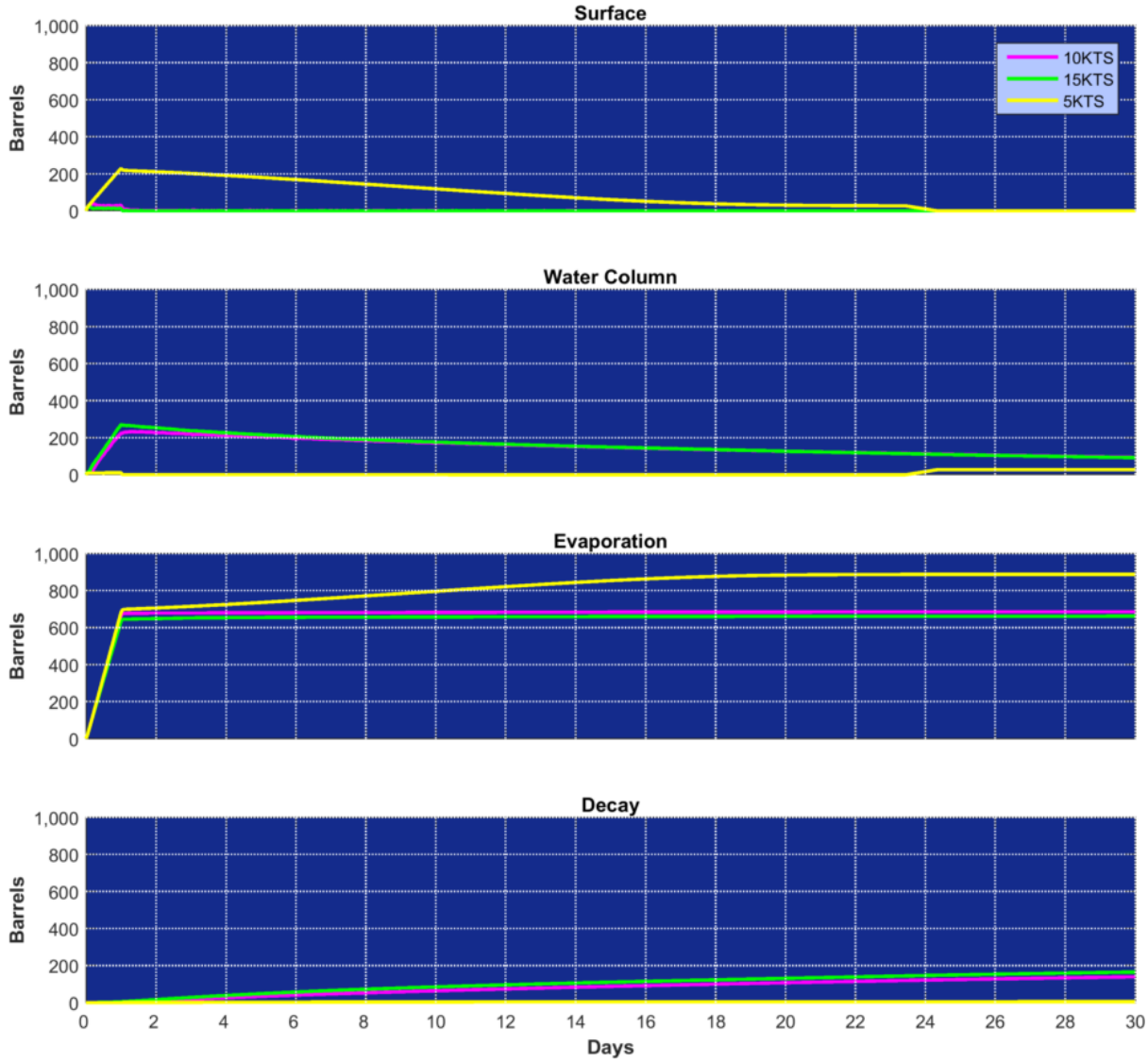


Figure 6-5 Predicted weathering and fates graph for a single spill trajectory

6.5.4.3 Sea surface, Shoreline and In-Water Thresholds

Oil spilt to the marine environment partitions into three distinct phases: surface, entrained and dissolved. Each of these phases behave independently and impact marine biota differently. Concentration thresholds for each phase have been defined (Table 6-27) based on NOPSEMA Environmental Bulletin A652993 Oil Spill Modelling (2019) and recent scientific literature to assess the impact from each oil phase and to derive the environment that may be affected (EMBA).

Table 6-27 Concentration thresholds used in the modelling and for EMBA

Exposure Zone	Threshold	Justification
Surface		
Low exposure (1 g/m^2–10 g/m^2)	0.5 g/m^2	The modelled 0.5 g/m^2 threshold represents the practical limit of observing hydrocarbon sheens (an average thickness of approximately 0.5 µm referred to as visible oil) in the marine environment. Although for the modelling study each trajectory was tracked to this minimum threshold, this threshold is considered below levels which would cause environmental harm and is more indicative of the areas perceived to be affected due to its visibility on the sea-surface. The low exposure zone at or above a concentration of 1 g/m^2 approximates range of socio-economic effects and establishes the planning area for scientific monitoring (NOPSEMA, 2019). This low exposure zone represents the area contacted by the spill and defines the conservative outer boundary of the area of influence from a hydrocarbon spill.
Moderate exposure (10 g/m^2–25 g/m^2)	10 g/m^2	Ecological impact has been estimated to occur at 10 g/m^2 as this level of oiling has been observed to mortally impact birds and other wildlife associated with the water surface (French *et al*. 1996; French 2000 cited in RPS, 2019). The 10 g/m^2 threshold has been selected to define the zone of potential moderate exposure and to define the threshold for actionable sea surface oil in response planning.
High exposure (> 25 g/m^2)	25 g/m^2	Studies have indicated that a concentration of surface oil of 25 g/m^2 or greater would be harmful for the majority of birds that contact the hydrocarbon at this concentration (Koops *et al*. 2004; Scholten *et al*. 1996 cited in RPS, 2019). Exposure at or above this threshold is used to define the zone of potential high exposure (noting that a high exposure threshold of 50 g/m^2 is described in NOPSEMA, 2019).
Shoreline Contact		
Low exposure (10 g/m^2–100 g/m^2)	10 g/m^2	A threshold of 10 g/m^2 has been defined as the zone of potential low exposure. This exposure zone represents the area visibly contacted by the spill and predicts potential for some socio-economic impact (NOPSEMA, 2019). This low exposure zone defines the outer boundary of the area of influence from a hydrocarbon spill.
Moderate exposure (100 g/m^2– 1,000 g/m^2)	100 g/m^2	French *et al*. (1996 cited in RPS, 2019) and French-McCay (2009 cited in RPS, 2019) have defined a hydrocarbon exposure threshold of 100 g/m^2 for shorebirds and wildlife (furbearing aquatic mammals and marine reptiles) on or along the shore, which is based on studies for sub-lethal and lethal impacts. The 100 g/m^2 threshold has been used in previous environmental risk assessment studies (French *et al*. 2011; French-McCay 2004; French-McCay 2003; French-McCay *et al*. 2012; NOAA 2013 cited in RPS, 2019). This threshold is also recommended in AMSA's foreshore assessment guide as the acceptable minimum thickness that does not inhibit the potential for recovery and is best remediated by natural coastal processes alone (AMSA 2007 cited in RPS, 2019). Therefore 100 g/m^2 defines the zone of potential moderate shoreline contact. It equates to approximately 100 mL of oil per m^2 of shoreline contacted and loading at this concentration predicts area likely to require clean-up effort for response planning (NOPSEMA, 2019).

High exposure (> 1,000 g/m^2)	1,000 g/m^2	Observations by Lin & Mendelssohn (1996 cited in RPS, 2019), demonstrated that loadings of more than 1,000 g/m^2 of hydrocarbon during the growing season would be required to impact marsh plants significantly. Similar thresholds have been found in studies assessing hydrocarbon impacts on mangroves (Grant, Clarke & Allaway 1993; Suprayogi & Murray 1999 cited in RPS, 2019). Hence, 1,000 g/m^2 has been selected to define the zone of potential high shoreline contact. It equates to approximately 1 L of hydrocarbon per m^2 of shoreline contacted and loading at this concentration predicts area likely to require intensive clean-up effort (NOPSEMA, 2019).
Entrained		
Low exposure (10 parts per billion (ppb)–100 ppb)(Note 2)	10 ppb instantaneous; and 10 ppb averaged over 48 hours .(Note 1)	The 10 ppb threshold corresponds generally with the lowest trigger levels for chronic exposure for entrained hydrocarbons in the ANZECC & ARMCANZ (2000) water quality guidelines and, as noted in the NOPSEMA bulletin (2019), establishes the planning area for scientific monitoring based on potential for exceedance of water quality triggers. French-McKay (2024) notes that "near the outer bounds of an EMBA, defined by an entrained oil threshold of 10 ppb (as recommended by NOPSEMA 2019), there is a very low probability of concentrations exceeding 10 ppb, the exposure durations are typically minutes to a few hours, and the oil is highly weathered (and so less toxic). Thus, a more realistic threshold would be appropriate, and it need not be protective of every single individual organism that might possibly encounter one droplet of entrained oil, regardless of likelihood or its ability to cause any adverse effect." Further, French-McKay (2024) concludes that "if entrained oil droplets is to be evaluated as a risk or to define the Environment that May be Affected (EMBA), 1 ppm (1,000 ppb) would be sufficiently conservative for oil droplets of all oil types and all weathering states, with 3 ppm (3,000 ppb) an appropriate threshold for crude oils. For light distillates and condensates, 1 ppm (1000 ppb) is an appropriate threshold." This modelled low exposure zone represents the area contacted by the spill and conservatively defines the outer boundary of the area of influence from a hydrocarbon spill.
Moderate exposure (100 ppb–500 ppb)	100 ppb instantaneous; and 100 ppb averaged over 48 hours .(Note 1)	French-McKay (2024) states "in relatively fresh oil, some of the hydrocarbons in entrained oil droplets are soluble/semi-soluble that may later dissolve and become bioavailable. However, as oil weathers, these potentially toxic components diminish to the point where the total hydrocarbon in entrained droplets is effectively non-toxic." As noted above French-McKay (2024) recommends a threshold of 1000 ppb for light distillates and condensate. The 100 ppb threshold is considered conservative in terms of potential for toxic effects. The 100 ppb threshold has been selected to define the moderate exposure zone.
High exposure (> 500 ppb)	500 ppb instantaneous; and 500 ppb averaged over 48 hours.(Note 1)	As noted above French-McKay (2024) recommends a threshold of 1000 ppb for light distillates and condensate. The 500 ppb threshold is considered a conservative high exposure level. The 500 ppb threshold has been selected to define the high exposure zone.
Dissolved Aromatic Hydrocarbons		
Low exposure (6 ppb–50 ppb)	6 ppb instantaneous; and 6 ppb averaged over 48 hours.(Note 1)	Studies indicate that the dissolved aromatic compounds are commonly the largest contributor to the toxicity of solutions generated by mixing oil into water (Di Toro *et al*., 2007 cited in RPS, 2019). The threshold value for species toxicity in the water column is based on global data from French *et al*. (1999 cited in RPS, 2019) and French McCay (2003, 2002 cited in RPS, 2019), which showed that species sensitivity (fish and invertebrates) to dissolved aromatics exposure > 4 days (96-hour LC50) under different environmental conditions varied from 6 ppb–400 ppb, with an average of 50 ppb. This range covered 95% of aquatic organisms tested, which included species during sensitive life stages (eggs and larvae).. French-McKay (2024) states that for dissolved aromatic hydrocarbons, the low 10 ppb threshold (described in NOPSEMA, 2019) is "conservatively protective of aquatic biota considering acute effects from short-term exposures that could occur

		following oil spills in ocean waters". This low exposure zone represents the area contacted by the spill and conservatively defines the outer boundary of the area of influence from a hydrocarbon spill.
Moderate exposure (50 ppb–400 ppb)	50 ppb instantaneous; and 50 ppb averaged over 48 hours.(Note 1)	French-McCay (2002 cited in RPS, 2019) indicates that an average 96-hour LC50 of 50 ppb could serve as an acute lethal threshold to 5% of biota. The 50 ppb threshold approximates potential toxic effects, particularly sublethal effects to sensitive species (NOPSEMA, 2019) and has been selected to define the moderate exposure zone.
High exposure (> 400 ppb)	400 ppb instantaneous; and 400 ppb averaged over 48 hours.(Note 1)	French-McCay (2002 cited in RPS, 2019) indicates that an average 96-hour LC50 of 400 ppb could serve as an acute lethal threshold to 50% of biota. The 400 ppb threshold approximates toxic effects including lethal effects to sensitive species (NOPSEMA, 2019) and has been selected to define the high exposure zone.

Notes: [1] Exposure times of over 48 hours would provide a better comparison with ecotoxicology tests, which use exposure times of up to 10 days to determine and assess actual impacts rather than instantaneous values (as described in NOPSEMA, 2019).

[2] Negri *et al*., 2024 provides an independent review of French-McCay, 2024 and agreed with the findings with respect to the entrained oil threshold.

6.5.4.4 Oil Spill modelling

Overview

SGHE commissioned oil spill modelling for a worst-case blowout scenario (RPS, 2019). A five-year current dataset (2008–2012) that includes the combined influence of three-dimensional ocean and tidal currents was developed. The currents, spatial winds and then detailed hydrocarbon properties were used as inputs in the oil spill model to simulate the drift, spread, weathering and fate of the spilled hydrocarbons.

As spills can occur during any set of wind and current conditions, a total of 100 spill trajectories per hypothetical spill scenario were initiated at random times within a 5-year period (2008–2012) to enable a robust statistical analysis. Each simulation was configured with the same spill information (i.e. spill volume, duration and oil type). This approach ensures that the predicted transport and weathering of an oil slick is subject to a wide range of current and wind conditions. Model parameters used and their justification are summarised in Table 6-28.

During each spill trajectory, the model records the grid cells exposed to hydrocarbons, as well as the time elapsed. Once all the spill trajectories have been run, the model then combines the results from the individual simulations to determine the following:

- Maximum exposure (or load) observed on the sea surface;
- Minimum time before sea surface exposure;
- Probability of contact to any shorelines;
- Probability of contact to individual sections of shorelines;
- Maximum volume of oil that may contact shorelines from a single simulation;
- Maximum load that an individual shoreline may experience;
- Maximum exposure from entrained hydrocarbons observed in the water column; and

- Maximum exposure from dissolved aromatic hydrocarbons observed in the water column.

The stochastic model output does not represent the extent of any one spill trajectory (which would be significantly smaller) but rather provides a summary of all trajectories run for the scenarios.

Table 6-28 Summary of parameters used in blowout modelling

Parameter	Description
Number of spill simulations	100 simulations throughout the year
Hydrocarbon Type	Longtom condensate
Release Type	Subsurface release from one of the Longtom wells
Total spill volume	900 bbl/day (143 m^3/day) for a period of 90 days
Spill volume justification	This scenario was based on a calculated blowout rate from the open hole of Longtom 5 during drilling. The calculated 90 MMscfd of gas assumed open / unrestricted hole size (5 ½") and maximum reservoir pressures, containing 10 bbl of condensate per MMscf of gas, which is the high-side condensate-gas-ratio of the Longtom gas. The Longtom-5 well will access the same geological reservoir and as such the condensate composition will be the same. In the case of ongoing production operations, the Longtom 3 and 4 wells have been progressively depressured and their blowout rates would be lower than the worst case drilling scenario that has been modelled. It is also assumed that the initial rate continues for the duration of the blowout and in reality the Longtom-3 and Longtom-4 wells may be unable to continue flowing at this rate for the duration of the blowout.
Release Depth	56 m below the sea surface.
Release Depth justification	Depth of water at field
Blowout release duration	90 days.
Release duration justification	The blowout duration of 90 days that has been used in the oil spill modelling is based on the estimated time it would take to source a rig and kill the well through the use of directional drilling. This assumption has been previously tested by examining the extent of the remaining oil after 90, 70 and 50 days. The plots showed that the extent of the oil spill effectively stabilised as there was little change between the 50 and 70 day blowout stochastic modelling and even less change between the 70 and 90 day case. All models utilised a conservative 3% decay rate for the condensate.
Simulation length	105 days.

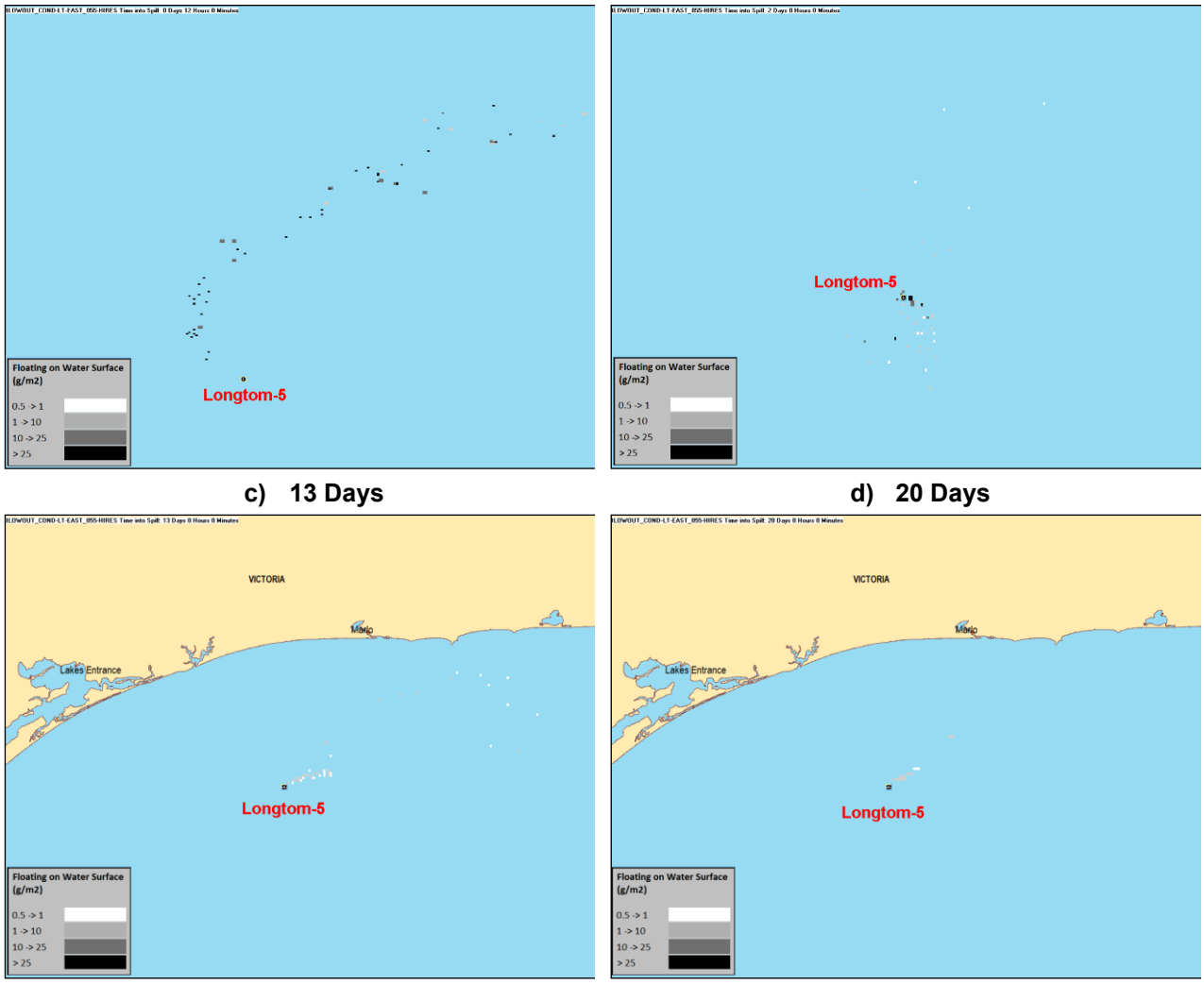
Summary of Modelling Results

Deterministic Simulation Results

Figure 6-6 shows snapshots of spatial distribution of the surface oil concentrations from some previous deterministic modelling conducted at Longtom. The deterministic modelling demonstrates that the slick generally covers a small area, ambient currents are high and the

area is extremely well flushed. Impact at any single point is intermittent with elevated concentrations lasting a short duration. With this in mind the stochastic simulation must be interpreted with caution.

a) 0.5 Day (12 Hours) **b) 2 Days**



c) 13 Days **d) 20 Days**

Figure 6-6 Deterministic plot of surface oil from a well blowout

Stochastic

Key results from the stochastic modelling studies for a worst-case loss of well control showed:

- Potential low sea surface exposure zone was predicted to remain within the Gippsland Basin with a low likelihood (<3%) of moderate exposure level (>10 g/m^2) predicted for surface waters adjacent to the release location (Figure 6-7);
- No sea surface exposure at the high threshold (>25 g/m^2) was predicted;
- The overall probability of shoreline contact (Figure 6-8) was 17% with hydrocarbons predicted to reach the shoreline of Croajingolong (West) a minimum of 6 days after the release;
- The shoreline of Croajingolong (West), Lake Tyers Beach and Lakes Entrance demonstrated up to 10% probability of low shoreline contact (>10 g/m^2) while the greatest length of shoreline impacted by a single spill trajectory was 18km, and 9km on average;
- The modelling demonstrated no time-averaged dissolved hydrocarbon exposure above 6ppb for any of the receptors assessed, however, instantaneous dissolved hydrocarbon exposure above 6ppb occurred for receptors situated within the Gippsland Basin and in waters nearshore of Mallacoota and Eden and up to 10 km south of Tuross Head;
- Low (>10ppb) time-averaged exposure zones for entrained hydrocarbons stretched to waters between Flinders Island and the mainland and crossed the NSW border to reach the nearshore waters of Ulladulla.
- Time average exposure to moderate levels of entrained hydrocarbons (>100ppb) was restricted to the immediate vicinity of the release.
- Potential instantaneous low (>10ppb) entrained hydrocarbon exposure was predicted for Victorian, Tasmanian and NSW state waters and extending significantly offshore in Commonwealth waters.
- Potential instantaneous moderate (>100ppb) entrained hydrocarbon exposure was predicted for Victorian and NSW state waters and extended from around Lakes Entrance to Eden.

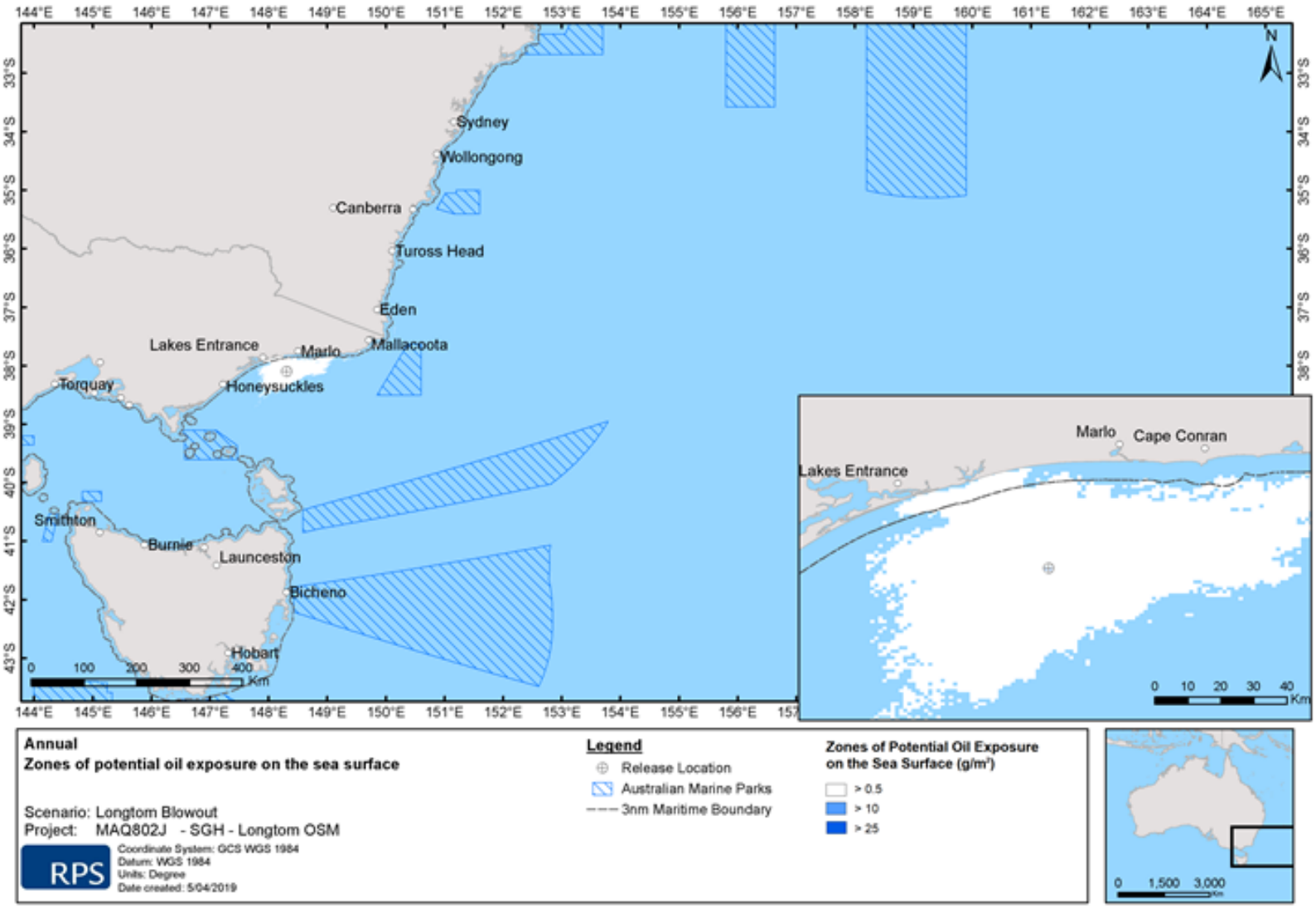


Figure 6-7 Zones of potential oil exposure on the sea surface for a well blowout.

