Tasmanian
Gas Pipeline

Offshore Environment Plan

TGP-698-PA-HSE-003

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Approved by:

Role	Name	Signature	Date
General Manager – Power & Pipelines	Wacek Lipski		1 December 2024

Preparation Record

Rev	Description	Originator	Reviewed	Approved	Date
13	**5 Year Review**	**Nuffield Group**	**W. Lipski**	**W. Lipski**	**Dec 2024**
12	Amended following NOPSEMA request for further written information	N. Baulch	W. Lipski	W. Lipski	Dec 2019
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10	Amendments to reflect organisational changes in 2015, including change of facility operator, and changes in legislation and regulatory / statutory authorities – Internal Issue Only	ERS Pty Ltd / TGPPL	W. Lipski	J. Delicato	Nov 2017
9	Amendments as per NOPSEMA resubmission requirements	ERS Pty Ltd / OSDAS	B. Parsons	B. Parsons	Nov 2014
8	Amendments as per NOPSEMA resubmission requirements	Monarc Environmental / OSDAS	B. Parsons	B. Parsons	Feb 2014
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4	Amendments made in conjunction with Monarc Environmental to reflect DPI requirements	A Bambridge	A. Bambridge	J. Cleland	June 2010
3	Company name change from TGP BBI Pty Ltd to Tasmanian Gas Pipeline Pty Ltd	A Bambridge	A. Bambridge	J. Cleland	February 2010
2	Change of pipeline ownership to BBI Pty Ltd and change of company structure from Alinta Asset Management to Jemena	Tas Gas Networks in conjunction with Monarc Environmental	A. Bambridge	J. Cleland	Nov 2009
1	First Amendment (prepared in conjunction with Monarc Environmental Pty Ltd)	Gas Transmission South (AAM)	F. Nelson	J. van Weel	30 Sept 2007
0		Duke Energy International	JT	JM	19 April 2002

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ACRONYMS, ABBREVIAIONS AND UNITS OF MEASUREMENT

Abbreviations, acronyms, terms and units of measurement have been used throughout this Offshore Environment Plan and are described/defined below:

ACAP	Agreement on the Conservation of Albatrosses and Petrels
ADIOS	Automated Data Inquiry for Oil Spills
ALARP	As Low As Reasonably Practicable
AMA	Asset Management Agreement
AMP	Australian Marine Park
AMSA	Australian Maritime Safety Authority
APPEA	Australian Petroleum Production and Exploration Association
AS	Australian Standard
ASME	American Society for Mechanical Engineers
AUV	Autonomous Underwater Vehicle
BHP	BHP Billiton
BIA	Biologically Important Area
BOM	Bureau of Meteorology
CA	Control Agency
CAMBA	China-Australia Migratory Bird Agreement 1986
CMS	Convention on the Conservation of Migratory Species of Wild Animals
CMT	Crisis Management Team
COLREGs	Convention on the International Regulations for Preventing Collisions at Sea 1972
CP	Cathodic Protection
dB	Decibels
DC	Direct Current
DCCEEW	Department of Climate Change, Energy, Environment and Water (Commonwealth)
DEDJTR	Department of Economic Development, Jobs, Transport and Resources (Victoria)
DEECA	Department of Energy, Environment and Climate Action (VIC – formerly DJPR)
DEH	Department of Environment and Heritage (now DoEE)
DEI	Duke Energy International
DELWP	Department of Environment, Land, Water and Planning, Victoria
DJPR	Department of Jobs, Precincts and Regions (Victoria) (formerly DEDJTR)
DNV	Det Norske Veritas
DoE	Department of the Environment (now DoEE)
DoEE	Department of the Environment and Energy (formerly DSEWPAC and DoE)

STV	Safe Transport Victoria (Victoria) (formerly DEDJTR)
DPIPWE	Department of Primary Industries, Populations, Water and the Environment (Tasmania)
DSE	Department of Sustainability and Environment, Victoria (now DELWP)
DSEWPAC	Department of Sustainability, Environment, Water, Populations and Communities (now DoEE)
DTPLI	Safe Transport Victoria Planning and Local Infrastructure (Victoria) (now DEDJTR)
EAPL	Esso Australia Pty Ltd
EEZ	Exclusive Economic Zone
EP	Environment Plan
EPP	Environment Protection Policy (Tasmania)
EMP	Environmental Management Plan
EMPCA	*Environmental Management and Pollution Control Act 1994* (TAS)
EMS	Environmental Management System
EMT	Environmental Management Team
EPA	Environment Protection Authority
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999*
ERA	Environmental Risk Assessment
ERMP	Emergency Response Management Plan (NM2-002PA-ERMP)
ERP	Emergency Response Plan
ERT	Emergency Response Team
ESD	Ecologically Sustainable Development
ESV	Energy Safe Victoria
FSA	Formal Safety Assessment
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
GIS	Geographical Information System
GN	Guidance Note
GPS	Global Positioning System
ha	hectare
HAZID	Hazard Identification (Study)
HAZOP	Hazard and Operability (Study)
HB	Handbook
HDD	Horizontal directional drilled
HSE	Health, Safety and Environment
HSEMS	Health, Safety and Environmental Management System
IACS	International Association of Classification Societies

IAPPC	International Air Pollution Prevention Certificate
ICAM	Incident Cause Analysis Method
IMCA	International Marine Contractors Association
IMDG Code	International Maritime Dangerous Goods Code
IMO	International Maritime Organisation
IMS	Invasive Marine Species
IOPPC	International Oil Pollution Prevention Certificate
IP	Intersection Point
ISO	International Standards Organisation
ISPPC	International Sewage Pollution Prevention Certificate
IUCN	International Union for Conservation of Nature
JA	Jurisdictional Authority
JAMBA	Japan-Australia Migratory Bird Agreement 1974
JHA	Job Hazard Analysis
KEF	Key Ecological Feature
kg	kilogram
kHz	kilohertz
km	kilometre
km^2	square kilometre
KP	Kilometre Point
KPI	Key Performance Indicator
kV	kilovolts
L	litre
LAT	Lowest Astronomical Tide
Lat.	Latitude
LCC	Land Conservation Council
LCS	Longford Compressor Station
LEL	Lower Explosive Limit
LOC	Loss of containment
Long.	Longitude
m	metres
m^3	cubic metres
mm	millimetres
m/s	metres per second

MARPOL	International Convention for the Prevention of Pollution from Ships
MARS	Maritime Arrivals Reporting System
MAST	Marine and Safety Tasmania
MDO	Marine Diesel Oil
MFO	Marine Fauna Observer
MGO	Marine Gas Oil
MLV	Main Line Valve
MMO	Marine Mammal Observer
MNES	Matters of National Environmental Significance
MPA	Marine Protected Area
MPa(g)	Mega Pascals (gauge)
MRT	Mineral Resources Tasmania, a division of the Department of State Growth
MSDS	Materials Safety Data Sheet
NM	Nautical Mile
NB	Nominal Bore
NEBA	Net Environmental Benefit Analysis
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measures
NOAA	National Oceanic and Atmospheric Administration (USA)
NOHSC	National Occupational Health and Safety Commission
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NOx	Oxides of Nitrogen
NOPTA	National Offshore Petroleum Titles Administrator
NoT	Notice of Termination
NPI	National Pollutant Inventory
NSW	New South Wales
NZS	New Zealand Standard
OA	Operating Area
OIW	oil in water
OPEP	Oil Pollution Emergency Plan
OPGGS Act	*Offshore Petroleum and Greenhouse Gas Storage Act 2006*
OPRC	International Convention on Oil Pollution Preparedness, Response and Cooperation
OPRC-HNS Protocol	Protocol on Preparedness, Response and Cooperation to Pollution Incidents by Hazardous and Noxious Substances
OSMP	Operational and Scientific Monitoring Plan

OSDAS	OSD Asset Services
OSRA	Oil Spill Response Atlas
OSTM	Oil Spill Trajectory Model
OTTER	Office of the Economic Regulator, Tasmania
OWS	Oily Water Separator
PIMS	Palisade Integrated Management Services
PEM	Protocol for Environmental Management
PJ	Petajoule
POLREP	Pollution Report
PPE	Personal Protective Equipment
PTW	Permit to Work
PWS	Parks and Wildlife Service (Tasmania)
RBI	Risk-Based Inspection
RCA	Root Cause Analysis
RMC	Remote Monitoring Centre
RMSA	Remote Monitoring Service Agreement
ROKAMBA	Republic of Korea-Australia Migratory Bird Agreement 2002
ROV	Remotely Operated Vehicle
SA	Standards Australia
SCADA	Supervisory Control and Data Acquisition system
SDS	Safety Data Sheet
SDO	State Duty Officer
SEPP	State Environmental Protection Policy (Victoria)
SETFIA	South East Trawl Fishing Industry Association
SITREP	Situational Report
SOLAS	International Convention on the Safety of Life at Sea 1974
SOPEP	Shipboard Oil Pollution Emergency Plan
SOx	Sulphur Oxides
SPRAT	Species Profile and Threats Database
SSS	Side Scan Sonar
STCW	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers 1978
t	tonnes
TAS	Tasmania
TEC	Threatened Ecological Community

TGP	Tasmanian Gas Pipeline
TGPPL	Tasmanian Gas Pipeline Pty Ltd
TJ	Terajoule
TP	Tangent Point
TSV	Transport Safety Victoria
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
USV	Uncrewed Surface Vessel
VIC	Victoria
VIV	Vortex Induced Vibrations
VOCs	Volatile Organic Compounds
WPS	Worley Power Services
ZPI	Zone of Potential Impact
˚C	degrees Celsius
%	percent

1. INTRODUCTION

1.1 Titleholder

For the purposes of this Offshore Environment Plan (EP), the titleholder and nominated liaison person is:

Wacek Lipski

Chief Executive Officer

Tasmanian Gas Pipeline Pty Ltd (TGPPL)

Address: Level 37, 360 Elizabeth Street, Melbourne VIC 3000

Phone: 03 9044 1123

Email: enquiries@tasmaniangaspipeline.com.au

Details of the titleholder's nominated liaison person will be published on the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) website. In the event of a change in the titleholder or nominated liaison person, NOPSEMA must be informed of the change by TGPPL as soon as practicable by email (submissions@nopsema.gov.au).

1.2 Background and Purpose

Tasmanian Gas Pipeline Pty Ltd submits this EP under the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* as a requirement of the renewal and maintenance of an accepted EP in place for any petroleum or greenhouse gas activity, Regulation 41.

TGPPL is the operator of the Tasmanian Gas Pipeline (TGP) and is required to have an EP that covers all their offshore petroleum activities.

1.2.1 Background

Commissioned in 2002, the TGP is the only pipeline supplying natural gas to Tasmania. The pipeline extends from Longford in Victoria, across Bass Strait to Bell Bay in north-east Tasmania. The offshore section of the TGP is approximately 301 km in length with a maximum water depth along the route of 77 m. Additional onshore pipelines extend from Bell Bay to Port Latta in north-west Tasmania and to Bridgewater in the south, see **Error! Reference source not found.**.

In July 2011, Palisade Investment Partners Ltd (Palisade) acquired Tasmanian Gas Pipeline Pty Ltd and its asset, the TGP. Palisade has kept the asset ownership and licence title "Tasmanian Gas Pipeline Pty Ltd" (TGPPL). Palisade is a specialist, independent infrastructure manager that focuses on assets that are essential to the efficient functioning of the communities and economies they serve.

An Asset Management Agreement (AMA) is in place between Palisade Integrated Management Services (PIMS) and TGPPL. Through the AMA, PIMS take on key roles within the TGPPL organisation structure. While TGPPL itself does not have any direct employees, for the purpose of this EP, PIMS personnel allocated to the TGPPL organisational structure are considered TGPPL employees.

TGPPL is the Facility Operator of the offshore section with responsibility for the ongoing operation and integrity, safety and environmental management. TGPPL have an in-house operations team (via the AMA with PIMS) and utilise specialist consultants and contractors to provide expert advice and engineering assistance when required. TGPPL does not directly employ field staff to manage, operate or maintain the pipeline. Instead, it has several field service agreements in place to ensure the continued operation of the pipeline.

A Field Services Agreement is in place between Zinfra Group (Zinfra) and TGPPL to perform maintenance activities on the TGP. Zinfra carry out certain onshore maintenance functions and provide emergency response for TGPPL if the subsea section requires isolation.

Zinfra Group is a leading service provider to the utility infrastructure sector. They deliver a comprehensive range of engineering, operations, maintenance and construction services nationally. Their services include asset management, engineering, design, project management, construction, maintenance and asset operations.

TGP has a remote monitoring service agreement (RMSA) with Worley Power Services (WPS). The Remote Monitoring Centre (RMC) is responsible for monitoring the pipelines condition and performance through remote sensors on a 24 hours per day, 365 day per year basis. Services provided by WPS primarily relate to the operation of the Supervisory Control and Data Acquisition (SCADA) system for the TGP in addition to assisting with the management of any emergency event arising on the TGP.

WPS is a wholly owned entity of Worley, an Australian engineering company providing project delivery and consulting services to the resources and energy sectors, and complex process industries.

These reporting structures are shown in the organisation structure for TGGPL in *Figure 1-1* below.

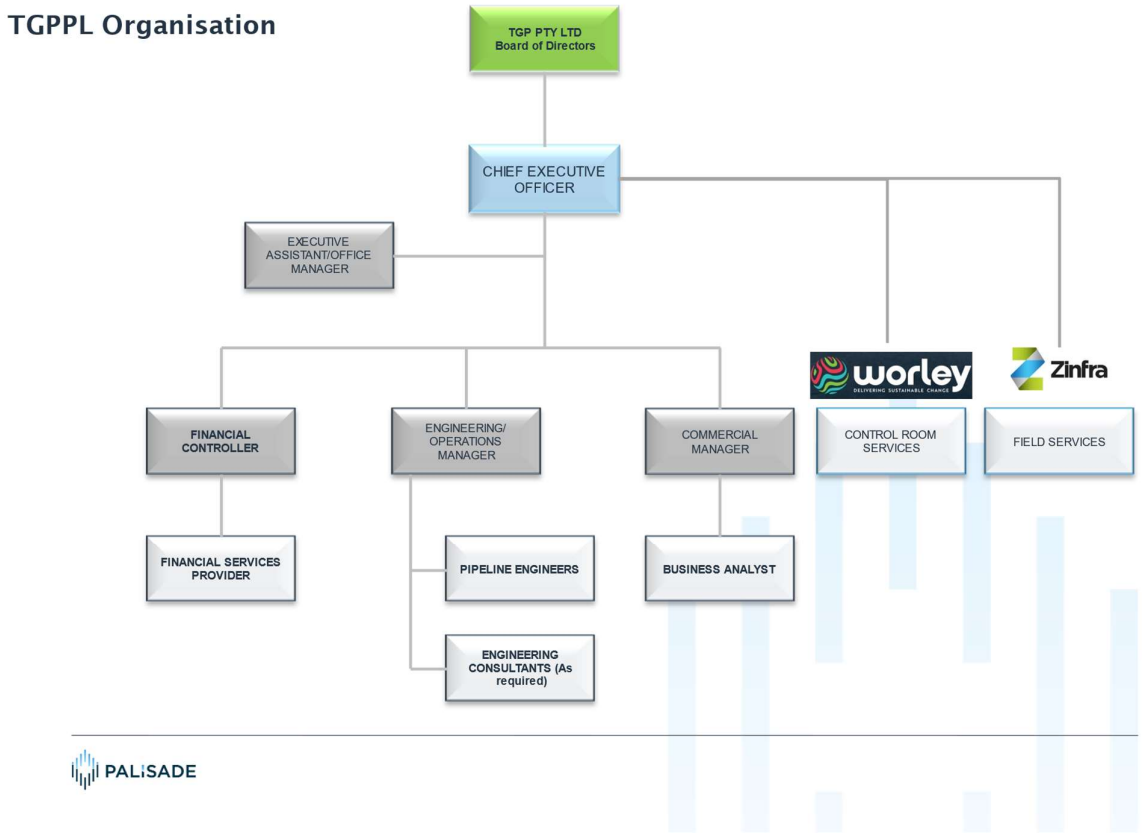


Figure 1-1: TGPPL Organisation Chart

1.2.2 Purpose

The key purpose for this EP is to demonstrate the 5-year update covers:

- Regulatory requirements and maintains compliance with environmental obligations in accordance with the TGP pipeline licences, *Commonwealth Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* and State offshore petroleum legislation.
- Operations requirements and activities for the next 5-years are defined.

