

GOLDEN BEACH GEOPHYSICAL INVESTIGATIONS

ENVIRONMENT PLAN SUMMARY

Vic/RL1(V)

Revision 0

GB Energy (Vic) Pty Limited
ABN 63615553010

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Acronyms

Acronym	Definition
2D	Two-dimensional
3D	Three-dimensional
AFMA	Australian Fisheries Management Authority
AHO	Australian Hydrographic Office
ALA	Atlas of Living Australia
ALARP	As Low As Reasonably Practicable
AMOSOC	Australian Marine Oil Spill Centre
AMSA	Australian Maritime Safety Authority
AMP	Australian Marine Park
APPEA	Australian Petroleum Production and Exploration Association
AS/NZS	Australian Standard/New Zealand Standard
BIA	Biologically Important Area
BWRS	Ballast Water Record System
CBiCS	Combined Biotope Classification Scheme
CEFAS	Centres for Environment, Fisheries and Aquaculture Science
CHARM	Chemical Hazard and Risk Management
CHMP	Cultural Heritage Management Plan
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DAFF	Department of Agriculture, Fisheries and Forestry
DAWE	Department of Agriculture, Water and the Environment
DAWR	Department of Agriculture and Water Resources (Cth)
dB	Decibel
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DEDJTR	Victorian Department of Economic Development, Jobs, Transport and Resources (Vic) (former)
DEECA	Department of Energy, Environment and Climate Action
DELWP	Department of Environment, Land, Water and Planning (Vic)
DoD	Department of Defence (Cth)
DoE	Department of the Environment (Cth) (former)
DoEE	Department of Environment and Energy (Cth)
DoF	Department of Fisheries (WA)
DP	Dynamic Positioning
DSEWPC	Department of Sustainability, Environment, Water, Population and Communities (Cth) (former)
DTP	Department of Transport and Planning
EAC	East Australian Current
EARPL	Esso Australia Resources Pty Ltd
EES	Environmental Effects Statement
EIA	Environmental Impact Assessment
EMBA	Environment that May Be Affected
EMS	Environmental Management System
EMV	Emergency Management Victoria

Acronym	Definition
EP	Environment Plan
EPA	Environment Protection Authority (Vic)
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth)
EPO	Environmental Performance Outcome
EPS	Environmental Performance Standard
ERC	Emergency Response Coordinator
ERP	Emergency Response Plan
ERR	Earth Resources Regulation (division of DEECA)
ESD	Environmentally Sustainable Development
FAQ	Frequently Asked Questions
FFG Act	<i>Flora and Fauna Guarantee Act 1988</i> (Vic)
GAB	Great Australian Bight
GB Energy	GB Energy (Vic) Pty Limited
GLaWAC	Gunaikurnai Land & Waters Aboriginal Corporation
GMP	Garbage Management Plan
HDD	Horizontal Directional Drill / Horizontally Directionally Drilled
HR	High-resolution
HRG	High Resolution Geophysical
HSE	Health, Safety and Environment
IAP	Incident Action Plan
IAP2	International Association for Public Participation
ICC	Incident Control Centre
ILUA	Indigenous Land Use Agreements
IMO	International Maritime Organisation
IMS	Invasive Marine Species
IMT	Incident Management Team
IOGP	International Oil & Gas Producers Association
IOPP	International Oil Pollution Prevention
IPIECA	International Petroleum Industry Environmental Conservation Association
IPP	International Pollution Prevention
ISPP	International Sewage Pollution Prevention
kHz	Kilohertz
LCC	Latrobe City Council
LEFCOL	Lakes Entrance Fisherman's Cooperative
LiDAR	Light Detection and Ranging
MACA	Marine and Coastal Act
MARPOL	International Convention for the Prevention of Pollution from Ships 1973, as modified by the Protocol of 1978
MARS	Maritime Arrivals Reporting System
MASW	Multi-channel Analysis of Surface Waves
MBES	Multi-beam Echosounder
MDO	Marine Diesel Oil
MGO	Marine Gas Oil
MNES	Matter/s of National Environmental Significance

Acronym	Definition
MNP	Marine National Park
MO	Marine Order
MoC	Management of Change
MODU	Mobile Offshore Drilling Unit
MSV	Maritime Safety Victoria
NEBA	Net Environmental Benefit Analysis
NatPlan	National Plan for Maritime Environmental Emergencies
NNTT	National Native Title Tribunal
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NTM	Notice to Mariners
OCNS	Offshore Chemical Notification Scheme
ODS	Ozone-Depleting Substance
OIW	Oil-in-Water
OPEP	Oil Pollution Emergency Plan
OPGGs Act	<i>Offshore Petroleum and Greenhouse Gas Storage Act (Cth & Vic)</i>
OPGGs	Offshore Petroleum and Greenhouse Gas Storage
OSMP	Oil Spill Monitoring Program
OSPAR	Oslo-Paris Conventions
OSRA	Oil Spill Response Atlas
OSRT	Oil Spill Response Team
OWR	Oiled Wildlife Response
OWS	Oily Water Separator
PLEM	Pipeline End Manifold
PMS	Planned Maintenance System
PMST	Protected Matters Search Tool
POWBONS	Pollution of Waters by Oil and Noxious Substances
PPE	Personal Protective Equipment
PTS	Permanent Threshold Shift
RAMSAR	Convention on Wetlands of International Importance especially as Waterfowl Habitat
RO	Reverse Osmosis
ROS	Regional Outfall Sewer
ROV	Remotely Operated (underwater) Vehicle
SA	South Australia/n
SCAT	Shoreline Clean-up and Assessment Technique
SEEMP	Ship Energy Efficiency Management Plan
SEP	Stakeholder Engagement Plan
SES	State Emergency Service (Vic)
SESS	Southern and Eastern Scalefish and Shark
SESSF	Southern and Eastern Scalefish and Shark Fishery
SETFIA	South-East Trawl Fishing Industry Association
SHS	Scalefish Hook Sector
SIMOPS	Simultaneous Operations
SIV	Seafood Industry Victoria

Acronym	Definition
SMPEP	Shipboard Marine Pollution Emergency Plan
SPRAT	Species Profiles and Threats Database
SRT	State Response Team
SSS	Side Scan Sonar
STCW	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers
STP	Sewage Treatment Plant
TEC	Threatened Ecological Community
TRG	Technical Reference Group
TSV	Transport Safety Victoria
TTS	Temporary Threshold Shift
UXO	Unexploded Ordinance
VBA	Victorian Biodiversity Atlas
VFA	Victorian Fisheries Authority
VHF	Very High Frequency
WA	Western Australia/n

1 Introduction

1.1 Background

GB Energy (Vic) Pty Limited (GB Energy) as Titleholder of Retention Lease Vic/RL1(V), is developing the Golden Beach Gas Field located in the Gippsland Basin approximately 4 km offshore from the Ninety Mile Beach coastline and close to the Golden Beach township (Figure 1-1) The project is referred to as the Golden Beach Energy Storage Project (hereafter referred to as 'the Project'). Vic/RL1(V) was acquired by GB Energy in 2017.

The Project comprises two phases, the first being the production of a limited amount (30–40 petajoules) of natural gas currently within the reservoir which will be processed at a new, stand-alone compression station on a greenfield site close to the Longford Gas plant. The Project will then transition to an underground offshore gas storage facility. This phase will enable gas to be injected at times of low demand (often in summer) and withdrawn during periods of high demand (usually winter), providing essential supply flexibility to the Victorian energy market. GB Energy is targeting first gas supply in 2028, before transitioning to a flexible storage facility in 2029.

1.2 Purpose

The purpose of the high-resolution geophysical investigation program is to identify constraints and hazards that may affect the design and/or location of development infrastructure. Specific objectives of the Activity include the acquisition of seabed and shallow sub-surface geophysical data to:

- identify seabed terrain features and hazards that may impact on the exact positioning of the Mobile Offshore Drilling Unit (MODU) and pipeline (such as other pipelines, shipwrecks, dropped objects, craters or rocky reef patches);
- detect hazards below the seabed;
- determine the risk of encountering shallow trapped hydrocarbons and avoiding such risks in the riserless drilling section;
- support the safe placement of the MODU's jack-up legs and to calculate MODU leg penetration; and
- inform the design and safe placement of riserless drilling and the pipeline (especially regarding the shoreline horizontal directional drilled [HDD] section).

The Activity will be conducted entirely within Victorian State waters in accordance with the Offshore Petroleum and Greenhouse Gas Storage Act 2010 (Vic) (OPGGS Act).

1.3 Purpose of this Document

This EP Summary is prepared in accordance with the requirements of Regulation 13E of the Regulations. Table 1-1 outlines where the requirements of this regulation are met in this document.

Table 1-1 Addressing this EP Summary against the OPPGS Regulation 13E requirements

Regulation 13E requirement	Location in this EP summary
Location of the Activity	Figure 1-1 and Table 2-1
Description of the receiving environment	Chapter 4
Description of the Activity	Chapter 2
Details of environmental impacts and risks	Chapter 6
Summary of the control measures for the Activity	Chapter 6
Summary of arrangements for ongoing monitoring of the authority holder's environmental performance	Section 7.9
Summary of environmental emergency response arrangements	Section 7.3 and 7.4
Consultations undertaken and plans for ongoing consultation	Chapter 3
Details of authority holder's nominated contact for the Activity	Section 1.4

1.4 Proponent

In accordance with Regulation 18 of the Victorian Offshore Petroleum and Greenhouse Gas Storage Regulations 2021 (hereafter referred to as OPGGS Regulations), the titleholder and nominated liaison contact details for this Activity are provided below:

- David Standfield (Project Director)
- Level 18, 90 Collins St, Melbourne, Victoria 3000
- Phone: 0477 354 149
- Email: des@gbenergy.com.au

GB Energy will notify the regulator of a change in GB Energy's nominated liaison person or contact details in line with OPGGS Regulation 18(3).

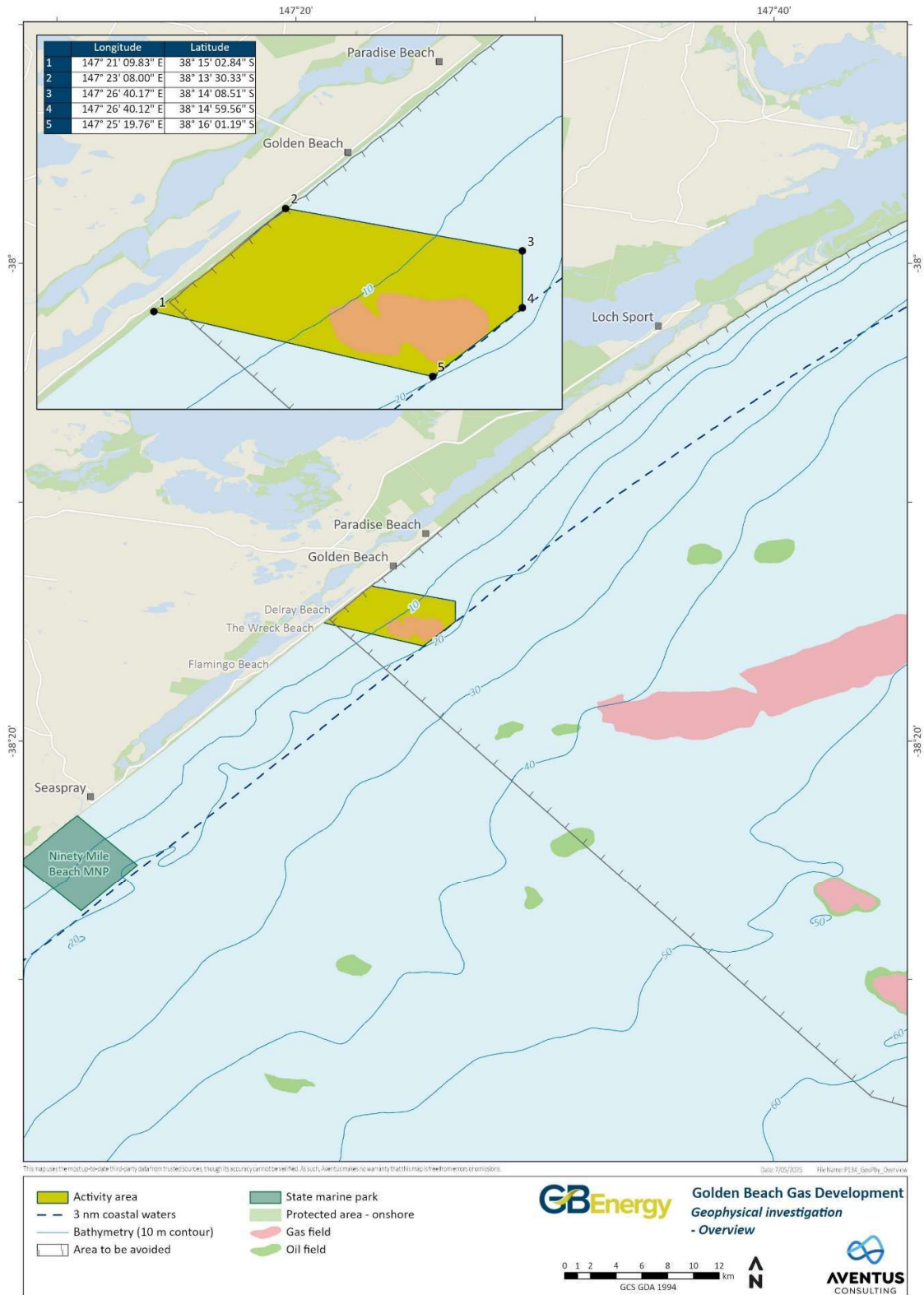


Figure 1-1 Project location

2 Activity Description

2.1 Activity Location

The VIC/RL1(V) permit is located entirely in Victorian State waters, the 22.9 km² activity area encompasses the polygon bounded by the geographic coordinates provided in Table 2-1. The indicative geophysical survey footprint (wholly within the defined Activity area) covers approximately 6.8 km², and is comprised of two sub-areas:

1. Drill site survey area - A ~4.1 km² area to assess the suitability of the seabed to support a jack-up MODU in water depths ranging between 19 m and 21 m Lowest Astronomical Tide (LAT), which is 1.8 km at its widest (east-west) point and 2.4 km long at its longest (north-south) point.
2. Pipeline route survey area - A ~2.7 km² area to assess the suitability of the seabed to support a pipeline and associated HDD exit and gas production equipment, 1 km wide and 2.5 km long, in water depths ranging from 1 m to 19 m LAT.

The Activity area defines the spatial boundary of the geophysical investigations as described in this summary EP.

Table 2-1 Activity area coordinates

Point	Longitude	Latitude
1	147° 21' 09.83" E	38° 15' 02.84" S
2	147° 23' 08.00" E	38° 13' 30.33" S
3	147° 26' 40.17" E	38° 14' 08.51" S
4	147° 26' 40.12" E	38° 14' 59.56" S
5	147° 25' 19.76" E	38° 16' 01.19" S

GDA 94, MGA Zone 55. See Figure 1-1 for the corresponding location points.

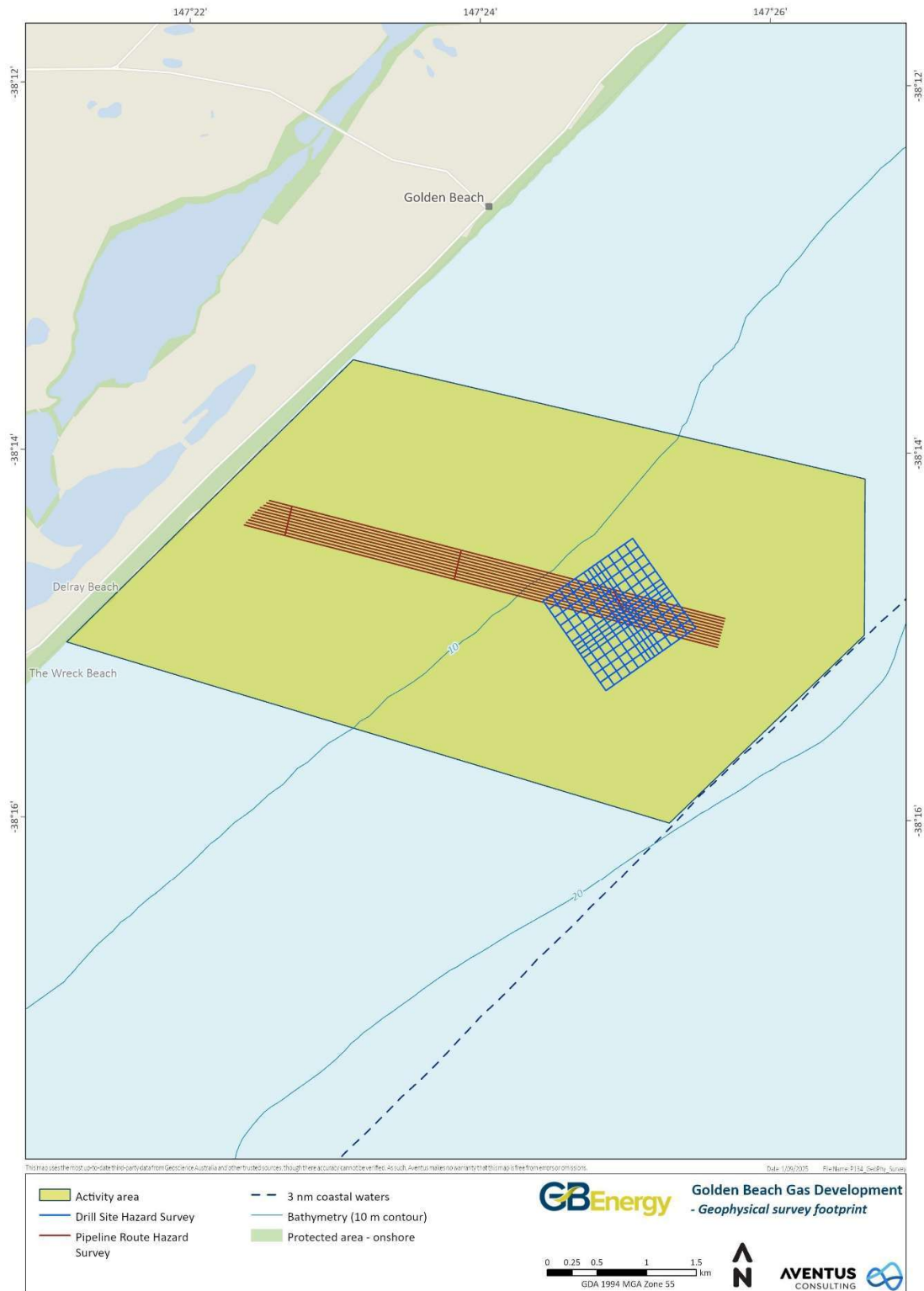


Figure 2-1 The Activity area

2.2 Timing and Duration

The Activity is scheduled to commence in late Q4 2025 or Q1 2026, contingent on the availability of a suitable vessel and the receipt of environmental approvals. The operational duration is estimated at 10–12 days, however, the Activity may take up to four weeks to complete to account for potential downtime due to weather-

related delays, the technologies employed, and prevailing sea-conditions. Operations will be conducted on a 24-hour basis.

2.3 Project Management

GB Energy will manage this Activity directly and is building up an in-house technical team comprised of highly experienced oil and gas professionals. GB Energy will contract a specialist geophysical contractor(s) to undertake this project.

2.4 Geophysical Investigations

The geophysical investigation will collect high-resolution seabed and shallow sub-surface data to support MODU placement and pipeline design.

The proposed investigation techniques have much lower sound levels than those used for petroleum exploration activities, which in turn reduces the nature and scale of any underwater noise related impacts to marine receptors.

2.4.1 Investigation Techniques

The proposed geophysical investigation techniques are described below:

- Single beam echosounder (SBES);
- Multi-beam echosounder (MBES);
- Sidescan sonar (SSS);
- Sub-bottom profiler (SMP);
- Magnetometer;
- 2D (Two dimensional) high resolution (HR) shallow seismic (single Sercel mini-G airgun ~20 cubic meters); and
- refraction seismic and/or multi-channel analysis of surface waves (MASW).

A simplified pictorial representation of geophysical investigation techniques is provided in Figure 2-2.

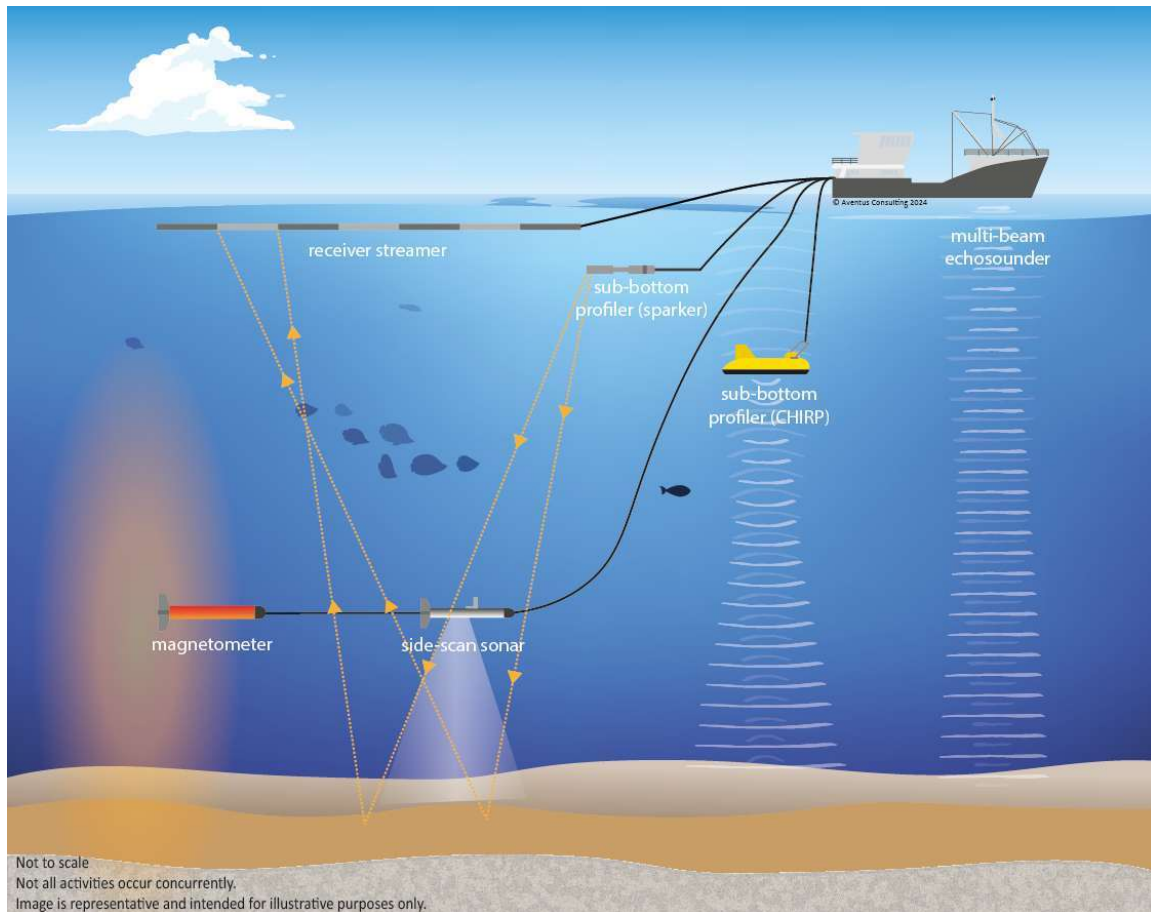


Figure 2-2 Simplified representation of geophysical investigation techniques Single beam Echosounder

A SBES may be used primarily for confirming water depth at site locations. The SBES transmits sound energy and analyses the return signal (echo) from the seabed or other objects. The sound waves will be transmitted from a hull-mounted transducer to produce single line coverage of the seabed.

SBES works on a single sound pulse in single narrow beam and can only measure one point per echo.

Typical SBES source levels and frequency ranges are as follows:

- the maximum source levels are typically 180–230 dB re 1 μ Pa @ 1 m with 1–30 cycles, (CEE HydroSystems, 2024) the single beam bathymetry received sound exposure levels is not likely to exceed 160 dB re 1 μ PA @ 1m.
- between 120 and 710 kHz and a maximum sounding rate of 20 Hz. The beam width will vary between 10° (120 kHz) and 2.8° (710 kHz).

Typical dimensions of a SBES are 30 x 25 x 13.8 cm, weighing approximately 3.52 kg (CEE HydroSystems, 2024).