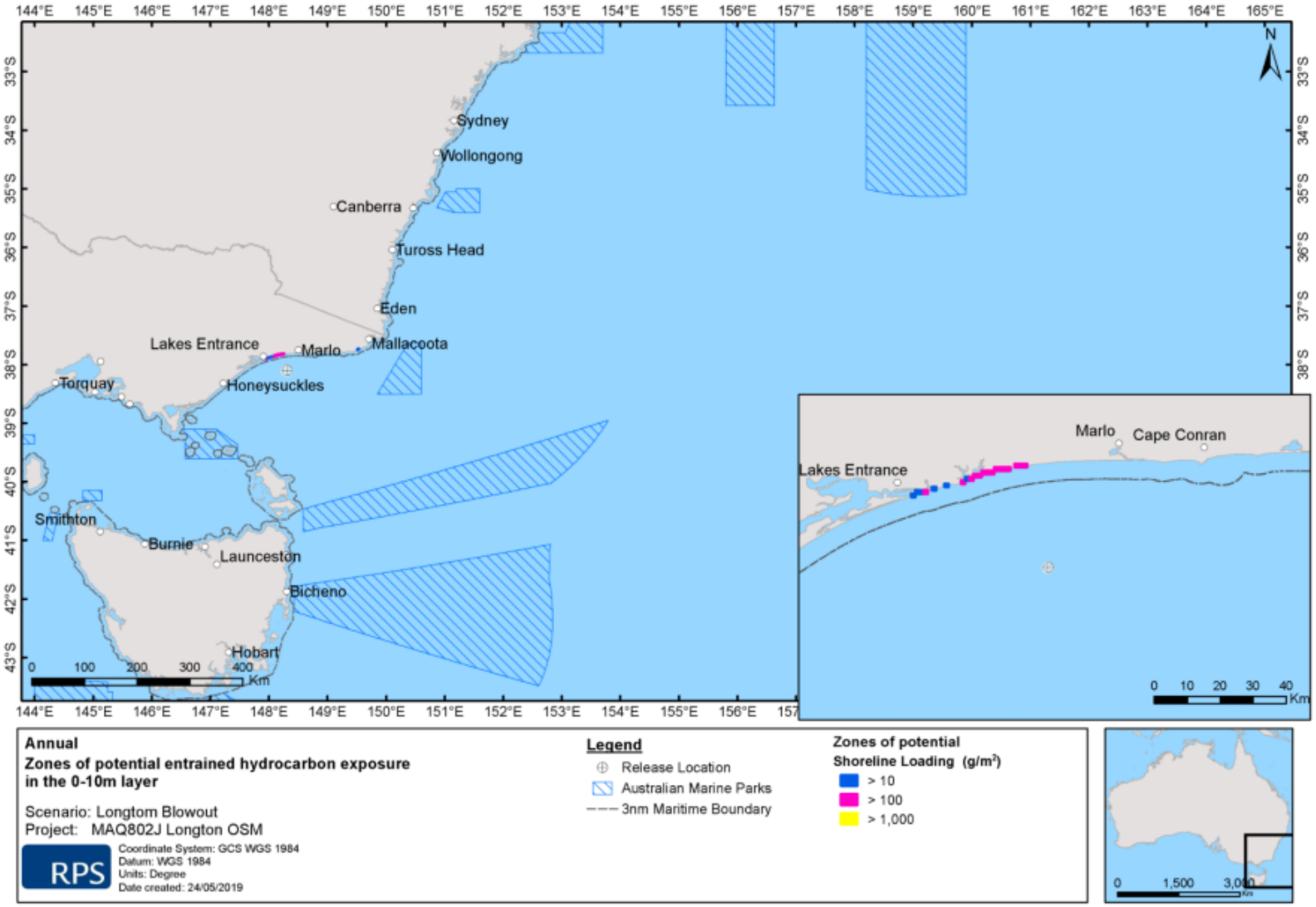


Figure 6-8 Zones of potential shoreline loading for a well blowout.

6.5.4.5 General - Impacts to Biological Species

Seabirds

Seabirds spend a considerable amount of time near the surface of the sea and are therefore at a higher risk of being in contact with a spill.

Seabirds that become coated in oil may suffer from hypothermia, which can result in death, as oil reduces the insulation properties of feathers. Embryo chicks in eggs may be prevented from receiving oxygen if their shells become coated with oil. It has been estimated that as little as four microlitres of petroleum contaminating a fertile egg can cause the embryo to die (AMSA, 2012).

Seabirds may also ingest the oil while feeding or preening, since several species of fish area able to survive beneath floating oil, resulting in toxic effects.

Mammals

Marine mammals are vulnerable to oil spills due to their amphibious habits and their dependence on air. Potential physiological effects of oil on marine mammals may include (AMSA, 2012):

- Hypothermia due to conductance changes in skin, resulting in metabolic shock (expected to be more problematic for non-cetaceans in colder waters).
- Toxic effects and secondary organ dysfunction due to ingestion of oil.
- Congested lungs.
- Damaged airways.
- Interstitial emphysema due to inhalation of oil droplets and vapour.
- Gastrointestinal ulceration and haemorrhaging due to ingestion of oil during grooming and feeding.
- Eye and skin lesions from continuous exposure to oil.
- Decreased body mass due to restricted diet.
- Stress due to oil exposure and behavioural changes.

Individual mammals oiled early in a spill may be exposed to the more toxic components of the oil by direct contact and ingestion and suffer greater toxicity per unit time and volume than those affected by more weathered oil.

By way of reference, aerial monitoring after the Montara oil spill (a light gas condensate) in August 2009 in the Timor Sea indicated there were no confirmed reports of oil-affected cetaceans (though there were 29 oil-affected birds, two oiled sea snakes and one oiled turtle) despite extensive aerial and water-based patrols in the area. There is no available evidence to suggest that the migratory or breeding patterns of any wildlife were affected (SEWPaC, 2012b).

Cetaceans

Cetaceans in particular have mostly smooth skins with limited areas of pelage (hair covered skin) or rough surfaces such as barnacled skin. Oil tends to adhere to rough surfaces, hair or

calluses of animals, so contact with oil by whales and dolphins may cause only minor oil adherence.

Whales are pelagic (move freely in the oceans) and because of their migratory patterns may only be occasionally affected by oil spills. Several dolphin species are likely to move through the operating area. Potential impacts from oil spills to dolphins are similar to that described for whales.

The way a whale consumes its food affects the likelihood of it ingesting oil. Baleen whales (such as humpbacks) skim the surface for krill and are more likely to ingest oil than ‘gulp feeders’ (toothed whales). Further, oil may stick to the baleen while they ‘filter feed’ near oil slicks. Sticky, tar-like residues are particularly likely to foul the baleen plates.

It has been stated that pelagic species will avoid oil, mainly because of its noxious odours, but this has not been proven. The strong attraction to specific areas for breeding or feeding

(e.g., Warrnambool calving grounds for Southern Right Whales) may override any tendency for cetaceans to avoid the noxious presence of oil. So weathered or tar-like oil residues can still present a problem by fouling baleen whales feeding systems.

Researchers have also indicated that inhalation of oil droplets, vapours and fumes is a distinct possibility if whales surface in slicks to breathe. Exposure to oil in this way could damage mucous membranes, damage airways or even cause death.

Dolphins

Records indicate that dolphins are able to detect oil spills and avoid them, however there have been instances where this has not occurred and the dolphin is exposed to floating oil.

Similar to cetaceans, dolphins are smooth skinned and oil tends not to stick to their skin. Dolphins can, however, inhale oil. This can damage their airways, lungs, ailments, mucous membrane and even cause death. A dolphin's eyesight may also be affected by oil (AMSA, 2012).

Seals

Seals are vulnerable to oil pollution as they spend a lot of their time on or near the surface of water. Seals need to surface every few minutes to breath and regularly haul out on beaches, which puts them at risk of coming in contact with the oil.

Fur seals are the most vulnerable, as the oil may adhere to their fur. Heavy oil coating can result in reduced swimming mobility and even death.

Seal pups are also vulnerable to oil. Their flippers may stick to their bodies, resulting in drowning. They also spend much of their time in rocky shore areas, compared to adults who swim in open water.

Seals may ingest oiled food or inhale oil droplets, which will attack their sensitive tissues causing abrasions and ulcers.

Turtles

When turtles surface in an oil slick to breathe, oil will affect their eyes and damage airways or lungs. Sea turtles will also be affected by oil through contamination of the food supply or by absorption through the skin.

Turtles are very vulnerable at beach nesting sites during the breeding season, note there are no breeding colonies present within the EMBA.

Fish

The eggs, larvae and young fish are the most vulnerable to oil, mainly because larger fish can take avoiding action.

Fish are associated with floating objects, as floating objects can reduce the light intensity (provide shade), provide food and provide shelter from diving birds. This can cause problems for seabirds, who are attracted to fish swimming under an oil slick.

Fish can become tainted if they encounter a spill. The worst tainting problems generally occur in aquaculture facilities.

Impacts of Response Strategies

Consultation with AMOSC and DoT (now DTP) confirmed the proposed SGHE response strategy of allowing spilled diesel and gas condensate to naturally weather, while monitoring and evaluating the situation as appropriate.

The application of chemical dispersant for the condensate and diesel scenarios was not recommended by either AMOSC or DoT, and as such is not a preferred response strategy for the defined scenarios. The application of dispersant has the potential to expose pelagic and benthic organisms to toxic components within the entrained mixture of hydrocarbons and dispersant. Avoiding the use of dispersant avoids these impacts. Condensate also rapidly weathers and a large proportion will evaporate from the sea surface.

There is the potential for deflection booms to be used closer to shore in a cleanup operation, however, attempting to collect semi-solid weathered oil residues such as the floating waxy flakes of paraffin residues predicted to develop from the Longtom gas condensate is not likely to be efficient or environmentally beneficial.

The Longtom condensate will rapidly evaporate and within 48 hrs the slick is expected to comprise of paraffin based waxy flakes. Paraffins have a high molecular weight, odourless and insoluble, and their direct toxicity is low. In summary, an intentional ‘hands off’ approach in terms of on-ground response, while monitoring and evaluating the spill primarily through aerial means (with some light foot traffic at some beaches and vessel deployment for water quality monitoring) in the event of a spill will result in little to no environmental impact from response activities.

6.5.4.6 Impacts on Environmental Sensitivities and Biological Values

Environmental sensitivities and biological values that may occur within the EMBA were described in Section 4. An assessment of the impact of a condensate spill on these sensitivities and values was undertaken and is summarised in Table 6-29. Noting more broadly, French-McCay (2024) recommended that risk assessments should primarily address dissolved hydrocarbon exposures (as well as floating surface and shoreline oil) rather than

entrained oil, referring to the most recent guidance published in a review series in Aquatic Toxicology in 2023 (cited in French-McKay, 2024 and Negri *et al*., 2024).

Table 6-29 Impact of condensate spill on environmental sensitivities

Area of sensitivity	Potential impact of condensate spill	Potential Impact Evaluation
AUSTRALIAN MARINE PARKS		
Beagle	Spill impact No contact with surface oil > 1g/m^2, instantaneous entrained hydrocarbons > 100 ppb or dissolved hydrocarbons > 6ppb. Priority **LOW**. Open marine environment.	Negligible
East Gippsland	Spill impact No contact with surface oil > 1g/m^2, instantaneous entrained hydrocarbons > 100 ppb or dissolved hydrocarbons > 6ppb. Priority **LOW**. Open marine environment, no shorelines.	Negligible
RAMSAR SITES		
Gippsland Lakes	Spill impact No contact with surface oil > 1g/m^2, instantaneous entrained hydrocarbons > 100 ppb or dissolved hydrocarbons > 6ppb. Priority **HIGH** (though potential for impact is limited due to only one entry point, Lakes Entrance). Freshwater body, high value tourism.	Negligible
VICTORIAN MARINE PROTECTED AREAS		
Cape Howe Marine National Park and Gabo Island	Spill impact No contact with surface oil > 1g/m^2 or dissolved hydrocarbons >50ppb Low probability of dissolved hydrocarbons >6ppb instantaneous. Low probability of entrained hydrocarbons >100ppb instantaneous but no exposure to 100ppb for 48hrs. Priority **HIGH**. Near-pristine sandy beaches backed by dense forest of the Croajingalong National Park.	Low
Mallacoota Inlet	Spill impact No contact with surface slick. Low probability of entrained hydrocarbons >100ppb instantaneous but no exposure to 100ppb for 48hrs. Low probability of low levels of dissolved aromatics. Priority **MODERATE**.	Negligible
The Skerries (Croajingolong National Park)	Spill impact No contact with surface slick or entrained hydrocarbons. Low probability of low levels of dissolved aromatics. Priority **HIGH**. Major seal-breeding colony.	Negligible
Point Hicks Marine National Park	Spill impact Patches of very light surface oiling with no shoreline loading >10g/m^2. Low probability of >100ppb and low potential exposure to 100ppb for 48hrs.	Moderate

Area of sensitivity	Potential impact of condensate spill	Potential Impact Evaluation
	Low probability of dissolved hydrocarbons >6ppb instantaneous. Priority **HIGH**.	
Croajingolong National Park	Spill impact Patches of very light surface oiling and shoreline loading >10g/m^2 (up to 2 km) on western shoreline. Low probability of dissolved hydrocarbons >6ppb instantaneous. Low probability of entrained hydrocarbons >100ppb instantaneous but no exposure to 100ppb for 48hrs. Priority **HIGH**. Near-pristine sandy beaches backed by dense forest of the Croajingolong National Park.	Moderate
Beware Reef Marine Sanctuary and Cape Conran Coastal Park	Spill impact No contact with surface slick or dissolved hydrocarbons. No contact with entrained hydrocarbons >100 ppb. Priority **HIGH**	Negligible
Gippsland Lakes Coastal Park	Spill impact No contact with surface slick, entrained or dissolved hydrocarbons. Priority **MEDIUM**. A popular tourist destination, but dominated by sandy beaches (with few marine sensitivities) that are easier to remediate compared to other shoreline types.	Negligible
NSW COASTAL SENSITIVITIES		
Beowa National Park and Nadgee Nature Reserve	Spill impact No contact with surface oiling. Low probability of concentrations of dissolved hydrocarbons > 6ppb. Potential for entrained hydrocarbons in water column around Green Cape, the eastern-most point of Beowa National Park >100ppb instantaneous but no exposure to 100ppb for 48hrs. Priority **HIGH**. Near-pristine coastline backing on to National Park.	Low
ECONOMIC AND SOCIAL VALUES		
Commercial and Recreational Fisheries Includes open marine environment, coastal and inshore fish habitat and spawning areas	Spill impact Potential for contact with low levels of surface oil in Gippsland Basin waters within Commonwealth and Victorian-managed fishery areas. Moderate surface oiling restricted to within 1km of release. Localised zones of low exposure to instantaneous dissolved aromatics along coastline. No exposure to time averaged low thresholds anticipated. Areas of Victorian waters (East Gippsland) exposed to instantaneous entrained hydrocarbons >100ppb. Economic and social impacts associated with disruption to commercial and recreational fishing operations. Priority **HIGH**. Valuable spawning and fishing area.	Moderate
Tourism and Recreation	Spill impact Earliest shoreline contact: 6 days.	Low

Area of sensitivity	Potential impact of condensate spill	Potential Impact Evaluation
	Predicted shoreline loading: • Maximum 49 bbl • Average 2 bbl Shoreline load anticipated to be mainly non-toxic waxy flakes between Lakes Entrance and Marlo. Potential for some moderate shoreline loading >100g/m^2 including Lake Tyers Beach. Potential for contact with low levels of surface oil between Lakes Entrance and Marlo. No exposure to moderate surface oiling along the coast. Low probability of exposure to dissolved hydrocarbons >6ppb instantaneous, Potential for moderate levels of instantaneous entrained hydrocarbons along East Gippsland coastline. Economic and social impacts of disruption to commercial operators relying on recreation and tourism industry. Priority **HIGH**. Popular (and valuable) tourism and recreation area	
Cultural assets. Man-made structures e.g., slipways, boatyards, ports, jetties	Spill impact Earliest shoreline contact: 6 days. Predicted shoreline loading: • Maximum 49 bbl • Average 2 bbl Shoreline load anticipated to be mainly non-toxic waxy flakes between Lakes Entrance and Marlo. Potential for some moderate shoreline loading >100g/$m^{2,}$ including Lake Tyers Beach. Potential for contact with low levels of surface oil between Lakes Entrance and Marlo. No exposure to moderate surface oiling along the coast. Minimal impact on cultural assets and man-made structures due to limited exposure to hydrocarbons. Limited economic and social impacts associated with disruption to commercial operators relying on boating industry. Priority **LOW**. Potential for damage to man-made structures associated with the predicted exposure is not credible.	Negligible
PARTICULAR BIOLOGICAL VALUES		
Cetaceans	Spill impact Potential exposure to low levels of sea surface oiling, and dissolved aromatics, Predicted impact is minimal due to the transitory nature of cetaceans through Bass Strait and their limited ecologically significant activities (such as breeding, foraging and calving) while in the area. Priority **HIGH**. All cetaceans are protected under the EPBC Act .	Low
Nesting shorebirds and seabirds	Spill impact Potential exposure to low levels of sea surface oiling, and dissolved aromatics nearshore. Degree of impact depends on whether shorebirds and migratory species are feeding or nesting along shorelines at the time of	Low

Area of sensitivity	Potential impact of condensate spill	Potential Impact Evaluation
	the spill and in the direct path of low-level sea surface oiling (less than fatal) and shoreline loading. Priority **HIGH**. Includes species protected under the EPBC Act	
Little Penguins	Spill impact Potential exposure to low levels of sea surface oiling and dissolved aromatics. Degree of impact depends on whether Little Penguins are feeding or nesting along shorelines at the time of the spill and in the direct path of low-level sea surface oiling (less than fatal) and shoreline loading. Little Penguin colonies could be indirectly affected by impacts on fish populations as their food source. Priority **MEDIUM**. Little Penguin is relatively common.	Low
Fur seals	Spill impact Potential exposure to low levels of sea surface oiling, entrained hydrocarbons and dissolved aromatics. Degree of impact depends on whether seals are breeding, feeding or hauling out along shorelines at the time of the spill and in the direct path of low-level sea surface oiling (less than fatal) and shoreline loading. Seal colonies could be indirectly affected by impacts on their food source. Priority **HIGH**. Unlike other marine mammals such as cetaceans and sea lions, fur seals depend on their fur rather than blubber for insulation and temperature regulation.	Low
Reptiles – marine turtles	Spill impact Potential exposure to low levels of sea surface oiling, and dissolved aromatics. Predicted impact is minimal due to the transitory nature of turtles through Bass Strait and their limited ecologically significant activities (such as breeding, foraging and nesting) in the area. Priority **HIGH**. Includes species protected under the EPBC Act.	Low

This assessment has been used to determine the residual risk ranking given in Table 6-30.

6.5.4.7 Risk Assessment

Table 6-30 outlines the risk assessment for the loss of containment of hydrocarbons due to subsea equipment damage.

Table 6-30 Loss of containment of hydrocarbons risk assessment

Hazard duration	Throughout operations and the life of this EP.	
Extent of hazard	While the area and extent of the EMBA is significant, it should be noted that the predicted impact for a single spill trajectory is relatively narrow and that the EMBA has been based on instantaneous thresholds rather than time averaged ones.	
Basis of Inherent Risk Assessment		
• The subsea infrastructure has been designed to withstand fishing activities, impact loads, corrosion, and pressures and temperatures from Longtom. • The locations of the wellheads are remote from the shore and sensitive environments. • Wellheads may be shutdown from onshore and are fail safe. • The Longtom reservoir is a gas reservoir with relatively small quantities of condensate. The condensate will rapidly evaporate and the residue will be small waxy inert flakes with low environmental impact. • Pipeline marked on navigation charts and Longtom facilities are within the Bass Strait ATBA. • SGHE is an AMOSC member, giving it access to AMOSC response functions and industry Mutual Aid response capability in the unlikely event of a Tier 2 or 3 spill. • A 500-m petroleum safety exclusion zone exists around Longtom-3 and Longtom 4. Vessel monitoring indicates limited vessel incursions to the PSZ and that vessel are on route elsewhere.		
Inherent risk analysis and ranking		
Consequence	**Likelihood**	**Inherent Risk**
Moderate (3)	Unlikely (D)	Moderate
Project specific environmental controls and checks that will take place	<u>Prevention</u> • Compliance with the Longtom Pipeline Safety Case including: - Equipment design and validation of the design. The design ensures that the hydrocarbons are contained and includes; Equipment pressure / temperature rating, Material suitability, Equipment stability under storm and seismic loading, Process controls, alarms and trips – effectiveness considered Very High. - Training, competency and experience of personnel to operate and maintain the facilities appropriately, including 24 hour continuous monitoring of production parameters when in operation – effectiveness considered Moderate. - Procedures for operating and maintenance activities. - effectiveness considered Moderate. - Maintenance and testing of equipment including shutdown systems - effectiveness considered Moderate. • Compliance with the Well Operations Management Plan (WOMP) including: - Well design including shutdown systems (e.g., SCSSV) – effectiveness considered Very High. - Operating procedures – effectiveness considered Moderate. - Maintenance and testing of equipment including shutdown systems – effectiveness considered Moderate	

	• Inspection, maintenance and repair campaigns subject to risk assessment – effectiveness considered Moderate. Mitigation • AMOSC membership and adherence to the following procedures - Effectiveness considered Moderate: - Oil Pollution Emergency Plan (OPEP). - Emergency Response Plan (ERP) • Source control - implementation of a Blow Out Contingency Plan (LT-HSE-PL-0007) and potentially the Longtom Relief Well Plan for a relief well to drill, intersect and kill a blowout – effectiveness considered High. Note that any relief well will need to be conducted in accordance with the legislation, a WOMP, safety case and EP will need to be developed and accepted. This would be done in parallel with the rig mobilisation and based on data from Montara this is considered achievable.

Residual risk analysis and ranking		
Consequence	**Likelihood**	**Residual Risk**
Moderate (3)	Rare (E)	Low

Demonstration of ALARP	
The risk of a hydrocarbon spill prior to the implementation of the controls (inherent risk) was assessed as 'moderate' based on the possibility of a major consequence occurring without any controls. However, with the above listed controls and the controls listed in the NOPSEMA-accepted WOMP and Longtom Pipeline Safety Case, OPEP and ERP, the risk has been reduced to low (residual risk). The key preventative controls are the design of the facilities to safely contain the hydrocarbons, the operating and maintenance systems, processes and procedures conducted in line with the NOPSEMA-accepted Pipeline Safety Case and WOMP requirements, the overall effectiveness of these controls is considered very high in preventing environmental impact. Note that the design is critical in ensuring hydrocarbons are contained and is subject to independent validation as part of the safety case that specifically confirms the codes and standards are appropriate and that the safety risks are reduced to ALARP. In the event of a loss of containment these systems will also ensure that the leak is mitigated and minimised (particularly the shutdown systems), the oil spill response will also ensure that spills are monitored and where practicable action is taken to further reduce or prevent the impact. The controls are considered sufficient, suitably robust, independent and effective to ensure the residual risks are Low and ALARP. The following ALARP analysis confirms that all reasonable risk treatment options have been considered to reduce the environmental impact of hydrocarbon spills, and the risk is deemed to be **ALARP**. Adopting further risk reduction measures will incur costs that are grossly disproportionate to the benefits gained. A 'Low' residual risk ranking is **broadly acceptable** according to the SGHE definition of risk.	
Eliminate	Not applicable.
Substitute	Not applicable.
Engineering	The subsea infrastructure has been designed to withstand fishing activities, impact loads, corrosion, and pressures and temperatures from Longtom
Isolation	The pipeline and wells can be isolated from the reservoir.
Administrative	A 500-m petroleum safety zone exists around Longtom-3 and Longtom 4. Training and adherence to the OPEP and the ERP.
Protective	Not applicable.

Demonstration of Acceptability
The operation of the offshore facilities is covered by a Longtom Pipeline Safety Case, WOMP and OPEP. All of these documents have to be reviewed and accepted by NOPSEMA prior to operations commencing,

The design of the facilities takes account of pressure, temperature, fluid composition, erosion, external impact and fatigue. These parameters will be monitored by process equipment and actions will be taken if the parameters are outside of acceptable limits. A separate shutdown system, which is fail safe, will also monitor the facilities for abnormal situations. This means that valves can be closed and facilities can be isolated to prevent continued gas and condensate flow. There are numerous other oil and gas developments in Bass Strait (20 production facilities and a large number of pipelines). Oil and gas infrastructure in the area has been accepted for the last 40 years. All legislative and other requirements have been met and the activity is consistent with SGHE policy and meets relevant management standards and procedures. Concerns from relevant stakeholders have been addressed through the consultation process, any new relevant stakeholder objections, claims or issues will be considered in line with the ongoing consultation. The locations of the wellheads are remote from the shore. The likelihood of a failure of the subsea equipment or a well blow out is considered remote, therefore this risk is considered **acceptable**.
Monitoring
No ongoing monitoring is required. In the event of a spill monitoring will be undertaken as per the requirements set out in the OPEP and OSMP.

7 Environmental Performance Objectives, Standards and Measurement Criteria

This section presents the environmental performance objectives, environmental performance standards and measurement criteria required to manage the hazards identified for the Longtom Gas Project. These terms are defined below:

- *Environmental Performance Objective* – a statement of the objectives or goals for protecting the environment relevant to the given hazard.
- *Environmental Performance Standard* – a statement of performance required of a system, an item of equipment, a person or a procedure that is used as a basis for managing the environmental risk of a given hazard.
- *Measurement Criteria* – defines how performance will be measured to determine whether the environmental performance objectives and environmental performance standards have been met.

Table 7-1 details the performance objectives, standards and measurement criteria for Longtom operations, which ensure environmental risks are managed to ALARP and an acceptable level.

Table 7-2 details the leading performance objectives, standards and measurement criteria for SGHE preferred oil spill response strategies. In the unlikely event of a hydrocarbon or diesel spill, the detailed environmental performance objectives, standards and measurement criteria provided in the OPEP will be used. To avoid repetition, these objectives, standards and measurement criteria have not been repeated herein.

Table 7-1 Environmental performance objectives, standards and measurement criteria

Hazard	Performance Objective	Performance Standard	Measurement Criteria
Physical Presence			
Interaction with other marine users	Impacts to other users shall be prevented through infrastructure layout, design and inspection.	• Any future Longtom-5 related facilities shall be located within the existing Longtom-3 petroleum safety zone. • A survey will be undertaken following maintenance activities to retrieve any debris, as far as practicable.	• As built layouts. • End of Campaign report includes final survey and records show that dropped objects have been retrieved, or their retrieval has been judged not practicable and the environmental risk has been assessed as acceptable.
	Impacts to other users shall be prevented through ongoing consultation	• Notifications for any offshore activities and ongoing consultation will be carried out in accordance with Section 3 (Consultation)	• Ongoing consultation records (including records of notifications)
	Impacts to other users shall be prevented through vessel navigation.	• Vessel navigation and communication equipment is functional and maintained in accordance with the planned maintenance system (or vessel operator's equivalent).	• Pre Mobilisation audit to confirm Navigational equipment is functional and that Vessel maintenance schedule is up to date and maintenance records are available. • Daily report includes check of navigation equipment.
Seabed disturbance	Impacts to the seabed as a result of maintenance shall be minimised.	• Routine inspections of the subsea facilities will be undertaken to identify and rectify possible areas of impact, e.g. potential erosion/scouring. • Procedures shall be developed that take into account seabed relief, sensitive seabed features and underwater cultural heritage.	• Pipeline inspection report to provide details of any significant areas of erosion/scouring. • IMR and installation procedures available and utilised • Daily reports and End of Campaign report document any anomalies, that qualified marine archaeologists are engaged and DCCEEW notified when required, and show that no unplanned disturbance occurred.