- Identification, analysis and appropriate environmental risk management controls are described for planned and unplanned activities to demonstrate reduction of risk to environment to As Low as Reasonably Practicable (ALARP).
- Ensuring controls are consistent with the principles of ecologically sustainable development, to be consistent with Section 3A of the *Environment Protection and Biodiversity Conservation Act 1999.*
- Providing methodology for processes and documentation to substantiate the controls, actions and considerations made within the EP.
- Defining environmental performance outcomes (EPO) and environmental performance standards (EPS).
- Provide details of consultation process, highlight objections or comments, and demonstrate consideration and implementation of reasonable controls from feedback or objections provided through the consultation process.

Additional objectives of the EP will support TGPPL in:

1. Ensuring implementation of TGPPL's and its contractor's environment policies and environmental management systems (EMS).
2. Assist TGPPL employees and contractors to operate and maintain the Offshore TGP in a manner that minimises potential impacts to the marine environment and third parties, including but not limited to:
    - benthic sedimentation and disturbance
    - disturbance to protected marine fauna
    - pollution of land, air and water
    - disruption to other commercial activities
    - disturbance to other legitimate marine users
    - production, handling and disposal of waste
    - disturbance to pipeline integrity
    - disturbance to archaeological, anthropological and other heritage sites of significance; and
    - the spread of introduced marine pests
3. Review and update the following activities that assist contractors and employees in conducting their inspections and maintenance activities:
    - staff induction and training
    - routine surveillance and monitoring of the pipeline
    - maintenance procedures with respect to environmental aspects; and
    - performance and compliance audits of the pipeline and facilities

The Offshore EP shall be reviewed and updated in accordance with TGP licence requirements and in consultation with the relevant regulatory authorities. This EP shall remain valid for 5 years from the date of acceptance by NOPSEMA as per the OPGGS Environment Regulations (2023) and will be due for renewal again every 5 years, as per Regulation 41. During this period, if a change or proposed change to circumstance or operations occurs, Regulation 39 requires TGPPL to determine whether this would require a revision and resubmission of the EP prior to the 5-year renewal (refer to Section 8.5.5). Additionally, a request for a revision of an EP may be given by NOPSEMA under Regulation 40 which would also trigger a revision process, refer to NOPSEMA Guideline 1705 (NOPSEMA, 2024).

1.3 Scope

This Offshore Environment Plan (EP) focuses on the Bass Strait subsea section of the TGP from the low water mark at Ninety Mile Beach, about one kilometre (km) east of Seaspray, Victoria, to the low water mark at Five Mile Bluff on the coast of Tasmania, including a portion of the drilled crossings at the Victorian and Tasmanian landfalls.

The Longford Compressor Station (LCS) – owned by Jemena - is covered by a separate Environmental Improvement Plan (PO-510-PA-EV-001), as required by the Victorian Environment Protection Authority (EPA) licence for this facility (LA42297). Similarly, the onshore section of the pipeline in Victoria for *the Petroleum Regulations 2021 Part 7 – Division 2* and Tasmania's *Petroleum*

(Submerged Lands) (Management of Environment) Regulations 2022 Part 2, is covered by a separate Onshore Environment Management Plan (TGP-698-PA-HSE-001).

The following State and Commonwealth pipeline licences apply to the offshore section of the TGP:

Table 1-1: TGGPL Offshore Pipeline Licences

Coverage	Route	Licence No.	Date Granted
State Offshore Victoria	The route of the pipeline starts at the high-water mark on Ninety Mile Beach east of Seaspray at Lat. 38°22'10", Long. 147°14'15", and continues to the point of intersection with the 3 nautical mile (nm) limit at Lat. 38°24'50", Long. 147°14'15".	Vic/PL 30(V)	20/11/2001
State Offshore Tasmania	The pipeline commences from the low water mark near Five Mile Bluff, Tasmania Lat. 41°01'50", Long. 146°53'30", and proceeds from there to the Tasmanian 3 nm limit where the pipeline crosses Lat. -40°58'20", 146°53'40".	T/PL1-TAS	14/11/2001
Commonwealth Offshore Victoria	The pipeline route follows a straight line from the intersection point with the 3 nm limit at Lat. 38°22'10", Long. 147°14'15", to a point at Lat. 38°30'00", Long. 147°18'00". The pipeline route then follows a straight line between that point and the boundary of the adjacent area at Lat. 39°12'00", Long. 147°06'25".	Vic /PL 30	19/11/2001
Commonwealth Offshore Tasmania	The pipeline route follows a straight line from the intersection point with the 3 nm limit at Lat. 40°58'20", Long. 146°53'40", to a point at Lat. 39°30'00", Long. 147°02'00". The pipeline route then follows a straight line between that point and the boundary of the adjacent area at Lat. 39°12'00", Long. 147°06'25".	T/PL1-COMM	21/11/2001

The TGP operational areas described in Table 1-2 are located within Victorian, Tasmanian and Commonwealth waters. The regulatory framework for offshore petroleum activities in each of these jurisdictions is shown below. Activities excluded from the scope of this EP are vessels transiting to and from the operational area. The inspection and maintenance vessels are considered part of the TGP 'petroleum activity' while within the operational areas as defined below.

Table 1-2: TGPPL Operational Areas

	Victorian waters	Tasmanian waters	Commonwealth waters
Operational area	Within 200 m of the pipeline from high water mark on Ninety Mile Beach east of Seaspray, Victoria to 3 NM limit.	Within 200 m of the pipeline, from low water mark at Five Mile Bluff, Tasmania to 3 NM limit.	Within the 200 m of the pipeline, between the Victorian and Tasmanian 3 NM limits.
Act and Regulations	*Offshore Petroleum and Greenhouse Gas Storage Act 2010* Offshore Petroleum and Greenhouse Gas Storage Regulations 2021	*Petroleum (Submerged Lands) Act 1982* Petroleum (Submerged Lands) (Management of Environment) Regulations 2022	*Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGS Act) and Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (OPGGS(E) Regulations)

	Victorian waters	Tasmanian waters	Commonwealth waters
			Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*
Regulator	Department of Energy, Environment and Climate Action (DEECA)	Mineral Resources Tasmania (MRT), a division of the Department of State Growth	National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA)

**The EPBC Act specifically governs the assessment of potential risks and impacts on matters of national environmental significance (MNES). The OPGGS Act and the EPBC Act are administered by NOPSEMA in relation to offshore petroleum activities.*

1.4 Environmental Plan Summary

As required by Regulation 35(7), a summary table of the content within the EP is included in Table 1-3.

Table 1-3: Environmental Plan Summary

Summary material requirement	Relevant section of EP containing EP Summary material
The location of the activity	**Section 2.1.1**
A description of the receiving environment	**Section 3**
A description of the activity	**Section 2.2.1 (Planned), 2.2.2 (Unplanned)**
Details of the environmental impacts and risks	**Sections 6.1.2, 6.2.2, 6.3.2, 6.4.2, 6.5.2, 6.6.2, 6.7.2, 6.8.2, 6.9.2, 6.10.2**
The control measures for the activity	**Sections 6.1.4, 6.2.4, 6.3.4, 6.4.4, 6.5.4, 6.6.4, 6.7.4, 6.8.4, 6.9.4, 6.10.4**
The arrangements for ongoing monitoring of the titleholder's environmental performance	**Section 8.5**
Response arrangements in the oil pollution emergency plan	**Section 9.4**
Consultation already undertaken and plans for ongoing consultation	**Section 10**
Details of the titleholders nominated liaison person for the activity	**Section 1.1**

2. PIPELINE OVERVIEW AND OPERATIONS

2.1 Description of the Operational Features

2.1.1 Subsea Pipeline Route and Activity Location

The TGP is a DN 350 (14 inch) pipeline with the key function of supplying sales quality natural gas from the LCS in Victoria, across the Bass Strait to Tasmania. The pipeline was commissioned in 2002 and has a capacity of 47 PJ per year.

The TGP offshore section commences at the high-water mark along Ninety Mile Beach, Seaspray and crosses Bass Strait to the low water mark at Five Mile Bluff, Tasmania where it continues onshore. The Offshore TGP is approximately 301 km in length, with maximum water depth along the route of approximately 77 metres (m). The TGP route is shown in **Error! Reference source not found.**. The Offshore TGP route was selected to minimise pipeline length and avoid adverse seafloor conditions and on bottom obstructions, identified during the pre-construction survey.

There are two drilled crossings where the pipeline meets the Victorian and Tasmanian landfalls, which were constructed using horizontal directional drilling (HDD). The Victorian HDD section is 1080 m long, commencing at Kilometre Point (KP) – 0.265 and exiting the seabed at KP 0.815, at approximately 10 m water depth. The Victorian shore approach was trenched and backfilled naturally from KP 0.806 to KP 4.0, and the maximum depth of the trench is 0.6 m (Lowest Astronomical Tide (LAT)) to the top of the pipeline. The Tasmanian HDD section is some 859 m long, entering the seabed at KP 300.181 in 10.5 m (LAT) water depth.

The rest of the offshore component of the TGP sits on the Bass Strait seabed. The seabed along the Offshore TGP route across Bass Strait is mostly flat and featureless with the steepest slopes occurring between KP 289 and KP 290, where the seabed rises approximately 14 m over 90 m (slope angle 9°). Many sections of the Offshore TGP have partially or fully self-buried over time.

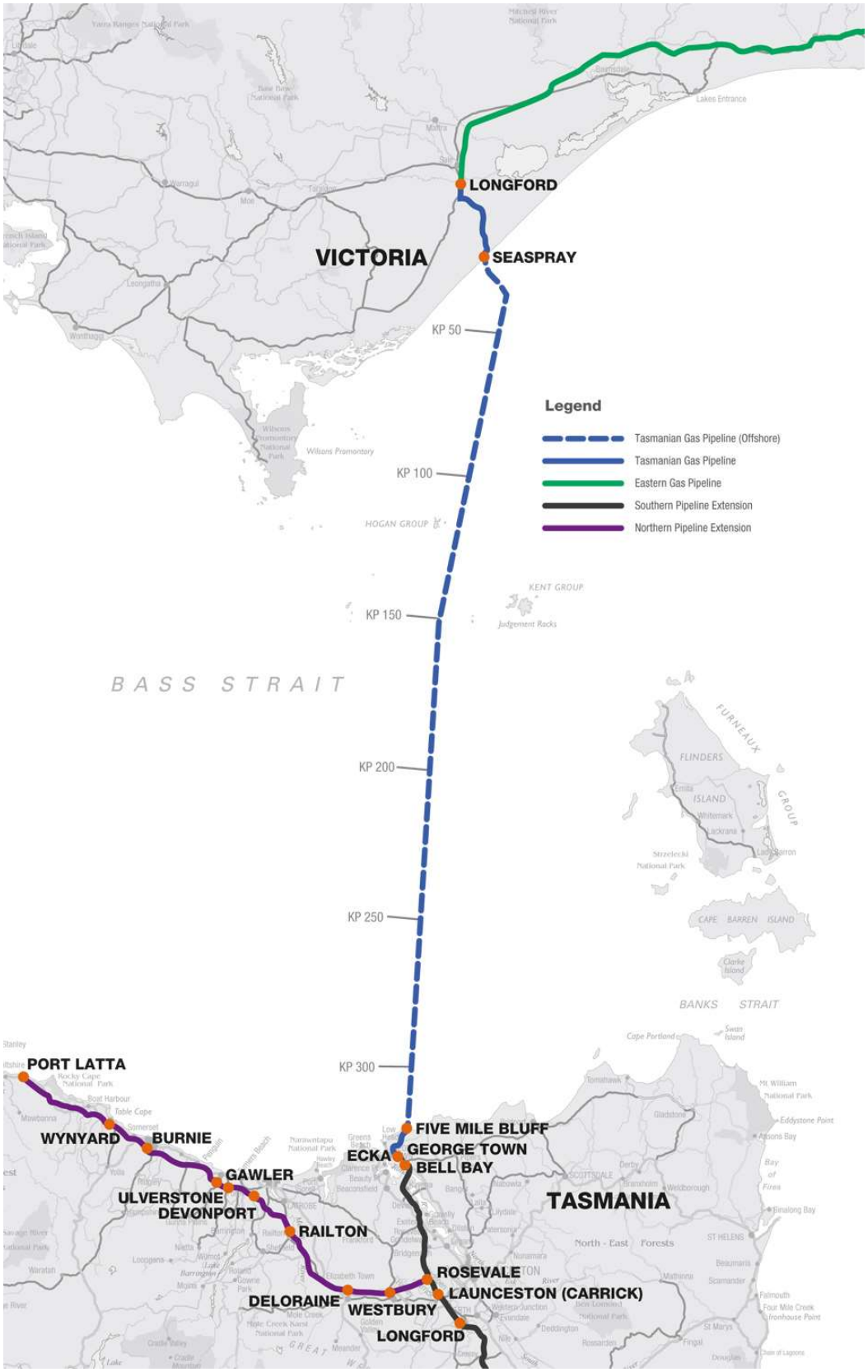


Figure 2-1: TGP Offshore Route Overview

2.1.2 Key Coordinates and Interfaces

The Offshore TGP route co-ordinates (grid and geographic) are provided in Table 2-1**Error! Reference source not found.**. The route length is defined by KP. The pipeline route curves are defined by length Intersection Points (IP) and associated Tangent Points (TP).