2.4.2 Multibeam Echosounder

A MBES is similar to SBES except that coverage on the seabed is wider than a single beam and typically in the order of 3-12 times the water depth. MBES collect both multibeam bathymetry and multibeam backscatter data. The sonar system sends out multiple soundwaves that bounce off the sea-floor and return to the vessel. The delay between sending and receiving the signal provides a measurement of ocean depth. These measurements are then used to produce a map charting the sea-floor.

During data collection, multibeam echosounders send out multiple soundwaves that bounce off the sea-floor and return to the ship. These soundwaves are emitted as acoustic pulses. From each pulse, a co-located bathymetry and backscatter measurement is collected. Each acoustic pulse propagates from the vessel in a line of beams from left to right, fanning out under the vessel; this is known as the beam pattern. The beam

pattern is wide across-track, which means it covers the area immediately under the vessel, and on either side of the vessel, and narrow along-track, which means it does not cover the area in front or behind the vessel.

The delay between sending the signal from the transmit arrays and receiving the acoustic returns provides a measurement of ocean depth, or bathymetry data. The strength of the return signal provides an indication of how hard the seafloor is, or backscatter data.

The MBES equipment is generally operated at tow speeds of 3–4 knots (5.5–7.4 km/hr).

Typical MBES source levels and frequency ranges are as follows:

- the maximum source levels are about 236–242 dB re 1 μ Pa @ 1 m for the 1° and 2° beams (DoC, 2016). For this program, the maximum source level is estimated to be 218 dB re 1 μ Pa @ 1 m.
- operate over a range of frequencies (200–500 kHz), the MBES selected for this Activity has a frequency of 400 kHz.

2.4.3 Side-Scan Sonar

A side-scan sonar (SSS) uses high-frequency sound pulses that are bounced off the sea floor to create an image of seabed morphology shape and show differences in seabed surface texture and substrate types.

Typically, a side-scan sonar consists of two transducers mounted on either side of a towed body or 'fish'. A SSS survey is undertaken by towing a sonar fish over the investigation area. Each transducer generates a fan-shaped sound pulse perpendicular to the vessel track. When the sound pulse hits the sea floor, some of the sound is reflected to the transducer and some is reflected away. The returned sound is known as backscatter.

Strong return (high backscatter) typically occurs when the sound is reflected off hard and rocky surfaces, while weak return (low backscatter) occurs if reflected off softer sediments (e.g. sand). Because of the geometry of the sound pulse sent toward the sea floor, an obstacle rising above the seabed, such as a shipwreck or steep hill can cast shadows (no return) in the sonar image. The size of the shadow can be used to determine the size of the feature. Interpretation of these data allow mapping of seabed features such as surface geology and processes, geomorphology, natural and man-made obstructions and debris considered to be significant to the placement of a MODU and the planned drilling operations.

The SSS fish will be towed at a speed of 3–4 knots (5.5–7.4 km/hr), approximately 10–15 m above the seabed at about 150–200 m behind the vessel. The SSS is towed and operated at the same time as the MBES. The SSS investigation is likely to be undertaken in two passes in conjunction with the MBES.

Typical SSS source levels and frequency ranges are as follows:

- the maximum source level for this Activity is expected to be 210–220 dB re 1 μ Pa @ 1 m (DoC, 2016).
- typically operates at dual frequencies ranging between 122 kHz and 410 kHz.

The fish is constructed of stainless steel and is a cylindrical torpedo-like device, typically ~1.2 m long, weighing 18 kg in the air (12 kg in the water) and can be operated by one person.

2.4.4 Sub-bottom Profilers

Sub-bottom Profilers (SBPs) are devices for converting electrical energy into acoustic energy. They produce an acoustic profile which extends from the seabed down to the limit of penetration.

Sub-bottom profile data is used for a range of purposes including:

- three-dimensional imaging of the sea-floor, shallow sub-surface and sediment layering
- assessment of environmental considerations for marine geological resource management, including the identification of buried geohazards, such as underwater landslides, gas seepage;
- environmental management, including establishing baseline data to support environmental monitoring;
- classification maps for seabed habitats; and
- sea-floor sedimentary environments for developing models of benthic environments and habitats.

The SBP system is towed and operated at the same time as the MBES and SSS. The SBP investigation is likely to be undertaken in two passes in conjunction with the MBES and SSS.

There are several shallow SBP systems which operate using various types of sound sources and frequencies. Different SBP systems are used depending on the objectives of the survey, water depths and prior knowledge of the rock types. The SBP must be able to provide imagery that penetrates to a minimum depth of 30 m below the mud line or to the anticipated penetration of the MODU legs plus 1.5 times the spud can diameter. The three systems currently being considered are described in this section.

2.4.4.1 Very high frequency systems including pingers, chirp profilers and parametric echo sounding

This type of SBP produces a swept-frequency signal. Chirp systems usually employ various types of transducers as the source. The transducer that emits the acoustic energy also receives the reflected signal. Chirp signals typically penetrate only about 5-10 m into the seabed and provide the best resolution, but lowest penetration of all three options. The beam width is usually between 15° and 55°. Chirp system transducers are usually circular and point downwards. A Chirp is normally hull-mounted when used for shallow water operations but may also be towed in a similar fashion to the SSS.

Typical Chirp source levels and frequency ranges are as follows:

- the maximum source levels are about 100-225 dB re 1 μ Pa @ 1 m.
- typically, between 0.7-12 kHz.

2.4.4.2 High frequency Boomers

High frequency boomers comprise a circular piston or plate moved by electro-magnetic force (comprising an insulated electrical coil adjacent to a metal plate). The high voltage energy that excites the boomer plate is stored in a capacitor bank. A shipboard power supply generates an electrical pulse that is discharged to the electrical coil causing a magnetic field to repel a metal plate. This energetic motion generates a broadband, high amplitude impulsive acoustic signal in the water column that is directed vertically downward.

Boomer sources show some directionality, which increases with frequency. Although they can be considered omnidirectional for frequencies below 2 kHz, they are quite directional in the vertical.

A boomer system is most likely to be used for the Activity, as it offers a moderate penetration depth of up to 100 m below the seabed in areas of favourable geology. Boomers are mostly surface towed but may also be towed below the surface to avoid sea surface wave noise and movement.

Typical boomer source levels and frequency ranges are as follows:

- varies from 100 to 220 dB re 1 μ Pa @ 1 m.
- ranges between 0.2 and 10kHz, with an effective bandwidth of 1-10kHz (low to high frequency).

2.4.4.3 Medium frequency sparkers

Medium frequency sparkers are sources that create an electric arc between electrodes with a high voltage energy pulse. The arc momentarily vaporises water in a localised volume and the vapour expands, generating a pressure wave. Sparkers can use the same capacitor bank as boomers. Sparkers provide low-resolution data to a much greater penetration depth below the seabed (~100 m). Sparkers are surface towed.

Typical sparker source levels and frequency ranges are as follows:

- between 200 and 226 dB re 1 μ Pa @ 1 m.
- ranges from 0.4kHz to 1.2kHz.

The receiver for the sparker or boomer system is usually a hydrophone or hydrophone array consisting of a string of individual hydrophone elements located within a neutrally buoyant synthetic hydrocarbon filled tubing. They typically contain 8 to 12 hydrophone elements evenly spaced in a tube that is 2.5-4.5 m in length and 25 mm in diameter. The cable may be wholly solid-state or may contain approximately 5 litres of hydrophone fluid.

2.4.5 Magnetometer

A towed marine magnetometer will be used to detect ferromagnetic infrastructure and objects (typically iron or steel) both exposed at the seabed and buried in the top few metres of sediment which are invisible to acoustic and seismic techniques. Magnetometers operate within the earth's magnetic field, using an atomic resonance of the Cs 133 atom which varies proportional to the ambient magnetic field.

The magnetometer survey will be conducted simultaneously with the MBES, SSS and SBP, as it can be towed in tandem behind the SSS using the same tow cable and power supply.

2.4.6 High-resolution 2D Shallow Seismic

High-resolution (HR) 2D shallow seismic data may be required to obtain information on jack-up rig foundation geological conditions and the presence of shallow gas to a depth of up to 500 m below the seabed. Pneumatically generated sources are mainly used for multi-channel seismic acquisition.

For this Activity the HR seismic airgun source array is likely to have the following characteristics:

- one air gun (Sercel mini-G airgun) with a typical volume of ~20 cubic inches (cui).
- source level of 228-240 dB re 1 μ Pa @ 1 m.
- firing interval of about 6.25 m.
- frequency ranging 0.03 to 0.5 kHz.
- operating air pressure of 2,000 pounds per square inch (psi).
- operating at 1-3 m below water surface.

A single 300 m long streamer would be used to receive the acoustic signals, which may be wholly solid-state or may contain several litres of hydrophone fluid. Given the size of the Activity area and its shallow waters, the shallow seismic Activity would be undertaken separately to the MBES, SSS, SBP and magnetometer investigation, taking about one additional day using the same line plan. Tielines to a nearby previous well location will be run to improve interpretation and correlation of foundation conditions.

2.4.7 Refraction Seismic and Multichannel Analysis of Surface Waves

Refraction seismic and/or Multichannel Analysis of Surface Waves (MASW) techniques provide a depth to various subsurface soil layers as well as rock strength information interpreted from the velocity of sound in the material.

Refraction data is acquired using the Continuous Refraction Seismic Profiling (CRiSP) system. The CRiSP system consists of a 5 cu in Bolt 5500 LL airgun housed within a positively buoyant plastic canister which is towed between 0.5 m and 1.0 m above the seafloor. A 24 element, 32 m long hydrophone streamer is towed behind the canister with around fifteen hydrophones spaced at 1 m intervals, while the remaining hydrophones are spaced at 2 m intervals. Shot timing and vessel speed is chosen to approximate a 6-12m data interval with recording lengths being sufficient for later processing of both first arrivals (for refraction profile) and frequency inversion (for MASW).

For this Activity the refraction seismic is likely to have the following characteristics:

- source Level: 180-200 dB re 1 μ Pa @ 1m.
- frequency: 20-150 kHz.
- source operating pressure: 500–1,500 psi.
- seismic refraction surveys consisting of wavelets with frequencies higher than that of 50Hz.

MASW uses surface waves in lower frequencies (usually 1-30Hz) to determine the shear-wave velocity (V_s) of subsurface materials, providing information about ground stiffness and subsurface structure for geotechnical and engineering applications.

2.5 Vessels

Vessel(s) have yet to be selected to undertake the geophysical investigations.

Typically, the type of vessel likely to be contracted will mobilise from within Australia and will be suitable for undertaking the geophysical activities being between 20-50 m in length, can accommodate up to 30 crew, have a gross tonnage ranging between 200-350 tonnes, and a fuel capacity of up to 50 m³.

Photo 2-1 provides an image of a vessel typical of the type that will be used for the investigations. A smaller vessel with a shallow draft (e.g., less than 2 m) and smaller fuel inventory, may be utilised for undertaking the geophysical activities in water depths less than 10 m. Examples of typical smaller vessels that may be used are shown in Photo 2-2.

The survey vessel will be accurately positioned using on-board Global Navigation Satellite System (GNSS) receivers.



Photo 2-1: Typical geophysical vessel, the Silver Star (1)



Photo 2-2: Typical smaller vessels for works in shallow water, the *MV Business Class* (top image) with a draft of 1.8 m and the *MV Prowler* (bottom image) with a draft of 0.8 m

2.6 Activity Summary

Table 2-2 summarises the proposed Activity parameters.

Table 2-2 Activity Summary

Parameter		Details	
Earliest commencement date		Q4 2025	
Duration of survey		10-12 days in total	
Water depths		5-21 m	
Activity area size		22.9 km ²	
Geophysical Investigation Techniques	Estimated Duration	Sound Frequency Range (kHz)	Sound Source Levels (dB re 1µPa @ 1m)
SBES	3 days (undertaken concurrently)	120-170	160
MBES		400	236-242
SSS		120-410	210-220
SBP		0.2-12	100-226
Magnetometer	2-4 days, undertaken separately to above	N/A	N/A
2D HR Shallow Seismic		0.3-5	228-240
Refraction Seismic and/or MASW Seismic	2-4 days	20-150	180-200

3 Stakeholder Consultation

The overarching objective of the Project's stakeholder consultation program is to enable the delivery of the Project consistent with regulatory requirements and good practice engagement and secure government approvals for the various phases.

GB Energy is committed to meeting these objectives by:

- identifying stakeholders (or 'relevant persons'), as required by legislation, see Section 3.3 whose functions, interests or activities may be affected by the Activity
- confirming the relevant persons in accordance with the regulations and engaging those stakeholders at the earliest opportunity
- ensuring relevant persons are informed about the Activity and the potential environmental and social impacts and risks
- proactively providing informative, accurate and timely information, and ensuring stakeholders have an adequate opportunity to consider the information and provide feedback
- ensuring affected stakeholders are informed about the consultation process and that their feedback, questions and concerns are considered in the EP
- providing a mechanism for assessing the merit of any stakeholder objections, complaints or claims of adverse impacts received throughout the consultation period, and providing feedback to that stakeholder in a timely fashion.

3.1 Consultation Background

GB Energy has undertaken extensive consultation with the Gippsland community since October 2018, which includes consultation for the following project phases:

- offshore geophysical and geotechnical (G&G) investigations EP which was accepted on 8 March 2019.
- whole-of-project Environmental Effects Statement (EES) application which was accepted 6 April 2021.
- land access negotiations since 2018 for onshore geotechnical studies, environmental and heritage studies and pipeline route.
- GB-2 drilling EP which was accepted on 3 May 2023.
- post GB-2 drilling updates with the Golden Beach community.
- geotechnical investigations EP which was accepted on 16 October 2024.
- geophysical investigations (to support the EP), which is expected to commence Q4 2025 or Q1 2026.

In April 2021, the Victorian Minister for Planning favourably assessed GB Energy's EES for the Golden Beach Gas Project. Within the assessed EES, GB Energy maintain two core documents and processes for stakeholder engagement, these being:

- EES Chapter 24 – Community and Stakeholder Engagement; and
- Golden Beach Pipeline – Consultation Plan (GB-PI-AP-PLA-001).

With the differing legislative requirements between onshore pipeline/facilities construction and offshore petroleum infrastructure development, a separate but complimentary Stakeholder Engagement Plan (SEP) was developed for the GB-2 drilling operations in 2023 and has been updated in 2025, with this utilised for the project's ongoing stakeholder engagement activities.

3.2 Consultation Methodology

The methods of consultation that GB Energy has adopted in the development of the EP include (but not limited to) the following:

- GB Energy website (www.gbenergy.com.au).
 - Frequently Asked Questions (FAQs).
- Project email (info@gbenergy.com.au).
 - Email updates.
- LinkedIn.
- Community social media pages.
- Information flyers and fact sheets.
- Letters.
- Local media and advertising.
- Public displays/notices.
- Face-to-face meetings.
- Virtual meetings.
- Outgoing phone calls.
- Community information sessions.

3.2.1 Recording Consultation Events

GB Energy uses Consultation Manager™ software as its stakeholder records management system. This holds copies of all correspondence issued and received in the development of the project, including issues raised

and their resolution. This software has been variously managed by several project personnel, including dedicated consultation personnel and the Regulatory & Compliance Manager.

3.2.2 Developing the EP

GB Energy has tailored consultation with relevant persons in the preparation of the EP to be proportional to the low level of impacts and risks predicted for the Activity and for the low level of concern expressed by relevant persons through the EES process regarding offshore environmental impacts and risks, while adhering to commitments in the EES regarding consultation post-EES phase.

Importantly, the stakeholder consultation process has leveraged the considerable experience and local knowledge of the GB Energy team including the Aventus personnel who have assisted with preparing this EP.

This knowledge has also allowed the project to incorporate previously raised issues, concerns and lessons learned into the design of the geophysical investigations. This includes the following key potential impacts and risks:

- underwater noise
- vessel movement
- ensuring no discharge of treated sewage close to the shoreline in order to protect amenity values.

The stakeholder consultation that was undertaken in the preparation of the offshore G&G EP (2018-19), GB-2 drilling EP (2023), and Geotechnical EP (2024), informed the methodologies adopted for the geophysical investigations EP and the information contained within it (e.g., control measures).

3.3 Relevant Person Identification

The environmental values and sensitivities that occur within the EMBA were assessed to determine which categories of relevant persons may potentially be affected by the activities to be carried out Table 3-1. These impacts and risks were assessed against the Activity and relevant persons who may potentially be affected by the activities were identified (Table 3-2).

Table 3-1 Categories of Relevant Persons – Values and Sensitivities

Values and sensitivities	Activity area	EMBA	Relevant Person categories
Conservation Values & Sensitivities			
World Heritage Properties	No	No	Not applicable
AMPs	No	No	Not applicable
Victorian protected areas: - McLoughlins Beach – Seaspray Coastal Reserve - Gippsland Lakes Coastal Park	No	Yes	Reg 13F(1)(a) Government departments/agencies Reg 13F(1)(b) First Nations Peoples
National Heritage Places	No	No	Not applicable
Commonwealth Heritage Places	No	No	Not applicable
Wetlands of International Importance: Gippsland Lakes Ramsar site	No	Yes	Reg 13F(1)(a) Government departments/agencies Reg 13F(1)(b) First Nations Peoples
Nationally Important Wetlands	No	No	Not applicable
Threatened and migratory species and biologically important areas (BIAs) (foraging aggregation, breeding) are identified in the EP.	Yes	Yes	Reg 13F(1)(a) Government departments/agencies Reg 13F(1)(b) First Nations Peoples
Key ecological features	No	No	Not applicable
Ecological and physical environment			
The ecological and physical environment described in Chapter 5 provides the basis for further assessment of values and sensitivities, along with impact and risk assessments (Chapter 7 and Chapter 8) from planned and unplanned activities. The ecological and physical environment includes: - Benthic habitats and species assemblages - Soft sediment (habitat for various species) - Seagrass (coastline presence) - Algae (coastline presence) - Coral (not a dominant habitat)	Yes	Yes	Reg 13F(1)(a) Government departments/agencies Reg 13F(1)(b) First Nations Peoples Reg 13F(1)(b) Commercial fishing associations

Values and sensitivities	Activity area	EMBA	Relevant Person categories
- Carbonate sands and exposed limestone (habitat for various species) - Basalt rises (habitat for various species) - Plankton - Invertebrates and fish - Birds - Marine reptiles - Cetaceans - Pinnipeds - Pest species			
Socio-economic			
Coastal settlements:			Reg 13F(1)(a) Government departments/agencies
- Golden Beach - Paradise Beach - Seaspray	No	Yes	Reg 13F(1)(b) First Nations Peoples Reg 13F(1)(b) Recreational fishing associations Reg 13F(1)(b) Volunteer emergency services
Offshore petroleum industry	Yes	Yes	Reg 13F(1)(b) Offshore oil and gas titleholders
Shipping	Yes	Yes	Reg 13F(1)(a) Government departments/agencies
Tourism industry	Yes	Yes	Reg 13F(1)(b) Local Government Authorities The presence of the activity area within the Area to be Avoided ([ATBA]) means that GB Energy has not consulted with marine tourism operators (e.g., game fishing charters) because large vessels are not permitted to operate within the ATBA.
Recreation (beach walking, fishing, snorkelling, diving, surfing)	Yes	Yes	Reg 13F(1)(b) Recreational fishers Reg 13F(1)(b) Local Government Authorities As per 'tourism industry' regarding the ATBA

Values and sensitivities	Activity area	EMBA	Relevant Person categories
Commercial fisheries: Extensive assessment undertaken of Commonwealth and Victorian managed fisheries and fishing effort in the activity area and EMBA. Very little in the activity area.	Yes	Yes	Reg 13F(1)(b) Commercial fishing associations
Cultural Environment			
First Nations People cultural values and sensitivities	Yes	Yes	Reg 13F(1)(b) First Nations Peoples
Maritime archaeological heritage	No	Yes	Reg 13F(1)(a) Government departments/agencies

Table 3-2 Categories of Relevant Persons – Impacts and Risks

Impacts and risks	Activity area	EMBA	Relevant Person categories
Impacts (planned events)			
Section 7.1 – Underwater noise emissions: temporary, during activities, up to several hundred metres	Yes	Unlikely	Reg 13F(1)(a) Government departments/agencies Reg 13F(1)(b) First Nations Peoples Reg 13F(1)(b) Commercial fishing associations
Section 7.2 – Displacement with third-party vessels and activities: temporary, during activities, limited to 500 m around the geophysical vessel	Yes	No	Reg 13F(1)(a) Government departments/agencies Reg 13F(1)(b) Commercial fishing associations
Section 7.3 – Atmospheric emissions: decrease in air quality due to vessel emissions, localised and temporary	Yes	No	Reg 13F(1)(a) Government departments/agencies
Section 7.4 – Light emissions: may attract light-sensitive species, temporary, during activities and localised	Yes	No	Reg 13F(1)(a) Government departments/agencies Reg 13F(1)(b) First Nations Peoples Reg 13F(1)(b) Commercial fishing associations
Section 7.5 – Discharge of sewage and grey water: reduction in water quality and increase in nutrients, temporary and localised, up to 50 m horizontally and 10 m vertically	Yes	No	Reg 13F(1)(a) Government departments/agencies
Section 7.6 – Discharge of cooling and brine water: potential toxicity impacts to marine fauna, increased sea surface temperature and salinity, temporary and localised, up to 100 m horizontally and 10 m vertically	Yes	No	Reg 13F(1)(a) Government departments/agencies
Section 7.7 – Discharge of bilge water and deck drainage: potential toxicity impacts to marine fauna, increased sea surface temperature and salinity around the discharge point, potential, temporary and localised, up to 100 m horizontally and 10 m vertically	Yes	No	Reg 13F(1)(a) Government departments/agencies

Impacts and risks	Activity area	EMBA	Relevant Person categories
Risks (unplanned events)			
Section 8.1 – Accidental overboard release of waste	Yes	Yes	Reg 13F(1)(a) Government departments/agencies Reg 13F(1)(b) First Nations Peoples Reg 13F(1)(b) Commercial fishing associations
Section 8.2 – Introduction and establishment of invasive marine species	Yes	Yes	As above.
Section 8.3 – Interference with third-party vessels and activities	Yes	No	Reg 13F(1)(a) Government departments/agencies Reg 13F(1)(b) Commercial fishing associations
Section 8.4 – Vessel strike with megafauna	Yes	No	Reg 13F(1)(a) Government departments/agencies Reg 13F(1)(b) First Nations Peoples
Section 8.5 – Underwater noise emissions (swimmers & divers) • Temporary • During activities	Yes	No	Reg 13F(1)(b) Local groups and residents Reg 13F(1)(c) Local groups and residents
Section 8.6 – Diesel spill Residual risk assessment (i.e., with control measures in place) determined risks to environmental and socio-economic receptors are all 'low.'	Yes	Yes	Reg 13F(1)(a) Government departments/agencies Reg 13F(1)(b) First Nations Peoples Reg 13F(1)(b) Commercial fishing associations Reg 13F(1)(b) Recreational fishing associations Reg 13F(1)(b) Local Government Authorities
Section 8.7 – Oil spill response activities	Yes	Yes	As above.

Section references in this table refer to the Golden Beach Geophysical Site Investigations Environment Plan.

3.3.1 Relevant Person Categories – Reg 13F(1)(a) – Authority or Entity of the State

Table 3-3 outlines the authorities or entities of the State (and Commonwealth, mostly related to overlap with the EMBA rather than the Activity area) that have been identified as relevant persons under Regulation 13F(1)(a).

3.3.2 Relevant Person Identification – Reg 13F(1)(b) – Person or Organisation with Functions, Interests or Activities that may be Affected

3.3.2.1 Relevant Person Identification – General Methods

Authorities, entities, persons and organisations whose functions, interests or activities who may be affected by the proposed geophysical investigations were researched by either:

- database review;
- functions, interests or activities;
- local knowledge;
- broad based keyword internet searches; and
- Marine Spatial Planning Framework.

Table 3-3 presents the relevant persons under Regulation 13F(1)(b) that have been identified using the methods outlined above, listing their functions, interests and activities and the values and sensitivities.

In light of the findings of the Case and the Appeal, the methods used to identify First Nations People and commercial fishers is described in more detail below.

3.3.2.2 Relevant Person Identification – First Nations People

The Activity area intersects with areas of First Nations People cultural heritage sensitivity. The Activity area and EMBA are located within the sea country of the Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC), representing five clans: Brataualung, Brayakaulung, Brabralung, Krauatungalung and Tatungalung family clans (and adjacent to their traditional lands).

GB Energy first engaged with GLaWAC about the project in November 2018 as part of the EES, and ongoing and regular contact has continued since that time. A total of 37 days was spent with Traditional Owners completing field work and cultural heritage surveys in the onshore project area for the CHMP, together with a number of meetings and exchanges of correspondence. This included a meeting with the GLaWAC Registered Aboriginal Party (RAP) Manager (June 2020) to present the results of the field work and nominated management measures for inclusion in the CHMP.