Hazard	Performance Objective	Performance Standard	Measurement Criteria
		• Survey data showing seabed anomalies that are not natural features, infrastructure or debris will be reviewed by a qualified marine archaeologist. • Any new suspected underwater cultural heritage to be reported to DCCEEW within 21 days. • Inspections will take place during maintenance activities to ensure no unplanned disturbance occurs during conduct of maintenance.	
	Disturbance to the seabed from Longtom activities shall be prevented through engineering design and inspection.	• The future Longtom-5 flowline will be designed to be stable and the area of disturbance is minimised as far as practicable. • An ROV survey will be undertaken to ensure, where practicable, IMR debris is retrieved following a campaign.	• Design validation certificate by a third party. • ROV survey report, including video footage, is available. • Records show that dropped objects have been retrieved, or their retrieval has been judged not practicable and the environmental risk has been assessed as acceptable.
Planned Discharges			
Subsea discharges	Lowest toxicity chemicals shall be selected for Longtom operations and maintenance purposes to prevent environmental impact.	• Chemicals will have a minimum ranking of OCNS 'D', silver or better. • The use of a chemicals not specifically described within this EP will be subject to the SGHE chemical selection process (see Section 6.2.1) and approved by the SGHE HSEC Manager.	• Annual EP audit to confirm use in compliance; 1. An approved list of chemicals is maintained. 2. Chemicals selection sheet are used and approved (if chemicals are not specifically approved in the EP). 3. All chemicals used are covered by either 1 or 2.

Hazard	Performance Objective	Performance Standard	Measurement Criteria
			• All documentation associated with use and discharge of chemicals, including audits and checklists, are retained for reference.
	The volume of the hydraulic fluid used shall be monitored, to prevent unexpected losses damaging the environment.	• The number of subsea valve operations is monitored and recorded across each month and the volume of hydraulic fluid discharged is calculated. • The volume of hydraulic fluid leaking from the solenoid valve in the Longtom-4 SCM is estimated, monitored and recorded across each month to confirm the status of the leak, and actions taken when necessary to reduce the risk to an acceptable level.	• Measurements of hydraulic fluid consumption and discharges are recorded and kept in the Longtom Operations Discharge Log on at least a monthly basis during operations. • Significant unexpected loss of hydraulic fluid is reported to SGHE management and NOPSEMA as required. • Annual EP audit to check Operations Discharge Log and LT4 SCM records to ensure that they have been appropriately reported and responded to.
Routine Vessel Discharges – Sewage, putrescible waste, treated bilge, cooling water and brine	Project vessels will manage sewage and grey water to prevent impact to the environment.	• Vessels to comply with MARPOL 73/78 Annex IV and have a valid International Sewage Pollution Prevention certificate in place. • No untreated sewage or grey water discharged overboard. • The sewage treatment plant will be maintained in accordance with the vessel's planned maintenance system.	• The International Sewage Pollution Prevention certificate is readily available, current and is checked during the pre-mobilisation audit. • Vessel's waste management practices, including the adequacy of the sewage treatment plant - checked during the pre-mobilisation audit. • Maintenance records confirm equipment is maintained in accordance with manufacturer's specifications and is checked during the pre-mobilisation audit. • Daily report includes check of sewage treatment plant availability.

Hazard	Performance Objective	Performance Standard	Measurement Criteria
			• Pre-mobilisation audit and daily reports are retained in hardcopy and electronic files for reference.
	There will be no discharges of unmacerated food waste during project activities to prevent impact to the environment.	• Vessels will comply with MARPOL 73/78 Annexes IV and V. • A galley macerator will be installed which shall macerate good scraps to a diameter of 25 mm prior to disposal overboard, in accordance with MARPOL standards. • Cooking oils and greases will be collected and transported back to shore for disposal. • All non-food galley waste will be transported back to shore for recycling/disposal. • The galley macerator will be maintained in accordance with the vessel's planned maintenance system.	• The vessel's compliance with MARPOL 73/78 Annexes IV and V, the waste management practices, including the adequacy of the macerator all checked during the pre-mobilisation audit. • Garbage records are available describing the type of waste disposed/collected, location and quantity. • Daily Report summarises waste transfers. • Maintenance records confirm equipment is maintained in accordance with manufacturer's specifications - confirmed during the pre-mobilisation audit. • Audit documentation and daily reports are retained in hardcopy and electronic files for reference.
	There will be no discharge of untreated bilge water to prevent impact to the environment.	• Vessels will comply with MARPOL 73/78 Annex I. Oil or oily mixtures will be retained on board or disposed of if in accordance with MARPOL standards (i.e., if it is less than 15 ppm oil-in-water). • Fixed and mobile equipment will be maintained in accordance with the vessel's planned maintenance system.	• Vessel compliance with MARPOL 73/78 Annex I is checked during the pre-mobilisation audit. • The International Oil Pollution Prevention certificate is readily available, current and valid and is checked during the pre-mobilisation audit. • Maintenance records confirm equipment is maintained in accordance with manufacturer's specifications. • Daily report includes check of oily water storage / disposal system.

Hazard	Performance Objective	Performance Standard	Measurement Criteria
			• Audit documentation and daily reports are retained in hardcopy and electronic files for reference.
	Project vessels will have a SOPEP in place to address chemical and hydrocarbon spills on deck and avoid overboard discharges to prevent impact to the environment.	• Vessels will have an approved SOPEP in place. Scupper plugs will be readily available, and any spills will be cleaned up immediately. • Vessel crew trained in SOPEP and SOPEP exercises conducted • Hydrocarbon and chemical storage areas will be bunded and chemicals will be stored in chemical storage lockers.	• The SOPEP, vessel's waste management practices, including the availability of SOPEP kits/scupper plugs and the adequacy of the bunded areas will be checked during the pre-mobilisation audit. • Training records confirm crew have appropriate competencies and training and SOPEP exercise records will be checked during the pre-mobilisation audit. • Audit documentation and daily reports are retained in hardcopy and electronic files for reference.
	Project vessels will manage cooling and brine water to prevent impact to the environment.	• The cooling water and RO desalination systems will be maintained in accordance with the PMS.	• Maintenance records confirm equipment is maintained in accordance with the PMS schedule – confirmed during the pre-mobilisation audit • Daily report includes functionality check of cooling water and RO desalination systems
Planned Emissions			
Planned Emissions	All offshore campaigns to be reviewed to prevent impacts from planned emissions to the environment.	Pre-campaign risk review conducted and no risks identified greater than described within this EP	Pre-campaign risk review report
Noise emissions	Prevent injury or harm to cetaceans from sound emissions	Vessel masters will implement interaction management actions consistent with the EPBC Regulations 2000 – Part 8 Division 8.1	• Daily operations reports note when cetaceans were sighted in the caution zone and interaction management actions implemented.

Hazard	Performance Objective	Performance Standard	Measurement Criteria
	during vessel operations	• Vessels will not knowingly travel faster than 6 knots within 300m of a whale or 150 m of a dolphin • Vessels will not knowingly get closer than 100m of a whale or 50m of a dolphin • If a cetacean approaches the vessel within the above zones, the vessel will avoid rapid changes in engine speed or direction.	
	Prevent injury or harm to cetaceans from noise emissions during helicopter activities	Interaction between helicopters and cetaceans within the project area will be consistent with EPBC Regulations 2000 – Part 8 Division 8.1: • Helicopters will not fly lower than 1650ft when within 500m horizontal distance of a cetacean (except when landing or taking off) and will not approach a cetacean from head on.	• Flight reports note when cetaceans were sighted in the caution zone and interaction management actions implemented.
	Prevent injury or harm to cetaceans from noise emissions during geophysical survey activities	• If a Southern Right Whale or Pygmy Blue Whale is sighted within 500 m of the SBP, SSS or MBES prior to commencement of data acquisition the operation will be delayed until the whale has moved out of the 500 m shutdown zone or 10 minutes has passed since the last sighting.	• Daily report demonstrates the implementation of the 500 m shutdown zone and night time restrictions.

Hazard	Performance Objective	Performance Standard	Measurement Criteria
		• The SBP, SSS or MBES will be shut down if a Southern Right Whale or Pygmy Blue Whale is sighted within 500 m of the operating source. Data acquisition will recommence once the whale has moved out of the 500 m shutdown zone or 10 minutes has passed since the last sighting. • The SBP, SSS or MBES will not be operated at night time if there have been three incidences of Southern Right Whales or Pygmy Blue Whales sighted in the preceding 24 hour period.	
Light emissions	Lighting will be limited to that required for safe work and navigation.	• Lighting will be limited to that required for safe work and navigation, and in accordance with Marine Order 30 – Prevention of collisions.	• Vessel compliance with Marine Order 30 is checked during the pre-mobilisation audit. • Audit documentation is retained in hardcopy and electronic files for reference..
Atmospheric emissions	Fuel combustion equipment complies with the requirements of MARPOL 73/78 Annex VI.	• Vessel to comply with the requirements of MARPOL 73/78 Annex VI and have a valid International Air Pollution Prevention (IAPP) certificate • Vessel engines shall meet prescribed NOx emission levels and have one Engine International Air Pollution Prevention (EIAPP) certificate for each diesel engine of ⩾130 kW.	• The IAPP certificate is readily available, current and is checked during the pre-mobilisation audit. • The EIAPP certificates are readily available, current and are checked during the pre-mobilisation audit. • Bunker receipts verify the sulphur content of the fuel supplied.

Hazard	Performance Objective	Performance Standard	Measurement Criteria
		• The sulphur content of Marine Diesel Oil used on-board shall not 0.5% sulphur.	
	Manage direct and indirect GHG emissions from the Longtom operations consistent with Australia's international GHG emissions commitments, as outlined in the *Climate Change Act 2022.*	• GHG emissions are reported annually in accordance with National Greenhouse and Energy Reporting (NGER) regulatory requirements.	• NGER reports
Unplanned Interactions			
Unplanned Interactions	All offshore campaigns to be reviewed to prevent impacts from unplanned interactions to the environment.	Pre-campaign risk review conducted and no risks identified greater than described within this EP	Pre-campaign risk review report
Interactions with marine fauna	No injury or death of megafauna resulting from vessel strike.	Vessel Masters will implement interaction management actions consistent with the EPBC Regulations 2000 – Part 8 Division 8.1	• Daily operations reports note when cetaceans were sighted in the caution zone and interaction management actions implemented.

Hazard	Performance Objective	Performance Standard	Measurement Criteria
		• Vessels will not knowingly travel faster than 6 knots within 300m of a whale or 150 m of a dolphin • Vessels will not knowingly get closer than 100m of a whale or 50m of a dolphin • If a cetacean approaches the vessel within the above zones, the vessel will avoid rapid changes in engine speed or direction.	
Introduction of invasive marine species	No introduction and establishment of IMS	Biofouling Management Plan and records maintained in accordance with IMO Guidelines for the Control and Management of Ships' Biofouling to Minimise the Transfer of Invasive Aquatic Species.	• Biofouling records collected in order to conduct biofouling risk assessment confirm these are maintained.
		Biofouling risk assessment conducted in accordance with IMS RA procedure shows low risk.	• Biofouling risk assessment record confirms vessel poses low risk of introducing IMS.
		All immersible retrievable -equipment has been cleaned and / or inspected in accordance with National Biofouling Management Guidance for the Petroleum Production and Exploration Industry prior to commencement of the activity.	• Records document cleaning and / or inspection of immersible retrievable - equipment.
		Ballast Water Management Plan approved in accordance with IMO Ballast Water Management Convention - Guidelines for	• Records show an approved BWMP and BWMC comply with the IMO Ballast Water Management Convention requirements, including the implementation of D-2

Hazard	Performance Objective	Performance Standard	Measurement Criteria
		Ballast Water Management and Development of Ballast Water Management Plans Ballast Water Management Certificate approved in accordance with the IMO Ballast Water Convention, including implementation of the D-2 standard per the agreed timeline.	standard in accordance with the agreed timeline per the Class or flag state of the respective vessel.
		Ballast Water Record System is maintained in accordance with Regulation B-2 of the Annex to the IMO Ballast Water Management Convention including • start and finish coordinates • actual pumping times • residual volume remaining in the tank at the end the empty cycle prior to refill (empty refill method only)	• Ballast Water Records
		Vessel Master to adhere to Australian Ballast Water Management (ABWM) Requirements for ballast water exchange.	• Ballast water records show location of ballast water uptake and discharge.
Accidental Releases			
Accidental Releases	All offshore campaigns to be reviewed to prevent impacts from accidental releases to the environment.	Pre-campaign risk review conducted and no risks identified greater than described within this EP	Pre-campaign risk review report

Hazard	Performance Objective	Performance Standard	Measurement Criteria
Waste (non-hazardous and hazardous)	Project vessels will not release solid waste to sea to prevent impact to the environment.	• Vessels to comply with MARPOL 73/78 Annex V and have a valid International Convention for the Prevention of Pollution from Ships certificate. • Vessels to implement a Waste Management Plan. • An ROV survey undertaken to check for, and retrieve, dropped objects following a construction campaign.	• The International Convention for the Prevention of Pollution from Ships certificate is readily available, current and valid and checked during the pre-mobilisation audit. • The Waste Management Plan is readily available and its contents have been communicated to crew, confirmed during the pre-mobilisation audit. • Garbage records are available verifying that there are no discharges of waste to sea (other than food wastes). The records also detail the types and volumes of waste taken ashore. • Daily Report summarises waste transfers. • The end of campaign report to include results of the ROV survey. Records show that dropped objects have been retrieved, where practicable. • Audit documentation, waste management plan and associated records and daily reports are retained for reference.
Loss of containment – hazardous and non-hazardous substances	Lowest toxicity chemicals shall be selected for Longtom operations and maintenance purposes to prevent environmental impact.	• Refer to Planned Discharges – Subsea discharges	• Refer to Planned Discharges – Subsea discharges

Hazard	Performance Objective	Performance Standard	Measurement Criteria
	ROV activities to not discharge hydraulic fluid into the marine environment.	• The ROV is designed to prevent hydraulic fluid leaks, with the hoses and fittings all rated for the operating pressures. • Compliance with maintenance and operating procedures, as they relate to ROV equipment, hose management and isolation/shutdown systems. • ROV maintenance area, Hydraulic fluid and supply systems are arranged to prevent leaks to the environment, i.e. bunded.	• Records/certificates show that ROV has been appropriately designed and is confirmed as part of pre-mobilisation audit. • Maintenance records indicate ROV and hoses are maintained in accordance with their planned maintenance system and is confirmed as part of pre-mobilisation audit • Adequacy of ROV maintenance area, Hydraulic fluid and supply systems, confirmed as part of pre-mobilisation audit. • Training records confirm crew have appropriate competencies and training, confirmed as part of pre-mobilisation audit • Pre-dive checklists completed and confirmed as part of pre-mobilisation audit. • Audit documentation and associated records are retained for reference.
	Project vessels will have a SOPEP in place to address chemical and hydrocarbon spills on deck and avoid overboard discharges to prevent impact to the environment.	• Vessels will have an approved SOPEP in place. Scupper plugs will be readily available, and any spills will be cleaned up immediately. • Vessel crew trained in SOPEP and SOPEP exercises conducted • Hydrocarbon and chemical storage areas will be bunded and chemicals will be stored in chemical storage lockers.	• The SOPEP, vessel's hydrocarbon and chemical management practices, including the availability of SOPEP kits/scupper plugs and the adequacy of the bunded areas will be checked during the pre-mobilisation audit. • Training records confirm crew have appropriate competencies and training and SOPEP exercise records will be checked during the pre-mobilisation audit.

Hazard	Performance Objective	Performance Standard	Measurement Criteria
			• Audit documentation and daily reports are retained in hardcopy and electronic files for reference.
Loss of containment – marine diesel fuel	Vessel and vessel equipment is operated and maintained to a standard that prevents spill causing a damage to the environment.	• Vessel navigation and communication equipment is functional and maintained in accordance with the planned maintenance system (or vessel operator's equivalent). • Vessel storage tanks functional and maintained in accordance with the planned maintenance system (or vessel operator's equivalent) • Inspection, maintenance and repair campaigns will be subject to risk assessment and controls will be implemented to manage the identified risks. • Only vessels using MDO engaged for Longtom activities.	• A pre-mobilisation vessel audit to confirm compliance, specifically the vessel's anti collision protocols and whether SOPEP kits are available and adequate. • Vessel maintenance schedule and up to date maintenance records are available and is checked during the pre-mobilisation audit. • Daily Report includes diesel volumes. • Audit documentation, logs and daily reports are retained for reference. • Pre-mobilisation inspection confirms that vessel uses MDO.
	For a loss of diesel, the source of release is controlled as soon as possible to minimise the scale of the spill and the impact on the environment	• In the event of a diesel spill the vessels ERP/SOPEP is implemented • Where possible diesel is transferred between tanks to minimise spill and the vessels ballast is also adjusted to minimise / control the source of the spill.	• Source controlled within 24 hours • All key documentation regarding spill response activities are retained in company records.

Hazard	Performance Objective	Performance Standard	Measurement Criteria
	Implement a response to a diesel spill to minimise the impacts to the marine environment.	• In the event of a diesel spill, the procedures in the SOPEP and OPEP[2] are followed, including: immediate actions, notifications, response actions and scientific monitoring as required. • Adherence to the ERP.	• The vessel SOPEP, OPEP and an ERP are readily available and their contents have been communicated to crew. • Pre-mobilisation audit to confirm crew have appropriate competencies and training. • Project specific training provided and confirmed via training records. • A campaign specific ERP/OPEP exercise is undertaken. • Audit documentation, ERP/OPEP exercise records and daily reports are retained for reference.
Loss of containment – reservoir hydrocarbons	The subsea facilities shall be designed and operated to prevent the loss of containment and hence protect the environment.	• The subsea facilities have been, and any future modifications will be designed in line with standards and criteria contained in detail within the Longtom Pipeline Safety Case[1] and validated in accordance with the NOPSEMA scope of validation requirements. • Orbost Gas Processing Plant operations and maintenance shall be conducted in line with the safety case and Amplitude Energy HSE Management System including. 1. Use of company HSE standards 2. Gas plant personnel trained in line with the Amplitude Energy Training and Competency standard.	• Design Validation certificate issued by a third party and safety case accepted • Annual audit to confirm: 1. Compliance with company HSEQC Management system standards 2. Training records demonstrate personnel directly associated with operations and maintenance are trained, certified and experienced 3. Operations carried out in accordance with approved processes and procedures. Maintenance activities carried out under a PTW system and subject to environmental assessment. 4. Records show that pipeline integrity inspections have been undertaken and equipment maintained and tested in line with the maintenance program and CFT schedule.

Hazard	Performance Objective	Performance Standard	Measurement Criteria
		3. Compliance with procedures and work processes 4. Maintenance and testing conducted in line the Operation Integrity Standard including the Asset Integrity Management System and the Integrity Management Plan. • Operations personnel are aware of the Environment Plan and its requirements	Log available of audit actions, verifying the status and close out of each.
		• Adherence to the NOPSEMA-accepted WOMP, including well design, shutdown systems and operating procedures. • Regular maintenance and inspection of the subsea facilities in accordance with the NOPSEMA-accepted Pipeline Safety Case and WOMP.	Annual EP audit to confirm compliance with the NOPSEMA-accepted Pipeline Safety Case and WOMP to include: 1. Personnel trained and competent 2. Operations carried out in accordance with approved processes and procedures, and maintenance activities carried out under a PTW system including an environmental assessment. • Records show that equipment is maintained and tested in line with the maintenance program and CFT schedule.
	Implement a response to a hydrocarbon spill to minimise the impacts to the marine environment.	• In the event of a hydrocarbon spill, the procedures in the OPEP[2] are followed, including: immediate actions, notifications, response actions and scientific monitoring as required. • Adherence to the ERP.	• The OPEP and ERP are readily available and their contents have been communicated to all relevant personnel. • Training records indicate personnel have appropriate competencies and training. Minimum expectations are that the Leader has IMO level 3 oil spill response training and the Planning and/or operations lead has IMO level 2 oil spill response training. This is checked quarterly.

Hazard	Performance Objective	Performance Standard	Measurement Criteria
			• Spills, immediate actions, response actions and post-spill monitoring are recorded and reported. The close out of a spill is verified by the SGHE Development Manager and the designated authority. • An ERP/OPEP exercise is undertaken annually.
	For a loss of well control event, to stop / control the source of release to limit the impact to the environment.	A Longtom Relief Well Plan as per NOPSEMA – accepted WOMP is in place. Containing: • Plume modelling of gas release • Relief well surface location, directional plan and point of intersection • Relief well hole and casing design • Dynamic kill modelling.	• Records show that a Longtom Relief Well Plan as per NOPSEMA-accepted WOMP is in place.
		• Inventory of long-lead equipment available to drill a relief well maintained in accordance with the NOPSEMA-accepted WOMP.	• Inventory of long lead equipment available to drill a relief well maintained.
		• Specialist well control contractors and equipment identified in accordance with NOPSEMA-accepted WOMP.	• Records show that specialist well control contractors and equipment identified.
		• Availability of rig to meet minimum requirements (as described in the NOPSEMA-accepted WOMP) to drill a relief well within 90 days confirmed annually during operations, and 30 days	• Status and location of suitable rig (plus a heavy transport vessel if required) to drill relief well identified annually during operations, and 30 days prior to spud and on a monthly basis throughout drilling campaign.

Hazard	Performance Objective	Performance Standard	Measurement Criteria
		prior to spud and monthly thereafter during drilling.	
		• In the event of a blowout, the well is killed or a relief well is drilled to control the source within 90 days.	• Well is killed or relief well drilled and source of release controlled. • All key documentation, including OSRT Log, daily drilling reports, regarding well containment activities are retained in company records.

Notes:

1. The Longtom Pipeline Safety Case and WOMP must demonstrate that the safety and well integrity risks are managed to ALARP and must include performance standards. A large number of these safety performance standards, particularly those for preventative controls also provide control against potential environmental risks. For example, the controls in place to prevent a vessel collision or pipeline failure will protect personnel and will also protect the environment. In addition, the Pipeleine Safety Case requires a third party validation of safety related items. Listing all these individual controls separately in the table is not considered appropriate.
2. The OPEP and the NEBA provide additional performance objectives, standards and measurement criteria in the event of a spill to ensure that the risk to the environment is managed to ALARP.

Table 7-2 Leading environmental performance objectives, standards and measurement criteria for the OPEP preferred response strategies

Response Strategy	Objective	Standards	Measurement Criteria
Source Control	Suitable Source Control Manager identified and agreement in place with a third party service provider, e.g. Wild Well Control to plan and manage a relief well.	Flow from blowout curtailed in less than 90 days. Relief well designed and drilled in accordance with codes and standards as specified in the relevant safety case and WOMP.	• Quarterly ERP checks availability of a suitable Source Control Manager • Master Services Agreement in place with third party service provider, e.g. Wild Well Control to support SGHE.
Monitoring	Operational and scientific monitoring program (OSMP) specific to the Longtom Gas Project available and resources available to implement.	Longtom Gas Project OSMP is consistent with: • NOPSEMA IP1073 - Information paper - Operational Scientific Monitoring Programs- Revision 2 - March 2016 • AMSA Oil Spill Monitoring Handbook 2016.	• Agreement in place with AMOSC to provide OSMP services. • Prior to restart options investigated for an agreement with OSMP service provider. • Annual EP Audit includes check of OSMP and availability of qualified personnel from the OSMP service providers to implement OSMP. • Annual EP Audit includes check that personnel could be mobilised within the required timeframe of the OSMP
Aerial surveillance	Aerial surveillance is deployed to monitor a spill and facilitate effective operational response to protect sensitive environments.	• Current contact details for AMOSC (for trained aerial observers) and local aviation service providers are included in Longtom Production Operations ERP Contacts directory. • Aerial surveillance is deployed within the next daylight shift after a spill greater than $10m^3$ is detected.	• At least an annual review of Longtom Production Operations ERP Contacts directory and check that AMOSC have trained aerial observers. • Records of aerial surveillance demonstrate that aerial surveillance was commenced with the next daylight shift after the spill was detected and information regarding slick movement is available to OSRT.
Satellite monitoring	Satellite tracking buoys are deployed for significant spills within	• Satellite buoys are available for deployment.	• Annual review of AMOSC equipment includes check of satellite buoys to support spill response for SGHE.

Response Strategy	Objective	Standards	Measurement Criteria
	an appropriate timeframe to facilitate effective operational response to protect sensitive environments.	• Satellite buoys are deployed within 24 hours for spills greater than $10m^3$.	• Records demonstrate that satellite buoys were deployed within 24 hours of the initial detection of a spill and information regarding slick/plume movement is available to OSRT.
Oil spill trajectory prediction	Trajectory of slick estimated via modelling to guide the selection of appropriate spill response strategies for minimising the impact on the environment and protection of sensitive areas.	• Key project personnel are familiar with spill trajectory estimation techniques. • Arrangements are in place for initiating spill trajectory modelling. • Trajectory modelling is produced within 12 hours of a spill greater than $10m^3$.	• Annual OPEP exercise includes requirement to estimate spill trajectory. • SGHE membership of AMOSC which provides for access to oil spill trajectory modelling. • Contract between AMOSC and RPS (or equivalent) is checked as part of the annual review of AMOSC capabilities. • Production of trajectory model and information regarding slick/plume movement is available to OSRT and is documented as part of oil spill response, with records maintained.
Deflection and recovery	Booms are available for deployment to protect sensitive environments such as inlets and estuaries identified in the OPEP.	• 500 m of suitable deflection booms are available for deployment in the event of a spill. • Equipment can be relocated and available for deployment in East Gippsland within 24 hours.	• Annual review of AMOSC equipment, resources and timing for deployment to East Gippsland, with documentation of this confirmation to be maintained.
	Deflection booms and recovery equipment are relocated and deployed in East Gippsland within an appropriate timeframe to facilitate effective operational	• Deflection booms and recovery equipment are deployed within 24 hours where defendable estuaries or shorelines are threatened by slick movement.	• Threatened defendable estuaries or shorelines are protected within 24 hours of request initiated. • Records of communications and logistics regarding boom deployment are retained as part of the oil spill response documentation.

Response Strategy	Objective	Standards	Measurement Criteria
	response to protect sensitive environments.		

8 Implementation Strategy

8.1 Aim

This section describes the implementation strategy for the EP, specifically detailing the measures required to ensure the environmental performance objectives and environmental performance standards are met. The broad environmental objectives of the Longtom Gas Project are to:

- Achieve and demonstrate best practice environmental management of any aspect of the operations that may have an impact on the environment.
- Minimise and manage the damage where an impact is unavoidable.

The SGHE HSEQC Policy serves as the key environmental management document for the project (Attachment 1). This policy guides the development and implementation of all other management system components. SGHE retains full and ultimate responsibility as the titleholder.