Table 2-1: TGP Offshore Route Co-ordinates (Grid and Geographic)

Feature	KP	WGS 84 (Zone 55)		AMG 66 (Zone 55)		Geographic WGS 84	
		Eastings (m)	Northings (m)	Eastings (m)	Northings (m)	Latitude	Longitude
Victoria End							
HDD Entry	21.647	517,842.2	5,753,741.4	517,730.0	5,753,558.0	-38.125157	147.121525
HDD Exit	22.735	518,167.2	5,752,703.4	518,055.0	5,752,520.0	-38.222522	147.122873
IP 1A		518,645.3	5,751,176.5	518,533.1	5,750,993.1	-39.231473	147.124858
IP 1B		520,368.0	5,749,364.1	520,255.8	5,749,180.7	-38.241339	147.135978
IP 1		526,271.2	5,738,832.4	526,159.0	5,738,649.0	-38.295452	147.180459
IP 2		502,979.2	5,631,602.4	502,867.0	5,631,419.0	-39.275455	147.020468
IP 3		491,100.2	5,462,000.4	490,988.0	5,461,817.0	-40.593526	146.533908
IP 3A		491,244.7	5,460,138.7	491,132.5	5,459,955.3	-41.003564	146.534517
HDD Exit	322.344	491,082.2	5,458,505.2	490,970.0	5,458,321.8	-41.012861	146.533813
HDD Entry	323.303	490,997.1	5,457,650.4	490,884.9	5,457,467.0	-41.015633	146.533444
Tasmania End							

2.1.3 Design and Operating Parameters

Made of carbon-manganese steel, the TGP has been designed and constructed in accordance with ASME B31.8: Gas Transmission and Distribution Piping Systems (1995 Edition) design code, applicable Australian Standards (e.g. AS 2885.2 Welding) and regulations of the Commonwealth, Victoria and Tasmania. Design parameters and operating conditions for the Offshore TGP are summarised in Table 2-2.

The Offshore TGP has been designed in accordance with a pipeline integrity study to ensure it can withstand conditions expected in Bass Strait, including currents, temperature, sedimentation, marine growth and seabed conditions. This is outlined in the TGP Design Basis Manual – Offshore Pipeline (TGP-698-DG-DN-003) and further details are also provided in the TGP Offshore Safety Case (TGP-698-SC-HSE-004).

The Offshore TGP has fully welded joints along its entire length and has no tees. As a result there are no flanges, with the exception of the HDD tie-in flanges offshore at the Victorian and Tasmanian ends.

The Offshore TGP is protected externally by a 0.4 mm fusion bonded epoxy anti-corrosion coating, with reported service life of more than 75 years (Metalife Solutions, 2022). In addition, the subsea section is further protected by a nominal 38 mm concrete weighted coating, which also serves to stabilise the pipe and act as an effective barrier between any third-party impacts and the pipe wall. The Offshore TGP also has a cathodic protection (CP) system comprising sacrificial aluminium anodes attached at approximately every 12 to 15 field joints (approximately every 180 m). Section 2.2.1.8 describes the activity further for maintenance of the replacement of anodes.

The Victorian and Tasmanian HDD sections are protected by 38 mm thick sacrificial anodes installed on every pipe joint through the bore hole. A galvanic anode CP system and onshore anode ground bed was installed on the Victorian HDD section during construction but was subsequently disconnected following commissioning of the pipeline.

Table 2-2: TGP Design Parameters and Operating Conditions

Parameter	Unit	Value
Pipeline Length	km	301.6
Size	NB	350
Outside Diameter	mm	355.6
Pipe Wall Thickness	mm	11.1
Wall Thickness (shore crossing)[1]	mm	12.7
Grade		X65
Maximum Allowable Operating Pressure	MPa(g)	15.3
Offshore Pipeline Average Design Temperature	°C	13

2.1.4 Pipeline Facilities and Features

The TGP route is shown in Figure 2-1. There are no permanent offshore facilities (platforms, mooring buoys, etc.) or equipment, machinery or instrumentation associated with the Offshore TGP. Ancillary facilities occur at the Victorian and Tasmanian ends beyond the offshore section of the TGP:

- Seaspray Main Line Valve (MLV) (Facility No 605) KP 21.40
- Five Mile Bluff MLV (Facility No 610) KP 323.025

A section of the Offshore TGP was trenched during the installation stage from the Victorian HDD exit point at KP 22.78 to approximately 11 m water depth at KP 25.988. The Tasmanian HDD exit point at KP 322.344 was not trenched due to hard rock. The trench on the Victorian side was not mechanically backfilled but left open to backfill naturally. To date, this is the only section of the Offshore TGP that is fully buried.

Since the pipeline was constructed, no additional property has been brought onto or left on the title areas covered by this EP.

No end-of-life or decommissioning activities are planned during the life of this EP. The offshore pipeline has a nominal 40-year design life, at the time of updating the EP the pipeline is approximately half-way into this design life. This may be extended subject to confirming the integrity of the pipeline. When decommissioning activities are being considered a review will be conducted and a plan developed including environmental considerations such as rehabilitation and monitoring. It is currently considered that:

- The net environmental risk and impact is significantly higher for decommissioning strategies involving pipeline recovery compared to leaving the pipe in-situ.
- The risk to others using the marine environment around the region of the abandoned pipeline for the remainder of its corrosion life is sufficiently low to be negligible.

[1] 12.7 mm wall thickness used for section of pipeline through the shore crossing and along the shore approach lengths to provide additional strength, wall thickness and stability.

- The long-term environmental impact in the region of the abandoned pipeline for the remainder of its corrosion life is sufficiently low to be negligible.

Based on the above, the current decommissioning philosophy assumes that the pipeline will remain in-situ, cleared of hydrocarbons, and filled with seawater, subject to the regulatory approvals at the time. This approach will be reviewed ahead of decommissioning activities, taking into consideration the acts, regulations and guidance of the time and any relevant technological advancements. As this is not currently part of the scope of activities, this EP will not cover decommissioning activities. Appropriate environmental approvals as per the OPGGS Regulations (2023) or other relevant Acts and Regulations at the time will be considered as decommissioning approaches.

2.1.5 Gas Composition

The TGP transports sales quality Natural Gas from Longford in Victoria to Tasmania. TGP Natural Gas comprises largely methane (91.14%) and ethane (5.21%) and is dry and free from significant impurities under normal operating conditions. Other components include carbon dioxide (2.26%), nitrogen (0.74%), propane (0.5%) and minor quantities of oxygen, butane, pentane and hexane (in quantities less than 0.1%).

The sales gas complies with AS 4564:2020 General-purpose Natural Gas, which sets out the limits for Wobbe Index, oxygen, hydrogen sulphide, total sulphur, water content, hydrocarbon dew point and total inert gases.

Gas quality is continuously monitored by SCADA using gas chromatographs and moisture analysers to check that gas conforms to specifications set out in contracts with gas suppliers and shippers. Gas chromatographs and moisture analysers are validated continually using certified calibration gas. The gas measurement instruments are validated at regular intervals as determined by the pipeline engineers.

2.1.6 Third Party Infrastructure

The Offshore TGP route is adjacent and to the west of the Esso Australia Pty Ltd (EAPL) Perch and Dolphin pipeline easement. These are shown in Figure 2-1and referenced. The TGP was designed to provide a minimum separation of 230 m between the Offshore TGP and the EAPL Perch and Dolphin pipelines. EAPL are in the process of submissions for their ‘Plug & Abandonment’ campaign for this pipeline and platforms (Esso Australia Resources Pty Ltd, 2024).

The Offshore TGP route is adjacent and to the east of the Basslink subsea 400 kV DC electricity Interconnector. The TGP design provided a minimum offshore separation between the Offshore TGP and the Basslink Interconnector of 3.262 km.

There is one foreign crossing of the Offshore TGP. The Indigo submarine cable is a fibre optic communication link between Sydney and Singapore via Perth and Jakarta and was laid in 2018 and completed in 2019. It crosses the TGP in a uraduct at S39 17.58661 E147 04.9635.

See in Figure 2-2 the following:

[A] Seaspray to Dolphin to Perch Gas Pipeline in stasis mode; Perch Title VIC/L17, Esso Australia Resources Pty Ltd; Woodside Energy (Bass Strait) Pty Ltd Titleholders.

[B] Seaspray to Dolphin to Perch Gas Pipeline in stasis mode; Dolphin Title VIC/L15 and Pipeline PCA-Shore300 Licence VIC/PL21, Esso Australia Resources Pty Ltd; Woodside Energy (Bass Strait) Pty Ltd Titleholders

[C] Indigo Central Cable, Subco

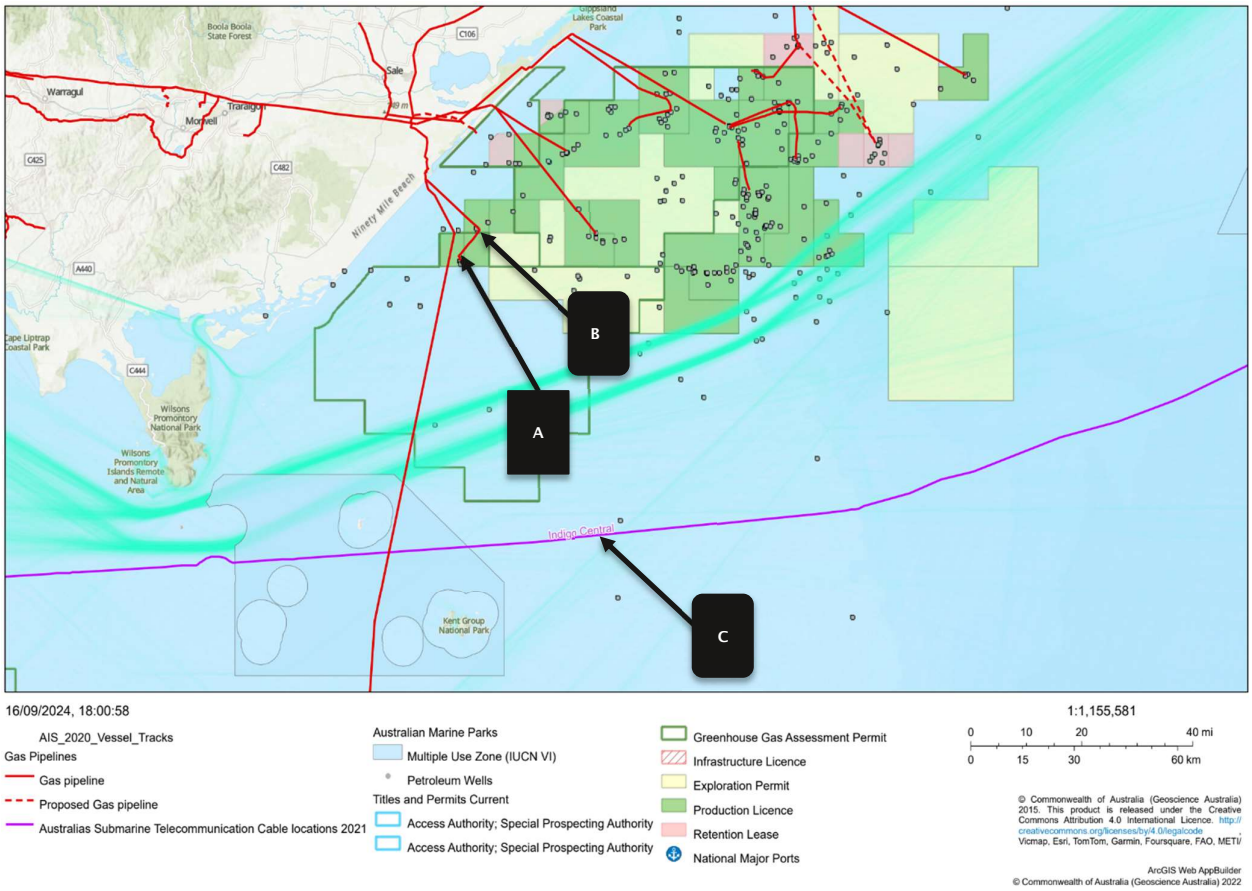


Figure 2-2: Third Party Infrastructure Mapped with TGP

2.2 Key Offshore Activities

The TGP is an operating pipeline transporting natural gas from Victoria to Tasmania and, therefore, there are no daily activities.

Surveys of the pipeline, to assess pipeline integrity and any maintenance requirements, are undertaken on a periodic basis and occur approximately every 5 years. Consequently, temporary facilities are only on location during subsea survey and emergency repair works if, and when, they arise.

The following sub-sections describe a list of current and potential activities associated with the Offshore TGP for the next 5-years considering both planned and unplanned events.

2.2.1 Planned Activities

Due to the nature of the pipeline, the activities on the pipeline are primarily survey and planned maintenance based. Field inspections and maintenance activities for the Offshore TGP are performed in accordance with the TGP *Offshore Operations and Maintenance Management Plan (TGP-600-OM-MO-002)*. These activities include:

- 5-10 yearly periodic subsea surveys using crewed surface vessel with remotely operated vehicles (ROV), Uncrewed Surface Vessel (USV) with or without ROV. Future inspections may utilise Autonomous Underwater Vehicle (AUV) technology. Air Diver Inspections may be used to inspect flanges at the HDD exits.

- An intelligent pipeline pigging activity, whereby an electronically equipped device (pig) is inserted into the pipeline to detect metal loss in the pipeline wall. This activity is conducted solely from shore facilities with no impact on the offshore environment.
- Maintenance activities conducted on an as-needs basis following surveys or identified issues.

The TGP *Offshore Pipeline Operations and Maintenance Management Plan* (TGP-600-OM-MO-002) provides for a five-year rolling planned works program which is reviewed annually subject to risk assessment and evaluation of any integrity surveys conducted in the preceding year. This approach is further defined in the *Offshore Pipeline Integrity Management Plan* (TGP-698-PA-IP-002). A summary of the timings can be found in Section

Summary of Planned Activities0. This document supports and informs TGPPL of planned activities to conduct environmental risk assessments on and for inclusion into the EP.

Major event driven surveys may be conducted in a similar fashion to the regular surveys to determine damage from physical impact or adverse weather and will be undertaken as required (refer to Section 2.2.1.8).

Inspections and maintenance activities are performed by specialist contractors that are contracted in accordance with TGPPL's contractor engagement process. Any inspection and maintenance work must be carried out in a manner that matches the performance outcomes and standards set down in this Offshore EP, roles and responsibilities are detailed in Section 8.3.

Offshore pipeline activities are discussed in detail in subsequent sections. Where the Offshore TGP joins the terrestrial component of the pipeline, operations and maintenance activities undertaken in the coastal areas are discussed in more detail in the TGP *Onshore Environment Management Plan (TGP-698-PA-HSE-001).*

2.2.1.1 Operation of the Pipeline

The RMC monitors the pipeline 24 hours per day, 7 days per week, 365 days a year via the SCADA system. The team is responsible for standard operation of the pipeline and monitoring using the SCADA system and supporting emergency response.