The method of identifying potential First Nations Peoples that may be relevant persons included:

- using existing relationships with First Nations People in the Gippsland region
- assessing the total values and sensitivities of the physical environment that may be affected by the planned and unplanned activities in the EP
- understanding and respecting that it is common for First Nations Peoples to be protective of their cultural sensitivities, and therefore such information may not be published, undertaking further research to identify First Nations Peoples organisations and persons, including:
 - researched Prescribed Bodies Corporate, RAPs, Native Title holders and claimants (using the National Native Title Tribunal [NNTT] website); and
 - consulted with GLaWAC to seek their advice on identifying relevant persons.

GB Energy have ongoing engagement with GLaWAC, with recent meetings in April 2025 to discuss these geophysical investigations and discussions over future land access (not related to the geophysical investigations) and use (along route of future pipeline).

3.3.2.3 Relevant Person Identification – Commercial Fishers

The approach to identifying potentially impacted commercial fishing relevant persons is as follows:

- identify and map Victorian and Commonwealth fisheries operating in the EMBA via the project Geographic Information System (GIS);
- contact commercial and recreational fishing associations to ascertain whether they are relevant persons;
- provide AFMA and VFA, as the Commonwealth and state-based commercial fisheries regulators, with information sheet and ask if they have any concerns;
- provide an information sheet to relevant fishing associations, request direct meetings to provide opportunity for detailed discussion, respond to questions, concerns and further information requests, seek further information on actual fishing effort, and seek support for engagement with their members, either directly or via the association as applicable;
- provide additional information to interested fishery groups where requested;
- send follow up emails and phone key associations and fishers who may fish in the operating area; and
- where fishers have identified that they may be potentially impacted by the project, GB Energy has liaised directly with them or the relevant fishing industry association to gather information (e.g., species targeted, fishing patterns and locations) and elicit concerns. For on-water project activities that have already occurred (i.e., geophysical investigations) and those that will occur in future, GB Energy has used South-East Trawl Fishing Industry Association's (SETFIA's) SMS service to keep commercial fishers informed of the location and timing of activities.

3.3.3 Relevant Persons – Reg 13F(1)(c) – Any other Person or Organisation

GB Energy identifies media organisations (print, television, radio, social) as 'other persons or organisations' per Regulation 13F(1)(c). This is because such organisations do not have a function, interest or Activity in the project area per se, rather their 'function' is to report on stories that are likely to have a broader public 'interest'.

To keep the local and regional community informed of the project, GB Energy has consulted with the organisations listed in Table 3-3 through means such as feature interviews and advertising.

Table 3-3 Relevant Persons under Regulation 13F(1)

Category A – Authority or entity of the State	
Commonwealth government agencies	
AMSA – Nautical and Regulation Section	Department of Climate Change, Energy, the Environment and Water (DCCEEW)
AFMA	DoD – Defence Support Group & Royal Australia Air force (RAAF) Base East Sale
Australian Hydrographic Office (AHO)	Department of Agriculture, Fisheries and Forestry (DAFF)
Victorian government agencies	
DEECA	EPA
DEECA - ERR	Parks Victoria
Department of Transport and Planning (DTP)	Safe Transport Victoria
Department of Treasury and Finance	VFA
East Gippsland CMA	West Gippsland Catchment Management Authority (CMA)
Gippsland Water	Southern Rural Water
Elected government officials	
Local State MP: Member of Gippsland South	Local Federal MP: Member of Gippsland

Local government	
East Gippsland Shire Council	Wellington Shire Council
Category B – Person or Organisation with functions, interests or activities that may be affected	
First Nations People	
GLaWAC	
Petroleum and greenhouse gas titleholders	
3D Oil	Esso Australia Resources Pty Ltd (EARPL)
CarbonNet Project	Petro Tech Pty Limited
Carnarvon Hibiscus Pty Ltd	Lakes Blue Energy
Fisheries associations – commercial	
Abalone Council Victoria	Seafood Industry Victoria (SIV)
Commonwealth Fisheries Association (CFA) (Comfish)	SETFIA
Eastern Zone Abalone Industry Association (EZAIA)	Victorian Scallop Fishermen's Association (VSFA)
Lakes Entrance Fishermen's Cooperative (LEFCOL)	
Commercial fishing license holders	
Mitchelson Fisheries	
Local groups and residents	
Committee for Gippsland	Landowners (onshore pipeline alignment)
Golden Paradise Beach Ratepayers and Residents Association	Local residents via the Golden Beach Community Centre
Fishing Associations - recreational	
Victorian Recreational Fishing (VRFish)	
Emergency preparedness and response agencies	
Gippsland coastguard	
Category C – any other person or organisation	
Australian Financial Review newspaper	Latrobe Valley Express newspaper
Gippsland Times and Maffra Spectator newspaper	

3.4 Provision of Information

3.4.1 Approach to Providing Information

The OPGGS Regulations requires titleholders to give each relevant person sufficient information to allow them to make an informed assessment of potential effects on their functions, interests or activities from the activities in the EP. Provision of information is responsive and adaptive to the individual needs and circumstances of the relevant person seeking the information. Key approaches to providing sufficient information are set out in Table 3-4.

Table 3-4 Information provided for Relevant Persons categories

Category	Description	Information type
13F(1)(a)	Relevant authorities or entities of the State	Information sheet emailed to relevant persons. Provision of further information where requested or required. Participation in TRG during the development of the EES. Meeting or phone call where requested or required. Commencement and cessation notices for relevant agencies.
13F(1)(b)	Persons or organisations whose functions, interests or activities may be affected by the Activity	Information sheet emailed to relevant persons. Meetings with SETFIA. Phone calls (when there is no response to initial emails). Provision of further information where requested or required. Public notice advertisements. Feature stories (print, radio, television, social media). Community information sessions in Golden Beach.
13F(1)(c)	Any other person or organisation	Updates to project timings. Commencement and cessation notices. Public notice advertisements. Feature stories (print, radio, television, social media). Community information sessions in Golden Beach.

In the information flyers issued to date to relevant persons specifically for the full EP, GB Energy provided as much information as was available regarding investigation techniques and potential impacts and risks, which is considered a sufficient level of information for several reasons:

- many of the government agencies were involved in the TRG and are well informed of the Project;
- GB Energy consulted with stakeholders and the local communities in 2019 for the G&G investigations EP with no significant concerns raised;
- the EES was hosted on the GB Energy website for over two years, with no related comments or enquiries submitted post-EES exhibition;
- the project is located within Australia's oldest petroleum exploration and production region, where the petroleum industry has established close working relationships with local communities. As such, local communities are very well informed and educated about offshore petroleum activities and don't have the same concerns that communities new to the industry have; and
- no complaints about the level of detail or requests for additional information resulting from the distribution of these or previous information sheets has been received by GB Energy.

3.4.2 Consultation in the Course of Preparing the EES

Significant consultation for the Golden Beach Gas Storage Project was undertaken between October 2018 and December 2020 while preparing the EES. A summary of consultation undertaken while preparing the EES can be seen in Section 4.6.2 of both the GB-2 drilling EP (approved on 3rd May 2023) and the Geotechnical Investigations EP (approved on 16th October 2024) which has been used to inform the preparation of the EP.

3.4.3 Consultation Undertaken in the Course of Preparing the EP

Consultation undertaken while preparing the EP has built on that undertaken in the course of preparing the EPs for the G&G investigations and GB-2 drilling, noting that the geophysical investigations is but one part of the greater Golden Beach Gas Storage Project development.

In May 2021, the Commonwealth Energy Minister at the time announced Budget funding to support the project and specifically the drilling of GB-2. The intention at that time was that the funding would be in place within a few months and then a commitment would be made to drill GB-2, at which time further consultation with relevant persons would take place. The expectation was that drilling would take place in about March 2022 and as such, engagement would re-commence six months ahead of that in September 2021.

GB Energy made a deliberate decision not to undertake proactive engagement activities while the Commonwealth funding process was underway. This was due to:

- uncertainty around the timeframe of potential activities;
- potential change of the nature and scope of activities;
- concerns with the previous consultation burden on relevant persons through the EES process; and
- relevant persons fatigue post-EES and as a result of many other projects in the local region (e.g., CarbonNet Project, Star of the South and the Seadragon offshore windfarm proposals) undertaking consultation at this time.

The funding from the Commonwealth was ultimately delayed and did not conclude until May 2022. GB Energy recommenced engagement planning activities in June 2022 and formally kicked off engagement in July 2022, with an increase in engagement in September 2022. The timing of this was deliberate as it was seen to be six months in advance of the GB-2 drilling activities commencing, which represented a suitable time to re-engage with relevant persons.

The principals and practices of the IAP2 spectrum have also been applied in the consultation undertaken while preparing the EP, noting that interest levels in the project have been very low.

A summary of consultation undertaken in the course of preparing the EP is provided in Table 3-5. This summary indicates that GB Energy has provided sufficient time (over two months) to relevant persons to engage on the proposed geophysical investigations. To date, no relevant persons have raised concerns that their functions, activities or interests may be negatively impacted by the geophysical investigations.

Table 3-5 Summary of consultation undertaken in the course of preparing the EP

Date	Description
March 2025	GB Energy website updated with information on geophysical investigations and community information meeting, including FAQ's
17 March 2025	Geophysical investigations information flyer and notification of upcoming community information session sent out to relevant persons via email
19 March and 2 April 2025	Advertisements about geophysical investigations and upcoming community information session placed in Gippsland Times print and online editions
31 March - 4 April 2025	Radio advertisements about upcoming community information session on TRFM local radio station
April 2025	Meetings held on geophysical investigations with GLAWAC, fishing industry groups, Ratepayers Association and other community representatives
April 2025	LinkedIn posts about geophysical investigations
7 April 2025	Reminder email about community information session sent out via email to relevant persons
8 April 2025	Community information session held at Golden Beach community hall

June 25	New community benefits initiatives launched
Q3 and Q4 2025	Project update newsletter sent out via email
Q3 2025	Community information session planned at Golden Beach community hall. Investigate opportunities for additional pop-ups at community events during Q4
Q3 and Q4 2025	Targeted stakeholder consultation
TBA	GB Energy website updated with geophysical Investigations sections, including link to existing EP. LinkedIn posts
4 weeks, 7 days and 2 days prior to Activity	Notify local stakeholders of the Activity commencing
Ongoing	Regular monthly meeting with regulators (DEECA, NOPSEMA, ESV, Work safe, EPA)

3.5 Measures Implemented in Response to Consultation

As a result of consultation with relevant persons while preparing the EP, there have been no requests to modify or add control measures for the geophysical investigations.

In general, and despite the significant consultation undertaken for the project, there has been very little concern expressed by stakeholders to GB Energy regarding offshore environmental issues.

3.6 Management of Objections and Claims

If any objections or claims (that are non-vexatious in nature) are raised during consultation with relevant persons, GB Energy will attempt to substantiate these using evidence such as publicly available and credible information (e.g., scientific articles, government-supplied fishing data). No such objections or claims have been raised in relation to the geophysical investigations.

Where the objection or claim is substantiated, where applicable, 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. Relevant persons 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 if any controls 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 in accordance with GB Energy's Management of Change process, and the relevant person will be advised of the process.

3.7 Ongoing Consultation with Relevant Persons

Consultation with relevant persons in the preparation of the EP does not end once the EP is submitted for assessment to ERR or once it is accepted. Consultation is ongoing in the lead up to, during and after the geophysical investigations.

GB Energy continues to consult with relevant persons regarding the geophysical investigations and the project more broadly. For the geophysical investigations this will be achieved via a number of methods, as outlined in Table 3-6. The planned events and notifications are subject to change, based upon the operational timings for geophysical vessel and commencement of operations. Additional events and/or the timing and content of events may be modified based upon the feedback received from relevant persons.

Any new relevant persons identified through the ongoing consultation process will be contacted and provided information about the Activity relevant to their functions, interests or activities.

Table 3-6 Summary of plan for ongoing consultation with relevant persons

Timing/ Milestone	Relevant Person	Consultation Method/Content
Ongoing		
As required	All relevant persons	• Communication of information and addressing queries and concerns via email, phone or meeting. • Project updates including acceptance of EP and start and completion of drilling.
Pre-Activity		
2 to 4 weeks prior to Activity commencing	AHO & MSV	• Vessel contractor to issue notification of Activity for publication of NTM, including: ◦ geographical coordinates of the Activity area ◦ duration of vessel presence on location ◦ vessel details including ◦ name ◦ Maritime Mobile Service Identity ◦ satellite communications details (including INMARSAT-C and satellite telephone) ◦ contact details ◦ call signs ◦ GB Energy contact details. ◦ GB Energy will provide updates on project timing and any changes to the intended operations.
4 weeks prior to Activity commencing	All relevant persons	• Notify local stakeholders of the project Activity commencing
10 days prior to Activity commencing	DEECA – ERR	• Email notification of start of Activity.
	GB Energy LinkedIn members	• Posting of a LinkedIn notification that the Activity is imminent.
	All relevant persons	• Notify all local stakeholders of the Project that Activity is commencing
7 days prior to vessel arrival	Local community and visitors	• Signage will be posted at the Golden Beach lookout and campgrounds along the foreshore providing details of the geophysical investigations given that the vessels will be close to the beach.
	Local community	• Advertising of the vessels' arrivals in The Gippsland Times and Latrobe Valley Express newspapers and the Letts Beach News.
	Commercial	• Notify LEFCOL and/or SIV to inform their members on project activities via text message.
48 – 24 hrs prior to Activity commencing	AMSA - JRCC	• Per AHO & MSV information.
	All relevant persons	• Notify local stakeholders of the project Activity commencing
While undertaking investigations		
During Activity	All relevant persons	• Communication of information and addressing queries and concerns via email, phone or meeting. • Emergency notifications via email, as and if required (e.g., MGO spill).

	GB Energy LinkedIn members	• LinkedIn post to provide update on operations.
	General public	• Progress updates released weekly via the GB Energy website.
	Commercial fishers active in the area	• SMS via SETFIA advising of the geophysical vessels' location and Activity timing.
Activity completion		
Within 24 hours of activity completion	AMSA – JRCC	• Email notification providing information on completion to cease AusCoast warnings.
Within 2 days of Activity completion	All relevant persons	• Email notification providing information on completion and vessel demobilisation.
	AHO & MSV	• Email notification providing information on completion to cease NTM.
Within 10 days of Activity completion	DEECA - ERR	• Email notification of cessation of Activity to close out the EP.
	Local community	• Remove information signage at the Golden Beach lookout and campgrounds.
	GB Energy LinkedIn members	• LinkedIn post to provide notification of cessation of Activity.
	General public	• Notification of cessation of Activity via the GB Energy website.

4 Description of the Existing Environment

In accordance with OPGGS Regulation 15(2), the EMBA by the Activity is summarised in this section, together with its values and sensitivities. While each project hazard has its own unique EMBA, the most significant one has been chosen for this chapter, which is that relating to a diesel spill.

This diesel spill EMBA has been established through hydrocarbon spill modelling and is based upon the area that could be affected by the largest credible spill from the project vessels. The EMBA (Figure 4-1) is therefore defined as:

The extent of high entrained exposure (100ppb) and moderate level hydrocarbon exposure to the sea surface (10 µm) and contact to shorelines (100 g/m²) and as a result of the loss of 50 m³ of marine gas oil over 6 hours from a loss of containment within the proposed Activity area during annualised metocean conditions.

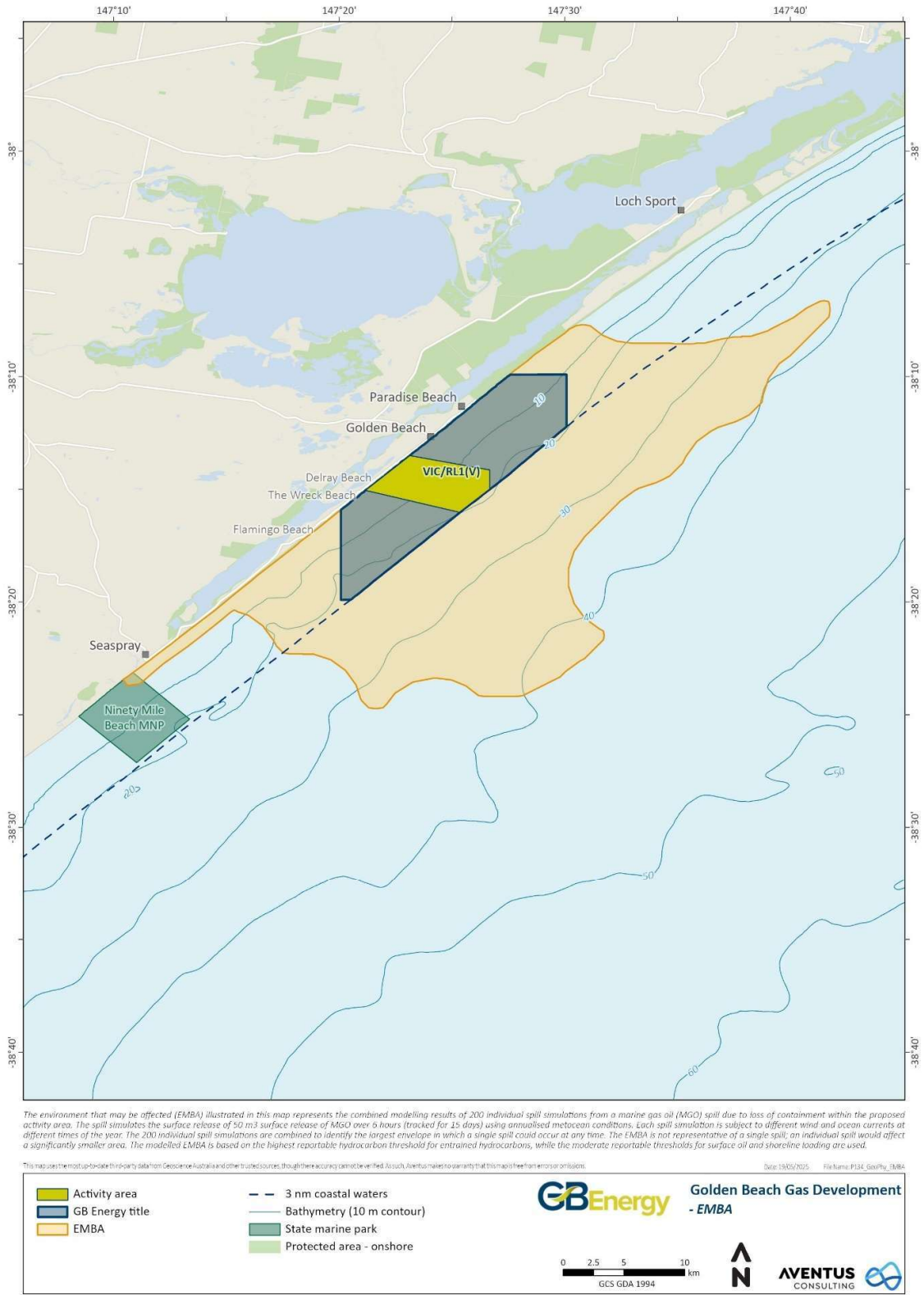


Figure 4-1 The EMBA

Table 4-1 summarises the presence or absence of receptors and sensitivities within the proposed operational area.

Table 4-1 Presence of receptors within the Activity area and EMBA

Receptor	Activity area	EMBA
Physical		
Low profile rocky reef		
Sponge garden		
Conservation values		
AMPs		
World Heritage-listed properties		
National Heritage-listed properties		
Threatened Ecological Communities (TECs)		
Key Ecological Features (KEFs)		
Nationally Important Wetlands		
Victorian marine protected areas		
Onshore protected areas		
Biological environment		
Plankton		
Benthic species:		
- commercial scallops		
- rock lobsters		
Seagrass beds		
BIA for fish:		
- Great white shark		
BIA for cetaceans:		
- Pygmy blue whale		
- Southern right whale		
- Humpback whale		
Pinnipeds		
Reptiles		
Seabirds		
Shorebirds		
Marine pests		
Cultural Heritage Values		
Shipwrecks		
Indigenous heritage		
Socio-economic Environment		
Native Title		
Tourism		

Receptor	Activity area	EMBA
Petroleum infrastructure		
Commercial fishing		
Recreational fishing		
Commercial shipping		

Red shading denotes no presence, green shading denotes presence.

4.1 Regional Context

The Activity area and EMBA are both wholly located within the South-east Shelf Transition provincial bioregion within the South-east marine region (CoA, 2015a). Victoria's marine environment has been classified into five mesoscale bioregions, with the Activity area and EMBA located wholly within the Twofold Shelf bioregion.

4.1.1 Climate

The region's climate is moist cool temperate (Barton *et al.*, 2012), with cool wet winters and cool summers. It is influenced by rain bearing cold fronts that move from south-west to north-east across the region, producing strong winds from the west, north-west and south-west. In winter, when the subtropical ridge moves northwards over the Australian continent, cold fronts generally create sustained west to south-westerly winds and frequent rainfall in the region (McInnes and Hubbert, 2003). In summer, frontal systems are often shallower and occur between two ridges of high pressure, bringing more variable winds and rainfall.

4.1.1.1 Temperature and Rainfall

Climate statistics between 2006-2024 at Lakes Entrance (62 km northeast of the Activity area, but the closest coastal town with a Bureau of Meteorology [BoM] weather station) shows that the average maximum temperature ranges from 15.2°C - 24.3°C and the average minimum temperature ranges from 6°C – 15.2°C (BoM, 2025). Mean annual rainfall is 724 mm with June producing the most rainfall and May the least (BoM, 2025).

4.1.1.2 Winds

Bass Strait is located on the northern edge of the westerly wind belt known as the Roaring Forties. Occasionally, intense meso-scale low-pressure systems occur in the region, bringing very strong winds, heavy rain and high seas. These events are unpredictable in occurrence, intensity and behaviour, but are most common between September and February (McInnes and Hubbert, 2003).

4.1.2 Physical Environment

4.1.2.1 Seabed

This section details the seabed composition on regional and local level as well as specific to the Activity area.

Regional

Bass Strait is concave-shaped, with a shallower rim on the eastern and western entrances to the strait and a deeper centre.

The substrate across Bass Strait comprises a variety of sediment types (Harris and Heap, 2009; Wilson and Poore, 1987). Inner shelf sediments, such as those of the Activity area, generally consist of fine sands (Harris and Heap, 2009; Victorian Department of Economic Development, Jobs, Transport and Resources [DEDJTR], 2017a), with moderate and well-sorted sands confined to the nearshore zone (Harris and Heap, 2009).

Geoscience Australia's seafloor sediments database classifies the proposed Activity area as having sediment grain sizes ranging in diameter from 0.2 to 0.5 mm, with isolated pockets within the EMBA having sediment diameters up to 5 mm (Harris and Heap, 2009).

Harris and Heap (2009) also state that the calcium carbonate content of the sands in the Activity area and the EMBA is about 10-20%. The carbonate component consists of recognisable skeletal fragments of molluscs, bryozoans and foraminifera (Harris and Heap, 2009).

Local

In 2021, the DELWP sponsored a new unified scheme for marine ecological classification, referred to as the Combined Biotope Classification Scheme (CBiCS). Edmunds et al. (2021) defines a biotope as a term describing a community of species in a defined abiotic habitat.

The Activity area comprises predominantly of sublittoral sand and muddy sand, and littoral sand (where the Activity area meets the shoreline). The Activity area also contains sparse amounts of non-reef sediment epibenthos, high energy infralittoral rock, high energy littoral rock, and sublittoral seagrass beds. Similarly, the marine environment surrounding the Activity area also contains the biotopes listed above with the addition of littoral sand, moderate energy infralittoral rock, sublittoral coarse sediment, and sublittoral seaweed on sediment (see Section 4.2.1).

Light Detection and Ranging (LiDAR) derived data on the sediments of the nearshore Victorian coastline was acquired in late 2008/early 2009 also indicates that the majority of the seabed shoreward of the activity area comprises sandy sediments. Intermittent and very narrow areas of low-profile reefs (about 0.5 m to 1.5 m in height above the surrounding seabed), running parallel to the coast, are scattered through the nearshore sandy sediments along the Ninety Mile Beach. These reefs comprise calcarenite and occur immediately behind the surf zone, in water depths ranging from 7 to 25 m (Burton *et al.*, 2012) and are likely to be often covered by mobile sand.

A seabed survey undertaken in 2007 for the nearby Sealion-1 drilling location (13.9 km to the east of the Activity area) found fine to medium grained, yellow-brown unconsolidated sand with minor (<3 mm diameter sized) shell fragments (Fugro, 2007).