The following table presents a summary of the implementation strategy against the typical the “Plan, Do, Check, Review and Improve” requirements of a successful plan.

Table 8-1 Plan, Do, Check and Review Requirements

Stage	What we do	Who	Where described
Plan	Maintain an accepted EP	SGHE Development Manager or above	This document
	Maintain an OPEP and ERP	SGHE Development Manager or above	EP Section 8.10 and refer to OPEP
	Develop Project Execution Plans, conduct HAZIDs and Risk Assessments	SGHE Project Manager	SGHE Hazard and Risk Assessment Protocol CORP-HSE-027, and activity specific PEP’s and RA’s etc are filed in company records.
Do	Execute our Operations in line with our EP, and Longtom Pipeline Safety Case and WOMP	SGHE Development Manager and all personnel working on Longtom.	This document, and Longtom Pipeline Safety Case – Operations LT-REG-PL-0007 and Longtom Well Operation Management Plan LT-HSE-PL-0008
	Conduct training in the EP	SGHE HSEC Manager	EP Section 8.4. Training records (including attendance sheets) maintained in company records.
	Conduct ERP and OPEP training, drills / exercises	SGHE HSEC Manager	EP Section 7 Table 7.1, Section 8.10, and refer to OPEP.

Stage	What we do	Who	Where described
			Training records (including attendance sheets) maintained in company records.
	Review acceptability of vessels and contractors	SGHE HSEC Manager	HSEQC Category Assessments for Contracts CORP-HSE-021,
	Conduct induction training for offshore campaigns	SGHE HSEC Manager	EP Section 8.4, and training records (including attendance sheets) maintained in company records.
	Report reportable and recordable incidents.	SGHE Development Manager or above	EP Table 8.3
	Check survey data for seabed anomalies which are not natural features, infrastructure or debris and engage marine archaeologist to review. Report results of review to DCCEEW if required.	SGHE HSEC Manager	EP Section 8.8
	Monitor discharges and other items as identified within the risk assessments.	SGHE HSEC Manager	EP Section 8.8
	Report to Regulator annually on the performance of the EP. Report reportable and recordable incidents.	SGHE Development Manager or above	EP Table 8.3
	Consult with identified stakeholders prior to major activities	SGHE HSEC Manager	EP Section 3 and Attachment 4.
Check	Routine monitoring and reporting of compliance with Performance Objectives, Standards and Criteria	SGHE HSEC Manager	EP Section 8.9
	Review changes to procedures, equipment and chemicals	SGHE Development Manager or above	EP Section 8.5, SGHE HSEQC Management Standard 6 for Management of Change (MOC), SGHE MOC procedure and Amplitude Energy MOC where relevant.
	Conduct pre-campaign risk review	SGHE HSEC Manager	EP Section 7 Table 7-1
	Vessel inspections and checks during campaigns	SGHE Offshore Representative	EP Section 7 Table 7.1 and 8.9
	Daily reports during campaigns	SGHE Offshore Representative	EP Section 7 Table 7.1 and 8.9

Stage	What we do	Who	Where described
	Quarterly check of ERP / OPEP contacts and phone numbers	SGHE HSEC Manager	EP Section 8.10
	Conduct vessel pre-mobilisation and annual EP compliance audits	SGHE HSEC Manager	EP Section 8.9
Review and Improve	Review Environmental Hazard Register, EP Risk and ALARP/Acceptability Assessment annually	SGHE HSEC Manager	EP Section 8.9
	Lesson Learnt workshop conducted for Offshore campaigns	SGHE Projects Manager	EP Section 8.9
	Conduct annual environmental performance and EP implementation strategy review	SGHE Development Manager and SGHE HSEC Manager	EP Section 8.9
	Conduct annual ERP / OPEP Exercise	SGHE HSEC Manager	EP Section 8.10 and OPEP
	Reporting and investigation of incidents and non-conformance	SGHE HSEC Manager	SGHE Incident Management Procedure CORP-HSE-003

8.2 SGHE HSEQC Management System

SGHE has a set of HSEQC Management Standards that provide a systematic and consistent approach for the management of project and operational activities. This approach aims to achieve the following outcomes:

- Planned, systematic, verifiable and continually improving approach to achieving HSEQC policies, plans, objectives and targets.
- Hazards are identified and controlled.
- Assets owned or managed by SGHE are designed and operated to accepted internal and external HSEQC standards.

Each manager is responsible for ensuring full compliance within their area of responsibility and control and will be held accountable for the successful implementation of these standards. During operations a self-assessment against the HSEQC Management Standards is undertaken each year by the SGHE HSEC Manager.

The SGHE HSEQC Management Standards consist of 15 standards, each of which is supported by several procedures or protocols:

1. Policy, Leadership and Commitment.
2. Organisation, Responsibility and Resources.

3. Planning, Objectives and Targets.
4. Regulatory Requirements and Document Control.
5. Competence, Training and Behaviours.
6. Risk and Change Management.
7. Projects, Facility Design, Construction and Commissioning.
8. Operations and Maintenance.
9. Incident Management.
10. Contractors, Suppliers and Partners.
11. Performance Measurement, Reporting and Communication.
12. Crisis and Emergency Management.
13. Health and Fitness for Work.
14. Audits, Inspections and Reviews.
15. Community.

The HSEQC Management Standards are the means by which the SGHE HSEQC Policy is implemented. The hierarchy of the HSEQC Management System is presented in Figure 8-1.

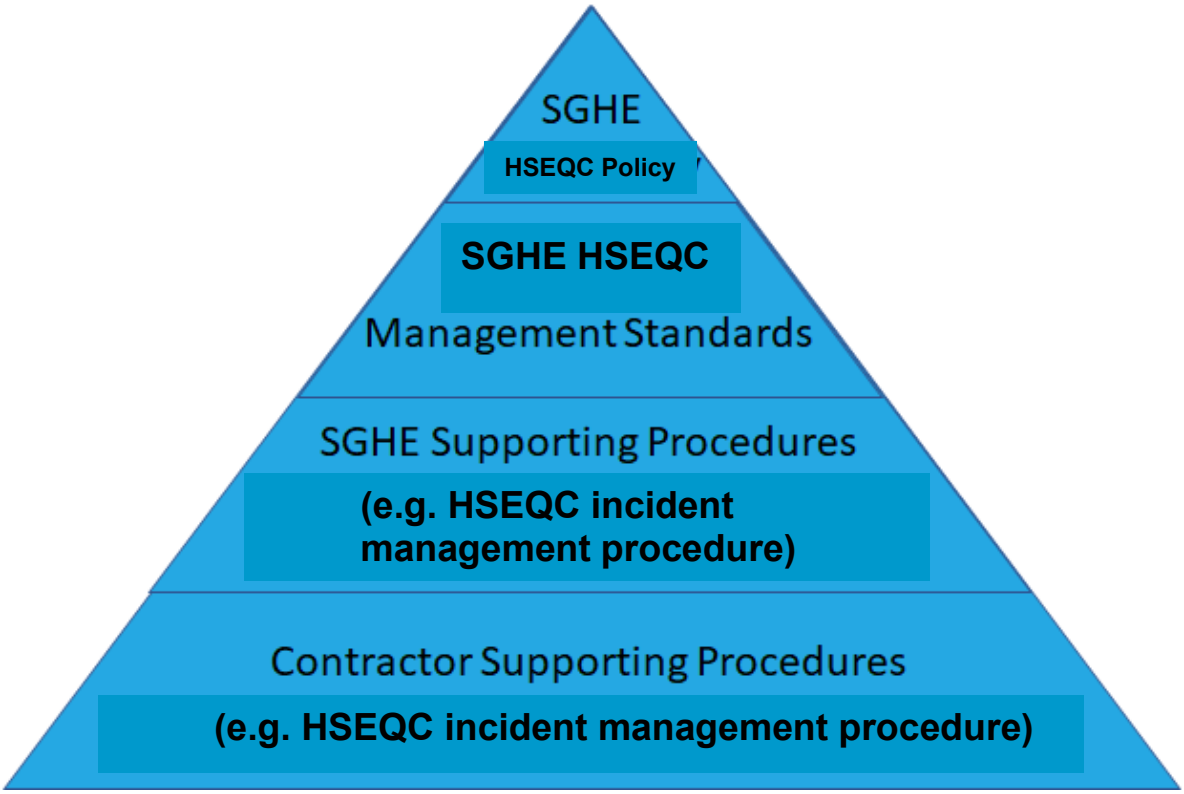


Figure 8-1 SGHE HSEQC Management Hierarchy

When the Longtom wells were last in production (May 2015), Santos was the operator of the Orbost Gas Processing Plant and controlled the wellheads to meet production requirements as directed by SGHE. Amplitude Energy, as the current operator of the Orbost Gas Processing Plant also has .an HSE management system, which is described, as relevant, in the Longtom Pipeline Safety Case.

8.3 Roles and Responsibilities

All SGHE and contractor personnel are required to comply with the Environment Plan and all relevant conditions of approval. Key environmental roles and responsibilities, and therefore chain-of-command, are identified in Table 8-2.

SGHE is responsible for ensuring that the project is managed in an environmentally responsible manner and in accordance with all regulatory requirements.

Table 8-2 Environmental Roles and Responsibilities

Role	Responsibilities
SGHE Development Manager	• Responsible for overall operation of the field. • Responsible for reporting to authorities (e.g., NOPSEMA). • Responsible for meeting regulatory requirements, including the Environment Plan. • Ensures compliance with the SGHE HSEQC Policy. • Ensures all required plans, audits and reviews are undertaken in accordance with the regulatory requirements and as required by this EP.
SGHE Project Manager	• Responsible for the management of offshore campaigns including future Longtom-5 campaigns. • Responsible for ensuring offshore campaigns meet the regulatory requirements, including the Environment Plan. • Ensures campaigns comply with the SGHE HSEQC Policy. • Ensures all campaign required plans, audits and reviews are undertaken in accordance with the regulatory requirements and as required by this EP.
SGHE HSEC Manager	• Coordinates the preparation of the environmental approvals documentation. • Ensures all personnel are inducted and are aware if their environmental responsibilities. Ensures overall compliance with the EP. • Responsible for coordinating emergency response preparedness. • Ensures inspection, maintenance and repair campaigns are subject to risk assessment and controls will be implemented to manage the identified risks. • Conducts (or delegates) a pre-mobilisation audit and annual EP compliance audits. • Reports environmental incidents to the SGHE Development Manager. • Ensures environmental incidents are reported to statutory authorities (see Section 8.7). • Ensures changes are assessed and approved by SGHE, in accordance with Section 8.5. • Ensures incident investigations are conducted. • Ensures corrective actions from environmental audits and incidents are completed. • Prepares and submits monthly reports to NOPSEMA.
SGHE Offshore Representative (when applicable)	• Responsible offshore for day to day conduct of the project. • Responsible for checking that the contractor implements all relevant environmental requirements (including inductions and training). • Responsible for reporting results of environmental matters to the SGHE HSEC Manager and Project Manager. • Responsible for monitoring the performance/compliance of the Offshore Longtom-5 Installation Contractor with regards to the requirements of the EP and all conditions of approval. • Conducts HSE inductions for crew arriving on the vessels. • Attends daily meetings, reviews JSAs and ensures general adherence to vessel specific procedures and project specific procedures, including the

Role	Responsibilities
	WOMP, OPEP, ERP and Safety Case. Undertakes periodic HSE inspections to check for compliance with EP commitments. • Reports on vessel performance to the SGHE HSEC Manager • Collates whale sightings and forwards on to the SGHE HSEC Manager • Liaises closely with the SGHE HSEC Manager on performance and incidents. • Ensures training requirements are fully implemented.
Vessel Masters and/or Plant Superintendent	• Responsible for the safe operation of the vessel / site. • Overall responsibility for HSE management. • Implements and ensures adherence to all relevant environmental legislative requirements, commitments, conditions and procedures on-board the vessel. • In the event that the Offshore Representative or SGHE HSEC Manager is not available, reports reportable incidents to NOPSEMA within 2 hours of an incident occurring. • Communicates hazards and risks to the workforce and the importance or following good work practices. • Maintains the site / vessel in a state of preparedness for emergency response. • Reports environmental incidents within the 500-m radius safety zone to the SGHE Offshore Representative. • Reports environmental incidents to the SGHE Offshore Representative and the SGHE HSEC Manager when they occur outside the 500-m safety radius safety zone but within the SGHE permit area. • Applies appropriate enforcement mechanisms to prevent breaches of the EP.
SGHE CEO	• Ensures sufficient resources are available to implement the SGHE HSEQC Policy and environmental commitments. • Ensures all incidents are investigated and reported in line with the SGHE HSEQC Policy.
All vessel personnel	• Adhere to this EP. • Follow good housekeeping procedures and work practices. • Encourage improvement wherever possible. • Report incidents to the SGHE Offshore Representative and Vessel Masters.

8.4 Competence, Training and Awareness

The SGHE HSEQC Management Standard No. 5 (Competence, Training and Behaviours) defines the training and competency expectations for SGHE staff and contractors The Amplitude Energy management standard for training and competency similarly defines the training and competency requirements and supporting management system to ensure employees, contractors and visitors to the Orbost Gas Processing Plant have the necessary knowledge and skills to enable them to conduct their activities:

- safely

- in an environmentally responsible manner; and
- without damaging plant and equipment.

Prior to the cessation of production activities when the Longtom wells were controlled by the Orbost Gas Processing Plant it was required that a Longtom EP induction training session was provided to all gas plant operators. This session highlighted the specific requirements of the Longtom EP on Patricia Baleen operations, defined what constituted an incident and the subsequent actions to be taken in the event of an incident. Prior to restart a Longtom EP induction training session will be re-provided to all gas plant operations personnel and other parties involved in managing Longtom production.

During an offshore IMR campaign SGHE ensures compliance with the EP requirements by way of pre-mobilisation audits, induction training, regular HSE meetings and checks, and by having SGHE representation offshore. This ensures each crew member is aware of their responsibilities and has the necessary skills to complete the required tasks and meet project objectives and standards.

Each contracting party involved with the project is required to have its own matrix that defines required skills, competencies and organisational compliance levels.

The vessel pre-mobilisation induction training aims to ensure personnel are aware of their roles and responsibilities in ensuring compliance with the EP and minimal impact to the environment during project activities. The information presented at the induction will include:

- An overview of the EP and its key commitments.
- Regulatory and procedural requirements.
- The SGHE and vessel environmental policies.
- Environmental sensitivities of the area.
- Environmental management procedures (e.g., waste management).
- Emergency and oil spill response procedures.
- Observation and notification procedures in the event of detrimental effects to marine flora or fauna.
- Recording and reporting of information to SGHE and the regulators.

All personnel are required to sign an attendance sheet to confirm their participation in, and understanding of, the pre-mobilisation induction.

8.5 Management of Change

The SGHE HSEQC Management Standard No. 6 (Risk and Change Management) defines how SGHE manage change. The SGH MOC procedure (CORP-PM-PR-0001) and associated forms (CORP-PM-FO-0001) provide further guidance on how change is

managed. The standard and procedure ensures that when changes are made to the project, to control systems, to an organisational structure or to personnel, the HSE risks and other impacts of such changes are identified and appropriately managed.

A risk assessment is undertaken which considers the impact of the proposed change on the project's environmental risks and on the environmental performance objectives (Section 7).

In the event that the proposed change introduces a significant new environmental impact or risk or results in a significant increase to an existing risk, this EP will be revised for resubmission.

Where the proposed change can be managed such that environmental performance objectives are met, this will be documented without the requirement for a formal revision to this EP. In the event that the proposed change results in non-compliance with a performance objective, this EP will be revised for resubmission.

All changes to the onshore facilities and their operation should also be controlled and managed under the Orbost Gas Processing Plant MOC system. The SGHE audit / inspections of the gas plant operator (i.e., Amplitude Energy) will confirm that change is appropriately managed.

8.6 Notifications

SGHE will formally notify NOPSEMA:

- at least 10 days prior to recommencing production;
- at least 10 days prior to commencement of Longtom -5 tie in activities and within 10 days of completion of Longtom-5 tie in activities; and
- within 10 days of cessation of Longtom operations.

8.7 Incident Recording and Reporting

SGHE has an Incident Management Procedure (CORP-HSE-003) that details the actions to be undertaken in the event of a safety or environmental incident, with all incidents reported to the SGHE Development Manager.

During an offshore campaign all environmental incidents will be reported in the first instance to the SGHE Offshore Representative, who will then report to the SGHE HSEC Manager and the SGHE Development Manager.

The SGHE Development Manager and the SGHE HSEC Manager will determine whether the incident is a reportable or recordable incident and notify NOPSEMA accordingly. If these personnel are unavailable the SGHE Offshore Representative will notify NOPSEMA. If the reporting requirement is in doubt the SGHE recommendation is to report the incident.

On the vessels, the Vessel Master is responsible for maintaining an onsite copy of internal records and reports, which are filed using standard office protocols.

8.7.1 Management of EP Non-conformance

All breaches of this EP will be treated as non-compliances. Breaches may be identified during an audit or as a consequence of an incident.

All non-compliance issues must be communicated immediately to the Offshore Representative during an offshore campaign and to the SGHE Development Manager and SGHE HSEC Manager. This expectation is reinforced at inductions and regularly throughout the project. All non-compliance incidents will be investigated as per the SGHE HSEQC Management Standard No. 9 (Incident Management). Following an investigation, remedial actions are developed to prevent recurrence and tracked to completion.

Significant non-compliances are communicated to the offshore crew during standard forums such as daily tool-box talks, pre-tour meetings, and weekly safety meetings on board the respective vessels. Non-conformances will be reported as per Section 8.7.2.

8.7.2 Incident Recording and Reporting

The processes for recording and reporting recordable and reportable environmental incidents to external authorities in line with the OPGGS(E) Regulations are described in Table 8-3. Figure 8-2 provides an illustration of reporting requirements.

Table 8-3 Routine and incident reporting requirements

Requirements	Timing
Routine Reporting	
Submit an Environmental Performance Report to NOPSEMA annually during the life of the project. The Environmental Performance Report will include the results of performance reviews, audits, any incidents, and details of any maintenance activities.	Submit an annual report by April 15th to NOPSEMA for the previous year during the life of the project.
Recordable Incident Reporting	
Legislative Definition: *"for an operator of an activity, means an incident arising from the activity that:* *(a) breaches a performance objective or standard in the Environment Plan that applies to the activity; and* *(b) is not a reportable incident."*	Submit NOPSEMA Recordable Environmental Incident Monthly Report to NOPSEMA by 15th of every month if there has been an incident in that month. A nil incident report will not be submitted.
Reportable Incident Notification	
Legislative Definition: *'for an operator of an activity, means an incident relating to an activity that has caused, or has the potential to cause, moderate to significant environmental damage.'*	Report verbally via notification phone line to NOPSEMA as soon as practicable and no later than 2 hours after the incident occurred. Ph: 1300 674 472 Email: submissions@nopsema.gov.au
Incidents classified as reportable using the equivalent SGHE risk assessment process (i.e., having a potential consequence rating of 'moderate (3)', 'major (4)' or 'catastrophic (5)') are: • A well blowout. • The introduction of invasive marine species. • A vessel diesel spill. • Hydraulic fluid release of 500 L / day or greater than 50000 L in a month	
The verbal notification must include the following information: • The incident and all material facts and circumstances concerning the incident that is known at the time. • Any actions taken to avoid or mitigate any adverse environmental impacts. • Any corrective actions that have been taken, or may be taken, to prevent a repeat of similar incidents occurring.	**Oil spill only (within 1 hr) to AMSA**: Ph: 1800 641 792 Email: mdo@amsa.gov.au Any emergency notifications to also

Requirements	Timing
• In addition, oil spills must be reported immediately to AMSA. • Any spills that could impact Victorian state waters should be reported to the Department of Transport and Planning (DTP) State Duty Officer (SDO). Written confirmation of the notification must be provided to NOPSEMA, NOPTA and DEECA Earth Resources Regulation if in offshore Victorian waters (see below) as soon as practicable after the verbal notification.	go to the DTP SDO - 1800 956 557
Reportable Incident Reporting	
The initial notification to NOPSEMA must be followed up by a written report. As a minimum, the written incident report will include: • The incident and all material facts and circumstances concerning the incident. • Root cause analysis. • Actions taken to avoid or mitigate any adverse environmental impacts. • Any corrective actions that have been taken, or may be taken, to prevent a recurrence of the incident. • Completion date. The written incident report must be provided to NOPSEMA within 3 days, and the National Offshore Petroleum Titles Authority (NOPTA) and the Victorian DEECA Earth Resources Regulation if in offshore Victorian waters (as the Department of the responsible State Minister) within 7 days of giving the written report to NOPSEMA. If the initial notification of the reportable incident was only verbal, any information that was not included in the verbal notification must be included in the written report.	As soon as practicable, and not later than 3 days following the incident Email (NOPSEMA): submissions@nopsema.gov.au Email (NOPTA): reporting@nopta.gov.au Email (DEECA ERR: ERRchiefinspector@deeca.vic.gov.au or Compliance Duty Officer (24 hours) 0419597010
Other Reporting Requirements	
Notification of activities affecting EPBC Act listed species or ecological communities in or on a Commonwealth area (specifically unintentional injury or death of a cetacean or listed threatened / migratory / marine species caused by, or suspected to have been caused by petroleum activity)	Within 7 days DCCEEW – 1800 803 772 EPBC.Permits@dcceew.gov.au
The Director of National Parks should be made aware of spills which occur within an Australian Marine Park, or are likely to impact marine parks. The notification should include: • titleholder details	As soon as possible Marine Park Compliance Duty Officer - 0419293465

Requirements	Timing
• 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 coordinator.	
Cetacean vessel strike	Within 3 days DCCEEW – https://data.marine-mammals.gov.au/ship-strike
Suspected or known IMS introduction	Immediately Report a pest (as per marinepests.gov.au website): DEECA – 136 186
Discovery of all suspected underwater cultural heritage	To be reported within 21 days of discovery to DCCEEW UnderwaterHeritage@environment.gov.au

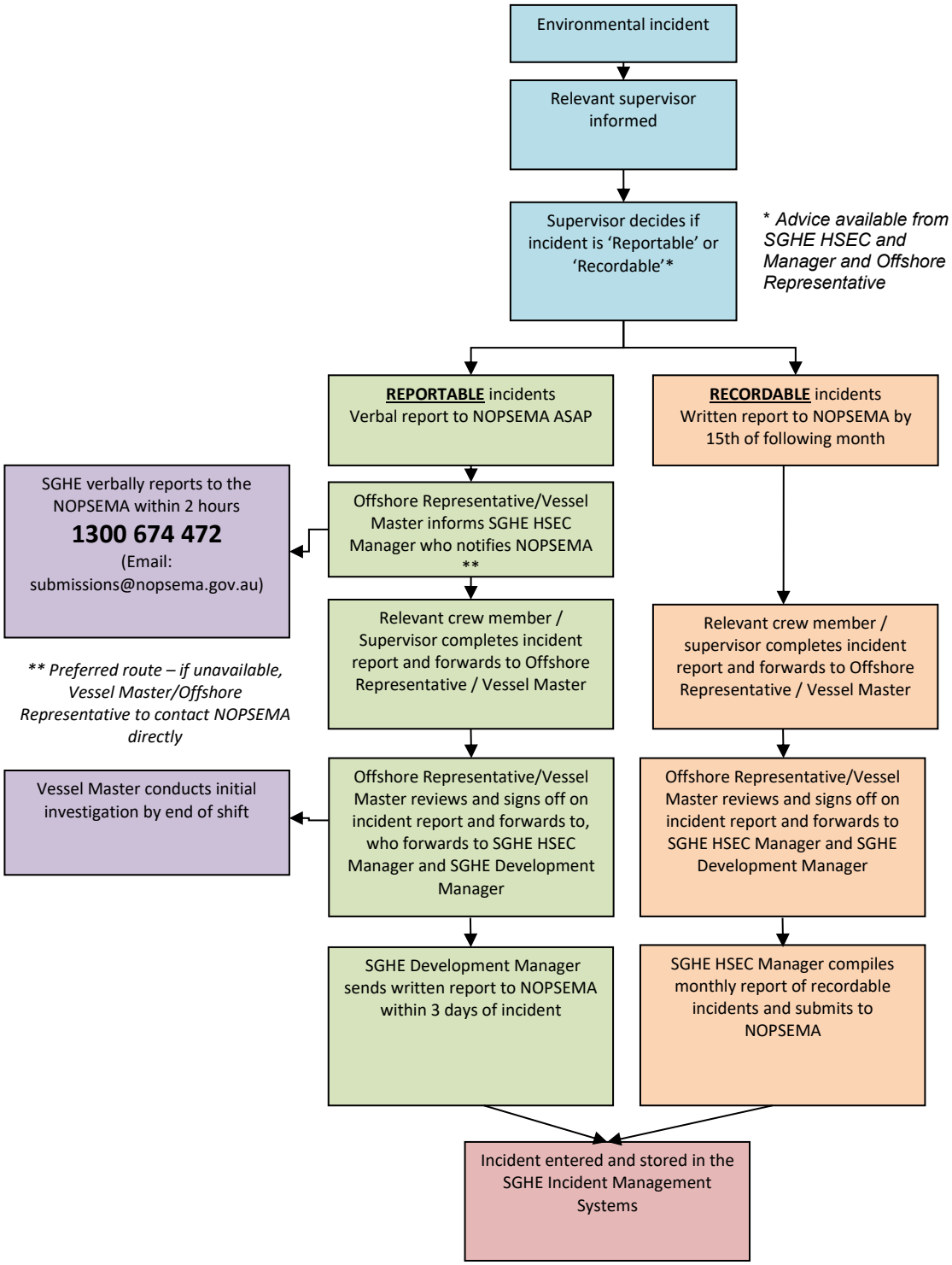


Figure 8-2 Summary of incident reporting and recording requirements

8.8 Monitoring

The SGHE HSEQC Management Standard No. 11 (Performance Measurement, Reporting and Communication) guides how monitoring is to be undertaken and reported.

A summary of the environmental monitoring requirements provided in Section 6 is outlined in Table 8-4. Results of this monitoring will be included in the annual Environmental Performance Reports, and included in monthly recordable incident reports as necessary (e.g., where a breach of EP commitments, objectives, standards or measurement criteria has been identified).

Table 8-4 Environmental monitoring and reporting summary

Aspect	Monitoring	Frequency	Reporting
Various	Process parameters (pressure, temperature, flow)	Continuous	• Incident reports and non-compliance contained in monthly report to NOPSEMA. • Results included in Annual Environmental Performance Report.
Various	Critical Function Testing of SCSSV, tree valves and HIPPS.	As required by the Pipeline Integrity Management Plan	• Incident reports and non-compliance contained in monthly report to NOPSEMA. • Results included in Annual Environmental Performance Report.
Seabed disturbance	Survey data checked for seabed anomalies which are not natural features, infrastructure or debris and marine archaeologist engaged to review.	During IMR activities	• Data provided to marine archaeologist for review • Results of review reported to DCCEEW if required.
Planned operational discharge of hydraulic fluid	Volumetric monitoring of the hydraulic fluid used and discharged.	Monthly.	• Results included in Annual Environmental Performance Report.
Impacts on stakeholders	Stakeholder issues and complaints	Annual and prior to any offshore campaign	• Results included in Annual Environmental Performance Report.