The SCADA system monitors flow in the pipeline and provides information on, and remote management of, the CP system, pressures, temperatures, valve status, metering selections, alarms, gas quality, flow rates, condition monitoring and site entry monitoring. The status of the entire TGP system can be determined and operators can respond to changing conditions, faults and emergencies.

The SCADA system ensures that all relevant alarms and protective systems are in place so that pipeline integrity, and safety of personnel and the public, is not compromised and that security of supply is maintained. Remote shutdown, opening and closing of MLVs and other ancillary functions are all conducted from the RMC using SCADA. The SCADA system consists of redundant servers, and the system is connected to stations and facilities along the TGP via the data communication network.

Gas pressure in the TGP is monitored continuously from the RMC. In the event of detection of an unexpected pressure drop in the offshore section, this will be immediately escalated to the TGPPL engineering team for assessment. Where deemed appropriate, the affected pipeline section may be isolated by closure of the appropriate MLVs at Seaspray, Victoria and Five Mile Bluff in Tasmania.

Smoke, flame, and/or gas detection systems have been installed in onshore pipeline facility control huts and are also monitored by the RMC via SCADA. There are no offshore facilities and accordingly no smoke, flame and/or gas detection systems are installed on the Offshore TGP. The SCADA system provides real time flow and pressure data, which is modelled to enable abnormal operating conditions, pipeline leak, to be alarmed.

2.2.1.2 Support Vessels

Maintenance and inspection of the Offshore TGP is undertaken with the aid of support vessels. Vessels are contracted from international or national suppliers, when required, and will vary depending on the proposed activity and vessel availability. Vessels supporting the TGP operations will be specified and operated in accordance with international and Australian regulatory requirements. The vessels will be subject to a marine assurance program and will be certified as compliant with international maritime legislative requirements by a Classification Society registered with the International Association of Classification Societies (IACS).

Vessels range in weight (300 – 1500 tonnes (t) - gross tonnage) and fuel capacity (48 - 530 cubic metres (m^3)). An example vessel, is the MV Calypso Star used for the Offshore TGP survey completed in 2019 (Figure 2-3) and the previous vessel used in March 2013 for an Offshore TGP survey, is the 'Silver Star' (refer to Figure 2-4). The 'Silver Star' has a gross tonnage of 300 t and a fuel capacity of 48 m^3 (approx. 48,000 L) spread between numerous tanks.

Depending on inspection and maintenance activities required, vessels are at sea for 1 to 4 weeks. Given their greater fuel capacity, large vessels can remain at sea for these time periods, however, smaller vessels such as the 'Silver Star' may require port visit to refuel or for maintenance. No vessel refuelling is undertaken at sea.

Vessels use global positioning system (GPS) coordinates to remain within the Offshore TGP route.

Figure 2-3: The "Calypso Star" - typical vessel for pipeline surveys

Figure 2-4: The "Silver Star" - typical vessel for pipeline surveys

USVs may also be used for inspection activities. These are smaller vessels that are piloted remotely and may utilise either MBES or ROV visual inspection methods. An example of a USV is shown in Figure 2-5.

Figure 2-5: USV X-14 provided by XOcean

2.2.1.3 Pipeline Inspections

As per the TGP *Offshore Pipeline Operations and Maintenance Management Plan (TGP-600-OM-MO-002)*, maintenance activities include periodic inspections to provide assurance of the pipeline integrity. Specialised geophysical surveys are used to inspect the condition of the offshore component of the pipeline. Pipeline anomalies or span inconsistencies from as-laid data are identified in these operations, along with pipeline orientation and the condition of coatings, field joints and anodes.

Each survey will use offshore support vessels. Equipment used in the surveys includes ROV / AUV mounted cameras, single and multi-beam echo sounders or SSS (refer to Section **Error! Reference source not found.** below). The vessel will also be equipped with deck handling facilities and survey positioning equipment.

Offshore vessels involved with Offshore TGP inspections have their own communications system for use between the vessel, land base and emergency services should they be required. The communication system is made available to visiting TGPPL personnel, visitors, representatives, consultants, etc. at all times during the surveys and in emergency situations.

Inspection of the Offshore TGP is normally scheduled once every 5 years (unless a risk assessment or unplanned event triggers a survey). TGPPL are continuously reviewing the risk profile of the asset using a risk-based inspection (RBI) approach to future surveys, with a view to extending the inspection intervals out to possibly every 7 years. The last full-length inspection of the Offshore TGP was completed in November 2024. The next inspection is targeted in late 2029. The duration of each survey ranges between 1 to 4 weeks. Surveys are not expected to exceed 4 weeks.

2.2.1.4 Side Scan Sonar (SSS) & Multibeam Echo (MBES) or other Digital Capture

SSS is a hydro-acoustic technique that involves towing a torpedo shaped 'towfish' (see Figure 2-6 (EdgeTech, 2024)) behind the survey vessel. The tows are typically conducted at 3 to 5 knots with a maximum swath width of 150 m per side depending on resolution and water depth. The towfish is normally located about 10-15 m above the seabed and at an approximate distance of 150-200 m behind the vessel. There are no fluids contained within the towfish. Where there is future scope for these devices to become autonomous, TGPPL will investigate, and risk assess the benefits of utilising tow-free SSS device technology to reduce need for crewed survey vessels to perform this activity.

Figure 2-6: An example 'towfish' retailed for Offshore Oil & Gas Pipeline route surveys

These surveys do not use airguns and are considered less intrusive than surveys for oil exploration where air gun penetration is expected to be in the range of 3 to 4 km. Systems used in the geophysical surveys of the Offshore TGP typically penetrate the seabed only to 10 m and the source noise level of sub-bottom profile equipment is approximately 60-70 dB re 1µPa@1 m.

The SSS survey is conducted over the majority of the Offshore TGP length (excluding inshore portions) and is used to: determine if the pipeline has moved; identify any objects that may have impacted the pipeline; and identify any spans that exceed the maximum allowable length. Information gathered during the SSS survey is used to plan and determine if further visual inspection or intervention is required.

MBES is also commonly used by TGPPL for inspection of the TGP, the echo sounder determines the distance between the survey vessel and seabed at any given instance, using GPS location to map the data. The technology works on the principle that water is an excellent medium to transmit sound waves, they are sent from a transmitter as a pulse that then bounces or reflects from the seabed or other features, such as a pipeline, then returns as an echo to the receiver (All about Pipelines, 2024). The technology has also been used to help identify gas leaks which can be seen in Figure 2-7 (R2 Sonic, 2024).

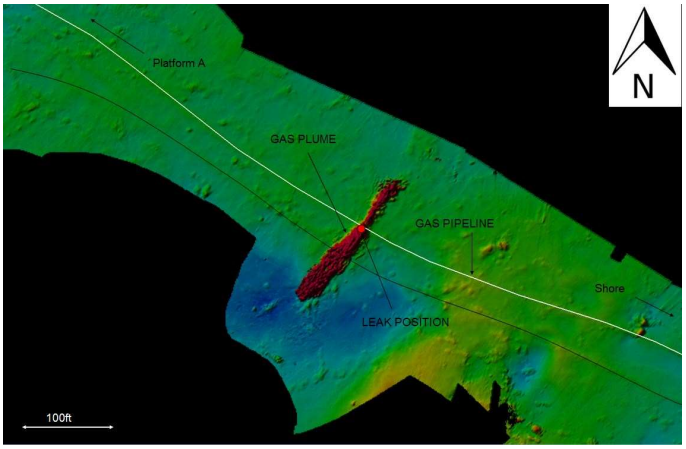


Figure 2-7: MBES image results for proving a gas leak

Other scanning technology emerging in the market will be considered by TGPPL, particularly where they present opportunity to reduce environmental impacts, particularly with respect to reducing environmental noise impacts and reducing potential marine pollution through reduced vessel size and crewing requirements. In addition to this, utilising emerging tracking of cetaceans to support spotting and understanding of migration and population movements is something that is of interest to support operating acoustic equipment with minimal impact to the noise sensitive populations. An example of this emerging information is the partnership of Google Australia and Griffith University using AI and hydrophones to automatically detect certain sounds and monitor and track humpback whale migration, patterns and other behaviours (Rosengreen, 2024).

2.2.1.5 Remotely Operated Vehicle (ROV) / Autonomous Underwater Vehicle (AUV) Survey

Where required, visual inspections of sections of the Offshore TGP identified during the SSS or MBES surveys, undertaken using a ROV or AUV. This allows additional information to be gathered including confirmation of the pipe stability and weight coating integrity, confirmation of any locations where the approved free span lengths are exceeded, and checks for external damage, debris and marine growth.

ROVs / AUVs are also used to inspect the CP system and may use probes to determine electrical potential differences at fixed points. Sacrificial anodes, placed about every 180 m along the Offshore TGP, are also inspected as are field joint coatings applied in the gaps of concrete between individual pipe joints. These surveys will include the inspection of as many anodes as possible, with estimates of the amount of anode depletion and the collection of potential readings, to identify any areas of the Offshore TGP that may be susceptible to external corrosion.

ROV surveys are undertaken in line with the IMCA R004 February 2024 Rev. 6 - Code of practice for the safe and efficient operation of remotely operated vehicles. ROVs are generally mounted with a camera in pressure proof housing and may have robotic arms to allow completion of small tasks. Small amounts of hydraulic oil may therefore be present. A cable connects the ROV / AUV to the surface and the image of the seabed can be viewed and recorded on the vessel. Coordinates are recorded via GPS to have an automated permanent record of the location of the camera drop or tow. Where spans are confirmed to be beyond the maximum allowable limit, maintenance works will be undertaken on the same voyage to correct the deficiency (refer to Section 2.2.1.8).

The Victorian and Tasmanian HDD exit points are inspected for scouring and/or free span development in accordance with the TGP *Offshore Pipeline Operation and Maintenance Management Plan (TGP-600-OM-MO-002)* through ROV/AUV or diver survey and complemented by hydrographic surveys as required to cover possible backfilled trench areas. Should excessive free spanning at the HDD exits be detected, the severity of the span shall be assessed. The method and timing of any span rectification work deemed necessary shall be determined based on an engineering and risk assessment of the survey results.

2.2.1.6 Diver Inspections

The tie-in flanges at the HDD sections of the Offshore TGP lie in relatively shallow water and it was anticipated that the flanges would be inspected manually using divers. However, during the 2013 ROV survey, the ROV unit was able to inspect the tie-in flanges to such an extent that the need for diving operations is no longer required for this inspection work.

Diver inspections are not normally carried out during the major surveys. However, in the event of extreme damage, if metrology is required, or for repair/maintenance work, divers may be employed to both inspect and accurately map the pipeline in the relevant area.

For further details of diving operations, refer to Section 2.11.4 of the *TGP Offshore Safety Case (TGP-698-RP-AU-003)*.

2.2.1.7 Internal Inspections (Pigging)

Pigs are devices inserted into the pipeline using 'pig traps' (launchers) that are fitted with doors (closures). Pigs enter the pipeline via a launcher and exit via a receiver, both of which are onshore devices. When inserted, pigs travel throughout the length of a pipeline driven by the gas flow.

There are two types of pigs which perform different maintenance functions:

- Utility pigs - are used to perform functions such as cleaning or sealing a pipeline; and
- Intelligent ('smart') pigs - provide information on the internal condition of the pipeline, as well as locating problem areas

The frequency of pipeline pigging using utility pigs is determined based on operational history and the annual integrity risk assessment and review. Cleaning pig runs are scheduled in accordance with the annual *Onshore Asset Management Plan.* The timing of subsequent cleaning pig runs will be determined subject to pig retrieval and inspection of the nature and amount of debris collected.

Intelligent pigging is also included as part of the TGP inspection and maintenance programme. A planned intelligent pigging run has been included in the *Offshore Pipeline Operations and Maintenance Management Plan (TGP-600-OM-MO-002)* every 10 years, following the successful initial run performed in 2010. The frequency is reviewed every year as part of the annual integrity risk review. As at the submission of this EP, the last inspection was completed in February 2021, with the next routine intelligent pigging run scheduled for 2031, however, the requirement for an intelligent pigging inspection outside the nominal 10 yearly schedule may be triggered by the following events:

- Integrity monitoring data indicates that there is a concern with respect to the long-term integrity of the pipeline; or
- A direct event occurs that may have compromised the integrity of the pipeline

2.2.1.8 Maintenance Activities

Maintenance work to repair potential or existing damage consists of specific tasks required to rectify deficiencies found during Offshore TGP inspections, and their frequency will therefore depend on the results of the inspection surveys. It is anticipated that maintenance activities could comprise the following:

- Rectification of unsupported pipeline spans that are greater than the maximum allowable span, to ensure compliance with the allowable design length and reduce the likelihood of vortex induced vibrations (VIV). Span correction generally involves the installation of supports, in the form of grout-filled bags, underneath the centre of the span (jetting to remove high points is considered unlikely once the pipeline has been laid). Each bag, with dimensions of about 1800 mm × 1200 mm, is placed under the subsea pipeline using a ROV and inflated with grout (concrete) via a hose connection to the support vessel. Each operation is monitored by the ROV to ensure smooth operation.
- Removal of dropped objects (such as containers) from passing vessels (including survey vessels) that may settle on or near the Offshore TGP is a conceivable requirement and,

depending on the object, is likely to be achieved with the assistance of a ROV (objects of up to 300 kg in weight can be removed by ROV).

- Repair of concrete coating which, depending on the severity, may simply involve placing a concrete mattress over the damaged area to prevent possible damage to the subsea pipeline from further impacts. Concrete itself is considered environmentally benign and the mattress installation is undertaken in accordance with IMCA D042, R016 2011 - Diver and ROV Based Concrete Mattress Handling, Deployment, Installation, Repositioning and Decommissioning. Concrete mattresses, of dimensions 150 mm x 2.2 m x 5 m, will be lowered onto the subsea pipeline via a specialised crane on-board support vessel (maximum on-board weight of 3.5 t). Final placement is assisted using ROVs and/or divers.
- Replacement of sacrificial anodes (possibly expected during the design life). This will be undertaken using an ROV, which will remove and replace the anode (attached via a bracket).

Removal of marine growth from the subsea pipeline is not expected to be required over the life of the pipeline.