Activity area

Fugro undertook a geophysical survey in the Activity area in March 2020 for GB Energy. Fugro found the gradient of the Activity area is very flat, ranging from 0 m at the beach to 19.5 m at its deepest point. The key observations from the survey were:

- there are elongated seabed depressions oriented northwest-southeast in the Activity area;
- the proposed pipeline route passes through seabed depressions;
- the seabed at the proposed well locations is flat; and
- the seabed depression depths measured less than one metre from the surrounding seabed.

The seabed around the Activity area is largely homogenous, consisting primarily of unconsolidated sediments with some isolated patchy areas of reef/rock.

The seabed samples collected indicate that the seabed of the Activity area is predominantly two types of carbonate sand:

- Class 1: Low, uniform, reflectivity response interpreted as flat lying sediments including fine to medium grained carbonate sands with silts.
- Class 2: Moderate to high reflectivity response interpreted as fine to coarse carbonate sands, gravels and shells.

Table 4-2 presents a summary of the grab sample material descriptions. The grab samples that were collected assist in determining the seabed types distributed at the GB-2 well site and along the pipeline corridor within the Activity area.

Table 4-2 Grab sample results of the geophysical Activity area

Sample ID	Location		Sample Description
	Easting (m)	Northing (m)	
Pipeline corridor			
G_001 9.6 m water depth	532,988	8,767,512	Siliceous CARBONATE SAND with silt. Sand is olive brown, fine grained and composed of mixed carbonates and siliclastics (mainly quartz), well sorted with few medium sand shell fragments and

Sample ID	Location		Sample Description
	Easting (m)	Northing (m)	
			traces of coarse sand shell fragments. Some marine growth.
G_002 16.9 m water depth	533,808	5,767,126	Siliceous CARBONATE SAND with silt. Sand is olive brown, fine to medium grained and composed of mixed carbonates and siliclastics (mainly quartz), with few shell fragments and traces of coarse sand shell fragments
G_003 17.3 m water depth	533,942	5,767,277	Gravelly siliceous CARBONATE SAND. Sand is reddish to orange brown and coarse grained. Medium sand fraction composed of mainly quartz (clear and frosted) and some mixed carbonates. Coarse sand is partly shells and shell fragments with gravel composed of shells, shell fragments and traces of rock fragments
G_004 17.9 m water depth	534,565	5,766,820	Siliceous CARBONATE SAND with silt. Sand is olive brown, fine grained and composed of mixed carbonates and siliclastics (mainly quartz), well sorted with medium sand and few shell fragments and traces of coarse sand shell fragments
G_005 18.5 m water depth	534,714	5,766,879	Gravelly siliceous CARBONATE SAND. Sand is reddish to olive brown, coarse grained, and composed of mixed carbonates, particularly shells, shell fragments and probable coral fragments. Gravels of similar composition. Sample is composed for small part (10%) of fine sand
GB-2 Well site			
G_006 18.6 m water depth	535,446	5,766,567	Siliceous CARBONATE SAND with silt. Sand is olive brown, fine grained and composed of mixed carbonates and siliclastics (mainly quartz), well sorted with medium sand and few shell fragments and traces of coarse sand shell fragments
G_007 18.8 m water depth	535,458	5,766,593	Gravelly siliceous CARBONATE SAND. Sand is reddish to olive brown, fine to coarse grained. Fine to medium sand fraction composed of mainly quartz (clear and frosted) and some mixed carbonates. Coarse sand is mainly shells (intact bivalves) and shell fragments with gravel shells, shell fragments (e.g. oyster shell) and traces of rock fragments
G_008 18.8 m water depth	535,532	5,766,779	Gravelly siliceous CARBONATE SAND. Sand is reddish to olive brown, fine to coarse grained. Fine to medium sand fraction composed of mainly quartz (clear and frosted) and some mixed carbonates. Coarse sand is mainly shell fragments with gravel.

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) GipNet study (2018) includes a series of monitoring sites located in and around the Activity area. These sites have been surveyed for physical properties (such as sediment grain size) and biological properties (including seabed habitat types and benthic fauna abundance). The CSIRO has shared this raw data (i.e., no consolidated study report has been made available) with GB Energy.

Table 4-3 summarises the substrate types identified at the CSIRO investigation sites within the Activity area (site 9, 10, 11) by towed camera footage. CSIRO also conducted seabed surveying using SSS, which provides detailed bathymetry mapping of the sea-floor in the Activity area.

Table 4-3 Seabed conditions at CSIRO investigation sites within the Activity area

CSIRO site	Water depth	Seabed condition
9	15 m	Sandy substrate sparsely interspersed with marine flora and macroalgae. No rocky reef was observed in the towed camera footage of these sites.
10	19 m	
11	19 m	

The bathymetry mapping (in full EP) demonstrates that the seabed of the Activity area gradually increases in depth away from the coast. Areas of rocky reef that overlap with the Activity area are also visible as a rise of 0.5-1 m from the surrounding seafloor. CSIRO assessment site 17 was located within this reef.

Table 4-4. summarises the seabed substrate types of these sites adjacent to the Activity area, as identified through towed camera footage captured by CSIRO.

Table 4-4 Seabed conditions at CSIRO investigation sites adjacent the Activity area

CSIRO site	Water depth	Seabed condition
5	15 m	Dominated by rippled sandy sediments, no hard substrate or reefs observed.
9	15 m	Sandy substrate sparsely interspersed with marine flora and macroalgae. No rocky reef was observed in the towed camera footage of these sites.
10	19 m	Sandy substrate sparsely interspersed with marine flora and macroalgae. No rocky reef was observed in the towed camera footage of these sites.
11	19 m	Sandy substrate sparsely interspersed with marine flora and macroalgae. No rocky reef was observed in the towed camera footage of these sites.
12	20.5 m	Dominated by rippled sandy substrate with some sporadic areas of seagrasses present. No hard substrate observed.
17	18 m	Some areas of sandy substrate. Rocky substrate, reef communities and marine flora observed.
18	18 m	Extensive areas of sandy sediments with only sporadic and interspersed areas of marine flora. Paucity of marine flora suggests lack of hard substrate present at the site.

4.1.3 Oceanography

4.1.3.1 Water depths

The Activity area is located in shallow water depths ranging from 0 to 20 m in the Gippsland Basin. The bathymetry contours generally run parallel to the coast, though this pattern is less pronounced in waters deeper than 18 m.

4.1.3.2 Water Currents

Currents within Bass Strait are primarily driven by tides, winds and density-driven flows (RPS APASA, 2018). The region is oceanographically complex, with subtropical influences from the north and sub-polar influences from the south (CoA, 2015a). There is a slow easterly flow of waters in Bass Strait and a large anti-clockwise circulation (CoA, 2015a). Three key water currents influence Bass Strait:

- the Leeuwin Current;
- the East Australian Current (EAC); and
- the Bass Strait Cascade.

Table 4-5 provides the average and maximum combined surface current speeds (ocean plus tides) located within the Activity area. The surface currents flow in the north-east to south-west axis parallel with the coastline. The average monthly surface current speed was 0.30 metres per second (m/s), with the maximum surface current speeds ranging between 1.0 and 1.5 m/s.

Table 4-5 Predicted average and maximum surface current speeds adjacent to the Activity area from 2008-2012 (inclusive)

Month	Average current speed (m/s)	Maximum current speed (m/s)	General direction
January	0.27	0.87	Tidally dominated from a predominant west-southwest and east-northeast direction
February	0.26	0.89	
March	0.25	0.96	
April	0.25	0.87	
May	0.26	0.89	
June	0.25	0.89	
July	0.26	0.95	
August	0.26	0.81	
September	0.26	0.98	
October	0.26	0.87	
November	0.27	0.87	
December	0.26	0.93	
Minimum	0.25	0.81	
Maximum	0.27	0.98	

Source: RPS, (2025)

4.1.3.3 Sea Temperature

The shallowness of Bass Strait means that its waters more rapidly warm in summer and cool in winter than waters of other nearby regions (CoA, 2015a). The sea surface temperatures in the area reflect the influence of warmer waters brought into Bass Strait by the EAC (IMCRA, 1998; Barton *et al.*, 2012).

Waters in eastern Bass Strait are generally well mixed, however calm summer conditions can result in surface warming and weak stratification. This creates a thermocline, which separates the wind-driven upper mixed layer from the bottom well-mixed layer and leads to horizontal temperature variations.

Sea surface temperatures in the area range from 12.1°C in August to 20.8°C in February, with an annual average of 16.3°C (RPS, 2025; based on the World Ocean Atlas data).

4.1.3.4 Salinity

Salinity in the region consistently ranges from 35.4 – 35.6 practical salinity units (psu) throughout the year (based on the World Ocean Atlas database) (RPS, 2025).

4.1.3.5 Tides

Bass Strait is a shallow area of the continental shelf, connecting the southeast Indian Ocean with the Tasman Sea. The region is known for high winds and strong tidal currents (RPS, 2025).

Tidal currents follow a semi-diurnal pattern with some diurnal inequalities (Barton et al., 2012; Jones and Padman, 1983). Current speeds generally range from 0.1 to 2.5 m/s (Fandry, 1983), with stronger currents of 2 to 2.5 knots reported as characteristic of the area (Barton et al., 2012). Tidal variation is 0.9 m for spring tides and 0.6 m for neap tides.

Tidal flows enter Bass Strait from both the east and west during flood tide and reverse during ebb tide. A three-to-four-hour phase difference in tidal components is observed across the strait, primarily between Lakes Entrance and Wilsons Promontory.

4.1.3.6 Waves

Bass Strait is a high-energy environment exposed to frequent storms and significant wave heights (Jones, 1980), although Barton et al. (2012) report wave energy in the Twofold Shelf Bioregion as relatively low. Storms may occur several times a month resulting in wave heights of 3 to 4 m or more.

4.1.3.7 Water Quality

The Regional Outfall Sewer (ROS) discharges at Delray Beach, within the Activity area. The mixing zone extends 100 m from the diffuser and shows elevated nutrient levels compared to background values (National Outfall Database, 2025). In 2020, the average monthly outflow of 851.93 megalitres (ML), with pollutant concentrations as follows:

- colour (Pt. Co. units) – 218.33;
- E. coli (org/100 mL) - 3,709.4;
- pH – 7.9;
- total dissolved solids (mg/L) – 3,10;
- total suspended solids (TSS) (mg/L) – 11.83;
- total nitrogen (mg/L) – 3.98; and
- total phosphorous (mg/L) – 1.31.

The data indicates that nutrient levels in the mixing zone are elevated compared to background levels.

4.1.3.8 Ambient Ocean Sound

Physical and biological processes contribute to natural background sound. Physical processes include that of wind, waves, rain and earthquakes, whilst biological noise sources include vocalisations of marine mammals and other marine species.

Table 4-6 presents a comparison of biological and anthropological sounds in the marine environment.

Table 4-6 Sound intensity and pressure (dB re 1uPa) @ 1 m from source for some common marine sources

Source	Sound intensity (dB re 1 uPa)	Frequency (Hz)	Reference
Natural sound			
Ambient sea sound	80-120	Varied	2
Undersea earthquake	272	50	2
Seafloor volcanic eruption	255+	Varied	2
Lightning strike on sea surface	250	Varied	2
Iceberg calving, shoaling and disintegration	220-245	Varied	5, 6
Bottlenose dolphin clicks	Up to 229	Up to 120,000	2
Breaching whale	200	20	2
Blue whale vocalisations	190	12 – 400 (16 – 25 dominant)	2
Blue whale moans	188	12 – 390 (16 - 25 dominant)	1
Southern right whale	172 - 186	30 – 2,200 (50 – 500 dominant)	1
Humpback whale	144-174	30 – 8,000 (song) (120 – 4,000 dominant) 50 – 10,000 (social calls)	1, 3
Sperm whale clicks	Up to 235	100 – 30,000	2
Anthropogenic sound			
Seismic acoustic source (32 guns)	178-210	Most energy 5 to 200 Hz	1
Ship sound (close to hull)	200	10 - 100	2
Survey vessel	110-135 (without thrusters) 121-146 (with thrusters)	20 - 1,000	4
Fishing trawler	158	100	3
7 m outboard motorboat	156	630	3
Tanker (179 m)	180	60	3
Supertanker (340 m)	190	7	3
Containership (274 m)	181	8	3
Navigation transponders	180 – 200	7,000 – 60,000	3
SSS	220 – 230	50,000 – 500,000	3
Bottom profilers	200 – 230	400 – 30,000	3
References			
1 – Richardson et al. (1995).	3 – WDCCS (2004).	5 – Chapp et al. (2005).	
2 – APPEA (2006).	4 – Total (2004).	6 – Matsumoto et al. (2014).	

4.2 Marine and Coastal Environment

A summary of marine and coastal features within the Activity area and EMBA is provided in Table 4-7.

Table 4-7 Summary of marine and coastal features within the Activity area and EMBA

Marine/coastal feature	Activity area	EMBA
Marine features		
Sublittoral sand and muddy sand		
Littoral sand		
High energy infralittoral rock		
Moderate energy infralittoral rock		
High energy littoral rock		
Non-reef sediment epibenthos		
Sublittoral seagrass beds		
Sublittoral coarse sediment		
Sublittoral seaweed on sediment		

* Green shading indicates presence of the feature, red indicates an absence.

4.2.1 Marine Environment

The biotopes within the Activity area are discussed within Section 4.1.2.1. In addition to the biotopes found within the Activity area, the EMBA also contains littoral sand, moderate energy infralittoral rock, sublittoral coarse sediment, and sublittoral seaweed on sediment. Habitat descriptions can be found at: [Marine and Coastal Knowledge – Supporting Information \(https://www.marineandcoasts.vic.gov.au/marine-and-coastal-knowledge/feature-activity-sensitivity-tool/supporting-information\)](https://www.marineandcoasts.vic.gov.au/marine-and-coastal-knowledge/feature-activity-sensitivity-tool/supporting-information).

4.2.2 Coastal Environment

The coastal environment described in this section is defined by the extent of the EMBA, which stretches for approximately 55 km from southwest of Seaspray to east of Loch Sport. The Activity area is directly adjacent to the sandy shoreline between Delray Beach and Golden Beach.

The OSRA (2015) maps are the primary resource used when describing the coastal features of the EMBA. According to the OSRA (2015) maps, the following features are overlapped by the coastal areas of EMBA:

- sandy beach - majority of the coastal area overlapped by the EMBA comprises of sandy beaches, including Ninety Mile Beach;
- hooded plover habitat - Hooded plover habitats are scattered along the sandy, coastal areas of the EMBA including near Lake Denison, Glomar Beach, Golden Beach and Loch Sport;
- estuarine fish habitats - Estuarine fish habitats have been identified at the mouth of the Merriman creek estuary in Seaspray, which is intermittently open to the ocean;
- intermittently open estuaries – the EMBA overlaps the Merriman creek estuary and Lake Dennison estuary; and
- one geological site - located at the mouth of the Merriman creek estuary.

4.3 Conservation Values and Sensitivities

The conservation values and sensitivities in and around the Activity area particularly, but also within the EMBA, are described in this section, with Table 4-8 providing an outline of the conservation categories included.

Table 4-8 Conservation values in the EMBA

Category	Conservation classification	Section
MNES under the EPBC Act	AMPs	Section 4.3.1
	World Heritage-listed properties	Section 4.3.2
	National Heritage-listed places	Section 4.3.3
	Wetlands of international importance	Section 4.3.5
	Nationally threatened species and TECs	Throughout section 4.4 & 0
	Migratory species	Throughout Section 4.4
	Commonwealth marine areas	Throughout Section 4.4
	Great Barrier Reef Marine Park	Not applicable.
	Nuclear actions	Not applicable.
	A water resource, in relation to coal seam gas development and large coal mining development	Not applicable.
Other areas of national importance	Commonwealth heritage-listed places	Section 4.3.4
	Key Ecological Features (KEF)	Section 4.3.7
	Nationally important wetlands	Section 0
Victorian protected areas	Marine National Parks and Sanctuaries	Section 0
	Coastal (onshore) conservation reserves	Section 0

4.3.1 Australian Marine Parks

No AMPs are located within the Activity area or EMBA.

The Beagle AMP is the closest, located 97 km southwest of the Activity area, followed by the East Gippsland AMP, located 214 km southeast of the Activity area.

4.3.2 World Heritage-Listed Properties

No properties on the World Heritage List occur within the EMBA or Activity area. The nearest site is the Royal Exhibition Building and Carlton Gardens in Melbourne, an onshore property located 215 km to the northwest of the Activity area.

4.3.3 National Heritage-Listed Places

There are no National Heritage-listed places in Bass Strait, with the nearest places all located onshore (Australian Alps National Parks and Reserves and the Point Nepean Defence Sites and Quarantine Station Area) over 70 km away.

4.3.4 Commonwealth Heritage-listed Places

No properties on the Commonwealth Heritage List occur within the EMBA. The nearest places are the Wilsons Promontory Lighthouse (128 km southwest of the Activity area) and the Gabo Island Lighthouse (232 km northeast of the Activity area).

4.3.5 Wetlands of International Importance

Australia currently has 67 wetlands covering over 8.3 million hectares, recognised for their ecological significance under the Ramsar Conventions and protected by Chapter 5, Part 15 of the EPBC Act (DCCEEW, 2024g). While no Ramsar wetlands are located within the Activity area or EMBA, the 'Gippsland Lakes' Ramsar site lies approximately 1 km north of the Activity area and is in close proximity to the EMBA shoreline, warranting its inclusion in this section.

4.3.6 Threatened Ecological Communities

An ecological community is a naturally occurring group of native plants, animals and other organisms that are interacting in a unique habitat. TECs are a MNES under the EPBC Act. TECs provide wildlife corridors and/or habitat refuges for many plant and animal species, and listing a TEC provides a form of landscape or systems-level conservation (including threatened species) (DCCEEW, 2024h).

The following TEC's were detected by the PMST and overlap with the coastal areas of the EMBA:

- natural Damp Grassland of the Victorian Coastal Plains
- subtropical and Temperate Coastal Saltmarsh.

Both of the above listed TECs are described within this section.

4.3.6.1 *Natural Damp Grassland of the Victorian Coastal Plains*

This TEC is a type of grassland of open grassy woodland with scattered trees and shrubs that occurs in the South East Coastal Plain. This TEC is generally found on heavy grey silty-loamy soils, which are poorly drained and therefore often damp and sometimes waterlogged. The heavy soils may be derived from floodplain or swamp deposits, and they may be influenced by moisture from local rainfall, surface flows from local creeks or runoff from surrounding land, and occasionally groundwater. Despite this TEC being terrestrial in nature, a range of wetland and coastal birds utilise this TEC, such as the curlew sandpiper, Australasian bittern, white-throated needletail, pacific golden plover, Australian painted snipe, Australian fairy tern and the marsh sandpiper.

4.3.6.2 *Subtropical and Temperate Coastal Saltmarsh*

According to the Conservation Advice for Subtropical and Temperate Coastal Saltmarsh, this TEC occurs in a relatively narrow strip along the Australian coast, within the boundary along 23°37' latitude along the east coast and south from Shark Bay on the west coast of WA (TSSC, 2013). The community is found in coastal areas which have an intermittent or regular tidal influence. The saltmarsh community is inhabited by a wide range of infaunal and epifaunal invertebrates and low and high tide visitors such as fish, birds and prawns (Adam, 1990). It is often important nursery habitat for fish and prawn species. Insects are also abundant and an important food source for other fauna. The dominant marine residents are benthic invertebrates, including molluscs and crabs (Ross et al., 2009).

4.3.7 Key Ecological Features

Key Ecological Features (KEFs) are components of the marine ecosystem that are considered to be important for biodiversity or ecosystem function and integrity of a Commonwealth marine area (DCCEEW, 2024i).

Both the Activity area and EMBA do not intersect any KEFs.

4.3.8 Nationally Important Wetlands

Nationally important wetlands are designated for their ecological and hydrological functions, roles in supporting vulnerable life stages of fauna, supporting ≥1% of the national population of native species, or significant historical or cultural value (DCCEEW, 2024j).

While several such wetlands occur along the Victorian coast, none occur within the Activity area or EMBA. The closest is the 'Lake Victoria Wetlands' located 6.2 km north of the EMBA.

4.3.9 Victorian Marine and Coastal Protected Areas

Victoria has twenty-four marine national parks and sanctuaries that were established, and are protected and managed, under the National Parks Act 1982 (Vic) by Parks Victoria. The EMBA overlaps a small area (~ 0.5 km²) of the Ninety Mile Beach MNP, located 21.2 km west of the Activity area.

Victoria has forty-five national parks and twenty-six state parks that were established, and are protected and managed, under the National Parks Act 1982 (Vic), Crown Lands (Reserves) Act 1978 (Vic) and Parks Victoria Act 1998 (Vic) by Parks Victoria.

4.3.9.1 Ninety Mile Marine National Park

The Ninety Mile Beach MNP covers an area of 2,750 ha and extends along approximately 5 km of coastline and offshore for 5 km from the high-water mark. The park protects an internationally significant sandy environment, recognised for its exceptionally high diversity of marine invertebrates.

The park's key natural values are listed as:

- very high diversity of marine invertebrates, including the large endemic southern Australian sea star (*Coscinasterias muricata*) and the soft coral (*Pseudogorgia godeffroyi*);
- scattered low calcarenite reefs providing habitat for a distinctive marine invertebrate fauna, especially sponges, with sparse flora communities of small red algae; and
- important habitat for threatened shorebird species, including species listed under international migratory bird agreements.

More than eight hundred different species were found within 10 m² of Ninety Mile Beach sand (compared to 300–400 per 10 m² in comparable habitats), making it one of the most biologically diverse marine environments in the world. Intertidal sand communities along the Ninety Mile Beach are species-poor, which is typical of coarse-grained, steep-faced, high-energy beaches.

The subtidal reefs support a community dominated by invertebrates, particularly sponges and sea squirts. Seaweeds are largely absent, possibly because of frequent scouring by shifting sand. The reefs themselves are likely to be periodically covered and uncovered by sand.

The waters of the park have aggregations of juvenile white shark (*Carcharodon carcharias*), snapper (*Pagrus auratus*), Australian salmon (*Arripis* spp.), long-finned pike (*Dinolestes lewini*) and short-finned pike (*Sphyaena novaehollandiae*). The southern right whale, Australian fur seals and New Zealand fur-seals are known to frequent the park.

4.3.9.2 Gippsland Lakes Coastal Park

Information provided here is sourced from Parks Victoria (1998).

This park is a narrow coastal reserve, covering 17,584 ha along the Ninety Mile Beach (including the beach itself, assumed to be to the low water mark) from Seaspray to Lakes Entrance.

The park's key natural values are listed as (use of the term 'Parks' in this section references the adjacent Lakes National Park):

- supports valuable remnants of vegetation communities that have been disturbed throughout much of their range, including Coast Banksia Woodland, Heath Tea-tree Heathland and Hairy Spinifex Grassland;
- Lake Reeve is of international significance and is a site of special scientific interest. This long, shallow lagoon is fringed by salt marsh with a number of plant species 'relatively uncommon in Victoria east of Seaspray';
- six significant flora and over 20 significant fauna species have been recorded within the Parks;
- Lake Reeve provides important breeding habitat for a number of waterfowl species and is one of Victoria's five most important areas for waders;
- the wetlands are important nursery areas for many fish species;

- the Parks contain sites of national, state and regional geological and geomorphological significance, mainly associated with the evolution of the barrier system that formed the Gippsland Lakes; and
- the Gippsland Lakes area, which includes the Parks, is recorded as a significant regional landscape by the National Trust of Australia.

4.4 Biological Environment

The results of the PMST and VBA database searches provide the key means by which species are identified for the Activity area and EMBA and are discussed in this section.

Additionally, BIAs are identified for those species that may occur within the Activity area and EMBA. BIAs are spatially and temporally defined areas of the marine environment used by protected marine species for carrying out critical life functions. BIAs are designated by identifying areas and times known or likely to be regularly or repeatedly used by individuals or aggregations of a single species, stock, or population for either reproduction, feeding, migration or resting (DCCEEW, 2023b).

4.4.1 Benthic Assemblages

4.4.1.1 Regional knowledge

The seascape of the region 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 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 that inhabit the soft seabed, including tubeworms, small crustaceans, nematodes, nemerteans and sea pens (OMV, 2001).

4.4.1.2 Bass Strait

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; and
- 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 EAC contributes to the high diversity due to the transportation of nutrient-rich waters.