Aspect	Monitoring	Frequency	Reporting
Following accidental release of condensate	Inspection of subsea facilities.	As required following spill event.	• Inspection Report. • Incident reports and non-compliance contained in monthly report to NOPSEMA. • Results included in Environmental Performance Report.
	Visual observations from any crew members**.**	Continuous following spill event.	• Incident reports and monthly report to NOPSEMA. • Results included in Annual Environmental Performance Report.
	Post-spill monitoring.	Following the spill.	• As per the NEBA and the Operational and Scientific Monitoring Program (OSMP).
Accidental release of hydraulic fluid, MEG and methanol	Volumetric monitoring of the hydraulic fluid, MEG and methanol used.	Monitored by the gas plant continuously, Routinely monitored by SGHE and recorded monthly or following an accidental release.	• Incident reports and non-compliance contained in monthly report to NOPSEMA. • Results included in Annual Environmental Performance Report.
Fuel consumption	Volumetric monitoring of fuel consumption by Vessel	During IMR activities	• Daily Report • Results included in Annual Environmental Performance Report.
Unplanned interactions with cetaceans	Visual observations from any crew members	At all times during IMR activities.	• Cetacean sighting forms completed and sent to SGHE HSEC Manager.
Planned sewage and putrescible waste discharges	Availability of the Vessel sewage treatment plant and macerator.	Daily check during IMR activities.	• Daily Report • Incident reports and non-compliance contained in monthly report to NOPSEMA. • Results included in Annual Environmental Performance Report.
Planned treated bilge discharges	Availability of the of the oil-in-water analyser.	Daily check during IMR activities.	• Daily Report • Incident reports and non-compliance contained in monthly report to NOPSEMA. • Results included in Annual Environmental Performance Report.

Aspect	Monitoring	Frequency	Reporting
Planned cooling water and brine discharges	Functionality of the cooling water and RO desalination systems	Daily check during IMR activities.	• Daily Report • Incident reports and non-compliance contained in monthly report to NOPSEMA. • Results included in Annual Environmental Performance Report.
Accidental release of waste (non-hazardous and hazardous)	Volumetric monitoring of various waste streams. Waste manifest maintained by Vessel	Daily check during IMR activities.	• Daily Report • Recorded in waste manifest. • Incident reports and non-compliance contained in monthly report to NOPSEMA. • Results included in Annual Environmental Performance Report.
Following accidental release of vessel diesel fuel	Visual observations from any crew members.	Continuous following spill event.	• Incident reports and non-compliance contained in monthly report to NOPSEMA. • Results included in Annual Environmental Performance Report.
	Post-spill monitoring.	Following spill event.	• As per the OPEP, NEBA and the OSMP
Accidental release of ROV hydraulic fluid	Inspection of ROV systems.	Daily check during IMR activities.	• Daily Report • Incident reports and non-compliance contained in monthly report to NOPSEMA. • Results included in Annual Environmental Performance Report.

In addition to the above monitoring and reporting requirements for NOPSEMA the following items will be reported to the Victorian DTP State Duty Officer by SGHE as soon as practicable.

- A spill or non-routine discharge of hydrocarbons or chemicals that creates a sheen visible to other stakeholders on the ocean and likely to have impact on state waters, which includes the simple fact of entering state waters or creating media interest. Visibility is the key issue here, not the size of the spill (e.g. litre limit).
- The death or injury of any fauna species such as fish (en masse), seals or cetaceans occurring during any operation (whether caused by that operation or not).
- Excessive flaring, planned or otherwise, that increases the environmental impact of the individual activity, is highly visible and distinguishable from routine flaring.
- Acrimonious interaction with other ocean users, such as fishers (recreational or commercial), shipping, recreational vessels etc.

- Collision with other ocean users, including between SGHE contracted (or otherwise) activity vessels or machinery, fishers, shipping, recreational vessels etc.
- Well blow out or other significant well integrity mishap during exploration or production.
- Occupational accident causing the significant injury or death of any person(s).
- Loss of equipment that poses a risk to other ocean users or that may wash up on a beach at any time in the future (past examples include ROVs or part thereof, CSEM/seismic receivers or sources).
- Any issue that is likely to receive wide coverage in the media, either positive or negative.
- Any activity that is likely to have shore-based impact, whether through support activities or through provision of essential services.
- A pipeline leak that is considered a recordable incident that is likely to be ongoing for any period over 4 weeks (until repaired or stopped).
- Any interruptions to oil, condensate or gas supplies, planned or otherwise, that are critical to normal societal functioning.
- Any significant company related changes that may be notable to our Minister, such as the appointment of new Corporate Officers in Australia.
- Any changes to officer level contacts for EP matters.

8.9 Auditing and Review

The SGHE HSEQC Management Standard No. 14 (Audits, Inspections and Reviews) guides how audits and review are to be undertaken and reported.

8.9.1 Formal Audit

SGHE will arrange for vessel pre-mobilisation and annual EP compliance audits. The vessel audit will be carried out prior to the work commencing to verify that procedures and equipment for managing routine discharges and emissions are in place (as described in pre-qualification material) to enable compliance with the EP. During both these audits compliance with EPOs and EPSs will be verified to ensure that environmental performance is maintained. Audit findings will be recorded and communicated to affected parties. Corrective actions will be tracked to closure.

The findings and recommendations of the audit will be documented and distributed to relevant personnel for review. It is almost certain that an audit is likely to result in recommendations for improvement opportunities and, occasionally, breaches of EP commitments may be identified. Any non-compliance is noted and communicated

immediately to the SGHE HSEC Manager, as well as being documented in the audit report, where applicable these will be communicated to NOPSEMA.

Non-compliances identified during a vessel audit will be communicated to the offshore crew during daily pre-tour meetings before each shift and at weekly safety meetings on board the vessel.

The EP compliance audit results will be included in the annual Environmental Performance Report submitted to NOPSEMA.

8.9.2 Routine Inspections

On a day-to-day basis, relevant SGHE and offshore contractor personnel will undertake inspections of operations and equipment to ensure EP commitments are being met. For example, the SGHE Offshore Representative will continually review environmental compliance and conformance as part of their routine activities and this will be supplemented by the use of formal HSE checklists to ensure compliance with the EP.

Non-compliances identified during routine inspections are communicated to the offshore crew during daily pre-tour meetings before each shift and at weekly safety meetings on board the vessels.

8.9.3 Reviews

While everyone is responsible for complying with the EP, the SGHE HSEC Manager specifically reviews compliance with the EP as part of their general activities. In the event of non-compliance an incident report is generated in line with the SGHE Incident Management Procedure and this will then be reported in line with Section 8.6.

Projects and offshore campaigns will be subject to a lessons learnt review at the end of the campaign to determine:

- The effectiveness of control measures; and
- Improvements in procedures or processes for future campaigns.

A review of environmental performance and the effectiveness of the implementation strategy will be conducted annually by the SGHE Development Manager and SGHE HSEC Manager. The review will consider audit findings, incident reports (including spills), regulatory compliance, operational-discharge monitoring data and project / campaign vessel-related monitoring data such as types / volumes of waste disposed to ensure that the EPOs and EPSs are being met.

Furthermore, an annual review of the environmental hazard register involving SGHE personnel and appropriate contractors will be facilitated by the SGHE HSEC Manager in the form of a HAZID workshop (Section 5.3), information from reviews, audits, NOPSEMA

publications and offshore industry related information will feed into this annual review of the hazards.

8.10 Emergency Preparedness and Response

SGHE has a Crisis Management Plan (CMP) (including a Longtom asset specific Emergency Response Plan (ERP)) and an OPEP in place for this activity.

The details of the emergency response team structure, roles and responsibilities and emergency contacts are described in both the CMP and OPEP. Performance objectives, standards and measurement criteria for a spill response are outlined in the OPEP.

8.10.1 Testing Emergency (Oil Spill) Response Arrangements

The CMP and OPEP will be subject to an annual test or exercise involving an external organisation such as AMOSC. This exercise shall test the ability of SGHE to adequately respond to an incident and shall test the knowledge of the key personnel with the OPEP and its requirements. Additional tests shall be conducted in the event of a significant change to the OPEP, i.e. before Longtom-5 is installed and in conjunction with the drill rig – Note drilling of Longtom-5 is subject to a separate EP. The CMP, OPEP and OSMP will also be formally checked on a quarterly basis to ensure contacts and phone numbers are still valid. Testing of response arrangements will be in accordance with the schedule outlined in Table 8-5.

Table 8-5 Testing of oil spill response arrangements

Test	Objective	Parties Involved	Schedule
Emergency Response contact lists	To ensure contacts and phone numbers are valid.	SGHE and third party agencies / service providers	Quarterly
Incident Management Team (OSRT) availability	To test the availability of trained and competent personnel to staff the OSRT.	SGHE OSRT	Quarterly
Source Control Team availability	To check the availability of trained and competent personnel to staff the Source Control Team.	SGHE and third party agencies / service providers	Quarterly
OSMP Team availability	To check the availability of trained and competent personnel to staff the OSMP.	SGHE and third party agencies / service providers	Annual
Level II/III response arrangements	Exercise to test Level II/III response arrangements included within the OPEP including	SGHE OSRT State govt. agencies AMOSC	Annual

Test	Objective	Parties Involved	Schedule
	activation of external service providers and OSROs To test interface and communication/reporting arrangements with regulatory authorities and Control Agencies	Drill rig and/or support vessels, as applicable	
Relief Well Readiness	To assess the availability of suitable* drill rigs capable of meeting the timelines defined in the source control EPS (in total well completed in 90 days) for relief well drilling.	SGHE Development Manager	Annual during operations, 30 days prior to spud and monthly thereafter during drilling
OSMP	Exercise to test the availability of qualified personnel to implement OSMP and develop understanding of SGHE requirements.	SGHE and third party OSMP service provider	Annual
	To test ability to implement OSMP and response times.	SGHE and third party OSMP service provider	2 yearly

* Parameters assessed include current Australian safety case or a rig that has previously worked in Australian waters and the contractor is familiar with the Australian safety case regulations, current working location (preferably in Australian waters, otherwise nearest location), compatibility with well location (depth, working pressures etc.), contractual arrangements and time to mobilise to site. A check is also conducted to see if identified rigs have been contracted through members party to the APPEA Mutual assistance Agreement (MAA), for the purposes of rendering assistance where needed in case of a catastrophic event.

Tests will be documented and any remedial actions/recommendations arising from the tests will be managed in accordance with the SGHE HSEQC Management Standard 14 Audits, Inspections and Reviews.

Where changes are required to the OPEP, resulting from testing / exercise outcomes, altered contractual arrangements, remedial actions, routine information updates (e.g. contact detail change), or other items; the SGHE HSEC Manager is responsible for ensuring changes are assessed against OPGGS(E) Regulation 19 revision criteria and where necessary, the EP and / or OPEP is submitted to NOPSEMA as a formal revision, in accordance with the Management of Change (MOC) process (SGHE MOC procedure: CORP-PM-PR-0001). For changes which do not trigger a formal revision, internal revisions to the OPEP will also be in accordance with the MOC process with any change justified.

8.10.2 Hydrocarbon Release Contingency Planning

An OPEP has been developed for the project. The OPEP is a live document and is regularly updated, as required (see also 8.10 above).

The OPEP contains the following information:

- Oil spill response priorities.
- Integration with other plans and regulations.
- Responsibilities of SGHE and contractor personnel.
- Tiered response arrangements.
- Reporting requirements.
- Incident control.
- Spill monitoring.
- Response strategies – offshore and onshore.
- Waste management.
- Training requirements.

Hydrocarbon spill response strategies are focused on sensitive environmental resources within the EMBA, as described in Section 4 and outlined in the NEBA section of the OPEP.

8.10.2.1 Hydrocarbon Release Monitoring

SGHE has in place an Operational and Scientific Monitoring Program (OSMP) that could be deployed in the event of a spill, to advise on the monitoring activities that would be conducted in the event of a spill.

The OSMP is applicable for the life of the project and details the systems, practices and procedures to be used to carry out post-spill environmental monitoring. Roles, responsibilities and arrangements for implementation of the OSMP are also defined.

8.10.3 Oil Spill Response Competency and Training

In accordance with Regulation 22 (4) of the OPGGS(E) Regulations the implementation strategy must ensure personnel have the appropriate competencies and training to undertake their roles and responsibilities in emergency situations.

Relevant competency standards for personnel undertaking oil spill response within SGHE are provided in Table 8-6. These competencies are refreshed via annual exercises (see Table 8-5).

Table 8-6 SGHE OSRT – Training and Competency Standards

Role	Competency
Incident Controller	IMO3
Planning Section Chief	IMO2
Environment Coordinator	IMO2
Operations Section Chief	IMO2
Logistics Section Chief	IMO2
Finance & Administration Section Chief	Internal Competency
Corporate Communications Section Chief	Internal Competency
Scientific Monitoring Manager	Environmental degree and experienced provider of OSMP services
Source Control Manager	Experienced offshore Drilling Manager / Drilling Supervisor

Oil spill response training and competency records will be maintained in accordance with SGHE HSEQC Management Standard No. 5 (Competence, Training and Behaviours).

As an initial action the Operations Section Chief will initiate Type I monitoring under the OSMP and will notify the third party OSMP service provider to stand-by. The Planning Section Chief with support from the Environment Coordinator will initiate the Type II monitoring under the OSMP. The Environment Coordinator and Operations Section Chief will monitor the implementation, for large spills where significant OSMP activities are taking place a Scientific Monitoring Manager will be appointed to manage the OSMP and to report back to the Environment Coordinator.

SGHE has a training package that contains a matrix of positions and their required training and a register with identified oil spill response personnel and their training with expiry dates. This matrix and register is monitored and checked quarterly as per Table 8-5.

External resources utilised to fill any oil spill response positions on the OSRT including Scientific Monitoring Manager and Source Control Manager positions must have the appropriate levels of competency. Competency requirements for monitoring personnel are defined in the OSMP. The third party OSMP services provider also maintains a training register of available personnel and this is updated and provided to SGHE on a quarterly basis.

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ATTACHMENTS

1 SGHE HSEC Policy
2 EPBC Act Referrals
3 EPBC Protected Matters Search Tool Report
4 Stakeholder Consultation – Correspondence Summary
5 Longtom Equipment List

Attachment 1 – SGHE HSEC Policy

SGH | Energy

SGH Energy Health, Safety, Environment, Quality and Community Policy

Policy Objectives

SGH Energy is an Australian based oil and gas exploration and production company, with a portfolio of operated and non-operated assets. One of the pillars of corporate success for SGH Energy is a commitment to and achievement of high standards of health, safety, environment, quality and community (HSEQC) performance, and fostering a culture of continuous improvement in all of these areas.

Strategies

To implement this Policy we will:

- As a minimum, comply with all applicable laws and regulations, while aspiring to higher standards.
- Apply responsible standards where laws and regulations do not exist.
- Document and apply standards that relate to HSEQC in the workplace and with consideration to their effect on employees, customers, contractors and the public.
- Apply a systematic approach to the identification of all hazards and HSEQC risks in order to manage risks to as low as reasonably practical.
- Maintain and continuously improve the HSEQC Management System across the organisation.
- Develop and incorporate HSEQC requirements through the lifecycle of company activities, including projects, operations and decommissioning.
- Provide the necessary resources to achieve the requirements of this HSEQC Policy.
- Provide adequate HSEQC training to all SGH Energy personnel and consultants in order to fulfil their responsibilities.
- Require that companies providing contract services to SGH Energy manage their HSEQC performance in line with the specific requirements in this Policy.
- Empower all employees and contractors with the right and responsibility to stop work in a situation that may cause an adverse HSEQC outcome.
- Foster a culture that empowers and rewards everyone to act in accordance with this Policy.
- Communicate openly with stakeholders and the community regarding SGH Energy activities.

Application

The Chief Executive Officer of SGH Energy is accountable to the Board of Directors for ensuring that this Policy is implemented.

This Policy applies to all personnel, contractors and joint venturers engaged in activities under SGH Energy's operational control.

Margaret Hall
Chief Executive Officer
SGH Energy

February 2025

Attachment 2 – EPBC Act Referrals

COMMONWEALTH OF AUSTRALIA

ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

DECISION THAT ACTION IS NOT A CONTROLLED ACTION

I, ALEX RANKIN, Assistant Secretary, Environment Assessment Branch, Department of the Environment and Heritage, a delegate of the Minister for the Environment and Heritage for the purposes of section 75 of the *Environment Protection and Biodiversity Conservation Act 1999*, decide that the proposed action, set out in the Schedule, is not a controlled action.

SCHEDULE

The proposed action to drill the Longtom-3 gas appraisal well in permit area VIC/P54 located off the Victorian coast, and as described in the referral received under the Act on 20 December 2005 (EPBC 2005/2494).

Dated this 20TH day of JANUARY 2006

.....

ASSISTANT SECRETARY
ENVIRONMENT ASSESSMENT BRANCH
DEPARTMENT OF THE ENVIRONMENT AND HERITAGE

Australian Government

Department of the Environment and Heritage

Ms Michelle Zaunbrecher
Health, Safety, Environment and Community Manager
Nexus Energy Limited
134 Little Lonsdale Street
MELBOURNE VIC 3000

Dear Ms Zaunbrecher

Nexus Energy Limited/Energy generation and supply (non-renewable)/Bass Strait/Commonwealth Marine/Longtom Gas Pipeline Development, VIC/P54 (EPBC Reference: 2006/3072)

Thank you for the above referral, received on 26 September 2006, for a decision on whether or not approval is needed under Chapter 4 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The referral has now been considered under the EPBC Act and I have decided that the action is not a controlled action. Approval is therefore not needed under Part 9 of the Act before the action can proceed.

A copy of the document recording my decision is attached for your information. I have written separately to Mr Graham Bunn to advise of my decision.

Chapter 5 of the EPBC Act states that it is an offence to take, kill, injure, move, trade or keep a member of a listed migratory species, listed threatened species or ecological community, listed marine species, or a cetacean, in a Commonwealth area (terrestrial or marine). It is necessary to make a separate application for a permit if the above circumstances are likely to apply to a proposed action. Further information may be obtained by calling 1800 803 772 or visiting the Department of the Environment and Heritage web site (http://www.deh.gov.au/epbc/).

Yours sincerely

Ms Alex Rankin
Assistant Secretary
Environment Assessment Branch

23 October 2006

COMMONWEALTH OF AUSTRALIA

ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

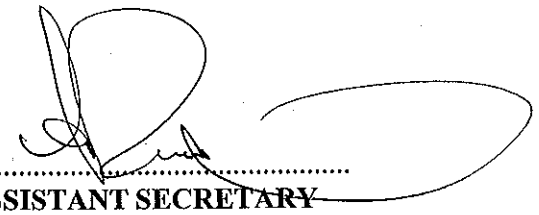
DECISION THAT ACTION IS NOT A CONTROLLED ACTION

I, ALEX RANKIN, Assistant Secretary, Environment Assessment Branch, Department of the Environment and Heritage, a delegate of the Minister for the Environment and Heritage for the purposes of section 75 of the *Environment Protection and Biodiversity Conservation Act 1999*, decide that the proposed action, set out in the Schedule, is not a controlled action.

SCHEDULE

The proposed action to develop the Longtom gas pipeline, within Petroleum Exploration Permit VIC/P54, Bass Strait, and as described in the referral received under the Act on 26 September 2006 (EPBC 2006/3072).

Dated this 23RD day of OCTOBER 2006



.....

ASSISTANT SECRETARY
ENVIRONMENT ASSESSMENT BRANCH
DEPARTMENT OF THE ENVIRONMENT AND HERITAGE

Australian Government

Department of the Environment, Water, Heritage and the Arts

Notification of REFERRAL DECISION – not controlled action

West Triton Drilling Program, Gippsland Basin, Victoria, EPBC 2007/3915

This decision is made under Section 75 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Proposed action

person named in the referral	Apache Energy Ltd, Stuart Petroleum Limited, 3D Oil Limited and Nexus Oil Limited
proposed action	To undertake an offshore drilling program across several permit areas within the Gippsland Basin as outlined in the referral received on 17 December 2007.

Referral decision: Not a controlled action

status of proposed action	The proposed action is not a controlled action.

Person authorised to make decision

Name and position	Ms Vicki Middleton Assistant Secretary Environment Assessment Branch
signature	Vicki Middleton
date of decision	17 January 2008

Notification of
REFERRAL DECISION – not controlled action if undertaken in a particular manner

Nexus Energy Ltd Longtom-5 Development, Victoria, VIC/L29 (EPBC 2012/6498)

This decision is made under sections 75 and 77A of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Proposed action	
person named in the referral **ABN:**	**Nexus Energy Ltd** **64 058 818 278**
proposed action	To drill and tie in the Longtom-5 production well in permit area VIC/L29 in Bass Strait [See EPBC Act referral 2012/6498].

Referral decision: Not a controlled action if undertaken in a particular manner	
status of proposed action	The proposed action is not a controlled action provided it is undertaken in the manner set out in this decision.

Person authorised to make decision	
Name and position	Barbara Jones Assistant Secretary Environment Assessment Branch
signature	
date of decision	5 **September 2012**

manner in which proposed action must be taken	The following measures must be taken to avoid significant impacts on • Wetlands of international importance (sections 16 & 17B) • Listed threatened species and ecological communities (sections 18 & 18A) • Listed migratory species (sections 20 & 20A) • Commonwealth marine areas (sections 23 & 24A) 1. The drilling and tie-in must be undertaken in accordance with the Environment Plan (inclusive of an Oil Spill Contingency Plan), as described in the referral, accepted by the National Offshore Petroleum Safety and Environmental Management Authority prior to the proposed action **commencing**.

2. Oil spill protection priorities must be implemented as stated in Attachment 3 to the referral.

3. The drilling and tie-in must be undertaken in accordance with the Well Operations Management Plan, as described in the referral, accepted by the National Offshore Petroleum Safety and Environmental Management Authority prior to the proposed action **commencing.**

Commencing : as described in the referral EPBC 2012/6498.The action will have commenced once drilling has started.

National Offshore Petroleum Safety and Environmental Management Authority : is the Commonwealth Statutory Agency regulating the health and safety, structural integrity and environmental management of all offshore petroleum facilities in Commonwealth waters, and in coastal waters where State powers have been conferred.

Attachment 3 – EPBC Protected Matters Search Tool Report

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: 01-May-2025

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	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	9
Listed Threatened Species:	116
Listed Migratory Species:	67

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

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

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

Commonwealth Lands:	3
Commonwealth Heritage Places:	1
Listed Marine Species:	107
Whales and Other Cetaceans:	33
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	1
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:	27
Regional Forest Agreements:	3
Nationally Important Wetlands:	12
EPBC Act Referrals:	73
Key Ecological Features (Marine):	2
Biologically Important Areas:	25
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands) [Resource Information]

Ramsar Site Name	Proximity	Buffer Status
Gippsland lakes	Within Ramsar site	In feature area

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	Buffer Status
Commonwealth Marine Areas (EPBC Act)	In feature area

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, 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.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Brogo Vine Forest of the South East Corner Bioregion	Endangered	Community may occur within area	In feature area
Giant Kelp Marine Forests of South East Australia	Endangered	Community may occur within area	In feature area
Gippsland Red Gum (Eucalyptus tereticornis subsp. mediana) Grassy Woodland and Associated Native Grassland	Critically Endangered	Community likely to occur within area	In feature area
Littoral Rainforest and Coastal Vine Thickets of Eastern Australia	Critically Endangered	Community likely to occur within area	In feature area
Lowland Grassy Woodland in the South East Corner Bioregion	Critically Endangered	Community may occur within area	In feature area
Natural Damp Grassland of the Victorian Coastal Plains	Critically Endangered	Community may occur within area	In feature area
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	Critically Endangered	Community likely to occur within area	In feature area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area	In feature area

Community Name	Threatened Category	Presence Text	Buffer Status
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community may occur within area	In buffer area only