2.2.1.9 Summary of Planned Activities

Table 2-3: Summary of Planned Activities for TGP Operations and Maintenance

Activity	2025-30 Operation	
Planned Activity		
Operation of the Pipeline	**Description**	RMC monitors via SCADA system, alerts operators of any change in pipeline operating conditions.
	Purpose	Monitor flow, collect information/data, remote management of system, condition monitoring and site monitoring. Respond to changes in process conditions as required. Responsible for supporting emergency response. Monitoring of smoke, gas and flame detection systems of remote onshore facilities.
	Frequency	Daily
	Duration	24 hours
	Time of Year	All year
	Persons conducting work	Contracted
	Support Vessel (Type)	N/A
	Helicopter (Y/N)	N
	Supporting Documents	N/A
Pipeline Inspections	**Description**	Specialised geophysical surveys are used to inspect the condition of the offshore component of the pipeline. Pipeline anomalies or span inconsistencies from as-laid data are identified in these operations, along with pipeline orientation and the condition of coatings, field joints and anodes.
	Purpose	Periodic inspections provide assurance of the pipeline integrity. Trigger maintenance from inspection results.
	Frequency	5 yearly (unless risk assessment or unplanned event triggers)
	Duration	1-4 weeks depending on inspection.
	Time of Year	All year, but predominantly December to April
	Persons conducting work	Contracted
	Support Vessel (Type)	Y, Vessels range in weight (300 – 1500 tonnes (t) - gross tonnage) and fuel capacity (48 - 530 cubic metres (m^3)). Additional survey vessels: SSS or ROV / AUV, USV
	Helicopter (Y/N)	N/A, unless specified through assessment for Cetacean monitoring
	Supporting Documents	Offshore Pipeline Operations and Maintenance Management Plan (TGP-600-OM-MO-002), Offshore Pipeline Integrity Management Plan (TGP-698-PA-IP-002).
Side Scan Sonar (SSS)	**Description**	SSS is a hydro-acoustic technique that involves towing a torpedo shaped 'towfish' behind the survey vessel. The tows are typically conducted at 3 to 5 knots with a maximum swath width of 150 m per side depending on resolution and water depth. The towfish is normally located about 10-15 m above the seabed and at an approximate distance of 150-200 m behind the vessel.
	Purpose	Used to determine if the pipeline has moved; identify any objects that may have impacted the pipeline; and identify any spans that exceed the maximum allowable length. Information gathered during the SSS survey is used to plan and determine the visual inspection requirements of the subsequent ROV / AUV survey.
	Frequency	5 yearly (unless risk assessment or unplanned event triggers)
	Duration	Dependant on scope
	Time of Year	All year
	Persons conducting work	Contracted
	Support Vessel (Type)	Y, Vessels range in weight (300 – 1500 tonnes (t) - gross tonnage) and fuel capacity (48 - 530 cubic metres (m^3))
	Helicopter (Y/N)	N, unless specified through assessment for Cetacean monitoring
	Supporting Documents	N/A

Activity	2025-30 Operation	
Remotely Operated Vehicle (ROV) / Autonomous Underwater Vehicle (AUV) Survey	**Description**	Visual inspections of sections of the Offshore TGP identified during the SSS surveys are undertaken using a ROV or AUV. ROVs / AUVs are also used to inspect the CP system and may use probes to determine electrical potential differences at fixed points. Sacrificial anodes, placed about every 180 m along the Offshore TGP, are also inspected as are field joint coatings applied in the gaps of concrete between individual pipe joints.
	Purpose	Confirmation of the pipe stability and weight coating integrity, confirmation of any locations where the approved free span lengths are exceeded, and checks for external damage, debris and marine growth. Estimates of the amount of anode depletion and the collection of potential readings, to identify any areas of the Offshore TGP that may be susceptible to external corrosion.
	Frequency	5 yearly (unless risk assessment or unplanned event triggers)
	Duration	Dependant on scope
	Time of Year	All year
	Persons conducting work	Contracted
	Support Vessel (Type)	Y, Vessels range in weight (300 – 1500 tonnes (t) - gross tonnage) and fuel capacity (48 - 530 cubic metres (m^3))
	Helicopter (Y/N)	N, unless specified through assessment for Cetacean monitoring
	Supporting Documents	N/A
Diver Inspections	**Description**	Diver inspections are not normally carried out during the major survey but can be used in the event of extreme damage, if metrology is required or for repair work.
	Purpose	In the event of extreme damage, if metrology is required, or for repair / maintenance work, divers may be employed to both inspect and accurately map the pipeline in the relevant area.
	Frequency	As required.
	Duration	Dependant on scope
	Time of Year	All year
	Persons conducting work	Contracted
	Support Vessel (Type)	Y, Vessels range in weight (300 – 1500 tonnes (t) - gross tonnage) and fuel capacity (48 - 530 cubic metres (m^3))
	Helicopter (Y/N)	N, unless specified through assessment for Cetacean monitoring
	Supporting Documents	Section 2.11.4 of the TGP Offshore Safety Case (TGP-698-RP-AU-003)
Internal Inspection	**Description**	Pigs are devices inserted into the pipeline using 'pig traps' (launchers) that are fitted with doors (closures). Pigs enter the pipeline via a launcher and exit via a receiver, both of which are onshore devices. When inserted, pigs travel throughout the length of a pipeline driven by the gas flow.
	Purpose	There are two types of pigs which perform different maintenance functions: • Utility pigs - are used to perform functions such as cleaning or sealing a pipeline; and • Intelligent ('smart') pigs - provide information on the internal condition of the pipeline, as well as locating problem areas
	Frequency	Determined based on operational history and the annual integrity risk assessment and review. Cleaning pig runs are scheduled in accordance with the annual Onshore Asset Management Plan. The timing of subsequent cleaning pig runs will be determined subject to pig retrieval and inspection of the nature and amount of debris collected. Intelligent pigging occurs approximately every 10 years unless triggered by: 1) Integrity monitoring data indicates that there is a concern with respect to the long-term integrity of the pipeline; or 2) A direct event occurs that may have compromised the integrity of the pipeline
	Duration	Dependant on scope
	Time of Year	All year
	Persons conducting work	Contracted

Activity	2025-30 Operation	
	Support Vessel (Type)	N/A
	Helicopter (Y/N)	N
	Supporting Documents	Offshore Pipeline Operations and Maintenance Management Plan (TGP-600-OM-MO-002)
Maintenance Activities	**Description**	Maintenance work to repair potential or existing damage consists of specific tasks required to rectify deficiencies found during Offshore TGP inspections. This includes, rectification of unsupported pipeline spans that do not meet requirements (using ROV), removal of dropped objects from passing vessels (generally ROV used), repair of concrete coating (ROV/divers support), and replacement of sacrificial anodes (using ROV)
	Purpose	Repair damage or remove environmental impacts to TGPPL assets and surrounding environment.
	Frequency	As required.
	Duration	1-4 weeks depending on work.
	Time of Year	All year
	Persons conducting work	Contracted
	Support Vessel (Type)	Y, Vessels range in weight (300 – 1500 tonnes (t) - gross tonnage) and fuel capacity (48 - 530 cubic metres (m3)), ROV / AUV
	Helicopter (Y/N)	N, unless specified through assessment for Cetacean monitoring
	Supporting Documents	Offshore Pipeline Operations and Maintenance Management Plan (TGP-600-OM-MO-002)

2.2.2 Unplanned Activities / Events

Unplanned events or emergencies identified through risk assessment for the for the Offshore TGP are:

- Leaks from / ruptures of the pipeline leading to loss of containment (LOC)
- Incidents on board the offshore inspection/maintenance support vessel(s) resulting in a spill of fuel, chemicals or other contaminants

2.2.2.1 Gas Escape

Major LOC from the Offshore TGP would result in a significant pressure drop, which would be identified via the SCADA system. Major surveys may result when significant pressure drops are identified in the pipeline via the SCADA system.

In the event of detection of pressure drop, the RMC will immediately contact TGPPL engineering to seek further advice. The offshore TGP may be isolated by closure of the onshore MLVs at Seaspray and Five Mile Bluff, limiting the volume of gas released. Following isolation of the Offshore TGP inventory, the TGP Offshore emergency procedures would be implemented and the inventory of gas blowdown in a controlled manner through the onshore MLVs. TGPPL would then implement procedures to repair the damaged section of subsea pipeline as soon as possible.

Due to the depth of the subsea pipeline, any gas release is most likely to be gradual and evidenced by bubbles rising to the surface. Any explosive rupture would be buffered by the density of the water and would only affect the immediate vicinity of the pipeline. Impacts would therefore depend on the depth at which the failure occurred. The pipeline however has been specifically designed (material, wall thickness and concrete coating) to resist all perceived risks such as penetration from anchors, dropped cargo or sunken vessels.

Maintenance of pipeline integrity is specifically addressed in a pipeline integrity management plan and risks associated with a breach in Offshore TGP integrity are covered within Section 3 of the *TGP Offshore Safety Case (TGP-698-SC-HSE-004)*.

Modelling of a potential leak of gas resulting from a breach of the Offshore TGP was undertaken to determine the area that may be impacted. The potential gas leak scenarios modelled ranged from a hole of 5 mm to a full-bore rupture (Cardno, 2013).

Due to its low molecular weight, any gas escape from the Offshore TGP is expected to rise rapidly through the water column to the sea surface where it will dissipate to atmosphere. For the purposes of the model, it was assumed that gas will rise from the seabed as bubbles and reach the sea surface in an area represented by a circle with a radius dependent on the water depth and the rate of leakage. With this initial source on the surface, standard atmospheric dispersion was used to compute the gas concentration in the atmosphere as a function of the distance downwind (Cardno, 2013).

Results of the modelling indicated that:

- Concentration of gas in the plume above the sea surface will drop rapidly to below the Lower Explosive Limit (LEL) within 5 km of the source
- Sea level gas concentrations are very much lower and due to the plume rise, are well below the required limit beyond about 100 m from the source

The environmental impacts of a gas leak would largely be due to its physical presence as it passes through the water column and into the atmosphere. Some of this gas may dissolve in the water column but is not generally considered harmful to aquatic organisms, is inherently biodegradable and potential to bioaccumulate is low (ExxonMobil, 2024). The main potential impacts are only likely to occur from the extreme cases of explosion, flammability or asphyxiation where it may accumulate in sufficient quantities. The open environment of the Offshore TGP is extremely unlikely to lead to this condition.

Potential exposure of marine fauna to gas hydrocarbons from a subsea pipeline rupture would require the coincident occurrence of fauna, such as marine mammals or birds, within the area of a recent leak.

In the open water offshore environment, the nearest land mass is located 10 km from the Offshore TGP and is unlikely to be impacted by gas escape from a subsea pipeline rupture.

For a gas leak in a nearshore environment, adverse effects could involve potential hazards associated with concentration of gas in air near the LEL, however atmospheric conditions prevailing at the time, and presence of ignition sources, will determine if there is any impact to the environment.

2.2.2.2 Hydrocarbon Spills

The TGP is licensed to carry dry natural gas only (i.e. it contains no liquid hydrocarbons or contaminating compounds) and, therefore, a leak from the Offshore TGP, regardless of size, is not considered a credible source of liquid hydrocarbon spills. As such, maintenance and inspection activities undertaken by third party vessels as part of Offshore TGP operations are deemed the only credible source of liquid hydrocarbon spills.

The types of hydrocarbons used during inspection and maintenance activities include:

- Hydraulic fluids used within inspection equipment (ROVs / AUVs)
- Fuel used to power inspection and maintenance vessels

Spills contained within the confines of the vessel are dealt with under the vessel Shipboard Oil Pollution Emergency Plan (SOPEP) and so are not discussed further within this document.

As no operational chemicals are required on the vessels and no refuelling shall occur at sea, the most credible sources of a hydrocarbon spill were identified as:

- Spills or leaks of hydraulic oil from the ROV / AUV
- Breach of a fuel tank on the survey vessel either resulting from a collision or grounding (for example during extreme weather events)

2.2.2.2.1. Hydraulic Oil Spill

Due to the size of the equipment used, the maximum volume of any potential spill of hydraulic oil from ROVs / AUVs will be 100 L.

Hydraulic oils utilised in the ROVs/AUVs are environmentally friendly, low ecotoxicity oils, which will breakdown rapidly and pose minimal risk to the marine environment. In addition, ROVs / AUVs are generally only utilized in open sea environments where a spill of this magnitude is likely to quickly disperse. Refer to Section 6.9 for more information on the control measures.

2.2.2.2.2. Fuel Spill

Marine Diesel Oil (MDO), or Marine Gas Oil (MGO), fuel will be used to power survey vessels. This may be procured from a range of suppliers.

Diesel oils are generally considered to be low viscosity, non-persistent oils, which are readily degraded by naturally occurring microbes. Diesel oils are considered to have a higher aquatic toxicity in comparison to many other crude oils due to the types of hydrocarbons present and their bioavailability. They also have a high potential to bio-accumulate in organisms.

MDO is a medium-grade oil (classified as a Group II oil) used in the maritime industry. It has a low density, a low pour point and a low dynamic viscosity (Table 2-4**Error! Reference source not found.**), indicating that this oil will spread quickly when spilled at sea and thin out to low thicknesses, increasing the rate of evaporation.

Due to its chemical composition, approximately 40% will generally evaporate within the first day, with the remaining volatiles evaporating over 3-4 days depending upon the prevailing conditions. Diesel shows a strong tendency to entrain into the upper water column in the presence of moderate winds and breaking waves (>12 knots) but floats to the surface when conditions are calm, which delays the evaporation process. Table 2-5 shows the boiling point ranges for the diesel used in the ADIOS II spill modelling.

Table 2-4: Physical Characteristics of MDO

Parameter	Characteristic
Density (kg/m^3)	829 @ 15^{o}C
API	37.6
Dynamic viscosity (cP)	4.0 @ 25^{o}C
Pour point (^{o}C)	-14
Oil category	Group II
Oil persistence classification	Light-persistent oil

Table 2-5: Boiling Point Ranges of MDO

Characteristic	Volatiles (%)	Semi-volatiles (%)	Low volatiles (%)	Residual (%)
Boiling Point (^{o}C)	<180	180 - 265	265 - 380	>380
MDO	6.0	34.6	54.4	5
	Non-persistent			Persistent

The environmental impact associated with an MDO spill is likely to be less severe than that of Marine Fuel Oil (and MGO less again) due to the lower molecular weight of the hydrocarbon fractions and lower viscosity, this makes them readily disperse in the conditions experienced across the Bass

Strait, compared with low wind and sheltered waterbodies where the diesel slick may be more persistent (NOAA, 2023).

The environmental impacts of a hydrocarbon spill are largely due to the toxicity of the fuel (generally due to the aromatic components) and its physical persistence as layer or emulsion. For a fuel spill in an offshore environment, adverse effects would primarily involve acute toxicity related to aromatic hydrocarbon exposure in "fresh" fuel. Potential exposure of marine fauna to spilled hydrocarbons would require the coincident occurrence of fauna, such as marine mammals or birds, within the area of a recent spill. As such, the potential for damage would be limited to the few hours immediately following a spill before the aromatic components evaporate. In the high energy environment of Bass Strait, aromatic compounds will evaporate and disperse quickly.

For a fuel spill in a nearshore environment, adverse effects could involve acute toxicity related to aromatic hydrocarbon exposure in "fresh" fuel as well as the potential physical effects associated with "oiling" of habitat or organisms (a detailed evaluation of potential impacts is provided in Section 6.9.2).