Parry et al. (1989) also found high diversity and patchiness of benthos sampled off Lakes Entrance, where a total of three hundred and fifty-three species of infauna was recorded. Crustaceans (53%), polychaetes (32%) and molluscs (9%) dominated sample results.

Barton et al. (2012) report that in the Ninety Mile Beach Marine National Park (22 km southwest of the Activity area), reefs are dominated by invertebrates (70% coverage), including sponges, ascidians (sea squirts) and smaller bryozoans (resembling coral) and hydroids (colonies of tiny jellies attached to a feather-like base).

A search of the VBA database for the EMBA reports no results for benthic fauna species. Elsewhere in eastern Bass Strait, the VBA indicates the presence of benthic species including sea snails, sea stars, sea urchins, sea slugs, rock lobsters and limpets (none of which are threatened species under Commonwealth or Victorian legislation).

This confirms the diverse nature of the benthic environment in the Bass Strait and Southern Ocean regions.

4.4.1.3 Activity area

The ALA database did not contain any records of benthic species within the Activity area.

CSIRO has conducted biological surveying and investigation at the sites with a towed camera and Remotely Operated (underwater) Vehicle (ROV) footage, fish baiting and sampling of epibenthic fauna.

At sites within the Activity area, sled tows of various lengths as well as opportunistic sampling of epibenthic fauna were conducted. The general assemblage of epibenthic fauna at sites in the Activity area is consistent with the literature describing the region, with gastropods, polychaetes, echinoderms, cnidarians, crustaceans, bivalves and an assortment of sponges being collected and identified (CSIRO, 2018). Where hard substrate is identified at investigation sites, such as at site 14 (1.8 km north of the Activity area), species richness is higher than the soft substrate samples.

A total of 1,253 individuals were found recorded from the benthic tows within the Activity area, represented by 6 phyla, 8 classes and 28 taxa. The number of taxa recorded at Site 9 (8 taxa) and Site 10 (6 taxa at Site 10(A/B) and 3 taxa at Site 10(2A/2B)) was generally lower compared to other sites from the survey area. The abundance of benthic fauna at Site 9 and 10 was lower than most sites, with 0.5 individuals/m² at Site 9, 0.3 individuals/m² at Site 10(A/B) and 0.7 individuals/m² at Site 10(2A/2B) recorded. Both abundance and richness of benthic fauna taxa at Site 11(A/B) was the second highest of all surveyed sites, with 19 taxa and 24.8 individuals/m² recorded.

Electroma georgiana (little wing pearl shell) was the most abundant species at all three sites (and accounted for 75% of the abundance and 76% of total biomass across all the CSIRO sample sites).

Ophiura kinburgi is also abundant at site 11 (in the Activity area). This is a brittle star that grows up to 2 cm in diameter and lives in soft sediments in water depths ranging from 2 to 500 m (Port Phillip Marine Life, 2020).

Site 9, close to the proposed Horizontal Direction Drilling (HDD) seabed exit point, has low species diversity and abundance.

A marine habitat assessment was commissioned by CarbonNet for their Pelican 3DMSS and conducted in early April 2017 to characterise the seabed. This habitat assessment included 11 sites two of which (site 32 and 33) were within the Activity area and the others located within proximity to the Activity area. Nine of the 11 sites consisted of sandy sediments and gravels/shells with contouring that is typical of mobile seabed affected by swell waves and strong tidal currents. Rocky reef was present at two sites located 800 m to 1 km to the southwest of the Activity area. No beds of giant kelp, seagrass or sponges were observed at any of the 11 sites within proximity to the Activity area. The results of this sampling relevant to the Activity area indicate that, in general, the seabed is dominated by fine sand with very little epibiota. Low profile discontinuous rocky reef was observed at sites 64, 65 and 67 (directly adjacent to the Activity area) during the assessment.

Scallops

Commercial scallops (*Pecten fumatus*) are present throughout Bass Strait, with a distribution along the southeast Australian coast from central NSW, Victoria, SA and Tasmania. Commercial scallops are mainly found at depths of 10-20 m, but may also occur at depths of up to 120 m. While mainly sedentary, scallops can swim by rapidly opening and closing their shells, usually when disturbed by predators (AFMA, 2017a). Scallops feed on prey and detritus, while they are prey for starfish, whelks, and octopus (AFMA, 2017a).

VFA data indicates that very little commercial fishing for scallops has been undertaken in the proposed activity area in the last five years (see Section 4.6.2.2).

While the dominance of sandy sediments throughout the Activity area and surrounds provides abundant suitable scallop habitat and makes it possible that scallops occur, recent surveys indicate that the presence of commercial scallops is nil to low and commercially viable scallop beds are not present.

The VFA commissioned a 2023 pre-season abundance survey for the Victorian scallop fishery in eastern Victoria (Koopman et al., 2023). The survey focused on the "Tarwhine bed" located near the Tarwhine oil and gas field (approximately 18 km south of the Activity area). The Clonmel bed located off Port Albert (approximately 81 km southwest of the Activity area) was also assessed during the 2023 survey. Twenty-five (25) exploratory tows at various locations surrounding the two beds were also evaluated in the 2023 survey. Results of the survey are as follows (Koopman et al., 2023):

- clonmel (total area of 2.69 km²): medium to high densities of commercial scallops were found throughout the bed;
- tarwhine east (total area of 40.23 km²): High, medium, and low densities were observed throughout the area surveyed; and
- tarwhine west (total area of 37.66 km²): One tow had no commercial scallops, while medium and low densities were observed throughout the area surveyed.

The closest exploratory tow to the Activity area, tow ID 50 located 4.2 km south of the Activity area, was noted as containing no scallops (0 kg). The surrounding tows (ID 49 & 51) also noted no scallops (0 kg).

Rock Lobster

Two species of rock lobster occur within Victorian waters, the southern rock lobster (*Jasus edwardsii*) and eastern rock lobster (*Sagmariasus verreauxi*).

The southern rock lobster is found on coastal reefs from the south-west coast of WA to the south coast of NSW, including Tasmania and the New Zealand coastline. Southern rock lobsters are found to depths of 150 m (VFA, 2022). In Victoria, the abundance of rock lobsters decreases from west to east reflecting a decreasing area of suitable rock reef habitat.

The eastern rock lobster is found in coastal waters and depths of up to 200 m. The eastern rock lobster is found predominately in NSW and also occurs in Victoria, SA and Tasmania. The VFA states small quantities of the eastern rock lobster are taken off eastern Victoria, particularly near the border of NSW and Victoria (VFA, 2019).

The life cycle of the rock lobster is complex. After mating in autumn, fertilised eggs are carried under the tail of the female for approximately three months before being released, typically between September and November. Once released, rock lobster larvae (phyllosoma) live in the plankton and undergo eleven developmental stages over a period of one to two years while being carried by ocean currents. During metamorphosis, juvenile rock lobster shift from a planktonic to a benthic existence (DPI, 2009).

Rock lobsters grow by moulting or shedding their exoskeleton. The frequency of the moulting cycle declines with age, from five moults a year for newly settled juveniles to once a year for mature adults. Males grow faster and larger than females, reaching 160 mm in carapace length after ten years. Females generally reach 120 mm in the same period. Growth rates also vary spatially, with growth faster in the east than in the west (DPI, 2005).

Adult rock lobsters are carnivorous and feed mostly at night on a variety of bottom dwelling invertebrates such as molluscs, crustaceans and echinoderms. Major predators include octopus and various large fish and sharks. Rocky reef is present as scattered patches shoreward of the Activity area in waters less than 20 m depth.

It is assumed that the patchy low-profile rocky reef that is located within the Activity area provides rock lobster habitat.

EMBA

Although the VBA reported no benthic species in the EMBA, the ALA records show a variety of species including:

- annelids (polychaetes, tube worms, bristle worms);
- crustaceans (crabs, lobsters, amphipods, shrimp);
- molluscs;
- bivalves (mussels, scallops, oysters, clams);
- gastropods (sea snails, nudibranchs);
- echinoderms (star fish, sea cucumbers, brittle stars, urchins, feather stars); and
- sessile and other invertebrates (sponges, sea squirts, sea spiders, barnacles, corals).

4.4.2 Flora

Literature searches, combined with OSRA (2015) mapping, indicate that marine flora, such as seagrasses and kelp, are generally not abundant in the extensive areas of subtidal sand flats in the nearshore waters of the EMBA. This is likely to be due to the high-energy nature of the Gippsland coastline and the mobile nature of sands, which prevents many species being able to anchor themselves.

A search of the VBA database for the EMBA reports one species of seagrass (*Ruppia tuberosa*), this species of seagrass is known to estuarine and marine environments and has a wide distribution around all of Australia.

Barton et al. (2012) report that in the Ninety Mile Beach MNP (22 km southwest of the Activity area), reefs have sparse floral communities of small red algae. Given the park's proximity, this may be expected to be representative of flora present on rocky reefs in the proposed Activity area.

4.4.3 Plankton

Plankton is a key component in oceanic food chains and comprises two elements; phytoplankton and zooplankton, as described herein.

Phytoplankton (photosynthetic microalgae) comprise 13 divisions of mainly microscopic algae, including diatoms, dinoflagellates, gold-brown flagellates, green flagellates and cyanobacteria and prochlorophytes (McLeay et al., 2003). Phytoplankton drift with the currents, although some species have the ability to migrate short distances through the water column using ciliary hairs. Phytoplankton biomass is greatest at the extremities of Bass Strait (particularly in the northeast) where water is shallow and nutrient levels are high.

It is expected that the suite of plankton species present in and around the Activity area will be typical of those expected for temperate coastal waters.

4.4.4 Fish

The PMST detected 34 fish species (26 of which are seahorses and pipefish) as potentially occurring in the Activity area, an additional two species of shark were detected in the EMBA only. Of the fish species detected, seven were listed as threatened under the EPBC Act and five were listed as threatened under the FFG Act. The great white shark (*Carcharodon carcharias*) has a reproduction BIA that overlaps with the Activity area (0.13%) and EMBA (31.18%).

A search of the VBA database reveals no recordings of threatened fish species or syngnathids in the EMBA.

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 (Latrobe City Council [LCC], 1993). Fish species commercially fished in and around the Activity area are listed in Section 4.6.2.

The marine habitat assessment undertaken by CarbonNet found various site-attached species at some of the patch reef and sponge gardens in the area, including butterfly perch (*C. lepidoptera*), wrasse (*Labridae sp.*), goatfish (*Upeneichthys vlamingii*), bearded rock cod (*Pseudophycis sp.*), morwong (*Cheilodactylus sp.*), cowfish (*Arcana sp.*) and boarfish (*Pentaceropsis recurvirostri*).

4.4.5 Cetaceans

The PMST indicates that six whale species and seven dolphin species may reside within or migrate through the Activity area, an additional species of whale was detected in the EMBA only.

A search of the VBA database indicates that the southern right whale has been recorded 17 times within the EMBA, with the most recent sighting recorded in 2021. One sighting of the strap-toothed whale (*Mesoplodon layardii*) and pygmy sperm whale (*Kogia breviceps*) were also recorded by the VBA within the EMBA, neither of these species were detected by the PMST, and have preferences for deeper water, it is likely the sightings were a result of strandings, vagrants or possibly misidentification.

The VBA also detected three sightings of the common dolphin (*Delphinus delphis*) and two sightings of the Risso's dolphin (*Grampus griseus*). One record of the burrunan dolphin (*Tursiops australis*) was also detected by the VBA within the EMBA in 2003, this species is listed as critically endangered under the FFG Act. This species of dolphin inhabits semi-enclosed embayments and estuarine systems, the species has also been recorded high up in freshwater rivers and potentially inhabits inshore coastal waters. There are approximately 63 individuals located in Gippsland Lakes (onshore) directly adjacent to the EMBA.

4.4.5.1 Blue Whales

The blue whale (*Balaenoptera musculus*) has four subspecies, two of which occur within Australian waters, including the Antarctic blue whale (*B. m. intermedia*) and the pygmy blue whale (*B. m. breviceps*) (Rice 1998, in (Department of the Environment, 2023)).

The pygmy blue whale (PBW) has five population groups, two of which are found in the Southern Hemisphere.

Distribution

McCauley et al. (2018) found Antarctic blue whale calls along the entire southern Australian coast, while calls from the New Zealand PBW population occur predominantly eastward of Bass Strait, and calls from the Indo-Australian PBW population were heard west of Bass Strait. The Indo-Australian PBW population wasn't recorded on the east Australian coast or east of Bass Strait and the NZ PBW population was always heard in the Bass Strait recordings, and only ever heard as far west as Portland in Victoria. The Antarctic blue whale was recorded at all sites south of 19°S (McCauley et al., 2018).

Balcazar et al. (2015) suggests that the Australian continent acts as a geographic boundary, separating Indo-Australian and NZ PBW acoustic populations at the junction of the Indian and Pacific Ocean basins (Balcazar,

et al., 2015). There are few contemporary records of blue whales in the Gippsland region, which can be seen in the few sighting records within the ALA database (all of which are pre-2000). However, recent scientific literature suggests that PBW populations are capable of travelling great distances far beyond their expected range (Barlow, 2023). This concept that blue whales can extend beyond their current range is corroborated by Branch et al. (2023), who modelled the predicted detection range for the Antarctic blue whale and PBW populations.

Diet

Blue whales have the highest known prey requirements, consuming up to two tonnes of krill per day (DoE, 2015a). Krill is the key to understanding the ecology and behaviour of blue whales. Krill is sensitive to temperature and migrates vertically and horizontally to maintain optimal positioning with respect to nutrients, often being found along thermal fronts and thermoclines. The krill species, *Nyctiphanes australis*, frequently swarm at or near the surface, making it easily available to foraging blue whales. Foraging is energetically expensive for blue whales, which must regularly find sufficient food to balance their enormous energy requirements (Gill, 2020). There are two important seasonal feeding aggregations areas known in Australia where large numbers of PBW have been recorded: the Bonney Coast Upwelling KEF and adjacent waters off South Australia (SA) and Victoria (located 440 km west of the EMBA); and the Perth Canyon KEF and adjacent waters off WA (located over 3,000 km west of the EMBA).

Antarctic Blue Whale

The Antarctic blue whale subspecies consists of one or more populations that feed off Antarctica during summer, and limited evidence suggests that some proportion migrate to subtropical latitudes of the Pacific and Indian Ocean to breed. They have been acoustically detected off the West and North coasts of Tasmania predominately from May to December. Based on the seasonality of recordings, these areas possibly form part of their migratory route, breeding habitat or a combination of the two (CoA, 2015).

Barlow (2023) noted that the South Taranaki Bight could be a migratory corridor for the Antarctic blue whale. The Antarctic blue whale is predicted to remain consistently within the Southern Hemisphere, with especially high probabilities in winter months (May-August), and low probabilities in summer (December-March) (Branch, 2023).

In light of the findings of Barlow (2023) and Branch (2023), it is possible the Antarctic blue whale will be present within the Activity area and EMBA.

Indo-Australian Pygmy Blue Whale

The distribution and migration patterns of Indo-Australian PBW are relatively well understood in areas further west of the EMBA. Satellite tagging of Indo-Australian PBW by Double et al. (2014) and Möller, et al. (2020) has revealed that the Indo-Australian population migrates from southern Australian foraging grounds through a WA migratory corridor to (presumed) breeding grounds in waters around Indonesia. The EMBA overlaps with 0.98% of the BIA for foraging.

Barlow et al. (2023) detected the Indo-Australian PBW song during a 10-day period in January 2017, implying a rare vagrant occurrence. The modelling predicts that the distribution of the Australian PBW is further westward of WA, further south along the GAB and Indian Ocean, south eastward towards the Bass Strait and Tasmania and even as far as NZ (Branch et al., 2023).

In light of the findings of Barlow et al. (2023) and Branch et al. (2023), it is possible the Indo-Australian PBW will be present within the Activity area and EMBA.

New Zealand Pygmy Blue Whale

Relatively little is known about NZ PBW. Antarctic blue whales are known to co-occur with PBW around New Zealand. Barlow et al. (2023) states that despite extensive acoustic recordings in eastern Australia, Bass Strait and Tonga, the NZ PBW has rarely been being detected in these locations. The NZ PBW is anticipated to be distributed northwards and eastwards of Tasmania (including Bass Strait and the eastern coast of Australia), and around NZ (Branch et al., 2023).

Due to a lack of records within the Gippsland region and known distribution surrounding NZ, it is unlikely the NZ PBW is present within the Activity area and EMBA.

4.4.5.2 Southern Right Whale

The southern right whale (SRW) (*Eubalaena australis*) is listed as endangered under both the EPBC Act and FFG Act. SRWs were depleted to less than 300 individuals globally due to commercial whaling in the 19th and 20th centuries (Tormosov, Mikhaliyev, Best, Zemsky, & Sekiguichi, 1998). They were protected from whaling in 1935, however, due to illegal whaling in the 1970s and because southern right whales have a slow rate of increase (7% per annum (p.a.)) compared to other marine mammals, their numbers remain low (IWC, 2013). Global abundance estimates are 13,000 for the species, across key wintering grounds in South Africa, Argentina, Australia, and New Zealand.

Population

The Australian population of SRW is divided into two subpopulations due to genetic diversity (Carroll, 2011; Baker et al., 1999) and different rates of increase (DSEWPAC, 2012b). The western sub-population occurs predominantly between Cape Leeuwin, WA and Ceduna, SA. This sub-population comprises most of the Australian population and is estimated at 3,200 individuals increasing at an annual rate of approximately 6% p.a. (Smith et al., 2019).

The eastern subpopulation can be found along the south-eastern coast, including the region from Tasmania to Sydney, with key aggregation areas in Portland and Warrnambool in Victoria. The eastern subpopulation is estimated at less than 300 individuals and is showing no signs of increase (Bannister, 2017). Connectivity between the two populations is unknown however, some limited movement between the two areas has been recorded (Burnell, 2001; Charlton, 2017; Pirzl et al., 2009).

Distribution

SRWs generally occur along the southern coast of Australia; they migrate annually along the eastern coastline from high latitude feeding grounds to lower latitudes for calving between mid-May and October (DCCEEW, 2023b). Known calving and aggregation grounds in the south-east region are Warrnambool, Port Fairy, Port Campbell and Portland in Victoria, and Encounter Bay in SA (DSEWPC, 2012). Nursery grounds are occupied from May to October, with female-calf pairs generally staying in the area for two to three months (Charlton, 2017). Calving itself usually occurs in very shallow (<10 m depth) waters. Sightings within the ALA database indicate that the SRW has been spotted within the Gippsland region pre and post 2000.

Biologically Important Areas

The Activity area overlaps 0.007% of the reproduction BIA and the EMBA overlaps 0.47% of the reproduction BIA. The Activity area overlaps 0.0002% of the migration BIA and the EMBA overlaps 0.07% of the migration BIA.

Southern right whales are likely to migrate through the Activity area and EMBA.

4.4.5.3 Humpback whale

The humpback whale (*Megaptera novaeangliae*) is a moderately large (15-18 m long) baleen whale that has a worldwide distribution but geographic segregation. In the 19th and 20th centuries, humpback whales were hunted extensively throughout the world's oceans and as a result it is estimated that 95% of the population was eliminated. In Australia, commercial whaling of humpback whales ceased in 1963 and until this time, it is estimated that humpback whales were reduced to between 3.5 and 5% of pre-whaling abundance (TSSC, 2015e).

In 2022, the humpback whale was removed from the vulnerable category and now holds no threatened status under the EPBC Act. However, they remain a MNES under the EPBC Act as a listed migratory species, and the species remains listed as a cetacean, where it is an offence to kill, injure, take, trade, keep, move or interfere with a cetacean (DAWE, 2022d).

Humpback whales are found in Australian offshore and Antarctic waters. Bass Strait represents part of the core range of the E1 Group, but feeding, resting or calving is not known to occur in Bass Strait (TSSC, 2015e), though migration through Bass Strait may occur. The nearest area that humpback whales are known to congregate (foraging BIA) is at the southern-most part of NSW (near the eastern border of Victoria), approximately 190 km northeast of the EMBA.

Humpback whales undertake annual migrations between their summer feeding grounds in Antarctic waters to their breeding and calving grounds in subtropical and tropical inshore waters, migrating up the Australian east coast (TSSC, 2015e). The northern migration off the southeast coast starts in April and May, with the southern

migration occurring from November to December. This migration tends to occur close to the coast, along the continental shelf boundary in waters about 200 m deep (TSSC, 2015e).

The listing advice for the humpback whale (DAWE, 2022) identifies vessel strike and anthropogenic noise as current threats to the species. As the Activity area and the EMBA represent a core range for humpback whales, they may be encountered, particularly during April, May, November and December, though the likelihood is considered low for the Activity area due to their preference for migrating along the edge of the continental shelf in waters much deeper than those of the Activity area.

4.4.5.4 Dolphins

None of the six dolphin species listed in the PMST are listed as threatened under the EPBC Act or FFG Act. The detected dolphin species are listed below:

- the common dolphin (*Delphinus delphis*);
- risso's dolphin (*Grampus griseus*);
- the dusky dolphin (*Lagenorhynchus obscurus*);
- the killer whale (*Orcinus orca*);
- the Indian Ocean bottlenose dolphin (*Tursiops aduncus*); and
- the bottlenose dolphin (*Tursiops truncatus*).

4.4.6 Pinnipeds

There are two pinniped species recorded under the EPBC Act PMST as potentially occurring within the Activity area and EMBA. The New Zealand fur-seal is listed as vulnerable under Victorian legislation but not under commonwealth. The VBA search for the EMBA recorded both species of the fur-seal. According to the VBA, the Australian fur-seal has been detected five times within the EMBA, with the most recent recording being in 2017. The New Zealand fur-seal was recorded once in 2015.

Three additional species of seal were also recorded by the VBA. The occurrences of these species within Australian coastal waters are considered vagrant and are typically pups or juveniles who have gone astray. It is highly unlikely any of the additional seal species detected by the VBA will be encountered in the EMBA.

One un-specified eared seal (*Otariidae spp.*) was also recorded by the VBA in the EMBA in 2014.

4.4.6.1 New Zealand fur-seal

New Zealand fur-seals (*Arctocephalus forsteri*) are listed as marine under the EPBC Act, and vulnerable under the FFG Act. NZ fur seals are mostly found in central South Australian waters (Kangaroo Island to South Eyre Peninsula); 77% of their population is found there (Shaughnessy, 1999).

There are 51 known breeding sites for New Zealand fur-seals in Australia, with most of these outside of Victoria (47 in SA and WA) (DEHWA, 2007). Breeding locations in Victoria occur at Kanowna Island, off Wilson's Promontory (located 138 km southwest of the Activity area) and the Skerries (located approximately 193 km northeast of the Activity area) (Kirkwood et al., 2009) (the latter being within the EMBA).

During the non-breeding season (November to January) the breeding sites are occupied by pups/young juveniles, whilst adult females alternate between the breeding sites and foraging at sea (Shaughnessy, 1999).

Haul-out sites in Bass Strait occur outside the EMBA (Barton et al., 2012).

There is no BIA for the New Zealand fur-seal in Bass Strait. Given the close proximity of the Activity area to breeding colonies and haul-out sites, it is likely that the species feeds within the Activity area and EMBA. However, there are no islands or rock outcrops within the Activity area or EMBA, so a resident population is unlikely to occur. These waters are unlikely to represent important critical feeding or breeding habitat.

4.4.6.2 Australian fur-seal

The Australian fur-seal (*Arctocephalus pusillus*) is listed as marine under the EPBC Act. The Australian fur-seal has a relatively restricted distribution around the islands of Bass Strait, parts of Tasmania and southern Victoria.

There are 10 established breeding colonies of the Australian fur-seal that are restricted to islands in the Bass Strait; six occurring off the coast of Victoria and four off the coast of Tasmania (DCCEEW, 2024b). The largest of the established colonies occur at Lady Julia Percy Island (26% of the breeding population and 471 km west of the Activity area) and at Seal Rocks (25% of the breeding population and 198 km west of the Activity area), in Victoria (DCCEEW, 2024b). These areas are not located within the EMBA. Historically, Australian fur-seal breeding colonies were more widespread, but several islands have not been occupied since their populations were removed by early commercial sealing (DCCEEW, 2024b).

Their preferred habitat, especially for breeding, is a rocky island with boulder or pebble beaches and gradually sloping rocky ledges. Australian fur-seals are present in the region all year. Pups begin to forage in June/July and are generally weaned by September/October (Shaughnessy, 1999).

Australian fur-seals are also regularly seen resting and foraging on and around the petroleum production platforms off the Gippsland coast. Barton et al. (2012), Carlyon et al. (2011) and OSRA list the haul-out sites known in Bass Strait, however, none of these sites occur in the EMBA.