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	Buffer Status
BIRD			
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat may occur within area	In feature area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris tenuirostris Great Knot [862]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat known to occur within area	In feature area
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat known to occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Fregetta grallaria grallaria White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat known to occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat may occur within area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In feature area
Pterodroma leucoptera leucoptera Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area	In feature area
Pycnoptilus floccosus Pilotbird [525]	Vulnerable	Species or species habitat known to occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat known to occur within area	In feature area
Sternula albifrons Little Tern [82849]	Vulnerable	Breeding known to occur within area	In feature area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche bulleri platei Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area	In feature area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In feature area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Thinornis cucullatus cucullatus](#) Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area	In feature area
CRUSTACEAN			
[Euastacus bidawalus](#) Bidhawal Crayfish, Bidawal Crayfish, East Gippsland Spiny Crayfish [83136]	Endangered	Species or species habitat known to occur within area	In feature area
[Euastacus diversus](#) Orbost Spiny Crayfish [66782]	Endangered	Species or species habitat may occur within area	In feature area
FISH			
[Epinephelus daemelii](#) Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat may occur within area	In feature area
[Galaxiella pusilla](#) Eastern Dwarf Galaxias, Dwarf Galaxias [56790]	Endangered	Species or species habitat may occur within area	In feature area
[Hoplostethus atlanticus](#) Orange Roughy, Deep-sea Perch, Red Roughy [68455]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area
[Prototroctes maraena](#) Australian Grayling [26179]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Rexea solandri (eastern Australian population)](#) Eastern Gemfish [76339]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area
[Seriolella brama](#) Blue Warehou [69374]	Conservation Dependent	Species or species habitat known to occur within area	In feature area
FROG			
[Heleioporus australiacus flavopunctatus](#) Southern Owl Frog, Southern Giant Burrowing Frog [92014]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Litoria aurea			
Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat known to occur within area	In feature area
Litoria raniformis			
Southern Bell Frog, Growling Grass Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat known to occur within area	In feature area
Litoria watsoni			
Southern Heath Frog, Watson's Tree Frog [91509]	Endangered	Species or species habitat likely to occur within area	In feature area
Mixophyes balbus			
Stuttering Frog, Southern Barred Frog (in Victoria) [1942]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Uperoleia martini			
Martin's Toadlet [1873]	Endangered	Species or species habitat known to occur within area	In feature area
MAMMAL			
Balaenoptera borealis			
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Balaenoptera musculus			
Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In feature area
Balaenoptera physalus			
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population)			
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area	In feature area
Eubalaena australis			
Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area	In feature area
Isoodon obesulus obesulus			
Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (south-eastern) [68050]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Petauroides volans			
Greater Glider (southern and central) [254]	Endangered	Species or species habitat known to occur within area	In feature area
Petaurus australis australis			
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat known to occur within area	In feature area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)			
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat likely to occur within area	In feature area
Potorous longipes			
Long-footed Potoroo [217]	Endangered	Species or species habitat known to occur within area	In feature area
Potorous tridactylus trisulcatus			
Long-nosed Potoroo (southern mainland) [86367]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pseudomys fumeus			
Smoky Mouse, Konoom [88]	Endangered	Species or species habitat may occur within area	In feature area
Pseudomys novaehollandiae			
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pteropus poliocephalus			
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
PLANT			
Acacia caerulescens			
Limestone Blue Wattle, Buchan Blue, Buchan Blue Wattle [21883]	Vulnerable	Species or species habitat known to occur within area	In feature area
Acacia constablei			
Narrabarba Wattle [10798]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Acacia lanigera var. gracilipes			
[31652]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Amphibromus fluitans			
River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Astrotricha sp. Howe Range (D.E.Albrecht 1054)			
Long-leaf Star-hair [85676]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Astrotricha sp. Wingan Inlet (J.A.Jeanes 2268)			
Wingan Star-hair [85675]	Endangered	Species or species habitat known to occur within area	In feature area
Caladenia tessellata			
Thick-lipped Spider-orchid, Daddy Long-legs [2119]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calochilus pulchellus			
Pretty Beard Orchid, Pretty Beard-orchid [84677]	Endangered	Species or species habitat may occur within area	In feature area
Commersonia prostrata			
Dwarf Kerrawang [87152]	Endangered	Species or species habitat likely to occur within area	In feature area
Cryptostylis hunteriana			
Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat known to occur within area	In feature area
Deyeuxia ramosa			
Climbing Bent-grass [87970]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Dianella amoena			
Matted Flax-lily [64886]	Endangered	Species or species habitat likely to occur within area	In feature area
Glycine latrobeana			
Clover Glycine, Purple Clover [13910]	Vulnerable	Species or species habitat may occur within area	In feature area
Persicaria elatior			
Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pomaderris parrisiae Parris' Pomaderris [22119]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Prasophyllum spicatum Dense Leek-orchid [55146]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pterostylis chlorogramma Green-striped Greenhood [56510]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Senecio psilocarpus Swamp Fireweed, Smooth-fruited Groundsel [64976]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Spyridium cinereum Tiny Spyridium [13564]	Endangered	Species or species habitat known to occur within area	In feature area
Thelymitra epipactoides Metallic Sun-orchid [11896]	Endangered	Species or species habitat likely to occur within area	In feature area
Thelymitra matthewsii Spiral Sun-orchid [4168]	Endangered	Species or species habitat likely to occur within area	In feature area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Xerochrysum palustre Swamp Everlasting, Swamp Paper Daisy [76215]	Vulnerable	Species or species habitat likely to occur within area	In feature area
REPTILE			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area	In feature area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Dermochelys coriacea			
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Eretmochelys imbricata			
Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Lissolepis coventryi			
Swamp Skink, Eastern Mourning Skink [84053]	Endangered	Species or species habitat known to occur within area	In feature area
Natator depressus			
Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In feature area
SHARK			
Carcharias taurus (east coast population)			
Grey Nurse Shark (east coast population) [68751]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Carcharodon carcharias			
White Shark, Great White Shark [64470]	Vulnerable	Breeding known to occur within area	In feature area
Centrophorus harrissoni			
Harrisson's Dogfish, Endeavour Dogfish, Dumb Gulper Shark, Harrison's Deepsea Dogfish [68444]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area
Centrophorus uyato			
Little Gulper Shark [68446]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area
Galeorhinus galeus			
School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area
Rhincodon typus			
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
[Ardenna carneipes](#) Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In feature area
[Ardenna grisea](#) Sooty Shearwater [82651]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Ardenna tenuirostris](#) Short-tailed Shearwater [82652]		Breeding known to occur within area	In feature area
[Diomedea antipodensis](#) Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Diomedea epomophora](#) Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Diomedea exulans](#) Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Diomedea sanfordi](#) Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Hydroprogne caspia](#) Caspian Tern [808]		Breeding known to occur within area	In buffer area only
[Macronectes giganteus](#) Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Macronectes halli](#) Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Phoebetria fusca](#) Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In feature area
[Sternula albifrons](#) Little Tern [82849]	Vulnerable	Breeding known to occur within area	In feature area
[Thalassarche bulleri](#) Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Thalassarche carteri](#) Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Thalassarche cauta](#) Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Thalassarche chrysostoma](#) Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area	In feature area
[Thalassarche eremita](#) Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In feature area
[Thalassarche impavida](#) Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Thalassarche melanophris](#) Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Migratory Marine Species			
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area	In feature area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In feature area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In feature area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area	In feature area
Carcharias taurus Grey Nurse Shark [64469]		Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Breeding known to occur within area	In feature area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area	In feature area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area	In feature area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area	In feature area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat likely to occur within area	In feature area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area	In feature area
Megaptera novaeangliae Humpback Whale [38]		Foraging, feeding or related behaviour known to occur within area	In feature area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Orcinus orca](#) Killer Whale, Orca [46]		Species or species habitat likely to occur within area	In feature area
[Physeter macrocephalus](#) Sperm Whale [59]		Species or species habitat may occur within area	In feature area
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Migratory Terrestrial Species			
[Hirundapus caudacutus](#) White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Migratory Wetlands Species			
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
[Arenaria interpres](#) Ruddy Turnstone [872]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
[Calidris alba](#) Sanderling [875]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
[Calidris ruficollis](#) Red-necked Stint [860]		Foraging, feeding or related behaviour known to occur within area	In feature area
[Calidris tenuirostris](#) Great Knot [862]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
[Charadrius bicinctus](#) Double-banded Plover [895]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
[Charadrius leschenaultii](#) Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Gallinago megala](#) Swinhoe's Snipe [864]		Foraging, feeding or related behaviour likely to occur within area	In feature area
[Gallinago stenura](#) Pin-tailed Snipe [841]		Foraging, feeding or related behaviour likely to occur within area	In feature area
[Limosa lapponica](#) Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Numenius madagascariensis			
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Numenius minutus			
Little Curlew, Little Whimbrel [848]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Numenius phaeopus			
Whimbrel [849]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Pandion haliaetus			
Osprey [952]		Species or species habitat known to occur within area	In feature area
Thalasseus bergii			
Greater Crested Tern [83000]		Breeding known to occur within area	In feature area
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Unknown		
Commonwealth Land - [21497]	VIC	In feature area
Commonwealth Land - [21496]	VIC	In feature area
Commonwealth Land - [21498]	VIC	In feature area

Commonwealth Heritage Places [Resource Information]

Name	State	Status	Buffer Status
Historic			
Gabo Island Lighthouse	VIC	Listed place	In feature area

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Ardenna tenuirostris as Puffinus tenuirostris Short-tailed Shearwater [82652]		Breeding known to occur within area	In feature area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Calidris alba Sanderling [875]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris ruficollis Red-necked Stint [860]		Foraging, feeding or related behaviour known to occur within area overfly marine area	In feature area
Calidris tenuirostris Great Knot [862]	Vulnerable	Foraging, feeding or related behaviour known to occur within area overfly marine area	In buffer area only
Charadrius bicinctus Double-banded Plover [895]		Foraging, feeding or related behaviour known to occur within area overfly marine area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius ruficapillus Red-capped Plover [881]		Foraging, feeding or related behaviour known to occur within area overfly marine area	In feature area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding known to occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea antipodensis gibsoni as Diomedea gibsoni			
Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea epomophora			
Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans			
Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi			
Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Eudyptula minor			
Little Penguin [1085]		Breeding known to occur within area	In feature area
Gallinago hardwickii			
Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Gallinago megala			
Swinhoe's Snipe [864]		Foraging, feeding or related behaviour likely to occur within area overfly marine area	In feature area
Gallinago stenura			
Pin-tailed Snipe [841]		Foraging, feeding or related behaviour likely to occur within area overfly marine area	In feature area
Haliaeetus leucogaster			
White-bellied Sea-Eagle [943]		Breeding known to occur within area	In feature area
Halobaena caerulea			
Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area overfly marine area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area	In buffer area only
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Numenius minutus Little Curlew, Little Whimbrel [848]		Foraging, feeding or related behaviour likely to occur within area overfly marine area	In feature area
Numenius phaeopus Whimbrel [849]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding known to occur within area	In feature area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In feature area
Pelagodroma marina White-faced Storm-Petrel [1016]		Breeding known to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In feature area
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Rhipidura rufifrons](#) Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
[Rostratula australis as Rostratula benghalensis (sensu lato)](#) Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
[Stercorarius antarcticus as Catharacta skua](#) Brown Skua [85039]		Species or species habitat may occur within area	In feature area
[Sterna striata](#) White-fronted Tern [799]		Foraging, feeding or related behaviour likely to occur within area	In feature area
[Sternula albifrons as Sterna albifrons](#) Little Tern [82849]	Vulnerable	Breeding known to occur within area	In feature area
[Sternula nereis as Sterna nereis](#) Fairy Tern [82949]		Breeding known to occur within area	In feature area
[Symposiachrus trivirgatus as Monarcha trivirgatus](#) Spectacled Monarch [83946]		Species or species habitat known to occur within area overfly marine area	In feature area
[Thalassarche bulleri](#) Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Thalassarche bulleri platei as Thalassarche sp. nov.](#) Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Thalassarche carteri](#) Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area	In feature area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In feature area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding known to occur within area	In feature area
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area	In feature area
Thinornis cucullatus cucullatus as Thinornis rubricollis rubricollis Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Fish			
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area	In feature area
Cosmocampus howensis Lord Howe Pipefish [66208]		Species or species habitat may occur within area	In feature area
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area	In feature area
Hippocampus abdominalis Big-belly Seahorse, Eastern Potbelly Seahorse, New Zealand Potbelly Seahorse [66233]		Species or species habitat may occur within area	In feature area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area	In feature area
Hippocampus minotaur Bullneck Seahorse [66705]		Species or species habitat may occur within area	In feature area
Histiogamphelus briggsii Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242]		Species or species habitat may occur within area	In feature area
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area	In feature area
Hypselognathus rostratus Knifesnout Pipefish, Knife-snouted Pipefish [66245]		Species or species habitat may occur within area	In feature area
Kaupus costatus Deepbody Pipefish, Deep-bodied Pipefish [66246]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Kimblaeus bassensis Trawl Pipefish, Bass Strait Pipefish [66247]		Species or species habitat may occur within area	In feature area
Leptoichthys fistularius Brushtail Pipefish [66248]		Species or species habitat may occur within area	In feature area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area	In feature area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In feature area
Mitotichthys semistriatus Halfbanded Pipefish [66261]		Species or species habitat may occur within area	In feature area
Mitotichthys tuckeri Tucker's Pipefish [66262]		Species or species habitat may occur within area	In feature area
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area	In feature area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In feature area
Solegnathus robustus Robust Pipehorse, Robust Spiny Pipehorse [66274]		Species or species habitat may occur within area	In feature area
Solegnathus spinosissimus Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area	In feature area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In feature area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In feature area
Stipecampus cristatus Ringback Pipefish, Ring-backed Pipefish [66278]		Species or species habitat may occur within area	In feature area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area	In feature area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area	In feature area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In feature area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area	In feature area
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area	In feature area
Mammal			
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In feature area
Arctocephalus pusillus Australian Fur-seal, Australo-African Fur-seal [21]		Breeding known to occur within area	In feature area
Reptile			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Chelonia mydas			
Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Dermochelys coriacea			
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Eretmochelys imbricata			
Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Natator depressus			
Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In feature area

Whales and Other Cetaceans			[Resource Information]
Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
Balaenoptera acutorostrata			
Minke Whale [33]		Species or species habitat may occur within area	In feature area
Balaenoptera bonaerensis			
Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area	In feature area
Balaenoptera borealis			
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Balaenoptera edeni			
Bryde's Whale [35]		Species or species habitat may occur within area	In feature area
Balaenoptera musculus			
Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In feature area

Current Scientific Name	Status	Type of Presence	Buffer Status
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Berardius arnuxii Arnoux's Beaked Whale [70]		Species or species habitat may occur within area	In feature area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In feature area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area	In feature area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area	In feature area
Globicephala melas Long-finned Pilot Whale [59282]		Species or species habitat may occur within area	In feature area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In feature area
Hyperoodon planifrons Southern Bottlenose Whale [71]		Species or species habitat may occur within area	In feature area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area	In feature area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area	In feature area

Current Scientific Name	Status	Type of Presence	Buffer Status
[Lagenorhynchus obscurus](#) Dusky Dolphin [43]		Species or species habitat likely to occur within area	In feature area
[Lissodelphis peronii](#) Southern Right Whale Dolphin [44]		Species or species habitat may occur within area	In feature area
[Megaptera novaeangliae](#) Humpback Whale [38]		Foraging, feeding or related behaviour known to occur within area	In feature area
[Mesoplodon bowdoini](#) Andrew's Beaked Whale [73]		Species or species habitat may occur within area	In feature area
[Mesoplodon densirostris](#) Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area	In feature area
[Mesoplodon ginkgodens](#) Gingko-toothed Beaked Whale, Gingko-toothed Whale, Gingko Beaked Whale [59564]		Species or species habitat may occur within area	In feature area
[Mesoplodon grayi](#) Gray's Beaked Whale, Scamperdown Whale [75]		Species or species habitat may occur within area	In feature area
[Mesoplodon hectori](#) Hector's Beaked Whale [76]		Species or species habitat may occur within area	In feature area
[Mesoplodon layardii](#) Strap-toothed Beaked Whale, Strap-toothed Whale, Layard's Beaked Whale [25556]		Species or species habitat may occur within area	In feature area
[Mesoplodon mirus](#) True's Beaked Whale [54]		Species or species habitat may occur within area	In feature area
[Orcinus orca](#) Killer Whale, Orca [46]		Species or species habitat likely to occur within area	In feature area

Current Scientific Name	Status	Type of Presence	Buffer Status
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area	In feature area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area	In feature area
Tasmacetus shepherdi Shepherd's Beaked Whale, Tasman Beaked Whale [55]		Species or species habitat may occur within area	In feature area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In feature area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In feature area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area	In feature area

Australian Marine Parks		[Resource Information]
Park Name	Zone & IUCN Categories	Buffer Status
East Gippsland	Multiple Use Zone (IUCN VI)	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Baawang	Reference Area	VIC	In feature area
Bancroft Bay - Kalimna G.L.R.	Natural Features Reserve	VIC	In feature area
Bemm, Goolengook, Arte and Errinundra Rivers	Heritage River	VIC	In feature area
Beowa	National Park	NSW	In feature area
Beware Reef	Marine Sanctuary	VIC	In feature area
Cape Conran Coastal Park	Conservation Park	VIC	In feature area
Cape Howe	Wilderness Zone	VIC	In feature area

Protected Area Name	Reserve Type	State	Buffer Status
Cape Howe	Marine National Park	VIC	In feature area
Croajingolong	National Park	VIC	In feature area
East Gippsland Coastal streams	Natural Catchment Area	VIC	In feature area
Ewing Morass W.R	Natural Features Reserve	VIC	In feature area
First and Second Islands F.R.	Nature Conservation Reserve	VIC	In feature area
Flannagan Island G.L.R.	Natural Features Reserve	VIC	In buffer area only
Fraser Island G.L.R.	Natural Features Reserve	VIC	In feature area
Gippsland Lakes Coastal Park	Conservation Park	VIC	In feature area
Lake Corringle W.R	Natural Features Reserve	VIC	In feature area
Lake Curlip W.R.	Natural Features Reserve	VIC	In buffer area only
Lake Tyers S.P.	State Park	VIC	In feature area
Nadgee	Nature Reserve	NSW	In feature area
Nyerimilang Park G.L.R.	Natural Features Reserve	VIC	In buffer area only
Point Hicks	Marine National Park	VIC	In feature area
Rame Head	Remote and Natural Area - Schedule 6, National Parks Act	VIC	In feature area
Rigby Island G.L.R.	Natural Features Reserve	VIC	In feature area
Sandpatch	Wilderness Zone	VIC	In feature area
Seal Creek	Reference Area	VIC	In feature area
Snowy River	Heritage River	VIC	In feature area
William Hunter F.R	Nature Conservation Reserve	VIC	In feature area

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State	Buffer Status
East Gippsland RFA	Victoria	In feature area
Eden RFA	New South Wales	In feature area
Gippsland RFA	Victoria	In feature area

Nationally Important Wetlands [Resource Information]

Wetland Name	State	Buffer Status
Benedore River	VIC	In feature area
Ewing's Marsh (Morass)	VIC	In feature area
Lake Bunga	VIC	In feature area
Lake King Wetlands	VIC	In feature area
Lake Tyers	VIC	In feature area
Lower Snowy River Wetlands System	VIC	In feature area
Mallacoota Inlet Wetlands	VIC	In feature area
Nadgee Lake and tributary wetlands	NSW	In feature area
Snowy River	VIC	In feature area
Sydenham Inlet Wetlands	VIC	In feature area
Tamboon Inlet Wetlands	VIC	In feature area
Thurra River	VIC	In feature area

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Aurora Green Offshore Wind Farm Preliminary Surveys	2024/09968		Completed	In feature area
Blue Marlin Offshore Wind Energy Project	2023/09532		Completed	In feature area
Gippsland Dawn Offshore Wind Project Geophysical and Geotechnical Investigations	2024/10030		Referral Decision	In feature area
Gippsland Offshore Wind Farm Marine Survey Investigations	2023/09682		Completed	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Greater Gippsland Offshore Wind Project	2022/09379		Assessment	In feature area
Greater Gippsland Offshore Wind Project Initial Marine Field Investigations	2022/09374		Completed	In feature area
Krauatungalung Walk	2024/10043		Completed	In feature area
Navigator North Offshore Wind Farm ? Early Marine Survey Investigations	2024/10093		Referral Decision	In feature area
Seadragon Offshore Wind, Early Marine Surveys	2023/09670		Completed	In feature area
South East Australia Carbon Capture and Storage Project, Commonwealth waters	2023/09732		Completed	In feature area
Not controlled action				
2004/2005 drilling program for exploration and production (VIC 01-06, 09-11, 16, 18 & 19 and VIC/RL	2003/1282	Not Controlled Action	Completed	In feature area
2D seismic Survey in VIC/P55, VIC/RL2 and VIC/P41	2004/1876	Not Controlled Action	Completed	In feature area
Acquistion of 2D seismic data in State Waters adjacent to Ninety Mile Beach-VIC/P39(V)	2004/1889	Not Controlled Action	Completed	In buffer area only
Basker-Manta-Gummy Oil Development	2011/6052	Not Controlled Action	Completed	In feature area
Basker-Manta-Gummy Oil Field Development	2007/3402	Not Controlled Action	Completed	In buffer area only
Basker-Manta Oil Field Development	2005/2026	Not Controlled Action	Completed	In feature area
Beardie-1 Field wildcat oil well	2001/505	Not Controlled Action	Completed	In feature area
Biodiversity Impacts Audit	2011/6191	Not Controlled Action	Completed	In feature area
Construction of an ocean access boat ramp at Bastion Point	2004/1407	Not Controlled Action	Completed	In feature area
Cunninghame Arm Redevelopment (Stage 3)	2002/618	Not Controlled Action	Completed	In feature area
Development of Kipper gas field within Vic/L3, Vic/L4 Vic/RL2	2005/2484	Not Controlled Action	Completed	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Development of Turrum Oil Field and associated infrastructure	2003/1204	Not Controlled Action	Completed	In feature area
Drilling and side track completion at Baleen gas production well in Production Licence area VIC/L21	2004/1535	Not Controlled Action	Completed	In feature area
Drilling of 'Culverin' oil exploration well, permit VIC/P56	2005/2279	Not Controlled Action	Completed	In feature area
Drilling of Scallop-1 Exploration Well	2003/917	Not Controlled Action	Completed	In feature area
East Pilchard exploration well	2001/137	Not Controlled Action	Completed	In feature area
Gippsland Basin Seismic Programme	2004/1866	Not Controlled Action	Completed	In feature area
Gippsland Lakes Composting Toilet Program	2000/66	Not Controlled Action	Completed	In feature area
Hemingway1/Oil Exploration	2001/177	Not Controlled Action	Completed	In feature area
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Longtom-3 Gas Appraisal Well, VIC/P54	2005/2494	Not Controlled Action	Completed	In feature area
Longtom Gas Pipeline Development, VIC/P54	2006/3072	Not Controlled Action	Completed	In feature area
Marlin-Snapper Gas Pipeline Project	2006/3197	Not Controlled Action	Completed	In feature area
Melville 1 Oil Exploration Well	2001/167	Not Controlled Action	Completed	In feature area
Northright-1 Exploration Well	2001/209	Not Controlled Action	Completed	In feature area
Offshore Petroleum Exploration	2001/289	Not Controlled Action	Completed	In feature area
Offshore Seismic Survey	2001/498	Not Controlled Action	Completed	In feature area
Pump station upgrades and rising main construction, Lakes Entrance, Victoria	2016/7646	Not Controlled Action	Completed	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Sole-2 appraisal gas well, VIC/RL3	2002/636	Not Controlled Action	Completed	In feature area
Sole gas field development	2003/937	Not Controlled Action	Completed	In feature area
Turrum Phase 2 Development Project	2008/4191	Not Controlled Action	Completed	In feature area
West Triton Drilling Program - Gippsland Basin	2007/3915	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
2D seismic survey in the Sole gas field and adjacent acreage in the Gippsland Basin (VIC RL/3 & VIC/	2002/871	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
2D seismic survey Permit Area VIC/P49	2006/2943	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
2D Seismic Survey Program in Bass Strait	2008/4040	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Apache 3D seismic exploration survey	2006/3146	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Bream 3D seismic survey	2006/2556	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Eden Breakwater Wharf extension, NSW	2015/7582	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Eden Breakwater Wharf Extension, NSW	2016/7828	Not Controlled Action (Particular Manner)	Completed	In feature area
Gas Pipeline	2000/20	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Gippsland 2D Marine Seismic Survey - VIC/P-63, VIC/P-64 and T/46P	2009/5241	Not Controlled Action (Particular Manner)	Post-Approval	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (particular manner)				
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Inspection of project vessels for presence of invasive marine pests in Commonwealth waters off Victo	2012/6362	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Lakes Entrance Sand Management Program Trial Dredging	2007/3694	Not Controlled Action (Particular Manner)	Completed	In feature area
Lakes Entrance Sand Management Program Trial Dredging	2007/3852	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Longtom-5 Offshore Production Drilling (Vic/L29), VIC	2012/6498	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Longtom South -1 Exploration Drilling	2011/6217	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Maintenance Dredging of Oceanic Sand	2011/5932	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Non-exclusive 3-D Marine Seismic Survey, Bass Strait	2002/775	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Northern Fields 3D Seismic Survey	2001/140	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Seismic Exploration in Permit VIC/P41	2001/267	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Seismic Survey	2001/206	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Seismic survey, Gippsland Basin	2001/525	Not Controlled Action (Particular	Post-Approval	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (particular manner)				
		Manner)		
Southern Flanks 2D Marine Seismic Survey	2010/5288	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Southern Margins 3D Seismic Survey VIC/P55	2007/3780	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Tuskfish 3D Seismic Survey, Bass Strait	2002/864	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Referral decision				
Beardie-1 Field wildcat oil well	2001/469	Referral Decision	Completed	In feature area
Breeding program for Grey Nurse Sharks	2007/3245	Referral Decision	Completed	In buffer area only
Longtom 5 Offshore Production Drilling (VIC/L29)	2012/6404	Referral Decision	Completed	In feature area
Longtom-5 Offshore Production Drilling (Vic/L29)	2012/6413	Referral Decision	Completed	In feature area
Shark 3D Seismic Survey	2007/3294	Referral Decision	Completed	In feature area
Stanton 3D Marine Seismic Survey	2013/6764	Referral Decision	Completed	In feature area

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	Buffer Status
Big Horseshoe Canyon	South-east	In feature area
Upwelling East of Eden	South-east	In feature area

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence	Buffer Status
Dolphins			
Tursiops aduncus			
Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Breeding	Likely to occur	In feature area
Seabirds			

Scientific Name	Behaviour	Presence	Buffer Status
Ardenna carneipes Flesh-footed Shearwater [82404]	Foraging	Known to occur	In feature area
Ardenna grisea Sooty Shearwater [82651]	Foraging	Likely to occur	In feature area
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging	Likely to occur	In feature area
Ardenna tenuirostris Short-tailed Shearwater [82652]	Foraging	Known to occur	In feature area
Ardenna tenuirostris Short-tailed Shearwater [82652]	Foraging	Likely to occur	In feature area
Diomedea exulans (sensu lato) Wandering Albatross [1073]	Foraging	Known to occur	In feature area
Diomedea exulans antipodensis Antipodean Albatross [82269]	Foraging	Known to occur	In feature area
Eudyptula minor Little Penguin [1085]	Breeding	Known to occur	In feature area
Eudyptula minor Little Penguin [1085]	Foraging	Known to occur	In feature area
Pelagodroma marina White-faced Storm-petrel [1016]	Breeding	Known to occur	In feature area
Pelagodroma marina White-faced Storm-petrel [1016]	Foraging	Known to occur	In feature area
Pelecanoides urinatrix Common Diving-petrel [1018]	Foraging	Known to occur	In feature area
Procellaria parkinsoni Black Petrel [1048]	Foraging	Likely to occur	In feature area
Thalassarche bulleri Bullers Albatross [64460]	Foraging	Known to occur	In feature area
Thalassarche cauta cauta Shy Albatross [82345]	Foraging likely	Likely to occur	In feature area

Scientific Name	Behaviour	Presence	Buffer Status
Thalassarche chlororhynchos bassi Indian Yellow-nosed Albatross [85249]	Foraging	Known to occur	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Foraging	Known to occur	In feature area
Thalassarche melanophris impavida Campbell Albatross [82449]	Foraging	Known to occur	In feature area
Sharks			
Carcharias taurus Grey Nurse Shark [64469]	Foraging	Known to occur	In feature area
Carcharias taurus Grey Nurse Shark [64469]	Migration	Known to occur	In feature area
Carcharodon carcharias White Shark [64470]	Breeding (nursery area)	Known to occur	In feature area
Carcharodon carcharias White Shark [64470]	Foraging	Known to occur	In feature area
Whales			
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Likely to be present	In feature area
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	Known to occur	In feature area

Bioregional Assessments			[Resource Information]
SubRegion	BioRegion	Website	Buffer Status
Gippsland	Gippsland Basin	BA website	In feature area

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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Attachment 4 – Stakeholder Consultation – Correspondence Summary

Victorian State Government Agency			
Agriculture Victoria - Biosecurity (marine pests)			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025. Follow up email to Principal Officer Invasive Marine Species including an invitation to an online or in-person meeting sent on 19 June 2025. Reply email from Principal Officer Invasive Marine Species received 19 June 2025 with suggested meeting times. Phone call with Principal Officer Invasive Marine Species on 25 June 2025 regarding Vessel Check / IMS risk assessment process (see below for summary of conversation)			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No objections or claims received. Vessel Check is no longer available. Other operators have been conducting their own checks and checking with him. Said SGHE would look to resurrect our previous process prior to vessel check and if anything significant came up or if unsure would contact and discuss it with him. Raised that SGHE is conducting a vessel inspection about every 12 months and looked to use vessels already in Victoria where possible. He is raising the issue of a common vessel check process nationally as it would provide a better level of consistency and certainty for all those involved. For activities in commonwealth waters he suggested dropping a line to pestmarine@aff.gov.au	N/A	N/A	SGHE will continue to liaise with the Principal Officer Invasive Marine Species prior to offshore campaigns should the SGHE IMS RA result not indicate 'Low Risk'. DAFF is on the list of relevant persons and was consulted in the preparation of this EP.
Consultation demonstration statement			
Sufficient information Longtom Consultation Information provided as described in EP Section 3.3.2.1. Updated flyer contained information on: • the nature, location and timing of the activities • impacts and risks, and mitigation measures • access to further information through a contact email address. Further detail specifically related to the function and interest of Agriculture Victoria – Biosecurity was then provided in a phone call. No further information has been requested, and no matters raised remain outstanding. **Reasonable period** Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.			