2.2.2.2.3. Fuel Spill Modelling Results

The maximum credible fuel spill volume associated with Offshore TGP inspection and maintenance activities is 40,000 L, being the maximum capacity of one fuel tank of the largest expected vessel (AMSA, 2012). Oil spill trajectory modelling with a spill volume of 40,000 L of fuel oil was undertaken to determine the areas that could potentially be impacted by a spill of fuel oil.

The key assumptions and methodologies of the oil spill modelling for the TGP Offshore OPEP are summarised as follows:

- It was assumed that spilled material will move downwind at a rate of 3% of the wind speed (Det Norske Veritas (DNV), 2011) in addition to movement by tidal currents. This provided the movement of the centroid of a spill
- It was assumed that the source of the spill will be a vessel that could be working at any point along the length of the Offshore TGP with equal likelihood
- A Monte Carlo simulation was run for 100,000 events to plot contours of frequency of occurrence of spilled material at intervals of 12, 24, 36 and 48 hours after the spill event
- Wind data was derived from the Bureau of Meteorology operational model system, and tidal currents extracted at ten locations equally spaced along the pipeline from a calibrated numerical model of the tidal currents in Bass Strait
- Does not take into account the weathering and fate of the spilled oil

Figure 2-8 shows the distribution of the centroids for all runs.

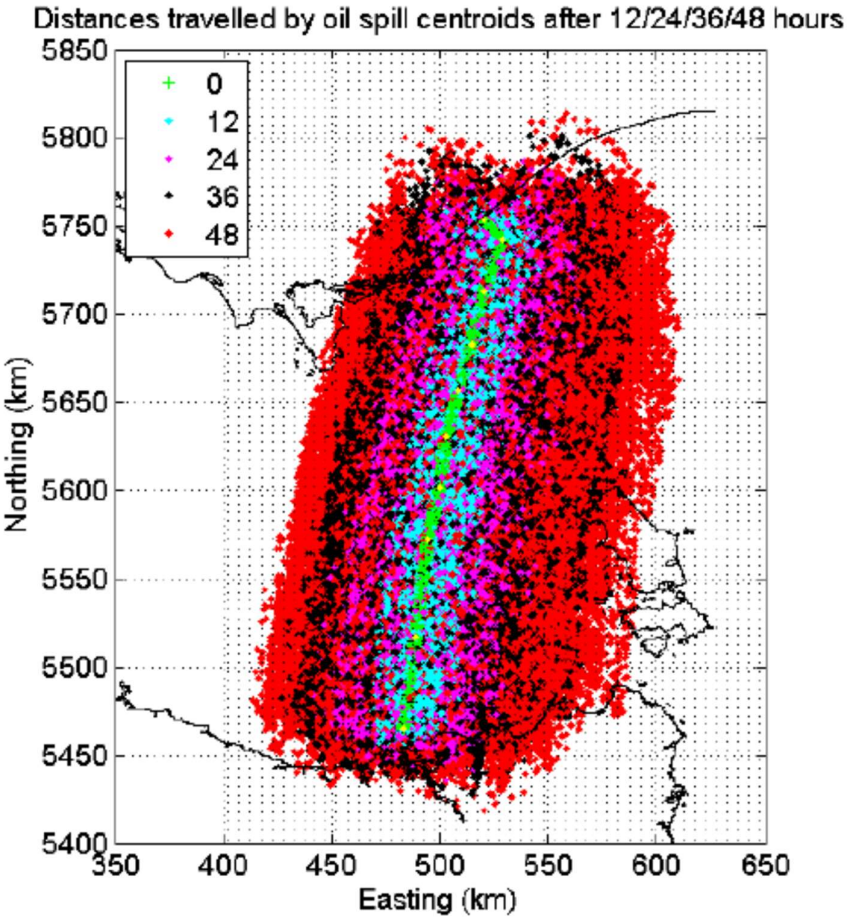


Figure 2-8: Results of 100,000 Fuel Oil Spill Simulations

Figure 2-9 show the percentage probability of the centroid occurring in a 5 km grid on the assumption that a hydrocarbon spill occurs.

Fuel tank breach through accidents because of extreme weather events or collision between vessels is considered unlikely due to the control measures in place (Section 6.9.4). Furthermore, with respect to accidents during extreme weather events, the maximum distance that a vessel working near the Offshore TGP could be from a safe mainland harbour is 160 km. Consequently, if weather conditions are predicted to deteriorate, vessels will terminate activities and seek refuge.

Since the likelihood of a spill is very low and field maintenance and subsea inspection activities only occur every 2 years, multiplying this by the low occurrence probability results in an extremely low likelihood of a spill occurring at any given location (Cardno, 2013).

Based on the trajectory modelling results, the zone of potential impact (ZPI) has been conservatively defined as the area within the 0.000 contour (representing a probability of less than 0.0005%) after 48 hours, refer **Error! Reference source not found.** for the 48-hour model.

The spill of 40 m^3 was also modelled using ADIOS II (Automated Data Inquiry for Oil Spills) to predict how the diesel oil would weather (undergo physical and chemical changes) in the marine environment defined in Table 2-6, to confirm the definition of the ZPI. It was predicted that the surface life for an instantaneous diesel spill of 40 m^3 from a worst-case vessel collision incident is estimated at 12 hours (Figure 2-9).

Table 2-6: Average characteristics for Bass Strait (Winter)

	Current	Wind	Water Temperature	Salinity
Details	0.3 m/s	8 m/s	12°C	35 ppt
Direction	East	West	-	-

Due to rapid and high levels of evaporation when spilt at sea, the environmental effects of diesel spills are generally short-term. When spilled at sea, diesel will spread and thin out quickly, with up to 37 m^3 (over 90%) predicted to be lost by evaporation and dispersion within just 6 hours, depending upon sea temperature and winds (Figure 2-9**Error! Reference source not found.**). Diesel oils also have low viscosities and can result in hydrocarbons becoming physically dispersed as fine droplets into the water column when winds exceed 10 knots. Droplets of diesel oil that are naturally dispersed will be sub-surface (3 – 10m depending on the conditions) and will move solely with the currents while dispersed in the water, while on the surface are affected by both wind and currents.

The definition of the ZPI as shown in Figure 2-10 is considered conservative given that the ADIOS modelling indicates that the surface life for a 40 m^3 diesel spill is approximately 12 hours. The area potentially exposed to surface oil within the 0.000 contour after 12 hours is considerably smaller with minimal shoreline contact. The ADIOS modelling confirms that the trajectory modelling provides a relevant and conservative basis for the definition of the ZPI and identification of receptors in the environment (see Section 6.9.2).

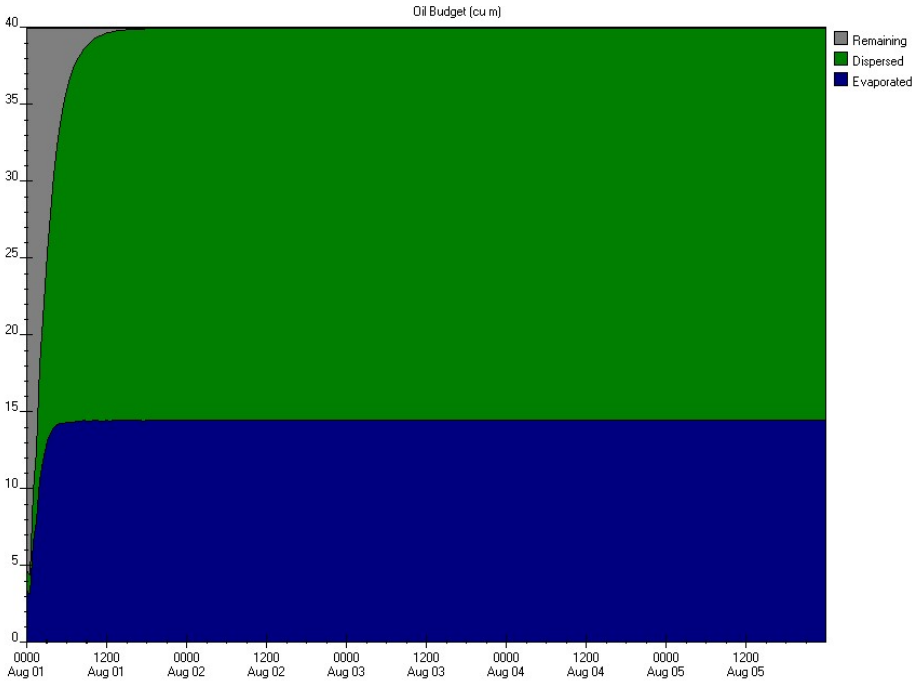


Figure 2-9: Percentage % of Oil Remaining from a 40m^3 Diesel Spill

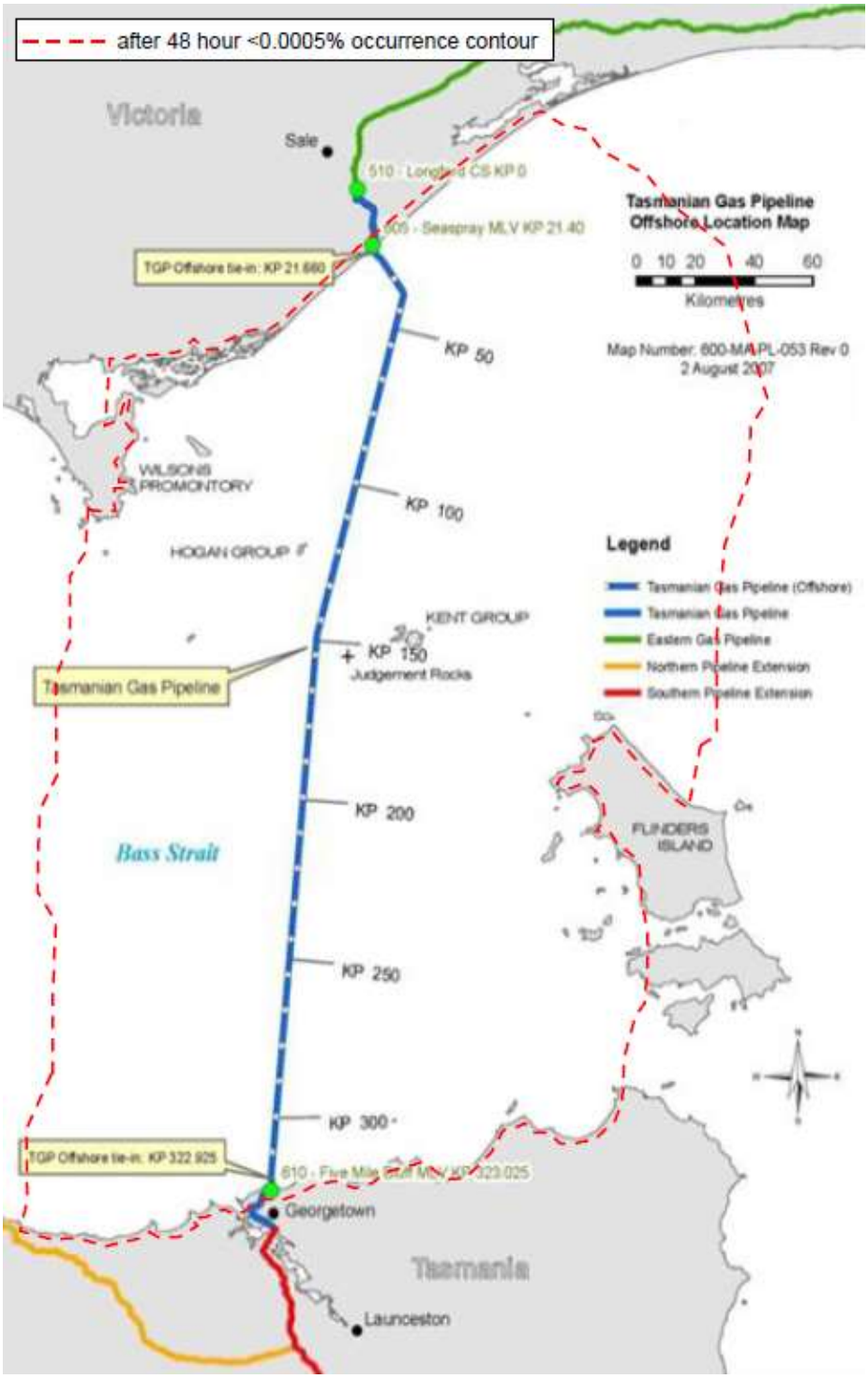


Figure 2-10: Zone of Potential Impact (ZPI) defined by 0.000 contour after 48 hours

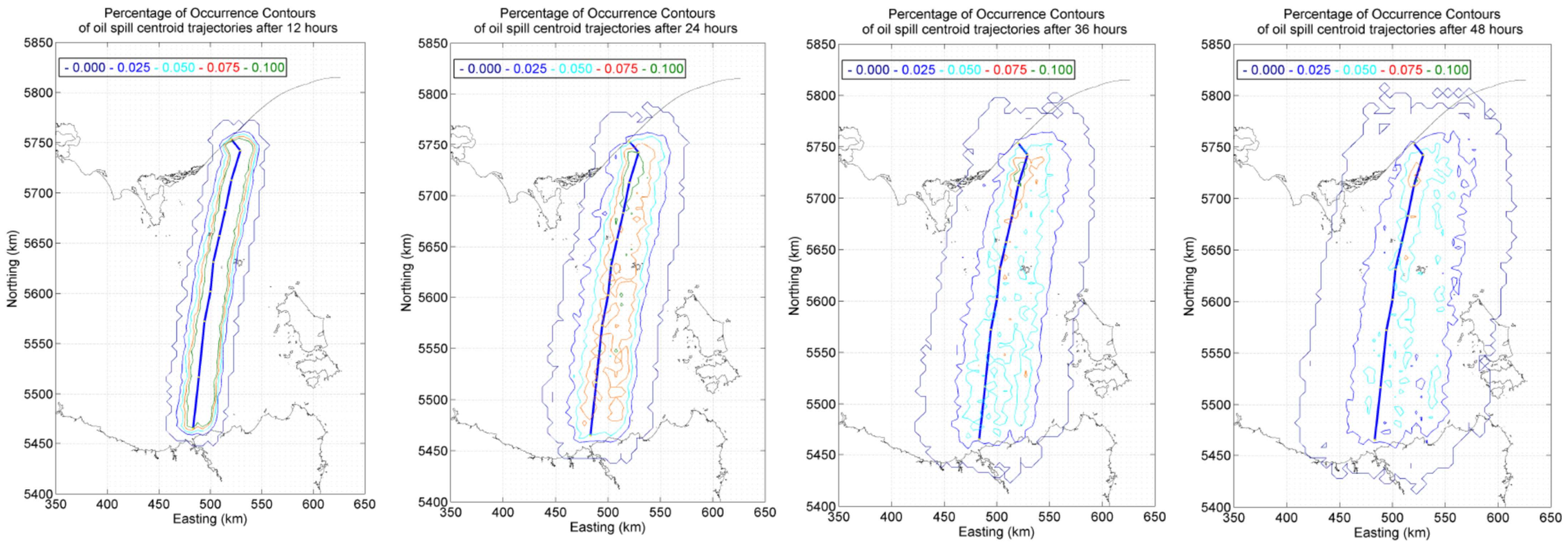


Figure 2-11: Percentage of Occurrence Contours of Spill Centroid Trajectories after 12, 24, 36 & 48 hours

3. DESCRIPTION OF THE ENVIRONMENT

3.1 Environmental Features

TGP's zone of potential impact (ZPI) is defined as the area that could potentially be impacted from a worst-case fuel spill, resulting from an inspection or maintenance vessel as described in Section 2.2.2.2. The main features of the environment traversed by the pipeline, including the ZPI, are2.2.2.2 described below. Appendix D contains the EPBC Act Protected Matters Report for the ZPI which informed this description of environment.