During the summer months, Australian fur-seals travel between northern Bass Strait islands and southern Tasmania waters following the Tasmanian east coast, however, lactating female fur-seals and some territorial males are restricted to foraging ranges within Bass Strait waters.

Male Australian fur-seals are bound to colonies during the breeding season from late October to late December, and outside of this time they forage further afield (up to several hundred kilometres) and are away for long periods, even up to nine days (Kirkwood et al., 2009; Hume et al., 2004).

There is no BIA for the Australian fur-seal in Bass Strait.

4.4.7 Reptiles

Three species of marine turtle are identified in the PMST as potentially occurring within the Activity area and EMBA, all of which are listed as threatened under the EPBC Act. Robertson and Coventry (2014) note that known occurrences of turtles in Victorian waters are rare vagrants outside their usual range. No BIAs for marine turtles occur within Bass Strait. According to the Southern Australian Sea Turtle project (CIE, 2014), all species of sea turtle have been recorded in southern Australian waters (i.e., waters off South Australia, Victoria, and Tasmania) except the Kemp's ridley sea turtle. Leatherback turtles have the highest occurrence, appearing to be sighted more often during summer and autumn than the rest of the year.

4.4.7.1 Loggerhead turtle

The loggerhead turtle (*Caretta caretta*) is listed as endangered and migratory under the EPBC Act. The loggerhead turtle is globally distributed in sub-tropical waters (Limpus, 2008a) including eastern, northern and western Australia (CoA, 2017) and is rarely sighted off the Victorian coast. No loggerhead foraging areas have been identified in Victoria waters (CoA, 2017).

The CIE (2014) noted that the loggerhead turtle had been recorded seven times in Victoria, the closest sighting to the EMBA area was recorded in the northeast region of Wilson's Promontory (approximately 62 km west of the EMBA). Given the lack of sightings of the loggerhead turtle in eastern Victoria and an absence of foraging areas, it is highly unlikely the species will be present within the Activity area or EMBA.

4.4.7.2 Green turtle

The green turtle (*Chelonia mydas*) is listed as vulnerable and migratory under the EPBC Act. The green turtle is distributed in sub-tropical and tropical waters around the world (Limpus, 2008b; CoA, 2017). In Australia, they nest, forage, and migrate across tropical northern Australia. There are no known nesting or foraging grounds for green turtles in Victoria and they occur only as rare vagrants (CoA, 2017). The CoA (2017) maps the green turtle as having a 'known' or 'likely' range within Bass Strait.

Similarly, the green turtle has been recorded in Victoria only five times. The closest sightings of the green turtle were recorded in the northern region of Wilsons Promontory (approximately 91 km southwest of the EMBA) and within Corner Inlet (approximately 71 km west of the EMBA). Given the lack of sightings of the green turtle in eastern Victoria and an absence of foraging areas, it is highly unlikely the species will be present within the Activity area or EMBA.

4.4.7.3 Leatherback turtle

The leatherback turtle (*Dermochelys coriacea*) is listed as endangered and migratory under the EPBC Act. The leatherback is widely distributed throughout tropical, sub-tropical and temperate waters of Australia (CoA, 2017) including oceanic waters and continental shelf waters along the coast of southern Australia (Limpus, 2009). Unlike other marine turtles, the leatherback turtle utilises cold water foraging areas, with reported foraging along the coastal waters of central Australia (southern Queensland to central NSW), southeast Australia (Tasmania, Victoria and eastern South Australia) and southern WA (Limpus, 2009). No major nesting has been recorded in Australia, with isolated nesting recorded in the Northern Territory, Queensland and northern NSW (CoA, 2017). This species nests only in the tropics. The CoA (2017) maps the leatherback turtles as having a known or likely range within Bass Strait.

Unlike the loggerhead and green turtle, the CIE (2014) noted 28 records of the leatherback turtle in Victoria. The closest sightings to the EMBA are in the southwest part of Wilsons Promontory (approximately 95 km southwest of the EMBA) and around the waters surrounding Manns Beach (approximately 34 km northwest of the EMBA). Despite the leatherback turtle being recorded the most within Victoria, it is still considered unlikely that the species will be encountered in the EMBA due to a lack of nesting sites.

4.4.8 Avifauna

Birds in the marine environment can include both seabirds and shorebirds:

- seabirds refer to those species whose normal habitat and food sources are derived from the ocean (both coastal and pelagic); seabirds include such species as albatrosses, petrels, pelicans, gannets and cormorants; and
- shorebirds (sometimes referred to as wading birds) refers to those species commonly found along sandy or rocky shorelines, mudflats, and shallow waters; shorebirds include such species as plovers and sandpipers.

Fifty-eight (58) seabirds and shorebirds are listed under the EPBC Act as potentially occurring in the Activity area and EMBA. The majority of these are listed as migratory and marine species.

The VBA database recorded an additional twelve seabirds and twenty-two shorebirds in the EMBA with over 100 terrestrial birds also recorded.

A search of the BirdData database was conducted for both the Activity area and EMBA in 2024. The BirdData database identified 7 birds (2 gulls, 1 gannet, 1 currawong, 1 silvereye, 1 greater crested tern and 1 blackbird) within the Activity area, all species were detected once, except for the greater crested tern which was detected twice. The BirdData database identified 232 species of birds.

Albatross and Petrels

The PMST report detected 15 albatross and five petrel species that have the potential to occur within the EMBA.

Albatrosses and petrels are mostly surface capturing, pelagic predators that feed on live and dying prey. Their ability to dive varies across species and involves either surface plunge dives or shallow dives to catch prey (generally less than 15 m deep). Both species are wide-ranging, opportunistic predators.

Albatrosses and petrels have a tendency to follow fishing vessels. Competition for fishers discards and baited hooks can be intense with smaller birds subject to secondary attacks by other larger birds (CoA, 2022). None of the remote offshore islands listed in the National Recovery Plan for albatrosses and petrels (CoA, 2022) that should be regarded as habitat that is potentially critical to the survival of albatrosses and petrels in Australia are within the Activity area or EMBA or in close proximity.

Due to their extensive ranges and the presence of several BIAs, it is likely that albatross and petrel species will be encountered in the EMBA.

Shearwaters

Six species of shearwaters were detected by the PMST. Shearwaters represent the most abundant seabird in Australia they are typically pelagic, except during breeding seasons where they are found on remote islands or coastal headlands. Shearwaters are medium-size long-winged seabirds that are most common in temperate and cold waters. They spend most of their time foraging in the ocean and return to coastal cliffs and offshore islands only to breed.

Shearwaters feed by pursuit-plunging, surface plunging or surface-seizing (DCCEEW, 2024b). One species of shearwater has a BIA within the Activity area and EMBA.

Due to their expansive ranges, it is likely that shearwaters may overfly or forage in the EMBA.

Little penguins

The Little penguin (*Eudyptula minor*) was not detected by the PMST, however, the VBA recorded four sightings of the species in 2021.

Nest building (in sand dunes or in rock crevices) occurs from June to December, breeding occurs from August to October, egg laying occurs from August to December, chick raising occurs from August to March and moulting occurs between February and April (during which time they must remain on land). During winter, penguins spend most of their time at sea, returning to the burrows to rest and attend to their burrows (PFPI, 2017). Based on OSRA (2015) mapping, little penguin colonies in the Gippsland region all occur outside the Activity area and EMBA.

The nearest BIA for little penguins occurs at Curtis Island (south of Wilson's Promontory, 138 km southwest of the Activity area), around Flinders Island (150 km south) and at Phillip Island (180 km west) (all located outside the EMBA). Little penguins may forage within the Activity area and EMBA.

Other seabirds

Other seabirds listed in the PMST that may occur within the Activity area and EMBA are listed here:

- the southern fairy prion (*Pachyptila turtur subantarctica*);
- the white-bellied sea eagle (*Haliaeetus leucogaster*); and
- the osprey (*Pandion haliaetus*).

4.4.8.1 Shorebirds and Coastal Species

Shorebirds and coastal species listed in the PMST that may occur within the Activity area and EMBA are listed here:

- terns - three species of tern (the little tern, Australian fairy tern & white-fronted tern) were detected by the PMST as potentially occurring within the EMBA;
- plovers - seven plovers may occur within the EMBA (double-banded, pacific, grey, greater sand, red-capped, hooded and eastern plover). The double-banded, red-capped and hooded plovers are also listed under the VBA as occurring within the EMBA, with the latter listed as vulnerable under the FFG Act;
- sandpipers - five sandpiper species may occur within the EMBA (marsh, curlew, common, sharp-tailed, pectoral). Low numbers of four of these sandpipers are recorded in the VBA for the EMBA;
- snipes - there are four snipe species that may occur within the EMBA (Latham's, Swinhoe's, pin-tailed and Australian painted). Latham's snipe is also recorded from the EMBA in the VBA, and is not listed as threatened under the FFG Act. Snipes may be present within the EMBA during the Activity;
- godwits - There are two species of godwit that may occur within the EMBA (bar-tailed and Nunivak bar-tailed). Godwits may be present within the EMBA during the Activity;
- red knot - The red knot is the only EPBC Act-listed species of knot that may occur within the Activity area and EMBA (and is recorded in the VBA). Knots may be present within the EMBA during the Activity;
- swift parrot - The swift parrot (*Lathamus discolor*) is a small parrot that has rapid, agile flight. The entire population migrates from Tasmania to the mainland for winter. On the mainland it disperses widely and forages on flowers and psyllid lerps in eucalypts. Given its habitat preferences, this species is unlikely to occur within the EMBA; and
- orange-bellied parrot - The orange-bellied parrot (*Neophema chrysogaster*) migrates across Bass Strait in autumn and over-winters on the mainland of Australia. In Victoria, they mostly occur in sheltered coastal habitats, such as bays, lagoons and estuaries, or, rarely, saltworks. Orange-bellied habitat may occur around the Gippsland Lakes area. The EMBA overlaps with the species infrequent

non-breeding range. The orange-bellied parrot may to be present within the coastal areas of the EMBA in low numbers during winter.

4.4.9 Marine Pests

Marine pests known to occur in South Gippsland, according to ParksVic (2015) and Barton et al. (2012) include:

- pacific oyster (*Crassostrea gigas*);
- northern pacific sea star (*Asterias amurensis*);
- New Zealand screw shell (*Maoricolpus roseus*); and
- european shore crab (*Carcinus maenas*).

The Marine Pests Interactive Map (DAFF, 2019) indicates that the Port of Melbourne is known to harbour the following species:

- northern pacific sea star;
- european shore crab;
- european fan worms (*Sabella spallanzanii* and *Euchone* sp);
- Japanese kelp (*Undaria pinnatifida*);
- asian date mussel (*Musculista senhousia*); and
- asian shore crab (*Hemigrapsus sanguineus*).

These species have the potential to be picked up in the ballast water and transferred to the Activity area. Two of these species (Pacific oyster and European green crab) are also known to occur in the Gippsland Lakes (Hirst & Bott, 2016).

4.5 Cultural Heritage Values

4.5.1 Underwater cultural heritage

4.5.1.1 First Nations Underwater Cultural heritage

First Nations Underwater Cultural Heritage (FNUCH) is defined as any trace of human existence that has a cultural, historical or archaeological character, is located underwater, and relates to the Aboriginal or Torres Strait Islander occupation of Australia. DCCEEW (2023d) notes that intangible underwater cultural heritage that lacks a physical component cannot be protected under the Underwater Cultural Heritage Act 2018. However, DCCEEW (2023d) supports the notion that understanding intangible FNUCH can support impact assessment.

Smyth and Isherwood (2016) describe Sea Country as all estuaries, beaches, bays, and marine areas collectively, within a traditional estate. Sea Country contains evidence of the ancient mystical events by which all geographic features, animals, plants, and people were created. The Activity area and the coastal areas of the EMBA overlap with the proposed Sea Country Indigenous Protected Areas (IPA). The proposed IPA is located within the coastal waters of the Gippsland region, comprising of numerous marine and coastal parks and includes the Ramsar listed Gippsland Lakes and Raymond Island, a highly significant cultural site. The Activity area and the coastal areas of the EMBA overlap with the proposed Sea Country IPA area.

4.5.1.2 Maritime Archaeological Heritage

There are no shipwrecks mapped as occurring in the Activity area with the closest being the Colleen Bawn located 500 m south of the Activity area.

Shipwrecks within the EMBA are as follows:

- Pretty Jane (1882).
- Julius (1892) – located on the shoreline.
- Norfolk (1914) – located on the shoreline.
- Colleen Bawn (1913).
- Magnolia (1887).

- PS Paynesville (1881) – located on shoreline.

Of the six hundred shipwrecks in Victoria, 9 have been placed within protected zones (a no-entry zone of 500-m radius [78.5 ha] around a particularly significant and/or fragile shipwreck). 5 of these are located within Port Phillip Bay, and 2 along the west Gippsland coast, these being the PS Clonmel (just outside Corner Inlet) and the SS Glenelg (35 km southwest of the Activity area).

4.5.2 Native Title

A search of the NNTT database identifies that there is registered Native Title determination over much of the coastline adjacent to the EMBA and Activity area, this being for the Gunaikurnai People (VCD2010/001). There are no Native Title Claims over the Activity area or adjacent coastline (NNTT, 2025).

The Gunaikurnai and Icon Energy (VI2013/008) Indigenous Land Use Agreement (ILUA) exists along the coastline adjacent to the Activity area and EMBA (NNTT, 2025). An ILUA is a voluntary agreement between Native Title parties and other people or bodies about the use and management of areas of land and/or waters.

4.6 Socio-economic Environment

4.6.1 Coastal Settlements

The coastline adjacent to the Activity area is sparsely populated, with the adjoining townships of Golden Beach and Paradise Beach being the closest. These towns are located within the Shire of Wellington.

The towns of Seaspray and The Honeysuckles are located further southwest on the coastline adjacent to the Activity area. Similar to Golden Beach and Paradise Beach, these are essentially tourism-focused towns.

4.6.2 Commercial Fishing

4.6.2.1 Commonwealth-managed Fisheries

Commonwealth commercial fisheries with jurisdictions to fish the EMBA are the:

- Bass Strait Central Zone Scallop Fishery (BSCZSF).
- Eastern Tuna and Billfish Fishery (ETBF).
- Eastern Skipjack Tuna Fishery (ESTF).
- Southern Bluefin Tuna Fishery (SBTF).
- Small Pelagic Fishery (SPF).
- Southern Squid Jig Fishery (SSJF).
- Southern and Eastern Scalefish and Shark Fishery (SESSF), incorporating:
 - Gillnet and Shark Hook sector;
 - Commonwealth Trawl sector (CTS); and
 - Scalefish Hook sector (SHS).

4.6.2.2 Victorian-managed Fisheries

Victorian-managed commercial fisheries with access licences that authorise harvest in the waters of the Activity area and the EMBA include the following (noting that not all operate in the Activity area):

- Victorian Scallop;
- rock lobster (eastern zone);
- abalone (central zone);
- wrasse;
- banded Morwong;
- pipi;
- octopus (eastern zone);

- ocean general;
- trawl inshore;
- purse seine;
- sea urchin;
- giant crab; and
- eel.

4.6.3 Recreational Fishing

Recreational fishing and boating are largely confined to the Gippsland Lakes and nearshore coastal waters, though surf fishing does occur along the beaches adjacent to Golden Beach.

There are no boat ramps adjacent to the Activity area.

4.6.4 Tourism

Marine-based tourism and recreation in the Bass Strait is primarily associated with recreational fishing and boating (see previous section). The Gippsland Lakes (comprising Lake Victoria, Lake King, and Lake Wellington, together with other smaller lakes, marshes and lagoons) are the primary tourist attraction in the region. The communities adjacent to this network of lakes are popular tourist towns for their boating and fishing activities, along with bushwalking, bird watching and other nature-focused activities. Towns including Lakes Entrance, Metung, Loch Sport, Golden Beach and Lake Tyers are especially popular in summer.

4.6.5 Offshore Energy Exploration and Production

4.6.5.1 Petroleum

The Activity area is located in proximity to several gas pipelines, these being:

- TasGas pipeline (Tasmanian Gas Pipeline Pty Ltd) – located 21 km west of the Activity area.
- Seaspray to Dolphin to Perch pipeline (EARPL) – located 20 km southwest of the Activity area.
- Bream A to shore pipeline (EARPL) – 5 km east of the Activity area.
- Barracouta to shore pipeline (EARPL) – 6.5 km east of the Activity area..

4.6.5.2 Electricity

The western extent of the EMBA intersects with a very small portion of Basslink Interconnector that allowed the trade of electricity between Tasmania (hydropower) and the National Electricity Market of the mainland. Basslink runs from Loy Yang in Gippsland, Victoria, across Bass Strait to Bell Bay in Northern Tasmania.

4.6.5.3 Renewable Energy

The EMBA intersects Australia's first offshore area declared available for renewable energy projects (OEI-01-2022 Part 1). The Activity area is located about 7 km from the declared area. The closest site that has been granted a feasibility license is the Gippsland Dawn offshore wind Activity area, located 12 km east of the project area and the Blue Mackerel North offshore wind project area located 27 km southwest of the Activity area.

4.6.6 Commercial Shipping

The South-east Marine Region (which includes Bass Strait) is one of the busiest shipping regions in Australia (CoA, 2015a). Lakes Entrance is an important fishing port for the region (CoA, 2015a).

The Activity area is located entirely within the Bass Strait ATBA. This area is a routing measure that ships in excess of 200 gross tonnes should avoid due to the high concentration of offshore petroleum infrastructure (oil and gas platforms and pipelines) that can provide a navigational hazard. Operators of vessels greater than 200 gross tonnes must apply to NOPSEMA to enter and be present within the ATBA (Australian Border Force, 2017).

4.6.7 Defence Activities

The Activity area is located beneath Defence Restricted Airspace R258D. The interactive DoD database (2023) indicates that the Activity area lies within the '393 Seaspray' and '392 Bass Strait' UXO sites. The EMBA also overlaps both sites.

4.6.8 Other Infrastructure

Other infrastructure present within the Activity area (pipeline route investigation portion) includes the ROS ocean outfall at Delray Beach. This outfall is operated by Gippsland Water and disposes large volumes of secondary treated, high saline wastewater from central Gippsland (ParksVic, 2006).

There are no submarine cable protection zones in the vicinity of the Activity area. The nearest telecommunications cables, which connect Tasmania to the Australian mainland, occur to the west of Wilsons Promontory and are far outside the EMBA.

5 Impact and Risk Assessment Methodology

5.1 Risk Assessment Approach

GB Energy uses a risk management methodology that is compliant with the Australian New Zealand Risk Management Standard ISO31000:2009 (*Risk management-Principles and guidelines*). In planning and designing its approach to risk management, GB Energy has sought to embed risk management into the Project's day-to-day processes so that risk management is relevant, effective, efficient and sustained.

The risk management framework is illustrated in Figure 5-1

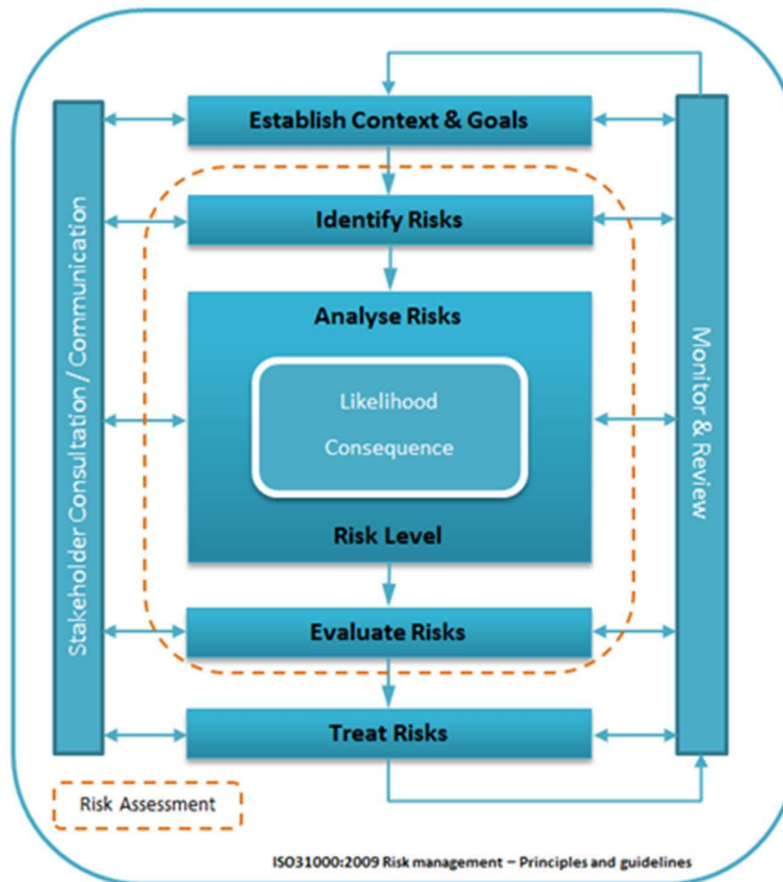


Figure 5-1 Risk management framework

5.2 Risk Management Process

GB Energy's environmental risk management methodology follows the ISO 31000 Risk Management Principles, which consists of the following steps:

- **Identifying** the environmental aspects of the Activity (including stakeholders that may be affected by the Activity).
- **Analysing** the environmental impacts and risks of the Activity.
- **Evaluating** those impacts and risks.
- **Identifying** the treatments that can be incorporated into the Activity to ensure the impacts and risks are managed to be ALARP and acceptable.

- **Ensuring** the environmental management system (EMS) is robust enough to achieve the objectives in place to manage the impacts and risks of the Activity.

5.2.1 Stakeholder Identification

Stakeholder engagement and cooperation is an essential part of GB Energy's corporate sustainability strategy. Stakeholder consultation is an important part of GB Energy's environmental risk management process because it assists in determining the significance of impacts its activities may have.

5.2.2 Risk Identification

GB Energy reviewed and revised the environmental identification risk register, first developed in November 2018 for the G&G investigations, in March 2024. The results of this review form the basis for the EIA and ERA which is summarised in Chapter 6.

5.2.3 Risk Analysis

The OPGGS Regulations 15(4) requires that the EP detail and evaluate the environmental impacts and risks for an Activity, including control measures used to reduce the impacts and risks of the Activity to ALARP and an acceptable level.

Environmental impact and risk are defined as:

- *Impact: any change to the environment, whether adverse or beneficial, that wholly or partially results from an Activity.*
- *Risk: the likelihood of a specific undesired event occurring within a specific period or in specified circumstances and with specified consequences.*

5.2.4 Determining risk consequence

GB Energy defines consequence as:

- *The nature of the outcome of an event.*

The consequence definitions are provided in Table 5-1.

Table 5-1 Consequence definitions

	Health & Safety (<i>impact to GB Energy or contracting personnel</i>)	Environment (<i>impact to the physical and ecological environment and cultural heritage</i>)	Financial (<i>loss of revenue, business interruption, commodity trading, asset loss</i>)	Reputation and Social (<i>services and community interruption</i>)	Schedule	Technical (<i>Occupational Health and Safety, environment, industrial relations, trade practices, industry acts</i>)
5. Critical	Fatality	Widespread, long-term impact to environment, flora/fauna and ecosystem. Complete remediation not possible.	> AUD 70MM	Critical impact on business reputation and/or international media exposure	> 6 months project delay	Cannot perform work
4. Major	Permanent disabling injury and/or long term off work	Regional, medium/long-term impact to environment, flora/fauna with conservation value. Impact to ecosystem function. Remediation difficult or expensive.	AUD 7 MM < x ≤ 70 MM	Significant impact on business reputation and/or national media exposure.	1 month < x ≤ 6 months project delay	Can perform work only after complete change of work method
3. Moderate	Injury requiring medical treatment, time off work and rehabilitation	Localised, medium-term impact to environment, flora/fauna with conservation value. Ecosystem function is not affected. Damage can be remediated but	AUD 700k < x ≤ 7 MM	Moderate to small impact on business reputation	1 week < x ≤ 1 month project delay	Can perform part of work with significant technical changes

	Health & Safety (<i>impact to GB Energy or contracting personnel</i>)	Environment (<i>impact to the physical and ecological environment and cultural heritage</i>)	Financial (<i>loss of revenue, business interruption, commodity trading, asset loss</i>)	Reputation and Social (<i>services and community interruption</i>)	Schedule	Technical (<i>Occupational Health and Safety, environment, industrial relations, trade practices, industry acts</i>)
		may be difficult or expensive.				
2. Minor	Injury requiring medical treatment with no lost time	Localised, short-term impact on environment, flora or fauna. Readily treated.	AUD 70k < x ≤ 700k	Some impact on business reputation.	2 days < x ≤ 1 week project delay	Can perform majority of work with significant technical changes
1. Negligible	Minor injury - first aid treatment	Negligible impact on environment. Minor disturbance of flora/fauna.	≤ AUD 70k	Minimal impact to business reputation	≤ 2 days project delay	Can perform all of work with some technical changes

5.2.5 Determining risk likelihood

GB Energy defines likelihood as:

- *The chance of occurrence (sometimes per unit in time).*

The definitions of likelihood are provided in Table 5-2.