Commonwealth Government Authority			
Australian Fisheries Management Authority (AFMA)			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025. Proforma email response received on 5 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No objections or claims. AFMA would like to be included in future consultations. AFMA has no specific comments on the activity but advised contacting the following organisations directly: • Southern Squid Jig (via CFA) • Bass Strait Central Zone Scallop Fishery (via CFA) • Tasmanian Seafood Industry Council (TSIC) • Seafood Industry Victoria • Small Pelagic Fishery (via SETFIA) • Southern and Eastern Scalefish and Shark Fishery (via SETFIA) • Southern Shark Industry Alliance Inc. • Eastern Tuna and Billfish Fishery (including eastern skipjack) • Southern Bluefin Tuna Fishery	N/A	N/A	Other than TSIC all other fisheries were already on the list of relevant persons. The EMBA does not overlap Tasmanian fisheries however as advised by AFMA SIT (formerly TSIC) was added to the list of relevant persons. Noting TSIC had been consulted previously and TSIC had responded (in 2011) that due to the location of the activity there should not be any interaction with Tasmanian managed fisheries and subsequent emails to TSIC have not received any response. SIT contact added to relevant persons list and email sent to SIT 11 July 2025. No response to AFMA required. SGHE will continue to consult with AFMA.
Consultation demonstration statement			
Full text of response provided in Sensitive Information Report pp1-2. **Sufficient information** As described in EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for AFMA to make an informed assessment of the possible consequences of the activity on its functions and interests in relation to Commonwealth-managed fisheries. Updated flyer contained sufficient information on: • the nature, location and timing of the activities • impacts and risks, and mitigation measures • access to further information through a contact email address. No further information has been requested, and no matters raised remain outstanding. **Reasonable period** Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.			

Commonwealth Government Agency			
Australian Hydrographic Office (AHO)			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025. Automated receipt email received 2 May 2025			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No objections, claims or other feedback.	N/A	N/A	Further information specific to AHO's functions will be provided as per ongoing consultation requirements communicated in previous consultation with AHO.
Consultation demonstration statement			

Full text of response provided in Sensitive Information Report pp3-4.

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for AHO to make an informed assessment of the possible consequences of the activity on its functions.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested, and no matters raised remain outstanding.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Commonwealth Government Authority			
Australian Maritime Safety Authority (AMSA)			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	Further information specific to AMSA's function will be provided as per ongoing consultation requirements communicated in previous consultation with AMSA.

Consultation demonstration statement

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for AMSA to make an informed assessment of the possible consequences of the activity on its function in relation to maritime safety and oil spill response.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested, and no matters raised remain outstanding.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

NSW Government Local Council			
Bega Valley Shire Council			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Bega Valley Shire Council to make an informed assessment of the possible consequences of the activity on its functions, interests and activities on the south coast of NSW.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Commonwealth Government Department			
Department of Agriculture, Fisheries and Forestry – Biosecurity and Trade (marine pests), Agriculture and Land (fisheries)			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025. Proforma response email from Marine and Aquatic Biosecurity Section received 1 May 2025. Email contained general information and links regarding biofouling, in-water cleaning and ballast water requirements.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No objections, claims or other feedback. "Your enquiry will be responded to within **10 business days** if it is not addressed in this email or the links provided." No further response received.	N/A	N/A	Information and links provided in email reviewed to ensure biofouling and ballast water management requirements in the EP are consistent with DAFF requirements. No response to DAFF required.
Consultation demonstration statement			
Full text of response provided in Sensitive Information Report pp5-7. **Sufficient information** Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for DAFF to make an informed assessment of the possible consequences of the activity on its functions and interests in relation to marine pests and fisheries. Updated flyer contained sufficient information on: • the nature, location and timing of the activities • impacts and risks, and mitigation measures • access to further information through a contact email address. No further information has been requested, and no matters raised remain outstanding. **Reasonable period** Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.			

Commonwealth Government Agency			
Department of Climate Change, Energy, the Environment and Water (Underwater cultural heritage)			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025. Automated receipt email received 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No objections, claims or other feedback received.	N/A	N/A	N/A
Consultation demonstration statement			
Full text of response provided in Sensitive Information Report p8. **Sufficient information** Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for DCCEEW to make an informed assessment of the possible consequences of the activity on its functions and interests in relation to underwater cultural heritage and wetlands. Updated flyer contained sufficient information on: • the nature, location and timing of the activities • impacts and risks, and mitigation measures • access to further information through a contact email address. No further information has been requested. **Reasonable period** Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.		

Commonwealth Government Agency			
Department of Defence			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A

Consultation demonstration statement

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Department of Defence to make an informed assessment of the possible consequences of the activity on its activities in eastern Bass Strait.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Victorian State Government Agency			
Department of Energy, Environment and Climate Change Action (DEECA)– Gippsland Region			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for DEECA – Gippsland Region to make an informed assessment of the possible consequences of the activity on its function and interests in Gippsland.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Victorian State Government Agency			
Department of Transport and Planning (DTP)			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025. Automated receipt email received 1 May 2025. Follow up emails to Senior Scientific Officer and Associate Director directly on 25 June 2025. New contact details for Acting Associate Director provided by DTP in response to SGHE Crisis Management Plan contacts check on 15 July 2025 Introductory Email and Consultation Flyer sent to new contact on 17 July 2025. Email response received 17 July 2025 providing Victorian Joint Industry and State Oil Pollution Responses Guidance Note 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No objections or claims. "DTP can be part of the EP consultation process with a focus on the OPEP. DTP can provide feedback on State arrangements in the OPEP."	N/A	N/A	Guidance Note provided in email reviewed to ensure state arrangements in the OPEP are consistent with DTP requirements. SGHE will continue to engage with DTP on state oil spill response arrangements. As per the guidance provided, consultation with other Victorian government agencies including DEECA, EPA, Parks Victoria, Safe Transport Victoria and VFA may be coordinated by DTP. Noting that in updating the OPEP in conjunction with the 5-yearly revision of its Longtom EP SGHE has not incorporated additional assets and there has been no increase in the likelihood or threat of pollution and no change to the spill scenarios modelled in the previous OPEP.
Consultation demonstration statement			
Full text of response provided in Sensitive Information Report p9. **Sufficient information** Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for DTP to make an informed assessment of the possible consequences of the activity on its function and interests in relation to oil spill response. Updated flyer contained sufficient information on: • the nature, location and timing of the activities • impacts and risks, and mitigation measures • access to further information through a contact email address. No further information has been requested. **Reasonable period** Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.		

Commonwealth Government Agency			
Director of National Parks			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A

Consultation demonstration statement

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Director of National Parks to make an informed assessment of the possible consequences of the activity on its function and interests in Australian Marine Parks.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

NSW State Government Agency			
Department of Climate Change, Energy, the Environment and Water (DCCEEW) – Environment and Heritage			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025. Automated receipt email received 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No objections, claims or other feedback.	N/A	N/A	N/A
Consultation demonstration statement			
Full text of response provided in Sensitive Information Report p10. **Sufficient information** Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for DCCEEW to make an informed assessment of the possible consequences of the activity on its function and interests in relation to environment and heritage in NSW. Updated flyer contained sufficient information on: • the nature, location and timing of the activities • impacts and risks, and mitigation measures • access to further information through a contact email address. No further information has been requested. **Reasonable period** Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.			

NSW State Government Agency			
Department of Primary Industries and Regional Development (DPIRD) – Fisheries and Forestry			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for DPIRD to make an informed assessment of the possible consequences of the activity on its function in relation to NSW-managed fisheries.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Victorian Government Local Council			
East Gippsland Shire Council			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for East Gippsland Shire Council to make an informed assessment of the possible consequences of the activity on its function, interests and activities in East Gippsland.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Victorian State Government Authority			
Environment Protection Authority (EPA) Victoria			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025. Email received 2 May 2025 stating forwarded to Gippsland Regional Team.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No objections, claims or other feedback.	N/A	N/A	N/A
Consultation demonstration statement			
Full text of response provided in Sensitive Information Report pp11-13. **Sufficient information** Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for EPA Victoria to make an informed assessment of the possible consequences of the activity on its function in relation to oil spill response. Updated flyer contained sufficient information on: • the nature, location and timing of the activities • impacts and risks, and mitigation measures • access to further information through a contact email address. No further information has been requested. **Reasonable period** Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.			

Victorian Statutory Authority			
Gippsland Ports			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Gippsland Ports to make an informed assessment of the possible consequences of the activity on its function and activities in Gippsland.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Victorian State Government Agency			
Parks Victoria			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025. Automated receipt email received 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No objections, claims or other feedback.	N/A	N/A	N/A
Consultation demonstration statement			
Full text of response provided in Sensitive Information Report p14. **Sufficient information** Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Parks Victoria to make an informed assessment of the possible consequences of the activity on its function in relation to national and marine parks in Gippsland. Updated flyer contained sufficient information on: • the nature, location and timing of the activities • impacts and risks, and mitigation measures • access to further information through a contact email address. No further information has been requested. **Reasonable period** Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.			

NSW State Government Agency			
Port Authority of NSW			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Port Authority of NSW to make an informed assessment of the possible consequences of the activity on its function and activities in NSW.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Victorian State Government Agency			
Safe Transport Victoria - Maritime			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Safe Transport Victoria to make an informed assessment of the possible consequences of the activity on its function in relation to maritime safety.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

NSW State Government			
Transport for NSW			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025. Automated receipt email received 20 May 2025. Another email received on 20 May 2025 redirecting to contact via website.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No objections, claims or feedback.	N/A	N/A	N/A
Consultation demonstration statement			

Full text of response provided in Sensitive Information Report pp15-18.

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Transport for NSW to make an informed assessment of the possible consequences of the activity on its function in relation to oil spill response.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Victorian State Government Authority			
Victorian Fisheries Authority			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Victorian Fisheries Authority to make an informed assessment of the possible consequences of the activity on its function in relation to Victorian-managed fisheries.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Victorian Government Local Council			
Wellington Shire Council			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Wellington Shire Council to make an informed assessment of the possible consequences of the activity on its functions, interests and activities.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Victorian State Government Agency			
Department of Energy Environment and Climate Action – Earth Resources Regulator			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A

Consultation demonstration statement

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for the Earth Resources Regulator to make an informed assessment of the possible consequences of the activity on its function.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

First Nations			
Gunaikurnai Land and Waters Aboriginal Corporation			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Although no response was received it is noted that Cooper Energy has been advised by GLaWAC that "GLaWAC management could act on behalf of its members for the purposes of consultation on the proposed activities offshore Gippsland" (Cooper Energy, 2024). Additionally, Emperor Energy (2025) noted that although GLaWAC "expressed interest in consultation, but Emperor Energy has been unable to get any further response to calls or emails."

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for GLaWAC to make an informed assessment of the possible consequences of the activity on its function and interest in relation First Nations cultural values.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

First Nations			
Bega Local Aboriginal Land Council			
Consultation overview with a summary of each response made by the relevant person			
Email enquiry via NSWALC website on 1 May 2025 Introductory Email and Consultation Flyer sent on 15 July 2025 to CEO's email address.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Cooper Energy (2024) noted that no response was received although "Cooper Energy endeavoured to meet each South Coast Zone LALC individually. To allow for efficiency, the zone administration facilitated a presentation during a South Coast Zone regional forum. Materials were thereafter distributed to individual LALCs and the opportunity to consult individually was provided…The South Coast Zone regional manager advised that nothing further was required from their perspective, and that individual LALCs would make contact if anything further was required. In July 2024, each South Coast Zone LALC and its members was provided another opportunity to consult… This email requested that information be shared with members and that the LALC advise if a members meeting should be held, should the board determine this to be appropriate."

Esso Australia (2025) noted no responses were received.

Emperor Energy (2025) noted no response received although "Additional contact made by phone, but no further response received. Email was directed to person as advised by administrative staff."

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Bega LALC to make an informed assessment of the possible consequences of the activity on its function and interest in relation to First Nations cultural values.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

First Nations			
Eden Local Aboriginal Land Council			
Consultation overview with a summary of each response made by the relevant person			
Email enquiry via NSWALC website on 1 May 2025 Email enquiry via NSWALC website on 22 May 2025 Email received on 22 May 2025, stating email regarding EP consultation was forwarded from NSWALC and requesting that the information be sent to the CEO's email address. Introductory Email and Consultation Flyer sent on 22 May 2025 to CEO's email address.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No objections, claims or other feedback.	N/A	N/A	N/A
Consultation demonstration statement			

Full text of response provided in Sensitive Information Report pp19-20.

Cooper Energy (2024) noted that no response was received although "Cooper Energy endeavoured to meet each South Coast Zone LALC individually. To allow for efficiency, the zone administration facilitated a presentation during a South Coast Zone regional forum. Materials were thereafter distributed to individual LALCs and the opportunity to consult individually was provided…The South Coast Zone regional manager advised that nothing further was required from their perspective, and that individual LALCs would make contact if anything further was required. In July 2024, each South Coast Zone LALC and its members was provided another opportunity to consult… This email requested that information be shared with members and that the LALC advise if a members meeting should be held, should the board determine this to be appropriate."

Esso Australia (2025) noted no responses were received.

Emperor Energy (2025) noted no response received although "Additional contact made by phone, but no further response received."

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Eden LALC to make an informed assessment of the possible consequences of the activity on its function and interest in relation to First Nations cultural values.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

First Nations			
Merrimans Land Aboriginal Land Council			
Consultation overview with a summary of each response made by the relevant person			
Email enquiry via NSWALC website on 1 May 2025. Email received 1 May 2025 confirming email address. Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No objections, claims or other feedback.	N/A	N/A	N/A
Consultation demonstration statement			
Full text of response provided in Sensitive Information Report p21. Cooper Energy (2024) noted that no response was received although "Cooper Energy endeavoured to meet each South Coast Zone LALC individually. To allow for efficiency, the zone administration facilitated a presentation during a South Coast Zone regional forum. Materials were thereafter distributed to individual LALCs and the opportunity to consult individually was provided…The South Coast Zone regional manager advised that nothing further was required from their perspective, and that individual LALCs would make contact if anything further was required. In July 2024, each South Coast Zone LALC and its members was provided another opportunity to consult… This email requested that information be shared with members and that the LALC advise if a members meeting should be held, should the board determine this to be appropriate." Esso Australia (2025) noted no responses were received. Emperor Energy (2025) noted no response received although "Additional contact made by phone, but no further response received." **Sufficient information** Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Merrimans LALC to make an informed assessment of the possible consequences of the activity on its function and interest in relation to First Nations cultural values. Updated flyer contained sufficient information on: • the nature, location and timing of the activities • impacts and risks, and mitigation measures • access to further information through a contact email address. No further information has been requested. **Reasonable period** Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.			

First Nations			
NSW Aboriginal Land Council			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Cooper Energy has been advised by the NSWALC South Coast Zone Director "… that within the legislated boundaries, each LALC was independent, with its own CEO and Board. As such, the zone administration was not able to consult on the proposed activities within this EP, as each LALC would have its own independent views." (Cooper Energy, 2024).

Emperor Energy similarly noted the advice that "each LALC will need to be contacted for consultation" (Emperor Energy, 2025).

Esso Australia (2025) noted no responses were received.

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for NSWALC to make an informed assessment of the possible consequences of the activity on its function and interest in relation to First Nations cultural values.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested. No feedback is expected as NSWALC's function is support and guidance for the individual LALCs.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Commercial Fishing			
Abalone Council Victoria			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Abalone Council Victoria to make an informed assessment of the possible consequences of the activity on its function in relation to abalone fisheries.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Commercial Fishing			
Australian Southern Bluefin Tuna Industry Association (ASBTIA)			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025. Automated email response 6 May 2025 advising email automatically forwarded to CEO.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No objections, claims or feedback.	N/A	N/A	N/A
Consultation demonstration statement			
Full text of response provided in Sensitive Information Report p22. **Sufficient information** Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for ASBTIA to make an informed assessment of the possible consequences of the activity on its function in relation to the Southern Bluefin Tuna Fishery. Updated flyer contained sufficient information on: • the nature, location and timing of the activities • impacts and risks, and mitigation measures • access to further information through a contact email address. No further information has been requested. **Reasonable period** Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.			

Commercial Fishing			
Australian Wildcatch Fishing			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025. Website contact form used 1 July 2025 to follow-up with General Manager of Australian Wildcatch Fishing directly (as recommended in consultation with SETFIA Executive Director). Email received 1 July 2025 with General Manager phone contact details. Several phone calls and follow up email to General Manager on 3 July 2025. Phone call with General Manager on 7 July 2025 regarding Longtom operations and ongoing consultation (see below for summary of conversation)			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No objections or claims. Australian Wildcatch Fishing receive the SETFIA text messages and are happy to continue receiving information that way, rather than directly from SGHE. They have recently updated their vessel navigation systems and have implemented a ring-fencing system around PSZs such as Longtom, this provides alarms if they get too close. No other questions raised.	N/A	N/A	N/A
Consultation demonstration statement			
Sufficient information Longtom Consultation Information provided as described in EP Section 3.3.2.1. Updated flyer contained information on: • the nature, location and timing of the activities • impacts and risks, and mitigation measures • access to further information through a contact email address. Further detail specifically related to the activities of Australian Wildcatch Fishing was then provided in a phone call. No further information has been requested, and no matters raised remain outstanding. **Reasonable period** Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.			

Commercial Fishing			
Commonwealth Fisheries Association			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Commonwealth Fisheries Association to make an informed assessment of the possible consequences of the activity on its function in relation to the Commonwealth-managed fisheries including Southern Squid Jig and Bass Strait Central Zone Scallop (as confirmed by AFMA).

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Commercial Fishing			
Victorian Sea Urchin Divers Association (VSUDA)			
Consultation overview with a summary of each response made by the relevant person			
Website query made on 15 May 2025 to Victorian Fisheries Authority (VFA) for contact details for Victorian Sea Urchin Divers Association. VFA advised direct email address via email 16 May 2025. Introductory Email and Consultation Flyer sent on Friday 16 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			
Full text of responses from VFA regarding VSUDA contact details provided in Sensitive Information Report pp23-24. **Sufficient information** Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for VSUDA to make an informed assessment of the possible consequences of the activity on its function in relation to sea urchin fisheries. Updated flyer contained sufficient information on: • the nature, location and timing of the activities • impacts and risks, and mitigation measures • access to further information through a contact email address. No further information has been requested. **Reasonable period** Relevant person first contacted on 16 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.			

Commercial Fishing			
Eastern Zone Abalone Industry Association			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for EZAIA to make an informed assessment of the possible consequences of the activity on its function in relation to the abalone fishery.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Commercial Fishing			
Lakes Entrance Fisherman's Co-operative (LEFCOL)			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for LEFCOL to make an informed assessment of the possible consequences of the activity on its activities.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Commercial Fishing			
Seafood Industry Victoria (SIV)			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025. Email received 2 May 2025 attaching copy of SIV Engagement Agreement.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No objections or claims. SIV is managing engagement with offshore developers under the framework of an Engagement Agreement.	N/A	N/A	No overlap of Victorian-managed fisheries with the operating area, except for the Trawl (Inshore) Fishery which complements the larger Commonwealth South East Trawl Fishery. Consultation with fishers in the South East Trawl Fishery is undertaken via SETFIA and therefore an engagement agreement with SIV is not considered to be required.

Consultation demonstration statement

Full text of response provided in Sensitive Information Report p25.

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for SIV to make an informed assessment of the possible consequences of the activity on its function in relation to Victorian-managed fisheries.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Commercial Fishing			
South East Trawl Fishing Industry Association (SETFIA)			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025. Follow up email sent to Executive Director directly on 19 June 2025 suggesting a meeting on ongoing consultation/IMR campaign notifications. Response from Executive Director on 19 June 2025 re meeting arrangements. Email to Executive Director on 25 June 2025 confirming meeting arrangements. Email from Executive Director on 28 June 2025 requesting a copy of the Consultation Flyer. Email to Executive Director on 1 July 2025 providing a copy of the Consultation Flyer and links to the NOPSEMA website for industry environment plans and gazetted notices for PSZs. Online meeting with Executive Director and Shared Marine Space Communications Manager held 1 July 2025. SGHE provided an overview of SGH Energy and Longtom operations including plans for restart. SETFIA described the recently established consultation focused / shared marine space group (see below for summary of conversation). Email from Executive Director on 1 July 2025 with a proposal for SGHE to join the SETFIA shared marine space group			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No objections or claims. SETFIA have set up a consultation focused / shared marine space group with the majority of wind farm developers, Esso and Amplitude. This has a joining fee, annual fee and a charge to update an online GIS tool. The GIS tool provides the fishing industry with a single map showing all offshore activities and the locations of PSZs and facilities. Fishing boats can also download the data into their navigation system and they are looking at geo fencing options that would alarm if the vessel entered a PSZ. The previous SMS based system was being used up to 4 x per week and is not that effective in getting information out due to the number of messages. Proposal for the GIS based system will be provided to SGHE - SGHE hadn't been included as the effort and number of messages SGHE have historically required was very low, SGHE would however be welcome to join. SMS option is still available. The key fishing industry players are the Southern Shark Industry Alliance, SIV and SETFIA. No major changes in fishing industry practices - school whiting fishery is more active. Wind farms may move some effort east.	N/A	N/A	As acknowledged by SETFIA the number of SMS messages required by SGHE historically have been very low. SGHE will continue to utilise the SMS option to notify the fleet of annual offshore campaigns. Following Longton restart this decision may be reconsidered, but currently participation in the shared marine space group is not required.
Consultation demonstration statement			
Full text of responses provided in Sensitive Information Report pp26-31. **Sufficient information** Longtom Consultation Information provided as described in EP Section 3.3.2.1. Updated flyer contained information on: • the nature, location and timing of the activities • impacts and risks, and mitigation measures • access to further information through a contact email address. Further detail specifically related to the function, interests and activities of SETFIA was then provided in a phone call. No further information has been requested, and no matters raised remain outstanding. **Reasonable period** Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.			

Commercial Fishing			
Southern Squid Jig Fishery			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for CFA (as per AFMA email) to make an informed assessment of the possible consequences of the activity on its function and interests in relation to the Southern Squid Jig Fishery.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Commercial Fishing			
Southern Shark Industry Alliance (SSIA)			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for SSIA to make an informed assessment of the possible consequences of the activity on its function and interests.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested. No feedback is expected directly from SSIA because SETFIA informed SGHE that although SSIA and SETFIA are independent not-for-profit entities SSIA and SETFIA currently share management services.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Commercial Fishing			
Tuna Australia			
Consultation overview with a summary of each response made by the relevant person			
Website query sent 1 May 2025 Automated receipt response received on 1 May 2025 Introductory Email and Consultation Flyer sent on 1 May 2025. Email response received 1 May 2025 regarding Tuna Australia's industry position statement on consultation with the energy sector.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No objections or claims. "Tuna Australia has developed an industry position statement defining our approach to consultation with the energy sector. Under our services agreement, we manage consultation with all tuna concession owners and holders relevant to proposed environmental plans. If you would like to enter into a services agreement with Tuna Australia, please let me know and I will provide a draft agreement template for consideration."	N/A	N/A	No overlap of Eastern Tuna and Billfish fishing activity is expected within the operating area as effort is concentrated along the coast of NSW and southern-central Queensland. AFMA indicates that as it is the continental shelf and slope waters that are targeted central Bass Strait is too shallow. Although the outer extent of the EMBA potentially overlaps an area of low to medium fishing intensity in the vicinity of the major landing port of Bermagui in southern NSW a services agreement is not considered to be required.
Consultation demonstration statement			
Full text of response provided in Sensitive Information Report pp32-33. **Sufficient information** Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Tuna Australia to make an informed assessment of the possible consequences of the activity on its function and interests. Updated flyer contained sufficient information on: • the nature, location and timing of the activities • impacts and risks, and mitigation measures • access to further information through a contact email address. No further information has been requested. **Reasonable period** Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.		

Commercial Fishing			
Victorian Scallop Fishermen's Association			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Victorian Scallop Fishermen's Association (SIV) to make an informed assessment of the possible consequences of the activity on its activities.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Commercial Fishing			
Seafood Industry Tasmania (SIT) formerly TSIC			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent to TSIC email address (provided by AFMA) on 6 May 2025. Introductory Email and Consultation Flyer sent to new SIT email address on 11 July 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A

Consultation demonstration statement

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for SIT to make an informed assessment of the possible consequences of the activity on its function in relation to Tasmanian-managed fisheries.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested. No feedback from SIT expected because TSIC has been consulted previously and has responded (in 2011) that due to the location of the activity there should not be any interaction with Tasmanian managed fisheries, subsequent emails to TSIC have not received any response.

Reasonable period

Relevant person first contacted on 6 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

NGO			
Australian Conservation Foundation (ACF)			
Consultation overview with a summary of each response made by the relevant person			
Website query sent 1 May 2025 Automated receipt email 1 May 2025. Introductory Email and Consultation Flyer sent on 1 May 2025.			
	Titleholder assessment of the merits	**Titleholder statement of response**	**Details of the measures adopted**
No objections, claims or feedback.	N/A	N/A	N/A
Consultation demonstration statement			

Full text of response provided in Sensitive Information Report p34.

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for ACF to make an informed assessment of the possible consequences of the activity on its interests.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

NGO			
Australian Marine Conservation Society			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Australian Marine Conservation Society to make an informed assessment of the possible consequences of the activity on its interests.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

NGO			
Environment Victoria			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Environment Victoria to make an informed assessment of the possible consequences of the activity on its interests.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

NGO			
Friends of the Earth			
Consultation overview with a summary of each response made by the relevant person			
Website query sent 1 May 2025. Automated receipt email received 1 May 2025. Introductory Email and Consultation Flyer sent on 1 May 2025. Response confirming contact details received 2 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No objections, claims or feedback.	N/A	N/A	N/A
Consultation demonstration statement			

Full text of response provided in Sensitive Information Report pp35-37.