From the consultation with relevant stakeholders (refer to summary in Section 10.6), no other environmental features, sites or information to inform an extended definition of environmentally significant areas were raised or identified beyond those mentioned in the following sections detailing the environment.

Environmental features of the pipeline route are comprehensively described in reports prepared prior to the construction of the pipeline for Duke Energy International (DEI). These reports were prepared to examine the potential environmental effects of the construction and operation of the pipeline, as well as proposed management measures, and were used to assist in determining the final pipeline route so that environmental impacts would be minimised. They include:

- DEI Tasmania Holdings Pty Ltd. 2001. Tasmania Natural Gas Project – Stage 1 Longford, Victoria to Bell Bay Power Station, Tasmania - Public Environment Report. Prepared by Hydro Tasmania. Volumes 1 to 10
- DEI Tasmania Holdings Pty Ltd. 2001. Tasmania Natural Gas Project – Stage 2 Bell Bay Power Station to Port Latta – Development Proposal and Environmental Management Plan. Prepared by Hydro Tasmania. Volumes 1 to 3
- DEI Tasmania Holdings Pty Ltd. Tasmania Natural Gas Project – Stage 3 Springfield to Boyer and Claremont. Volumes 1 to 3

The original pipeline reports concluded that operational activities are likely to have only minimal impact on the environment due to the location of the pipeline on the seabed and the unobtrusive nature and low frequency of inspection and maintenance activities (refer to Section 2.2). Further details on the environmental impacts identified are provided in Section 6.

3.1.1 Physical Environment

Bass Strait was formed approximately 12,000 years ago by the inundation of a land bridge that had once connected Tasmania and Victoria (National Museum Australia, 2022). It is a comparatively shallow sea (depths of up to 80 m) with the western and eastern entrances defined by the continental shelf that extends between King Island and Cape Otway in the west and between Flinders Island and Wilsons Promontory in the east. Beyond the continental shelf the seabed declines sharply to depths over 3,000 m.

The seabed along the direct route between Seaspray and Five Mile Bluff is reasonably featureless (refer to Figure 3-1). Near the pipeline the seabed consists primarily of fine and medium grained quartzose sands with a mean grain size of 0.12 to 0.25 mm (refer to Figure 3-2 for a sea floor image). Coarse sands and gravels are present to a lesser extent in the proximity of the Victorian shore crossing (Hydro Tasmania, 2001). Seabed current manipulations have formed some sand waves.

Circulation, or mixing of water, in Bass Strait is mainly dependent on tidal currents, but wind-driven currents, coastal trapped waves, barometric pressure-induced currents, density-driven flows and ocean-scale circulation patterns also contribute. The current speeds ultimately depend on the proximity to the eastern entrance of Bass Strait, with lower current speeds expected to the west. Current speeds between 0.30 m/s and 0.79 m/s occur during 5-year return period storms, while current speeds of 0.41 m/s to 1.03 m/s occur during 100-year return period storms (Hydro Tasmania, 2001).

The average annual rainfall is 716.7 mm (recorded at Deal Island in the Kent Group), with the highest rainfall and most rainy days occurring from May through to August. Winds are typically strongest during spring and weakest during the winter: 50-60% of winds are under 10 knots, with 30-37% of

winds occurring between 10 and 20 knots. Strongest winds (greater than 20 knots) mainly originate from the west. Average temperatures range from 8.2°C in winter to 20.5°C in summer (Australian Government Bureau of Meteorology, 2024)

Protection of the region from westerly and south-westerly swells is provided by Wilsons Promontory, Tasmania and King Island. However, during 5 and 100 year storm events, wave heights may range from 4.5 m to 5.5 m and 6.8 m to 7.5 m, respectively. Although the Offshore TGP was originally laid on the surface of the seabed, strong current and wave activity may result in shifting sands and periodical burial of pipeline sections. Seismic activity along the pipeline route was considered during the design phase of the pipeline and was confirmed to be of minimal risk.

Referring to the EPBC Act Protected Matters Report (see Appendix MNES list), the physical environment didn't include any matters of national environment significance (MNES) as no World Heritage Properties or National Heritage Places were identified within the area nominated (using the ZPI as the reference area when running the report). Within the report, there were other physical environmental features within the matters protected by the EPBC Act identified. These are:

- Commonwealth areas listed include primarily defence lands: AFFSE – Scottsdale, Devenport Training Depot, Dutson Bombing Range, East Sale Surveillance Radar, RRAF East Sale, and other unknown Commonwealth lands.
- Commonwealth Heritage Places include Goose Island Lighthouse (TAS), Mersey Bluff Lighthouse (TAS), Traralgon Post Office (VIC) and Wilsons Promontory Lighthouse (VIC).

In the context of this Offshore Environment Plan, there is no direct impact to these areas identified in the activities as the locations are onshore. The main consideration is to ensure where an activity is planned and consultation is required, that the Department of Defence is considered as a potential relevant person. More information on wetlands, shipwrecks, Commonwealth marine areas, Parks and other MNES are considered in Section 3.2.

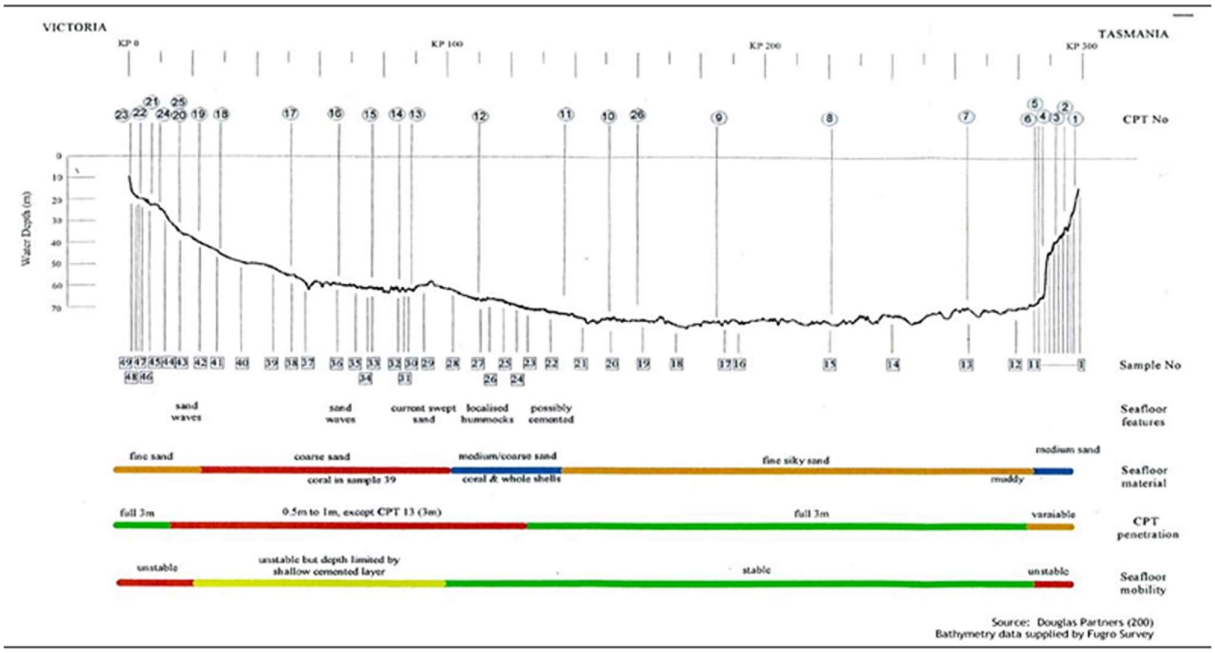


Figure 3-1: Bass Strait Sea Floor Features

Figure 3-2: TGP subsea pipeline and seabed (2008)

The Offshore TGP route does not lie within any significant terrestrial features, with the closest landform 9 km away, but does pass within the vicinity of several small islands or island groups (as shown in Figure 2-1). These include (in order from north to south):

- **The Hogan Island Group** - straddles the border between Victoria and Tasmania and is located about 10 km to the west of the Offshore TGP and about 45 km east of Wilsons Promontory, Victoria. It is made up of one main island: Hogan Island and several islets including Boundary Islet, East Islet, Long Islet, Twin Islet, Round Islet and Seal Rock. Boundary Islet is the land boundary between Victoria and Tasmania
- **The Curtis Island Group** - lying about 25 km west of the pipeline and made up of Curtis Island, Cone Island, Sugarloaf Rock and Devils Tower
- **The Kent Group** - an archipelago of six islands and offshore rocks situated approximately halfway between Wilsons Promontory and the northern end of Flinders Island. The main groups of islands (incorporating Deal, Dover and Erith Islands) lie about 23 km east of the Offshore TGP. Two minor islets, Northeast and Southwest are within the vicinity of this group, however, Judgement Rocks, a small granite island with an area of 0.39 hectares (ha) lies to the south-west of the main islands of the Kent Group and about 10 km east of the pipeline
- **The Bass Pyramid Group** - made up of Craggy Island, Wright Rock and Bass Pyramid and lying between Flinders Island and the Kent Group. Bass Pyramid is a small, steep-sided granite island with an area of <1 ha and lies about 20 km east of the pipeline
- **Tenth Island** - part of the Waterhouse Island Group off the northern coast of Tasmania, lies approximately 9 km east of the pipeline

All islands, apart from Boundary Islet within the Hogan Island Group, are under the jurisdiction of Tasmania and are located at least 8 km from the Offshore TGP.

3.1.2 Biological Environment

The biological environment section considers the flora, fauna, and species identified within the EPBC as vulnerable or endangered. The Bass Strait is an area of relative high faunal diversity and supports a number of species of high conservation and commercial value. This is partly due to its unique biogeographical location at the convergence of three marine biogeographical regions: the Peronian (New South Wales), Maugean (Tasmania) and Flindersian (southern Australia) (Edgar, 1984).

There are many different temperate ocean habitat types represented in Bass Strait, from open beaches and rocky reefs (both exposed and sheltered) to offshore islands, soft bottom habitats (sand, mud and seagrass) and open sea.

The main marine species and communities present within, and immediately surrounding, the Offshore TGP route primarily comprises:

- **Benthic infauna and epifauna** (fauna living within and on the seabed) - Include brittlestars, urchins, sponges, lamp shells, crabs, sea squirts, polychaete worms, bivalves and molluscs. Bass Strait as a whole has a relatively heterogeneous benthic habitat and has one of the highest biodiversities of benthic fauna in the world. The substrate along the pipeline route itself, however, represents a largely homogenous habitat type and is not significantly diverse from other regions within Bass Strait (Hydro Tasmania 2001). While a number of species that occur in south-east Australian waters are endemic to the area, most of these species are widely distributed throughout the region (Phillips et al, 1984). Any impacts will be localised and unique faunal elements are unlikely to be disturbed
- **Birds** - Include resident seabirds and migratory species crossing Bass Strait. Large breeding seabird colonies exist around the Kent Group, particularly on Deal and Erith Islands and two small islets known as North East and South West Islands. Species include Common Diving Petrels, Short-tailed Shearwaters, Little Penguins, Pacific Gulls, Sooty Oystercatchers and cormorants (Kent Management Plan, 2005). Species listed under the EPBC Act also breed within islands of the Kent Group, including the Vulnerable Fairy Prion (*Pachyptila turtur subantarctica*) and Cape Barren Goose (*Cereopsis novaehollandiae grisea*).

  A foraging BIA has been identified for a number of albatross, petrel and shearwater species: Antipodean, Buller's, Shy, Black-browed, Campbell, Wandering and Indian Yellow-nosed Albatross, Common Diving and White-faced Storm Petrels and Short-tailed Shearwater, in Bass Strait and along the edge of the continental shelf (DoEE 2015a). The Australian populations of both the Common Diving and White-faced Storm Petrels account for a significant proportion of the global populations and breeding BIAs have been identified around the Kent Group and Furneaux Group respectively. Bass Strait has the largest proportion of Little Penguin breeding colonies in Australia at approximately 60% and foraging and breeding BIAs have been identified for the Little Penguin around both the Kent and Furneaux Island groups (DoEE 2015a).

  Up to 40 threatened species listed under the EPBC Act may occur, or are likely to occur, within the ZPI throughout the year (Appendix D). Many of these species are protected under international agreements (e.g. CAMBA, JAMBA and ROKAMBA – refer to Section 4.1) and may be observed passing through Bass Strait on their way to or from mainland Victoria and Tasmania. This includes land-based species such as the endangered Swift Parrot (*Lathamus discolour*), which migrates from southern Tasmania to Victoria every winter.
- **Cetaceans** - About 15 species of whales and dolphins have been observed in Bass Strait, although only a minority are resident or have been observed frequently. The most freely seen are the Common (*Delphinus delphis*) and Bottle-nosed (*Tursiops truncatus*) dolphins. Several whales also visit the region during annual migrations to and from their breeding grounds (mostly during the winter months). These include the Blue Whale (*Balaenoptera musculus*) and Southern-right Whale (*Eubalaena australis*), which are listed as Endangered under the EPBC Act, and the Humpback Whale (*Megaptera novaeangliae*) is listed as Vulnerable (Appendix MNES list). All cetaceans are susceptible to direct disturbance from shipping operations, including seismic or acoustic surveys, collision with large vessels, and pollution from plastics, oil spills and dumping of industrial wastes which can lead to bioaccumulation of toxins in cetacean body tissues.

  Sightings of Blue Whales in Bass Strait a reasonably rare (Bannister *et al*., 1996) however a BIA for the Pygmy Blue Whale for distribution and possible foraging (DCCEEW, 2015) has been identified in Bass Strait extending west to South Australia waters to the Bonney Upwelling, a known Pygmy Blue Whale feeding aggregation area.

  Southern-right Whales migrate west along the southern Australian coastline to calving aggregation areas in western Victoria waters. BIAs for migration and distribution have been identified in Victorian coastal waters and in Bass Strait respectively shown in Table 3-1.