Table 5-2 Consequence definitions

Frequency		Description	Probability
E	Almost certain	Impact is occurring now. Could occur within days to weeks.	99% chance of occurring within the next year.
D	Likely	Balance of probability will occur. Could occur within weeks to months	>50% chance of occurring within the next year.
C	Possible	May occur shortly but a distinct probability it won't. Could occur within months to years.	>10% chance of occurring within the next year.
B	Unlikely	May occur but is not anticipated. Could occur in years to decades.	>1% chance of occurring within the next year.
A	Remote	Occurrence requires exceptional circumstances. Exceptionally unlikely event in the long-term future.	<1% chance of occurring within the next year.

5.2.6 Risk Evaluation

The risk is evaluated by 'multiplying' likelihood and consequence, as per Table 5-3. The recommended form of action, escalation and monitoring for each risk level is provided in Table 5-4.

Chapter 6 presents the 'inherent' rating (pre-treatment) and 'residual' risk rating (with controls adopted) for each risk (unplanned events).

Table 5-3 Qualitative risk analysis matrix

		Consequence				
		1	2	3	4	5
Frequency		Negligible	Minor	Moderate	Major	Critical
E	Almost certain	Medium	High	High	Extreme	Extreme
D	Likely	Low	Medium	High	High	Extreme
C	Possible	Low	Medium	Medium	High	High
B	Unlikely	Low	Low	Medium	Medium	High
A	Remote	Low	Low	Low	Low	Medium

Table 5-4 Risk treatment action

Risk rating	Treatment action
EXTREME The risk is intolerable	- Modify the threat, the frequency or consequence so that the risk is reduced to 'high' or lower. - For an operational Activity, the risk shall be reduced as soon as possible, typically within a timescale of not more than a few weeks. - For commercial risks, review the risks and where practicable reduce by additional mitigation measures such as hedging, insurance, etc.
HIGH The risk is tolerable if ALARP	- Repeat threat identification and risk evaluation processes to verify and, where possible, quantify the risk estimation; determine the accuracy and uncertainty of the estimation. - Where the risk ranking is confirmed to be 'high', if practicable, modify the threat, the frequency or consequence to reduce the risk ranking to 'medium' or 'low'. - Where the risk ranking cannot be reduced to 'medium' or 'low', to demonstrate ALARP it is necessary to review if it is reasonably practicable to remove threats, reduce frequencies and/or reduce the severity of consequences, and if it is reasonably practicable, these risk treatment actions shall be applied. If it is not reasonably practicable, no further action is required and ALARP is demonstrated. - For an operational Activity, the reduction to 'medium' or 'low' or demonstration of ALARP shall be completed as soon as possible; typically, within a timescale of not more than a few months.
MEDIUM The risk is tolerable	- Determine the management plan for the threat to prevent occurrence and to monitor changes that could affect the classification. - Management responsibility must be specified – monitor to determine if risk changes and needs to be reassessed.
LOW The risk is tolerable	- Review at the next review interval. - Manage by routine procedures – reassess at next review.

5.2.7 Risk Treatment

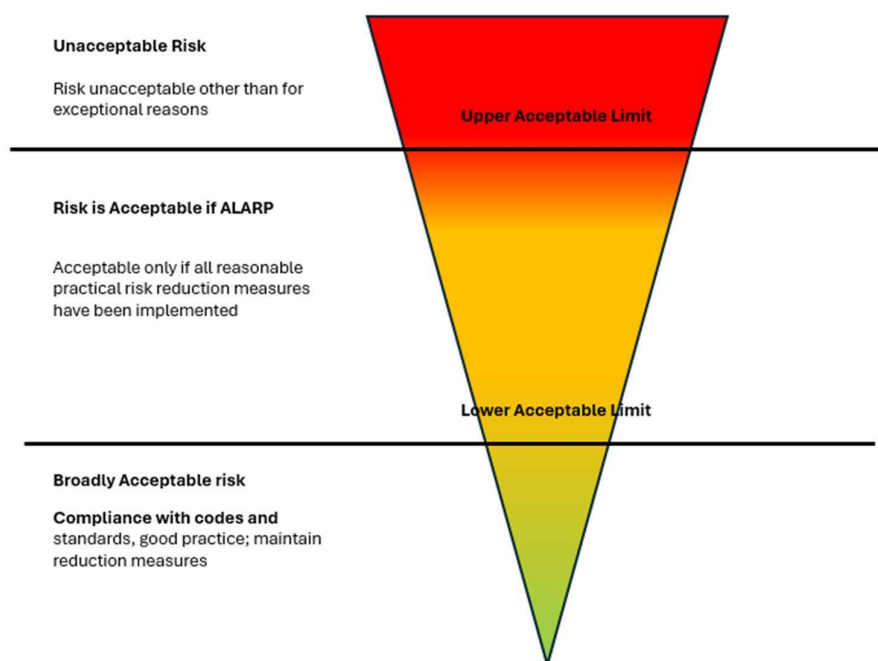
Each of the impacts and risks identified and evaluated in Chapter 6 have associated control measures. The following sections describe how ALARP and acceptability are defined and assessed.

5.2.8 Demonstration of ALARP

The ALARP principle is defined as:

- The demonstration that the cost of further risk reduction measures is grossly disproportionate to the benefit gained.*

The ALARP principle arises from the fact that infinite time, effort and money could be spent attempting to reduce a risk or impact to zero. This principle is also illustrated in Figure 5.2.



Source: CER (2015).

Figure 5-2 The ALARP principle

There is no universally accepted guidance to applying the ALARP principle to environmental assessments. For the EP, the guidance provided in NOPSEMA's EP decision making guideline has been applied and augmented where deemed necessary (as outlined in GB Energy's Risk Management Procedure).

The level of ALARP assessment is dependent upon the:

- residual impact and risk level (high versus low); and
- the degree of uncertainty associated with the assessed impact or risk.

A risk is considered to be reduced to ALARP when the following criteria are met:

- there are no additional reasonably practicable measures available to further reduce the risk, or
- there are no reasonably practicable alternatives to the Activity, or
- the 'cost' of implementing further measures is grossly disproportionate to the reduction in risk.

5.2.9 Demonstration of Acceptability

In addition to determining whether environmental risks are ALARP, GB Energy undertakes an assessment of all environmental hazards to determine whether they will be of an acceptable level. GB Energy considers a range of factors when evaluating the acceptability of environmental impacts associated with its activities, as outlined in Table 5-5.

Table 5-5 Acceptability test

Test	Question
Internal context	
Policy compliance	Is the proposed management of the risk or impact aligned with the GB Energy's HSE Policy?
Management System Compliance	Is the proposed management of the risk or impact aligned with the GB Energy's HSE Management System or supporting procedures?
Stakeholder engagement	

Social acceptability	Have stakeholders raised any concerns about Activity impacts or risks, and if so, are measures in place to manage those concerns?
Legislation, industry standards and best practice	
Laws and standards	Is the risk or impact being managed in accordance with existing Australian or international laws or standards such as MARPOL, Flag State Marine Orders (MOs), API standards, etc?
Industry practice	Is the impact or risk being managed in line with industry practice, such as Oslo-Paris Conventions (OSPAR), Offshore Chemical Notification Scheme (OCNS), Industry Codes of Environmental Practice, etc?
Environmental context	Is the impact or risk being managed pursuant to the nature of the receiving environment (e.g., sensitive or unique environmental features generally require more management measures to protect them than environments widely represented in a region)?
Environmentally Sustainable Development (ESD) Principles	Does the proposed risk or impact comply with the accepted industry principles of conduct that ESD principles be integrated into company decision-making?
ALARP	Are there any further reasonable and practicable controls that can be implemented to further reduce the risk or impact?

5.3 Risk Monitoring and Review

To support the risk management system, it is necessary to have a process of monitoring and review. Ongoing review is required to ensure that risks and treatment plans remain relevant. Factors impacting upon risk assessments and control practices can be identified through regular monitoring.

Priority should be given to monitoring risks that are rated as 'high' or above (as defined in Table 5-4). The monitoring and review process is undertaken to support the reporting process and is an opportunity to identify emerging risks that have arisen, that need to be analysed and addressed, if required.

Monitoring and review aspects are described in the Implementation Strategy (Chapter 7) of this EP Summary.

6 Environmental Impact and Risk Assessment

This section presents the EIA and ERA for the environmental impacts and risks identified for the Activity using the methodology described in Chapter 5.

A summary of the impact and risk ratings for each impact and risk identified and assessed in this chapter is presented in Table 6-1.

Table 6-1 Environmental impact and risk rating summary

Hazard		Inherent	Residual
Impacts (planned events)		Consequence rating	
1	Generation of underwater sound	Negligible	Negligible
	• Biological Receptors	Negligible	Negligible
	• Commercial fisheries	Negligible	Negligible
2	Displacement of Other Marine Users	Negligible	Negligible
3	Atmospheric emissions	Negligible	Negligible
4	Light emissions	Negligible	Negligible
	• Environment	Negligible	Negligible
	• Community	Negligible	Negligible
5	Discharge of sewage and grey water	Negligible	Negligible
6	Discharge of cooling and brine water	Negligible	Negligible
7	Discharge of bilge water and deck drainage	Negligible	Negligible
Risks (unplanned events)		Risk rating	
1	Accidental overboard release of waste	Low	Low
2	Introduction of IMS	Medium	Low
3	Interference with Other Marine Users	Low	Low
4	Vessel Strike or Entanglement with Megafauna	Low	Low
5	Underwater sound interaction with swimmers and divers	Medium	
5	Marine diesel oil spill	Medium	Low
6	Oil Spill Response - Surveillance and Tracking	Low	Low
7	Oil Spill Response Methods - Deflection and protection booms	Low	Low

Table 6-2 presents a summary of the environmental hazards associated with the Activity, the impacts and risks of these hazards, the impact and risk ratings and the environmental performance standards (EPS) required to manage the identified impacts and risks. An EPS is defined as a statement of the performance required of a control measure.

Table 6-2 Environmental impact and risk assessment for geophysical surveys

Hazard	Potential impacts and risks	Avoidance, management and mitigation measures (environmental performance standards)	Residual impact or risk
Impacts (planned events)			
Generation of underwater sound	Physiological or pathological impacts to local populations of marine fauna and avifauna.	- fauna observations: - should a whale be observed within 3 km of the vessel, A Standard Management Procedures will be implemented during the geophysical investigations (whenever any geophysical equipment is active) - a soft start is not possible if a single 20 cui air gun is used, and similarly, it is not possible to undertake a soft start for the SBES, MBES, SSS or SBP. In this case, investigations can only commence if no whales have been sighted for 30 minutes prior to start up - support vessel crew will implement EPBC Regulations 2000 (Part 8, Division 8.1), embodied in The Australian National Guidelines for Whale and Dolphin Watching (DoEE, 2017b), which means maintaining watch for cetaceans such that: - caution zone (300 m either side of observed whales and 150 m either side of observed dolphins) – vessels must operate at speeds <6 knots within this zone - no approach zone (100 m either side of observed whales and 50 m either side of observed dolphins) – vessels must operate at speeds <6 knots within this zone and should not enter this zone and should not wait in front of the direction of travel or an animal or pod/group - do not encourage bow riding - if animals are bow riding, do not change course or speed suddenly - if there is a need to stop, reduce speed gradually - selected vessel crews have completed an environmental induction covering the above-listed requirements - GB Energy has a Marine Mammal Observer onboard the survey vessel during the geophysical investigations - engines and thrusters are maintained in accordance with manufacturer's instructions via the Planned Maintenance System (PMS) to ensure they are operating efficiently.	Negligible
Displacement of other marine users	Temporary exclusion for fisheries, locals, tourism and shipping.	- the AHO/TSV will be notified of the Activity no less than four weeks prior to the Activity commencing to enable the promulgation of NTM and AusCoast navigational warnings - GB Energy will use SETFIA short message service (SMS) service to notify fishers of the Activity, timing and caution zone at least 2 weeks prior to the Activity commencing - GB Energy has undertaken pre-activity consultation with fishing stakeholders to ensure that commercial fishers are aware of the Activity operations, timing, and caution zone requirements - a notification is issued to fisheries stakeholders who operate in the Activity area at least four weeks prior to the Activity commencing - notifications are provided to residents (i.e., Golden Beach, Paradise Beach) at least four weeks prior to the start of the Activity.	Negligible

Hazard	Potential impacts and risks	Avoidance, management and mitigation measures (environmental performance standards)	Residual impact or risk
Atmospheric emissions	Decrease in air quality due to gaseous emissions and particulates from MDO combustion and contribution to the incremental build-up of GHG in the atmosphere (influencing climate change).	- the Activity will not be undertaken during recognised peak tourism/recreational periods, including but not limited to the Christmas period, and the Golden Beach End of Summer Festival (Easter long weekend). - only low-sulphur (<0.5% m/m) marine-grade diesel will be used in order to minimise SOx emissions - if the vessel has a gross tonnage of >400 tonnes it must possess equipment, systems, fittings, arrangements, and materials that comply with the applicable requirements of MARPOL Annex VI - if the vessel is >400 gross tonnes and involved in an international voyage, it must implement their Ship Energy Efficiency Management Plan (SEEMP) to monitor and reduce air emissions - if the vessel is >400 gross tonnes firefighting and refrigeration systems must be managed to minimise ODS - all combustion equipment is maintained in accordance with the PMS (or equivalent) - oil and other noxious substances will not be incinerated - fuel use will be measured, recorded and reported for abnormal consumption, and in the event of abnormal fuel use, corrective action is taken to minimise air pollution	Negligible
Light emissions	Light glow may act as an attractant to light-sensitive species (e.g., seabirds, fish, migratory birds, sea turtles and zooplankton), in turn affecting predator-prey and population dynamics (due to attraction to or disorientation from light).	- lighting is directed to working areas (rather than overboard) to minimise light spill to the ocean - lighting directed overboard can be manually over-ridden (with a local switch where possible) such that it is only switched on as required (e.g., man overboard) - light glow is minimised by managing external vessel lighting in accordance with: - AMSA MOs Part 30 (Prevention of Collisions) - AMSA MOs Part 59 (Offshore Support Vessel Operations) - all crew are informed of their reporting responsibilities for grounded or injured birds during the environmental induction - GB Energy Offshore Representative will report grounded or injured birds on the vessel to the GB Energy Environmental Specialist - incidents of grounded or injured birds on the vessel will be handled in accordance with the grounded or injured bird procedure below - at least one experienced seabird subject matter expert (SME) handler will be on call to provide advice and support to the GB Energy Offshore Representative - if required, the seabird SME handler will travel to the vessel and provide advice and training to the GB Energy Offshore Representative (and other personnel on board the vessel, as necessary) regarding handling of grounded birds.	Negligible
Discharge of sewage and greywater	Temporary and localised increase in nutrient content of surface waters around the vessels.	- sewage and grey water are treated in a MARPOL-compliant STP prior to overboard discharge - the STP is maintained in accordance with the PMS - in the event of a STP malfunction, untreated sewage will only be discharged when the vessel is >12 nm from shore. - treated sewage and grey water is not discharged within 500 m of the shoreline.	Negligible

Hazard	Potential impacts and risks	Avoidance, management and mitigation measures (environmental performance standards)	Residual impact or risk								
Discharge of cooling and brine water	Increased sea surface temperature and salinity around the discharge point. Potential toxicity impacts to marine fauna from residual biocide and scale inhibitors.	- engines and associated equipment that require cooling by water will be maintained in accordance with the vessel PMS so that they are operating within accepted parameters - only ONCS 'Gold'/'Silver' (CHARM) or 'D'/E' (non-CHARM)-rated chemicals are used in the cooling and brine water systems - biocide dosing is kept to a minimum in accordance with the equipment manufacturer's specifications - freshwater generation will be limited to volumes necessary for operational requirements.	Negligible								
Discharge of bilge water and deck drainage	Reduction of surface water quality around the discharge point. Acute toxicity to marine fauna through ingestion of, or contact with, heavily contaminated water (in the event of malfunction of the OWS or an uncontrolled spill on an un-bunded deck).	- hydrocarbon and chemical storage areas (process areas) are bunded and drain to the bilge tank (or equivalent). - all hydrocarbons and chemicals will be stored within secure receptacles within bunded areas or dedicated chemical lockers that drain to bilge tanks - portable bunds/drip trays used in non-process areas - all bilge water passes through a MARPOL-compliant OWS set to limit OIW to <15 ppm prior to overboard discharge - the OWS is maintained in accordance with the vessel PMS - the OWS is calibrated in accordance with the PMS to ensure the 15 ppm OIW limit is met. - the residual oil from the OWS is pumped to tanks and disposed of onshore (no whole residual bilge oil is discharged overboard) - in the event of OWS malfunction, all oily water is retained onboard for transfer to shore or discharged in waters >12 nm from the shore - through regular training, the vessel crews are competent in spill response and have appropriate response resources in order to prevent or minimise hydrocarbon or chemical spills discharging overboard - fully stocked SMPEP response kits and scupper plugs or equivalent drainage control measures are readily available to the crew and used in the event of a spill to deck to prevent or minimise discharge overboard - deck cleaning detergents are biodegradable - housekeeping of the decks is maintained to a high standard to ensure open drains do not carry residual hydrocarbons and chemicals to sea - the vessel-specific SMPEP is implemented in the event of a large spill of hydrocarbons or chemicals overboard.	Negligible								
Risks (unplanned events)			<table> <tr> <th colspan="4">Residual risk assessment</th></tr> <tr> <td>C</td><td>L</td><td>RR</td><td></td></tr> </table>	Residual risk assessment				C	L	RR	
Residual risk assessment											
C	L	RR									

Hazard	Potential impacts and risks	Avoidance, management and mitigation measures (environmental performance standards)	Residual impact or risk		
Accidental overboard release of hazardous and non-hazardous waste	Marine pollution (litter and a temporary and localised reduction in water quality), injury and entanglement of individual animals (such as seabirds and seals) and smothering or pollution of benthic habitats.	- a MARPOL Annex V-compliant GMP is in place for vessels >100 gross tonnes or certified to carry 15 persons or more that sets out the procedures for minimising, collecting, storing, processing and discharging garbage - waste is stored, handled and disposed of in accordance with the GMP. This will include measures such as: - no discharge of general operational or maintenance wastes or plastics or plastic products of any kind - waste containers are covered with secure lids to prevent solid wastes from blowing overboard. - all solid wastes are stored in designated areas before being sent ashore for recycling, disposal or treatment - any liquid waste storage on deck must have at least one barrier to minimise the risk of spills to deck entering the ocean. This can include containment lips on deck (primary bunding) and/or secondary containment measures (bunding, containment pallet, transport packs, absorbent pad barriers) in place - correct segregation of solid and hazardous wastes - vessel crews are inducted into waste management procedures at the start of the drilling program to ensure they understand how to implement the GMP - crane transfers are undertaken in accordance with the vessel-specific lifting procedures - the vessel crane and lifting equipment are maintained fit for use at all times in accordance with the PMS to minimise the risk of dropped objects - solid waste that is accidentally discharged overboard is recovered if reasonably practicable - no putrescible waste is discharged in the Activity area (or state waters in general). All putrescible waste is transferred to shore for suitable disposal.	Negligible	Unlikely	Low
Introduction of invasive marine species	Reduction in native marine species diversity and abundance, displacement of native marine species, socio-economic impacts on commercial fisheries and changes to conservation values of protected areas.	- the vessels are managed in accordance with the National Biofouling Management Guidance for the Petroleum Production and Exploration Industry (AQIS, 2009). This means: - conducting in-water inspection by divers or inspection in drydock if deemed necessary - biofouling risk will be assessed, with cleaning of hull and internal seawater systems undertaken if deemed necessary - anti-fouling coating status taken into account, with antifouling renewal undertaken if deemed necessary - vessels that are >400 gross tonnes carry a current IAFS Certificate that is compliant with and MO Part 98 (Anti-fouling Systems) - the EMGPS will be maintained in accordance with the PMS to ensure it is operating efficiently (without the use of chemicals) - an IMS evaluation takes place for the vessels prior to mobilising to site based on the following: - inspecting the IAFS certificates to ensure they are current. - determining recent ports of call to determine the IMS risk of those ports - determining the need for in-water cleaning and/or re-application of anti-fouling coating. - implementing the guidance provided in the Australian Biofouling Management Requirements (Version 1, 2022).	Minor	Unlikely	Low

Hazard	Potential impacts and risks	Avoidance, management and mitigation measures (environmental performance standards)	Residual impact or risk	
		- submersible equipment will be cleaned (e.g., biofouling is removed) prior to initial use for the project - a vessel contractor pre-qualification is undertaken to ensure biofouling and ballast water controls meet project requirements - vessels will fulfil the requirements of the Australian Ballast Water Management Requirements (DAWE, 2020, v8). This includes requirements to: - carry a valid Ballast Water Management Plan (BWMP) - submit a Ballast Water Report (BWR) through the Maritime Arrivals Reporting System (MARS) - hold a Ballast Water Management Certificate (BWMC) - ensure all ballast water exchange operations are recorded in a Ballast Water Record System (BWRS)		
Interference with other marine users	Collision with third-party vessels. Damage or loss of fishing equipment and/or loss of commercial fish catches.	- the geophysical vessels use anti-collision monitoring equipment (24-hour radar watch, Global Maritime Distress Safety System [GMDSS] and AIS) - visual and radar watch is maintained on the bridge of the geophysical vessel at all times - vessel Masters and deck officers hold valid International Convention on Standards of Training, Certification and Watchkeeping for Seafarers STCW certificates (or equivalent) in accordance with AMSA Marine Order 70. The support vessel maintains communication with nearby vessels to ensure the caution zone is enforced - the geophysical vessel maintains communication with third-party vessels to enforce the caution zone - the Vessel Masters issue warnings (e.g., radio warning, flares, lights/horns) to third-party vessels approaching the caution zone in order to prevent a collision with the geophysical vessel - for vessels >200 tonnes, GB Energy will apply to NOPSEMA for a Bass Strait ATBA authorisation for the vessels to operate within the ATBA - collisions (or near misses) are managed in accordance with vessel emergency procedures.	Negligible	Remote
Vessel strike or entanglement with megafauna	Injury or death of megafauna	- fauna observations: - should a whale be observed within 3 km of the vessel, A Standard Management Procedures will be implemented during the geophysical investigations (whenever any geophysical equipment is active) - all crew aboard the geophysical vessel will complete an environmental induction prior to the start of the Activity - vessel crew will implement EPBC Regulations 2000 (Part 8, Division 8.1), embodied in The Australian Guidelines for Whale and Dolphin Watching (CoA, 2017) for sea-faring activities will be implemented, during the geophysical program which means: - caution zone (300 m either side of whales and 150 m either side of dolphins) – vessels must operate at <6 knots within this zone - no approach zone (100 m either side of whales and 50 m either side of dolphins) – vessels must operate at speeds <6 knots within this zone and should not enter this zone and should not wait in front of the direction of travel or an animal or pod/group - do not encourage bow riding	Negligible	Unlikely