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Friends of the Earth to make an informed assessment of the possible consequences of the activity on its interests.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

NGO			
Greenpeace			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025. Automated receipt email received 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No objections, claims or feedback.	N/A	N/A	N/A
Consultation demonstration statement			

Full text of response provided in Sensitive Information Report p38.

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Greenpeace to make an informed assessment of the possible consequences of the activity on its interests.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

NGO			
Sea Shepherd Foundation			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Sea Shepherd Foundation to make an informed assessment of the possible consequences of the activity on its interests.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

NGO			
Surfrider Foundation Australia			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Surfrider Foundation Australia to make an informed assessment of the possible consequences of the activity on its interests.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

NGO			
The Wilderness Society Victoria			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for The Wilderness Society Victoria to make an informed assessment of the possible consequences of the activity on its interests.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Businesses			
Committee for Gippsland			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Committee for Gippsland to make an informed assessment of the possible consequences of the activity on its function and interests.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Businesses			
Orbost Chamber of Commerce			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Orbost Chamber of Commerce to make an informed assessment of the possible consequences of the activity on its interests.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Recreational Fishing			
Game Fishing Association of Victoria			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for the Game Fishing Association of Victoria to make an informed assessment of the possible consequences of the activity on its interests and activities.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Recreational Fishing			
Gippsland Lakes Fishing Club			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for the Gippsland Lakes Fishing Club to make an informed assessment of the possible consequences of the activity on its interests and activities.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Recreational Fishing			
Victorian Game Fishing Club			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for the Victorian Game Fishing Club to make an informed assessment of the possible consequences of the activity on its interests and activities.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Recreational Fishing			
VRFish			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025. Automated receipt email received 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No objections, claims or feedback.	N/A	N/A	N/A
Consultation demonstration statement			
Full text of response provided in Sensitive Information Report p39. **Sufficient information** Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for VRFish to make an informed assessment of the possible consequences of the activity on its function and interests in relation to recreational fishing. Updated flyer contained sufficient information on: • the nature, location and timing of the activities • impacts and risks, and mitigation measures • access to further information through a contact email address. No further information has been requested. No feedback from VRFish expected because VRFish has been consulted previously and has responded (in 2011) that the location of the activity is not a significant area for recreational fishing, subsequent emails to VRFish have not received any response. **Reasonable period** Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.			

Energy Industry			
Amplitude Energy (formerly Cooper Energy)			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025. Follow up email to Manager of Offshore Projects directly on 25 June 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Amplitude Energy to make an informed assessment of the possible consequences of the activity on its interests.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested, noting that discussions with Amplitude Energy in relation to arrangements for Longtom restart are ongoing.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Energy Industry			
Emperor Energy			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025. Automated receipt email received 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No objections, claims or feedback.	N/A	N/A	N/A
Consultation demonstration statement			
Full text of response provided in Sensitive Information Report p40. **Sufficient information** Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Emperor Energy to make an informed assessment of the possible consequences of the activity on its activities. Updated flyer contained sufficient information on: • the nature, location and timing of the activities • impacts and risks, and mitigation measures • access to further information through a contact email address. No further information has been requested. **Reasonable period** Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.			

Energy Industry			
ExxonMobil			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025 to Esso Australia Consultation Hub. Follow up email sent to Stakeholder Engagement Advisor directly on 25 June 2025. Response received from Stakeholder Engagement Advisor on 25 June 2025 advising SGHE contact the Esso Australia Consultation Hub. Response from Esso Stakeholder Engagement Team on 7 July 2025 confirming the consultation flyer was reviewed and Esso has no concerns with the activity.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No objections, claims or other feedback.	N/A	N/A	N/A
Consultation demonstration statement			
Full text of response provided in Sensitive Information Report pp41-43. **Sufficient information** Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for ExxonMobil to make an informed assessment of the possible consequences of the activity on its activities. Updated flyer contained sufficient information on: • the nature, location and timing of the activities • impacts and risks, and mitigation measures • access to further information through a contact email address. No further information has been requested. **Reasonable period** Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.			

Energy Industry			
Greater Gippsland 2 OWP Project (Gippsland Dawn)			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 5 May 2025. Automated email receipt received 5 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No objections, claims or other feedback.	N/A	N/A	N/A
Consultation demonstration statement			

Full text of response provided in Sensitive Information Report p42.

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Gippsland Dawn to make an informed assessment of the possible consequences of the activity on its activities.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Energy Industry			
Navigator North Project			
Consultation overview with a summary of each response made by the relevant person			
Introductory Email and Consultation Flyer sent on 1 May 2025.			
Relevant person objections, claims or other feedback	**Titleholder assessment of the merits**	**Titleholder statement of response**	**Details of the measures adopted**
No response received from relevant person to date.	N/A	N/A	N/A
Consultation demonstration statement			

Sufficient information

Consistent with EP Section 3.3.2.1., the Longtom Consultation Information which was developed to inform relevant persons about the EP revision allowed for Navigator North Project to make an informed assessment of the possible consequences of the activity on its interests.

Updated flyer contained sufficient information on:

- the nature, location and timing of the activities
- impacts and risks, and mitigation measures
- access to further information through a contact email address.

No further information has been requested.

Reasonable period

Relevant person first contacted on 1 May 2025. Consistent with EP Section 3.3.3 a reasonable period (minimum of 30 days) has been allowed for the relevant persons to consider the information, make an informed assessment and engage in a two-way dialogue with the titleholder. No additional time has been requested.

Attachment 5 – Longtom Consultation Information

From:	SGH Energy
To:	SGH Energy
Subject:	Longtom Environment Plan Consultation May 2025
Date:	Thursday, 1 May 2025 3:04:43 PM
Attachments:	Longtom Stakeholder Consultation Flyer Rev 010525.pdf

Good afternoon,

SGH Energy is the operator of two subsea gas wells and a subsea pipeline located in the Longtom gas field approximately 30 kilometres offshore from Orbost, Gippsland.

SGH Energy is currently preparing the Longtom Environment Plan 5-year revision. This is a continuation of the existing Environment Plan in place, and will describe the existing environment, include an expanded stakeholder consultation process, and describe how SGH Energy will undertake the Longtom field activities to avoid, minimise or manage potential environmental impacts and risks to As Low As Reasonably Practicable (ALARP) and acceptable levels.

SGHE Energy is consulting with Relevant Persons as part of preparing the 5-year revision. If your functions, interests or activities may be affected by SGH Energy's Longtom activities, you, your business or your organisation are considered a Relevant Person for the purpose of consultation on this Environment Plan. SGH Energy is required to provide Relevant Persons sufficient information and time to make an informed assessment of the possible consequences of our activities on their functions, interests and activities.

We are seeking your feedback to help us better understand the impacts and risks that may arise from the Longtom activities. Your feedback and our response will be included in the revised Longtom Environment Plan, which will be submitted to NOPSEMA for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023. Please let us know if your feedback is sensitive and not to be published and we will make this request known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential. The NOPSEMA community information brochure on consultation is available here.

If you would like to comment on the Longtom activities described in the attached flyer or would like additional information, please contact us at sghenergy@sghenergy.com.au. If there is anyone you know who may be interested in SGH Energy's Longtom activities, we encourage you to share this information with them.

The Environment Plan is scheduled to be submitted in July 2025 and to address and incorporate any feedback we are seeking **responses by 20th June 2025**. However, consultation is an ongoing process and we will process any feedback whenever it is provided and/or when additional information is sought.

Regards,

SGH Energy Pty Ltd
Suites 323/325 | 1 Queens Road | Melbourne | VIC 3004 Australia
Email: sghenergy@sghenergy.com.au

SGH | Energy

LONGTOM CONSULTATION

SGH Energy VICP54 Pty Ltd (SGHE) is conducting consultation in support of a periodic revision to the Environment Plan for its Longtom subsea facilities in the Gippsland Basin, Bass Strait.

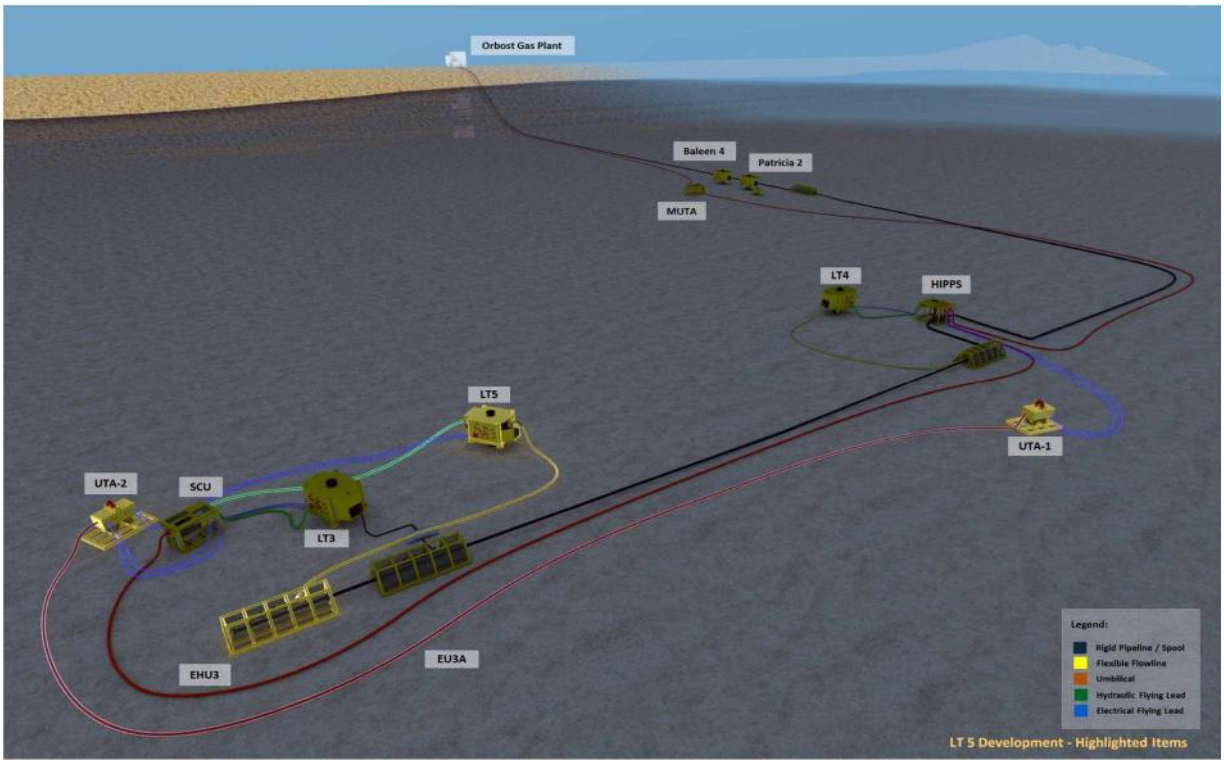
SGHE is committed to ensuring that all Relevant Persons are informed about its Longtom subsea facilities and welcomes any feedback.

SGHE is the operator of the Longtom gas field in Production Licence VIC/L29 and the Longtom Pipeline VIC/PL38 and is required to have an Environment Plan that covers all of the associated offshore petroleum activities. The Longtom subsea facilities are located approximately 31 km offshore from Orbost, Gippsland in a water depth of 56 m and coordinates as shown on the figure below.

Gas production commenced in late 2009 from two subsea wells (Longtom-3 and Longtom-4) which are connected into the Longtom Pipeline and then via the Amplitude Energy-owned Patricia Baleen subsea pipeline and the onshore Orbost Gas Processing Plant. The Longtom offshore production operations were controlled from onshore via a controls and communication umbilical with periodic offshore vessel visits to check and maintain equipment. The two Longtom wells are currently shutdown and the wells are isolated via closed valves. Inspection and maintenance campaigns continue to be undertaken periodically by offshore vessels during the non-production phase.

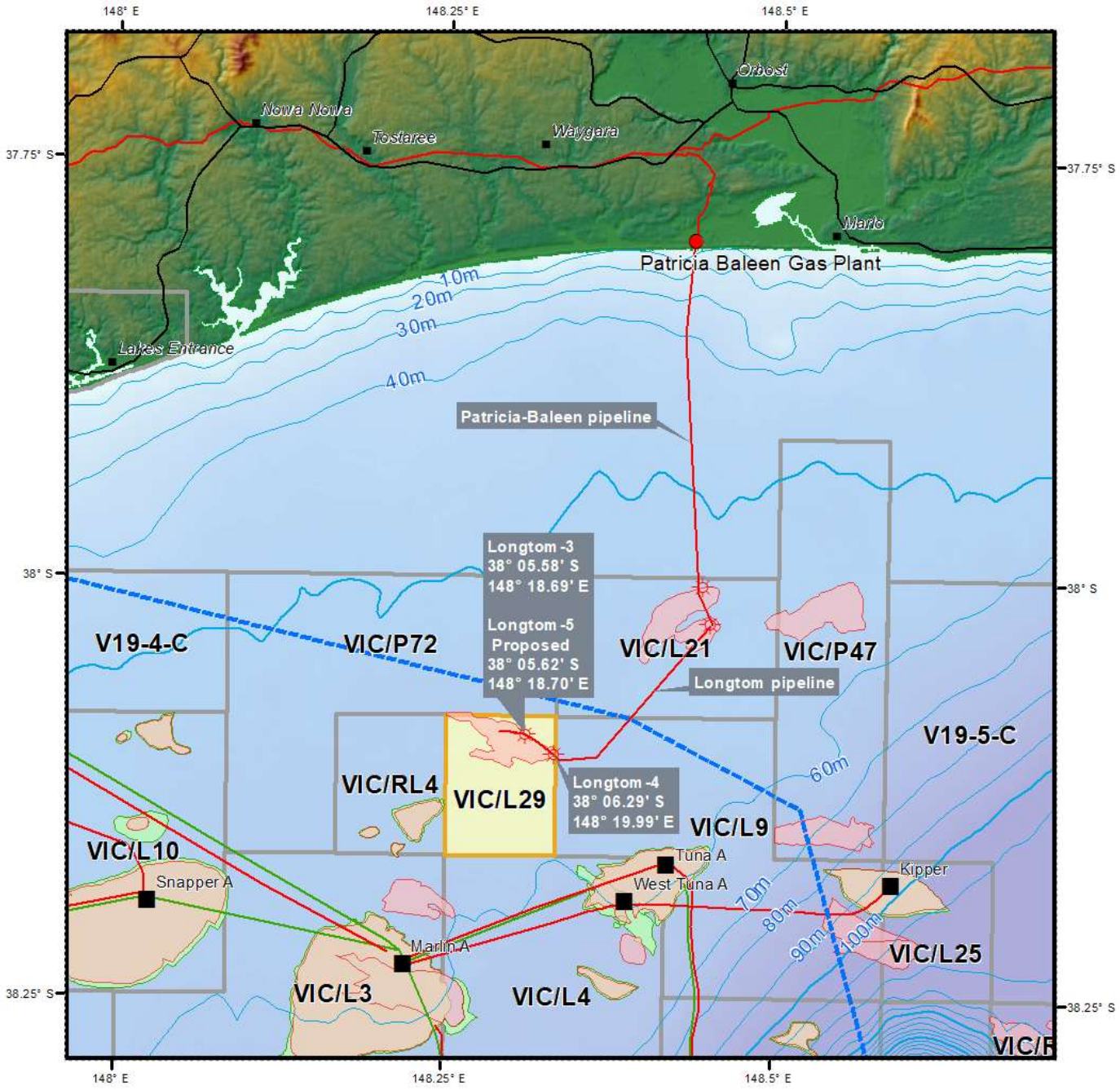
The current Environment Plan for Longtom is being revised in accordance with the Offshore Petroleum and Greenhouse Gas Storage Act and (Environment) Regulations that require formal revision every five years. All potential impacts and risks and associated prevention and mitigation control measures are being reviewed. A summary of the potential environmental hazards of the activities relating to the Longtom subsea facilities is provided in the attached table. All impacts and risks have been assessed to be low. SGHE avoids, minimises or manages all impacts and risks to As Low As Reasonably Practicable (ALARP) and acceptable levels.

Planning is underway for the resumption of Longtom gas production, which may occur from 2028 onwards. After the restart of the offshore facilities, a future subsea production well (Longtom-5) may be developed and connected to the existing subsea facilities and located within the existing Longtom-3 Petroleum Safety Zone (PSZ). If proceeding, the associated drilling and tie-in activities will be subject to a separate Environment Plan and Relevant Persons will continue to be consulted.



For further information, please contact sghenergy@sghenergy.com.au

Location of Longtom Facilities and Petroleum Safety Zones

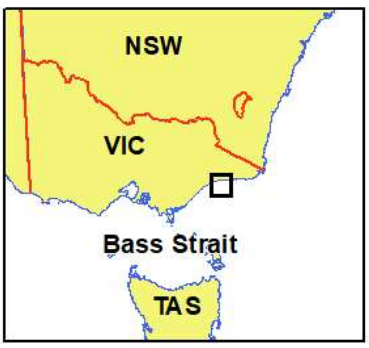


Legend

- Gas well
- Gas fields
- Oil fields
- SGHE Permit
- Non-SGHE Permits
- Production platforms
- Existing gas pipeline
- Oil pipeline
- Shipping Exclusion Zone
- Towns
- Roads

0 5 10 15 20
Kilometers

GDA94 Geodetic Datum
UTM Zone 55 S



LOCALITY MAP

For further information, please contact sghenergy@sghenergy.com.au

Hazards and Impacts from Longtom Activities and their Key Controls

Hazard	Characteristics and Potential Impacts	Prevention and Mitigation measures
Physical interaction with other marine users	• Disruption to other marine users such as commercial fishing and shipping.	• Existing Petroleum Safety Zones shown on navigational charts. • Communication of commencement of vessel-supported inspection and maintenance activity to Relevant Persons. • Longtom vessel-supported activities are infrequent, of short duration and mostly within existing Petroleum Safety Zones.
Seabed disturbance	• No sensitive benthic habitats/communities present • Localised disturbance/damage to benthic habitats and communities.	• Small area of disturbance/damage from placement of stabilising sandbags or mattresses, rapidly recolonised.
Planned subsea discharge of testing fluid during inspection, maintenance or repair	• Temporary and localised reduction in water quality.	• Small volumes discharged infrequently. • Chemicals planned for discharge environmentally assessed (including toxicity, biodegradation and bioaccumulation characteristics) and approved prior to use.
Planned vessel discharges - sewage and food waste, treated bilge, cooling water and brine	• Temporary and localised reduction in water quality. • Temporary and localised increase in nutrients in marine environment.	• Longtom vessel-supported activities are infrequent and of short duration. • Vessels comply with International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978 (MARPOL) requirements.
Accidental release of waste from vessel	• Temporary and localised reduction in water quality.	• Longtom vessel-supported activities are infrequent and of short duration. • Vessels comply with International Convention for the Prevention of Pollution from Ships (MARPOL) requirements. • Vessel waste management procedures.
Accidental release of hydraulic fluid from Remotely Operated Vehicle (ROV)	• Temporary and localised reduction in water quality.	• Longtom vessel-supported activities are infrequent and of short duration. • Volume of hydraulic fluid potentially released from ROV is small.
Accidental release of diesel fuel from Longtom related vessels	• Diesel fuel disperses and evaporates rapidly. • Temporary and localised reduction in water quality. • Localised injury and/or death of marine fauna species such as fish and birds. • Localised and temporary socioeconomic impacts to fishing industry from tainting.	• Communication of commencement of vessel-supported inspection and maintenance activity to key Relevant Persons. • Longtom vessel-supported activities are infrequent, of short duration and mostly within existing Petroleum Safety Zones. Activity specific operating guidelines for vessel-supported activities. • Vessel emergency response preparedness including Shipboard Oil Pollution Emergency Plan.
Vessel noise	• Localised sound emissions • Temporary and short-term disturbance/displacement of sound sensitive fauna around active vessels.	• Longtom vessel-supported activities are infrequent and of short duration. • Vessels will comply with Environment Protection and Biodiversity Conservation Regulations 2000 Part 8 Division 8.1 interacting with cetaceans.

For further information, please contact sghenergy@sghenergy.com.au

Hazards and Impacts from Longtom Activities and their Key Controls

Hazard	Characteristics and Potential Impacts	Prevention and Mitigation measures
Vessel lighting and air emissions	• Temporary and localised increase in ambient light (considered insignificant) • Temporary and localised reduction in air quality (considered insignificant).	• Vessel-supported activity is infrequent and of short duration. • External lighting on vessels minimised to that required for navigation, safety of deck operations and security considerations. • Marine engines are routinely maintained, and air emissions will meet MARPOL requirements.
Unplanned interaction with marine fauna (vessel strike)	• No known critical habitat for cetacean's present (noting no whales have been observed during past campaigns). • Potential injury or death of marine fauna.	• Longtom vessel-supported activities are infrequent and of short duration. • Vessels travel at low speed while conducting petroleum activities at Longtom. • Vessels will comply with Environment Protection and Biodiversity Conservation Regulations 2000 Part 8 Division 8.1 interacting with cetaceans.
Unplanned introduction of invasive marine species (IMS) from vessel	• Water depth and undegraded/unaltered environment at Longtom not conducive to IMS introduction or spread. • Potential displacement of native species and habitat domination.	• Longtom vessel-supported activities are infrequent and of short duration. • Vessels will have a Ballast Water Management Plan and associated certificate. • Vessels will comply with Australian Ballast Water Management requirements. • Biofouling management for vessels in accordance with Australian biofouling management requirements.
Planned subsea discharge of hydraulic fluid during operation (not applicable during the non-production phase)	• Temporary and localised reduction in water quality.	• Small volumes discharged infrequently. • Chemicals planned for discharge environmentally assessed (including toxicity, biodegradation and bioaccumulation characteristics) and approved prior to use.
Accidental release of hydrocarbons (gas and condensate) from subsea facilities	• Gas disperses rapidly. • Longtom condensate evaporates rapidly leaving only non-toxic waxy residue. • Temporary and localised reduction in water quality. In the very unlikely event of a major and prolonged release: • Localised injury and/or death of marine fauna species such as fish and birds. • Localised and temporary socioeconomic impacts to fishing industry from potential tainting. • Localised shoreline pollution from residue. • Localised and temporary socioeconomic impacts on tourism.	• National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) accepted Safety Case and Well Operations Management Plan in place. These include the design and operational controls that prevent and mitigate a loss of containment, such as the subsea facility design, control, inspection and maintenance programs and their isolation arrangements. • Navigational charts detail location of subsea facilities. • Subsea wells are located within the Bass Strait shipping 'Area to be Avoided'. • Existing Petroleum Safety Zones for subsea wells. • Emergency response preparedness including Oil Pollution Emergency Plan and Operational and Scientific Monitoring Plan.

For further information, please contact sghenergy@sghenergy.com.au

Attachment 6 – Longtom Equipment List

Longtom Equipment / Inventory List	
Item and description	**Status**
Longtom-1 well	Plugged and Abandoned
Longtom-2 well	Plugged and Abandoned
Longtom-3 (LT3) well and LT3 subsea production tree	Operational but shut-in
Longtom-3 rigid tie in spool / flowline from well to LT3 Tee.	Operational
LT3 HFL and 3xEFLs - Hydraulic Flying Lead and three Electrical Flying Leads from LT3 Subsea Control Unit (SCU) to LT3-Tree	Operational
2 x concrete mattresses at Longtom-3	Operational
Longtom-4 (LT4) well and LT4 subsea production tree	Operational but shut-in
Longtom-4 flexible flowline from well to pipeline skid	Operational
LT4 HFL and 2xEFLs - Hydraulic Flying Lead and two Electrical Flying Leads from LT4 Subsea Control Module (SCM) to LT4-Tree	Operational
6 x concrete mattresses at Longtom-4	Operational
Longtom-5 well and subsea production tree	Not drilled or installed - for future campaign
Longtom-5 flexible flowline from well to Pipeline End Manifold (PLEM)	Not installed - for future campaign
LT5 HFL and EFLs - Hydraulic Flying Lead and Electrical Flying Leads from LT5 SCM to LT5-Tree	Not installed - for future campaign
LT5 SCM - controls the Longtom-5 production tree	Not installed - for future campaign
Longtom-3 PLEM skid - protection frame and valving arrangement at the start of the Longtom pipeline, includes Longtom-3 tie in Tee.	Operational
LT4 Protection Frame - Longtom-4 tie in to Longtom pipeline.	Operational
Tie in Flange - isolation valve	Operational
HIPPS tie in spool	Operational
HIPPS (Longtom High Integrity Pressure Protection Skid) - protection frame, valve and shutdown system to protect downstream pipeline.	Operational but shut-in
HIPPS tie in spool	Operational
Tie in Flange - isolation valve	Operational
Tie in Flange	Operational
Removable spool connecting the Longtom pipeline to the PB PLEM.	Operational
PB PLEM (Patricia Baleen Pipeline End Manifold) skid - protection frame and valving arrangement at the end of the Longtom pipeline	Operational
Removable spool connecting the PB PLEM to the PB pipeline.	Operational
PB End Flange - Amplitude Energy item	Operational
PB MUTA (Patricia Baleen Main Umbilical Termination Assembly) - Amplitude Energy item - start of the Longtom umbilical near Balleen-4 well.	Operational
EHU-1 - First section of the Longtom umbilical from the PB MUTA to EHU-1/EHU-2 Joint - provides power, communications, hydraulic fluid and chemicals.	Operational
3 x mattresses at PB MUTA	Operational
EHU-1/EHU-2 Umbilical Joint Rocking Horse - Umbilical connection point	Operational
2 x mattresses at EHU-1 to EHU-2 connection (Rocking Horse)	Operational
Grout Bag 4m x 1m x 0.5m placed over pipeline for EHU-1 crossing	Operational
EHU-2 - Second section of the Longtom umbilical from Rocking Horse to Longtom-4 SCM - provides power, communications, hydraulic fluid and chemicals.	Operational

SCM - Longtom-4 Subsea Control Module (SCM) - controls the Longtom-4 production tree and the HIPPs.	Operational
EHU-3 - Third section of the Longtom umbilical from the Longtom-4 SCM to Longtom-3 SCU provides hydraulic fluid and chemicals (earth fault in the power / communications lines).	Operational
EU-3A - provides power and communications from the UTA-1 to UTA-2 to repair the earth fault in the EHU-3.	Operational
SCU - Subsea Control Unit at Longtom-3 - controls the Longtom-3 production tree and potential future Longtom-5.	Operational
UTA-1 - Umbilical Termination Assembly (UTA) at Longtom-4 for the EU-3A umbilical	Operational
UTA-2 - Umbilical Termination Assembly (UTA) at Longtom-3 for the EU-3A umbilical	Operational