Hazard	Potential impacts and risks	Avoidance, management and mitigation measures (environmental performance standards)	Residual impact or risk		
		- if animals are bow riding, do not change course or speed suddenly - if there is a need to stop, reduce speed gradually - vessel strike causing injury to or death of a cetacean is reported to the DCCEW via the online National Ship Strike Database (https://data.marinemammals.gov.au/report/shipstrike) within 72 hours of the incident - entanglement of megafauna in vessel mooring is reported to the Whale and Dolphin Emergency Hotline on 1300 136 017 as soon as possible. No attempts to disentangle megafauna should be made by vessel crew.			
Underwater Sound Interaction with Swimmers and Divers	Physical injury of swimmers and divers due to geophysical investigations.	- the Activity will not be undertaken during recognised peak tourism/recreational periods, including but not limited to the Christmas period, and the Golden Beach End of Summer Festival (Easter long weekend) - seismic source will be shut down if swimmers or 'diver below' flags are seen in area - if a swimmer or diver is visually confirmed or reported to be in distress from acoustic exposure - seismic source will be shut down immediately. - vessel or patrol crew will coordinate rescue and transport to shore for further medical assistance or clearance - source will not be reactivated until the individual is confirmed out of water and area is clear.	Minor	Unlikely	Low
Diesel spill	Pollution of sea surface, water column and shoreline. Injury or death of marine fauna, avifauna and macroalgae through ingestion or contact. Contamination of fish stocks and potential closure of fisheries.	- no refuelling will be undertaken at sea (this will be done in port) - GB Energy will conduct a due diligence of the selected contractors - the vessels have an approved SMPEP (or equivalent appropriate to class) that is implemented in the event of a fuel tank rupture and spill - vessel crews are inducted into spill response procedures - vessel crews are trained in spill response techniques in accordance with the SMPEP and vessel training matrix - prior to the vessel contractor(s) commencing the Activity, a desktop diesel spill response exercise will be conducted to test interfaces between the SMPEP, OPEP, NatPlan and VicPlan - GB Energy will report the spill to regulatory authorities within 2 hours of becoming aware of the spill - the Vessel Master will authorise actions in accordance with the vessel-specific SMPEP (or equivalent according to class) and the Activity-specific OPEP to limit the release of MGO.	Minor	Unlikely	Low
Oil spill response activities					
Oil spill surveillance and tracking	Routine and non-routine impacts and risks associated with vessel operations. Noise disturbance to marine fauna and shoreline species by aerial flights.	- access to operational response capabilities is maintained through GB Energy's contract with ORCA - GB Energy undertakes a pre-Activity desktop drill to test response capability - GB Energy ensures that ORCA undertakes regular inspection, and testing is undertaken for its oil spill response equipment - visual observations from the vessel are initiated immediately following a spill - an Incident Action Plan (IAP) is prepared by the IMT Planning Officer within the first 24 hours after the spill starts, which is used to guide response activities	Negligible	Likely	Low

Hazard	Potential impacts and risks	Avoidance, management and mitigation measures (environmental performance standards)	Residual impact or risk	
		- vectoring undertaken by an onsite spill assessor within 3 hours of spill report - real-time OSTM results are provided by RPS to GB Energy within 4 hours of notification of the spill - surveillance aircraft will ensure buffer distances of 500 m (helicopters) and 300 m (fixed wing) are maintained around cetaceans in accordance with EPBC Regulations 2000 (Part 8).		
Oil spill protection and deflection	Damage to nearshore habitats from inshore shallow draught vessel activities and boom anchoring. Damage to shoreline environments from vehicle, machinery and or/foot access and associated land use. Deeper mixing of hydrocarbons within beach sediments. Secondary contamination of the shoreline.	- within 6 hrs of spill event notification, SCAT have mobilised to areas of predicted impact (daylight permitting) in consultation with East Gippsland Shire Council. SCAT information and the status of estuaries is provided to IMT for inclusion in operational NEBA - an operational NEBA is prepared by the IMT to determine the net benefits of the booming strategy for the estuarine areas predicted to be contacted by MDO within 4 hours of receiving OSTM - personnel and equipment resources are deployed to site to undertake the protection and deflection activities within timeframes outlined in the IAP - booming operations continue until such time as no further sheen is visible on the sea surface, at the direction of the IMT Leader - environmental briefings are conducted prior to work commencing in order to identify risks and suitable controls - access to estuarine areas is via established tracks, non-native vegetation or via the ocean - vessels do not anchor in, and booms are not anchored to areas of OSRA-mapped or visible kelp forest, reef, sponge gardens or seagrass meadows - adequate monitoring personnel are in place at booming locations to maintain and attend to the operability of booms, including the release of fauna caught in booms (where safe to do so) - vessel Masters maintain the following buffer distances around cetaceans (in accordance with the Australian Guidelines for Whale and Dolphin Watching for sea-faring activities): 'Caution zone' (300 m either side of whales and 150 m either side of dolphins) – vessels must operate at no wake speed in this zone 'No approach zone' (100 m either side of whales and 50 m either side of dolphins) – vessels should not enter this zone and should not wait in front of the direction - waste storage tanks and hoses are located within a contained, impervious area - spill kits are available at oil recovery area and are under supervision and secured from public access - collected waste is disposed in accordance with Victorian EPA waste disposal requirements.	Negligible	Remote
Shoreline Assessment and clean-up	Damage to foreshore and backshore environments from vehicle, machinery and/or foot access and associated land use (e.g., waste storage).	- SCAT teams mobilised to site within 6-24 hours of the notification of the spill (daylight hours permitting) - SCAT information is provided to the IMT Leader for inclusion into the NEBA. An operational NEBA is undertaken to determine net benefits - if an operational NEBA identifies that shoreline clean-up is required, the IAP includes this information to guide the response, with personnel and equipment deployed to relevant locations - shoreline clean-up resources are deployed to site within timeframes identified in the IAP	Negligible	Unlikely

Hazard	Potential impacts and risks	Avoidance, management and mitigation measures (environmental performance standards)	Residual impact or risk		
	Disturbance to Indigenous Cultural Heritage. Temporary exclusion of the public from amenity beaches. Increased demand for what may be limited resources in small coastal towns. Deeper mixing of hydrocarbons within beach sediments. Secondary contamination of foreshore and backshore areas from personnel and equipment movement.	- environmental briefings are conducted prior to clean-up commencing in order to identify risks and suitable controls - access to shoreline is via established tracks (with track edges fenced with bunting if required). - Access outside of existing tracks and pathways is determined in consultation with local DEECA representatives - mobile equipment to be driven as close to the water's edge as possible to prevent impacts to shoreline birds - clean-up will keep to the inter-tidal zone as far as possible - in consultation with local DEECA representatives, known occurrences of Aboriginal cultural heritage are flagged for avoidance - waste storage is located within a contained, impervious area - area is under supervision and secured from the public - oiled waste is transported in accordance with EPA waste disposal requirements - all access points (personnel and equipment) will be controlled via designated access points through decontamination facilities.			Low
Oiled wildlife response	Disturbance, injury or death of fauna.	- DEECA personnel are mobilised to site within 12 hours of the notification from the SCAT team that fauna is at risk - OWR kits are mobilised to site within 12 hours of the notification from the SCAT team that fauna is at risk - an operational NEBA is undertaken to determine net benefits of undertaking OWR - if an operational NEBA identifies that OWR is required, the IAP includes measures to guide the response, with personnel and equipment deployed to relevant locations - environmental briefings are conducted prior to clean-up commencing in order to identify risks and suitable controls - access to shoreline is via established tracks (with track edges fenced with bunting if required). - Access outside of existing tracks and pathways is determined in consultation with local DEECA representatives - mobile equipment to be driven as close to the water's edge as possible to prevent impacts to shoreline birds - wildlife is only handled and treated by DEECA-trained or Phillip Island Nature Park wildlife clinic oiled wildlife responders.	Negligible	Remote	

7 Implementation Strategy

GB Energy retains full and ultimate responsibility as the Titleholder of the Activity and is responsible for ensuring that the mitigation measures outlined throughout Chapter 6 are implemented.

GB Energy has overall responsibility for the management of the Activity to ensure that:

- design and execution of the activities is in accordance with industry best practice and legislated standards;
- all regulatory approvals are obtained prior to Activity commencement;
- contractors have been pre-qualified by GB Energy as having appropriate equipment and resources to undertake the investigations and have appropriate systems in place to ensure that these activities are undertaken in accordance with all legislative requirements;
- the environmental impacts and risks of the Activity are minimised and reduced to ALARP and environmental performance is monitored; and
- the day-to-day direction of work and the monitoring and auditing of work by contractors is undertaken in accordance with the accepted EP.

The vessel contractors will have the day-to-day control and management of the vessels through the respective Vessel Masters. The Vessel Master has overriding authority and responsibility to make decisions with respect to environment protection and pollution prevention and to request assistance as may be necessary.

GB Energy has an agreement with ORCA Pty Ltd regarding oil spill response arrangements for the Activity.

GB Energy and the vessel contractors will agree to undertake the Activity as follows:

- GB Energy is the Titleholder for the permit, and is the Permit Operator and Project Manager;
- GB Energy has principal responsibility for the engineering design and project management of the Activity, along with contracting services;
- the vessel contractors are responsible for operating the vessels while conducting the Activity and interfacing with service contractors at the operations level on the vessels;
- the Vessel Masters are responsible for ensuring the safety of all personnel on board their respective vessels;
- the Vessel Masters are responsible for the implementing their SMPEPs;
- GB Energy is responsible for the onshore management of emergency incidents; and
- the GB Energy Onboard Representative will be the designated representative on the vessels and will have a direct interface with the Vessel Masters.

7.1 Roles and Responsibilities

The organisation structure for the Activity consists of onshore and offshore GB Energy and contractor personnel. The organisation structure for the Activity is illustrated in Figure 7.1.

Day-to-day implementation of the EP will occur on the relevant vessel under the leadership of the Vessel Master, Party Chief and the Onboard GB Energy Representative. The GB Energy Project Manager will have oversight of the performance of the Activity against the EP and other project plans and will initiate reviews and audits as required.

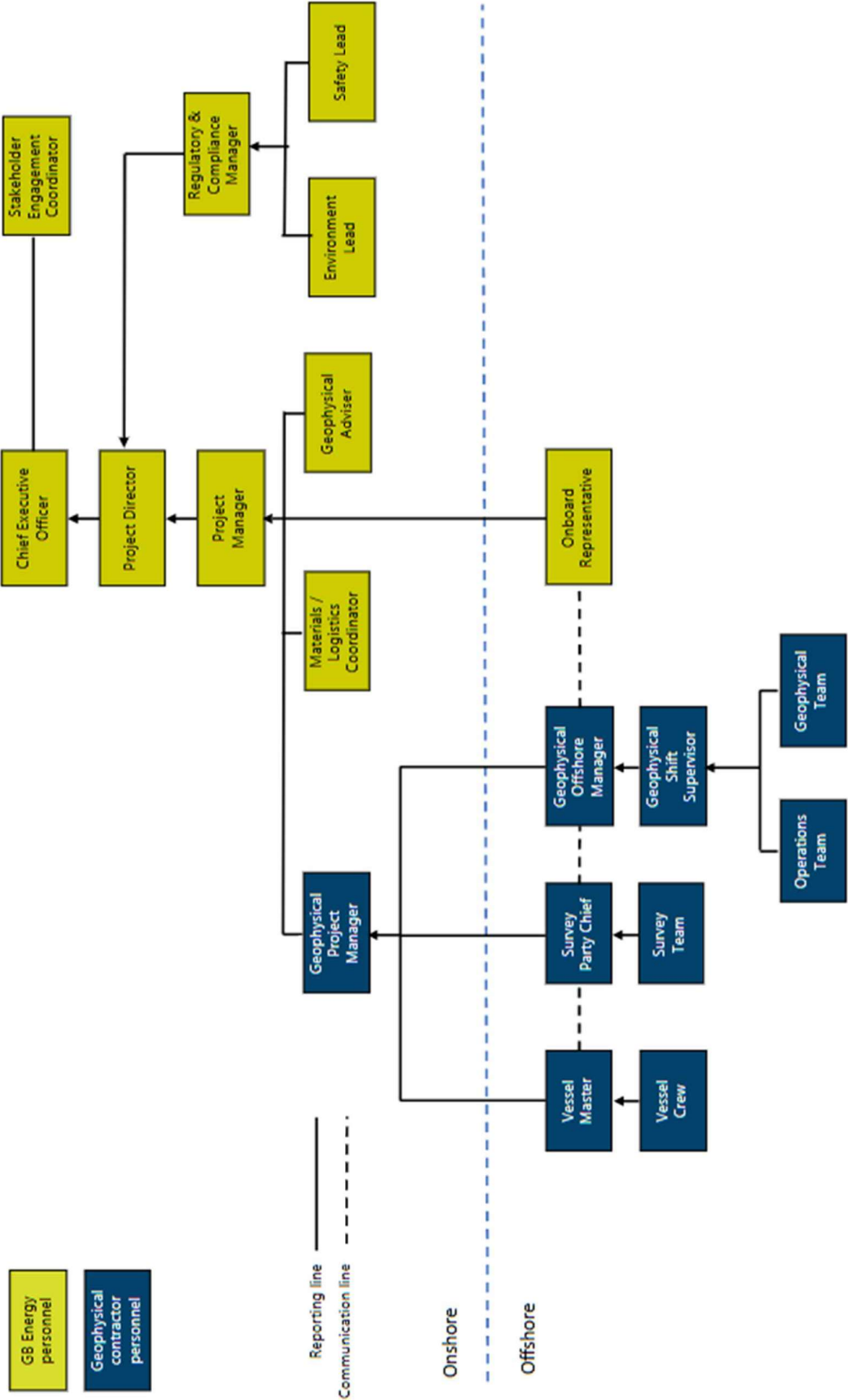


Figure 7-1 The organisation structure for the Activity

7.2 Environmental Management Systems

7.2.1 GB Energy

GB Energy has in place a Health, Safety and Environmental Management System (HSEMS) that is aligned with ISO 14001:2015 (Environmental Management Systems – requirements with guidance for use).

The HSEMS contains 14 elements for identifying, managing and reducing the company's impact on health, safety and the environment, based on the principle of continual improvement and the 'plan, do, check, act' cycle in line with ISO14001.

7.2.2 Vessel Contractors

The vessel contractors used to conduct the Activity will be required to have an HSEMS that meets the requirements of the GB Energy HSE Policy and HSEMS.

7.3 Training and Awareness

7.3.1 Recruitment and Training

During its contractor selection process, GB Energy will conduct a due diligence review to ensure that the chosen contractors have procedures in place to ensure the correct selection, placement, training and ongoing assessment of employees, with position descriptions (including a description of HSE responsibilities) for key personnel being readily available.

7.3.2 Environmental Induction

An activity-specific HSE induction for all personnel working on the Activity will be undertaken prior to its commencement. The GB Energy Onboard Representative is responsible for ensuring personnel receive this induction prior to the commencement of the Activity. All personnel are required to sign an attendance sheet to confirm their participation in and understanding of the induction. The vessel contractors will conduct their own company and vessel-specific inductions independently of the Activity-specific HSE induction.

7.3.3 Oil Spill Response Training

Quarterly training of vessel crews in SMPEP procedures is a MARPOL requirement for vessels over 400 GRT (Annex 1, Regulation 37).

During its contractor audit process, GB Energy will assess the vessel contractors' implementation of their SMPEPs (or equivalent, relevant to class).

An office-based desktop spill response exercise of the Activity-specific OPEP will be conducted by GB Energy and ORCA prior to the mobilisation of the vessels to the area of operations and no earlier than within four weeks of the Activity commencing.

7.3.4 Toolbox Talks and HSE Meetings

Environmental matters will be included in daily toolbox talks as required by the specific task being risk assessed. The GB Energy Onboard Representative and Vessel Masters will discuss HSE matters that have arisen in the previous week, and issues to consider for the following week. Records associated with Activity-specific training, environmental training, inductions and attendance at toolbox meetings will be recorded and maintained on board the vessel.

7.3.5 Communications

The Vessel Masters and GB Energy Onboard Representative are jointly responsible for keeping the vessel crews informed about HSE issues, acting as a focal point for personnel to raise issues and concerns.

7.4 Environmental Emergencies and Preparedness

In the event of an emergency of any type, the Vessel Master will assume overall onsite command and act as the Emergency Response Coordinator (ERC). All persons aboard the vessels will be required to act under the ERC's directions. The GB Energy Onboard Representative will maintain communications with GB Energy

Regulatory & Compliance Manager who will become the overall IMT Leader and will also coordinate with GB Energy's Oil Spill Response Team (OSRT) in the event of an emergency involving an oil spill. Oil spill emergency response support will be provided by ORCA.

7.4.1 Adverse Weather Protocols

It is the duty of the Vessel Master to act as the focal point for all actions and communications with regards to any emergency, including response to adverse weather or sea state, to safeguard their vessel, all personnel onboard and environment. The Vessel Contractors will use the in-vessel Very High Frequency (VHF) Marine Radio Weather Services and/or obtain daily weather forecasting from the Bureau of Meteorology to monitor weather within the Activity area in the lead up to and for the duration of the Activity.

7.4.2 Vessel Emergencies and MDO Spills

Vessel-specific emergency response procedures will be included in the vessel contractors' ERPs. The ERPs will contain instructions for vessel emergency, medical emergency, search and rescue, reportable incidents, incident notification and emergency contact information. Given the various vessel types and vessel operating companies that exist, by necessity these ERPs must be vessel specific.

Prior to the conduct of the Activity, GB Energy will review the vessel ERPs to ensure that appropriate emergency procedures considered in those plans have been put into place for all relevant environmental emergency events (including the assignment of emergency management roles for particular events). Environmental emergencies that will be considered will include (but not be limited to):

- introduction of animal diseases into aquaculture;
- MGO spill (addressed in the full EP);
- IMS incursions (addressed in the full EP);
- cetacean stranding and vessel strike (addressed in the full EP);
- maritime casualties requiring salvage and intervention, emergency towage and requests for a place of refuge;
- marine pollution from floating or sunken containers of hazardous materials;
- debris originating from a maritime casualty;
- physical damage caused by vessels;
- fire or explosion on the vessel;
- hijack/terrorism; and
- adverse weather.

SMPEPs and ERPs typically include vessel-specific procedures for the following:

- fire and explosion;
- incidents – collision, grounding, hull damage, man overboard, equipment failure;
- waste management;
- hazardous materials and handling; and
- hydrocarbon and chemical spills.

The support vessel Masters will ensure that their crews are fully aware of the vessel-specific requirements and that exercises for vessel-related incidents are conducted.

7.4.3 Emergency Response Training

The readiness and competency of GB Energy (and its oil spill response contractor ORCA) and the vessel contractor to respond to incidents and emergencies will be tested by conducting a desktop emergency response exercise within four (4) weeks prior to each vessel contractor commencing the Activity.

A scenario will be chosen that combines an emergency with risk to human life (such as fire) and risk to the environment (large hydrocarbon spill). This way several plans (i.e., the ERP and OPEP) can be tested simultaneously.

7.5 Simultaneous Operations

The Activity area overlaps the GHG Assessment Permit GGAP006386(V), operated by the CarbonNet Project on behalf of the Crown in right of Victoria. As part of the stakeholder consultation process, GB Energy has informed the CarbonNet Project of the Activity location and timing. GB Energy remains in contact with the CarbonNet Project so that SIMOPS issues can be addressed if and as required.

7.6 Recording and Reporting - Internally

7.6.1 Routine Recording and Reporting

Routine internal recording and reporting of Activity HSE matters will encompass the following:

- daily teleconferences – held between the Vessel Master and GB Energy personnel each morning for an update on progress from the previous day and the forward plan, including any HSE matters that have arisen;
- daily reports – the GB Energy Onboard Representative will prepare a daily report, including data on activities conducted for the day and any HSE issues arising and distributed to the extended project team;
- weekly report will be prepared and submitted to DEECA, including data on activities conducted for the week;
- HSE reporting – the Regulatory & Compliance Manager will collate key HSE performance statistics on a daily basis and report those to the wider project team during daily teleconferences;
- monthly environmental report – GB Energy will prepare and submit a monthly environmental report not later than 15 days after the end of the calendar month that details all recordable incidents (in accordance with OPGGS Regulation 31(3)); and
- EP performance report – the Regulatory & Compliance Manager or Environmental Specialist will prepare an end-of-Activity performance report that reports on the outcomes of each EPS in the EP. This will be submitted to DEECA ERR within 3 months of completion of the Activity.

7.6.2 Incident Recording and Reporting

All environmental near-misses and incidents, including non-compliances with the EP, EPO and EPS, must be communicated immediately to the GB Energy Onboard Representative who will then report to the Regulatory & Compliance Manager. This expectation will be reinforced at inductions, daily toolbox meetings and weekly HSE meetings.

The Vessel Master will lead an investigation into the cause, effects and learnings of the incident as per the contractor's investigation procedures. Where circumstances warrant it, this investigation will be conducted jointly with the GB Energy Regulatory & Compliance Manager and GB Energy Onboard Representative. Following an investigation, the vessel contractor and GB Energy will develop remedial actions and communicate these to the team (and wider organisations, as appropriate) to prevent recurrence.

Regulation 6 of the OPGGS defines the following incident types:

- **Recordable incident** – a breach of an EPO or EPS in the EP that applies to the Activity that is not a reportable incident.
- **Reportable incident** – an incident relating to the Activity, whether or not described in the EP in force for the Activity, that has caused, or has the potential to cause, moderate to catastrophic environmental consequences and a breach of or non-compliance with the Act or the EPO, which is outlined in the full EP.

In accordance with the regulations, GB Energy will report any reportable incidents to ERR within 2 hours of becoming aware of the incident, and recordable incidents will be reported to ERR no later than 15 days after the end of the calendar month.

7.7 Record Keeping

In accordance with Regulations 32 and 33 of the OPGGS, GB Energy will store and maintain the documents or records relevant to the EP implementation (including the accepted EP itself) for a period of 5 years in a way that makes retrieval reasonably practicable. These records will be stored on GB Energy's document management system and will be made available to DEECA in electronic or printed form upon written request.

7.8 Management of Change

GB Energy's MoC procedure (GB-GN-PM-PRO-001) will be used as the overarching document that will guide the MoC process for the Activity. An MoC Form must be completed by the person identifying that a change is required. This is then reviewed by relevant specialists to determine the impact of the change. An internal review will take place by the relevant manager. The results of the review will inform the change to all those who may be affected by it.

7.9 Monitoring

7.9.1 Field Environmental Monitoring

GB Energy will maintain a quantitative record of emissions and discharges, and other environmental matters generated on location during the Activity.

7.9.2 Auditing, Assurance and Inspections

Environmental performance of the Activity will be reviewed in a number of ways. These reviews are undertaken to ensure that:

- EPS to achieve the EPO are being implemented;
- potential non-compliances and opportunities for improvement are identified; and
- all environmental monitoring requirements have been met before completing the Activity.

The following arrangements will be established to ensure environmental performance is in line with the EP.

Onboard Environmental Audit

GB Energy will undertake an EP compliance audit onboard the geophysical vessel prior to mobilisation and/or during geophysical operations to assess compliance with the EPS in the EP. The scope and timing of the audit, along with details of the suitably qualified person undertaking the audit, will be provided by GB Energy to DEECA for their approval prior to the audit.

Onboard Inspections

The GB Energy Onboard Representative will continuously supervise the Activity, ensuring adherence to the EPS specified in the EP. This will be facilitated by completing an environmental inspection checklist developed by the Environmental Specialist. A completed checklist will be provided to the Environmental Specialist on a weekly basis so that environmental compliance is continuously monitored. The findings and recommendations of inspections and audits will be documented and distributed to relevant personnel for comments. Any non-compliances or opportunities for improvement will be communicated to the Vessel Masters and Project Manager at the time of the inspection or audit to ensure there is adequate time to implement corrective actions. Results will be summarised in the EP performance report submitted to DEECA after the completion of the Activity.

7.9.3 Contractor Monitoring and Review

GB Energy will have in place commitment registers to assist in monitoring against contractors' plans. Learnings from this monitoring will inform continued operations and the development of EPs for future phases of the Golden Beach Gas Storage Project.

7.10 Environment Plan Review

GB Energy may determine that an internal review of the EP is necessary based on any one or all of the following factors:

- changes to hazards and/or controls identified in the review of the EP;
- implementation of corrective actions to address internal or external inspection or audit findings;

- an environmental incident and subsequent investigation identify issues in the EP that require review and/or updating;
- a modification of the Activity is proposed that is not significant but needs to be documented in the EP;
- changes identified through the MoC process, such as hazards or controls, organisational changes affecting personnel in safety critical roles; and
- changes to any of the relevant legislation.

7.10.1 Revisions Triggering EP re-submission

GB Energy will revise and re-submit the EP for assessment as required by the OPGGS Regulation listed in Table 7-1.

Table 7-1 OPGGS EP revision requirements

Regulation requirement	OPGGS Regulation
Submission of a revised EP before the commencement of a new Activity .	20(1)
Submission of a revised EP when any significant modification or new stage of the Activity that is not provided for in the EP is proposed.	20(2)
Submission of a revised EP before, or as soon as practicable after, the occurrence of any significant new or significant increase in environmental impact or risk not provided for in the EP.	20(3)
Submission of a revised EP if a change in Titleholder will result in a change in the manner in which the environmental impacts and risks of an Activity are managed.	20(4)
At least 14 days before the end of each period of 5 years commencing on the day in which the original and subsequent revisions of the EP are accepted.	20(1)

7.10.2 Minor EP Revisions

Minor revisions to that do not require resubmission to DEECA will be made where:

- minor administrative changes are identified that do not impact on the environment (e.g., document references, contact details, etc.)
- a review of the Activity and the environmental risks and impacts of the Activity do not trigger a requirement for a revision, as outlined in Table 7-1.

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Final Audit Report

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