The main migration route of the Humpback Whale is along the east coast of Australia however some whales may migrate through Bass Strait.

- **Macroalgae** - A detailed survey of the north-eastern Bass Strait Islands identified up to 40 species of macroalgae surrounding the Kent and Hogan Groups, an indicator of the nutrient rich waters and diversity of habitats available (Edgar, 1984)
- **One fish species** potentially occurring within the ZPI was listed as vulnerable under the EPBC Act (Appendix MNES list): the Australian Grayling (*Prototroctes maraena*). The Australian Grayling is a migratory species that inhabits estuarine waters and coastal seas as larvae/juveniles, but spends most of its life in rivers and streams as an adult (DCCEEW, 2008)
- **Pelagic and demersal species** (ocean dwelling species and those species that live close to the seafloor) - A number of important commercial fish and invertebrate species, with a relatively high diversity in fish species, have been recorded around the Kent Group (DPIWE, 2000). It is estimated that over 500 species of fish, including approximately 50 species of elasmobranches (sharks and rays), are found in Bass Strait (LCC, 1993). There are no endemic species to the area, with most species being widely dispersed throughout the region
- **Pinnipeds** - Pinnipeds, principally the Australian Fur Seal (Arctocephalus pusillus), frequent Bass Strait (Appendix MNES list). Many of the islands in Bass Strait are important breeding or haul-out sites for the Australian Fur Seal, there are 10 established breeding colonies of the Australian Fur-seal, which are restricted to islands in the Bass Strait; six occurring off the coast of Victoria and four off the coast of Tasmania (DCCEEW, 2024), these are including large breeding colonies at Judgement Rocks and Tenth Island. Australian Fur Seals generally breed around November to December with the majority of pups suckled for about 8 months (DoE, 2015).
- **Plankton** - There have been few studies of plankton populations in the Bass Strait region, however a key study by Watson and Chaloupka (1982) recorded over 170 species of zooplankton during sampling of eastern Bass Strait waters, half of which were marine copepods. These are a key biomass component of the ocean food chain
- **Reptiles** - There are several reptile species that are occasional vagrants to the eastern part of Bass Strait, including three species of marine turtle: the Loggerhead (*Caretta caretta*) and the Leatherback (*Dermochelys coriacea*), both of which are listed as Endangered and the Green Turtle which is listed as Vulnerable under the EPBC Act (Appendix MNES list).
- **Two migratory species** which may be found in Bass Strait are listed as vulnerable under the EPBC Act (Appendix MNES list): the Great White Shark (*Carcharodon carcharias*) and the Whale Shark (*Rhincodon typus*). Ninety Mile Beach provides important feeding grounds for juvenile Great White Sharks, effectively representing nursery habitat. A Biologically Important Area (BIA) for breeding (nursery ground) has been established in the coastal region extending east from Wilsons Promontory. The Great White Shark moves seasonally along the Australian coast moving north in Autumn and Winter along the east coast and returning to southern Australian waters by early Summer. Sharks are known to congregate around seal colonies within the Kent and Hogan Group looking for food and these waters have been established as a foraging BIA for the Great White Shark. Whale Sharks generally occur in warmer oceanic waters off northern Australia and are not likely to be found in Bass Strait

It is also important to understand the community of introduced pests that are present in the area:

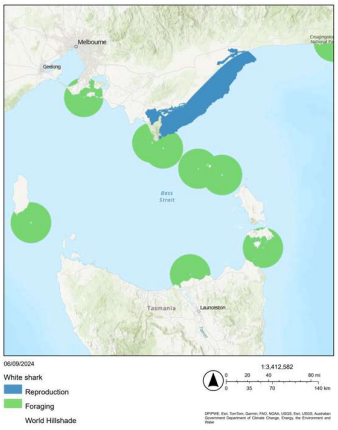
- **Introduced Pests** – In the South-East marine region 115 species have been introduced and an additional 84 have been identified as cryptogenic (Parks Australia, 2002). It is likely that many of these species have been introduced by ballast water discharged from international shipping or attached to the many private and commercial vessels traversing Bass Strait. Key marine pests observed in northern Tasmania, Bass Strait and southern Victorian waters include the northern Pacific Seastar (*Asterias amurensi*), European Green Crab (*Carcinus maenas*), Asian Date Mussel (*Musculista senhousia*), European Clam (*Corbula gibba*), European Fan Worm (*Sabella spallanzanii*), New Zealand Screw Shell (*Maoricolpus roseus*), Japanese Kelp (*Undaria pinnatifida*) and Long-spined Sea Urchin (*Centrostephanus rodgersii*). All marine pests are considered a threat to the marine environment as they compete directly with native species for habitat and food.

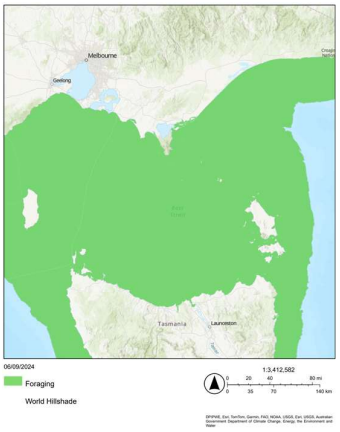
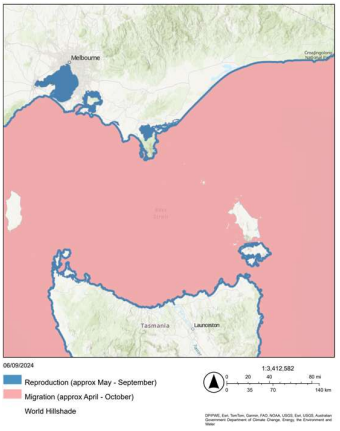
3.1.2.1 Threatened and Migratory Species

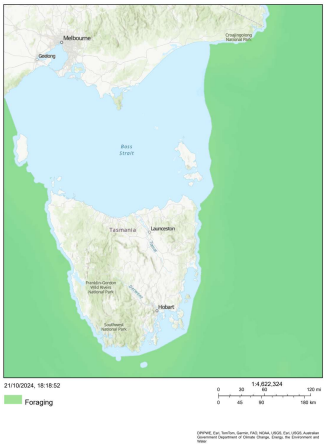
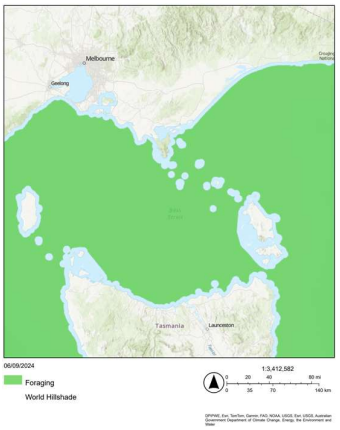
For the majority of the species identified in Table 3-1, either conservation advice or a recovery plan have been identified by the DCCEEW, these have been found and referenced through the Species Profile and Threats Database (SPRAT) (DCCEEW, 2024). These can also be referenced or located by following links directly from the MNES report (Appendix D) for each species, community, or site.

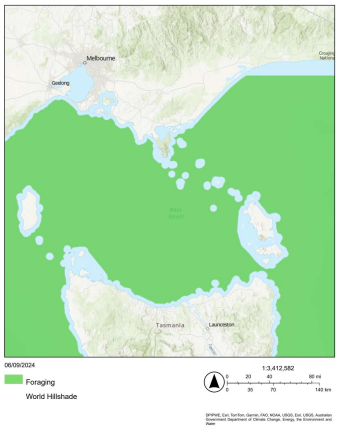
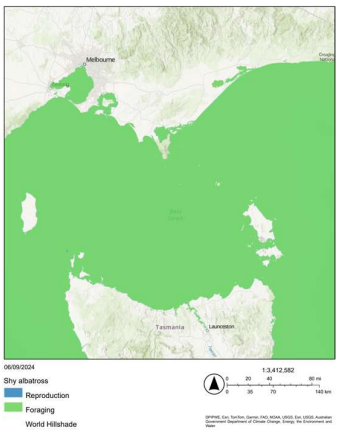
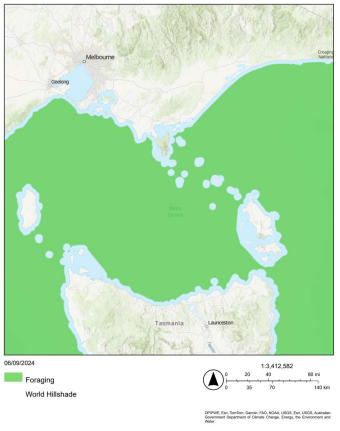
Additionally, there are broader recovery plans and advice that can be considered when identifying threats and actions to support conservation, such as the *Wildlife Conservation Plan for Seabirds (2022)*, *Lord Howe Island Biodiversity Management Plan (2008)*, and *National Recovery Plan for albatrosses and petrels (2022)* among others (DCCEEW, 2024). These identify similar species or ecological communities that can be covered under one plan and some are considered in the table below as well.

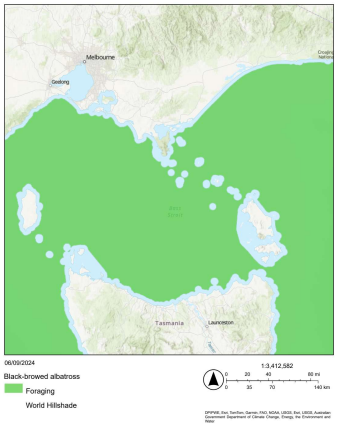
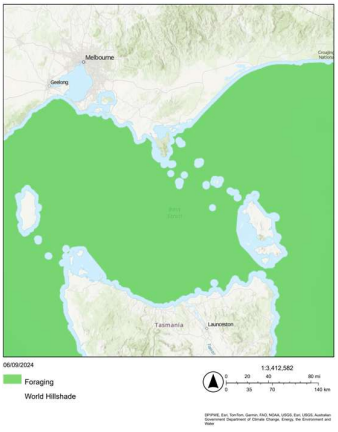
Table 3-1: List of Threatened and Migratory Species within the TGP Operating Area (OA) or ZPI

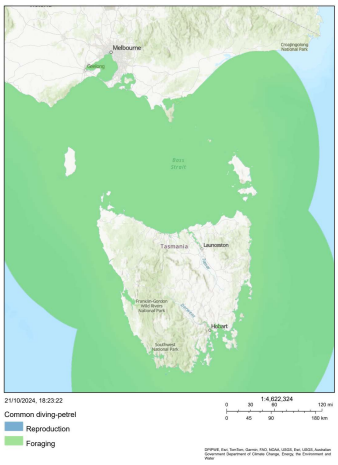
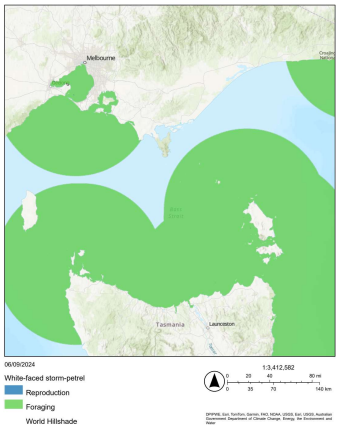
Common Name	Conservation Advice or Recovery Plan	Key Threats (relevant to petroleum activities)	BIA		
			OA	ZPI	Map
Sharks					
Great White Shark	Recovery Plan for the White Shark	None identified	f, b	f, b	
Whale Shark	Approved Conservation Advice for Whale Shark	Vessel strike Habitat destruction from mineral exploration, production and transportation Marine debris	-	-	
Cetaceans					

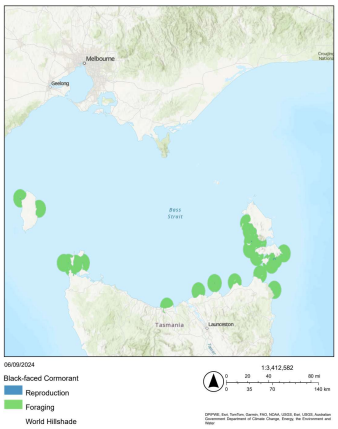
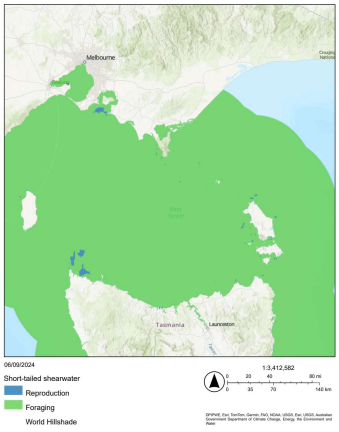
Common Name	Conservation Advice or Recovery Plan	Key Threats (relevant to petroleum activities)	BIA		
			OA	ZPI	Map
Pygmy Blue Whale	Conservation Management Plan for the Blue Whale, 2015-2025	Noise interference Habitat modification from marine debris or chemical discharge Vessel strike	f	f	
Southern-right Whale	Conservation Management Plan for the Southern-right Whale, 2011-2021 and National Recovery Plan for the Southern Right Whale (Eubalaena australis) 2024	Noise interference Pollution Vessel strike	m	d, m	
	National Recovery Plan for the Southern Right Whale, 2024	https://www.dcceew.gov.au/sites/default/files/documents/national-recovery-plan-southern-right-whale.pdf			
Humpback Whale	Approved Conservation Advice for Humpback Whale	Noise interference Habitat modification Vessel strike Entanglement	-	-	
Fin Whale	Approved Conservation Advice for Fin Whale	Noise interference Habitat modification Vessel strike Entanglement	-	-	
Birds					

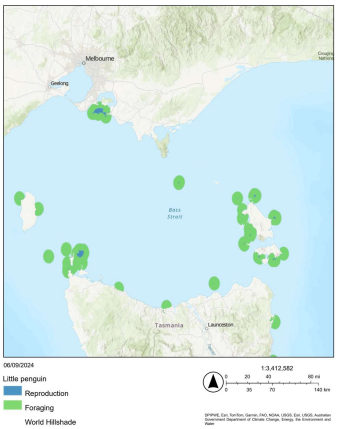
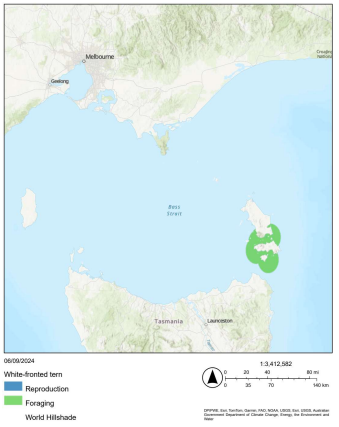
Common Name	Conservation Advice or Recovery Plan	Key Threats (relevant to petroleum activities)	BIA		
			OA	ZPI	Map
Antipodean Albatross	National Recovery Plan for Albatrosses and Petrels (2022)	Human disturbance, climate change and marine pollution, including marine debris.	-	f	
Southern Royal Albatross	National Recovery Plan for Albatrosses and Petrels (2022)	Human disturbance, climate change and marine pollution, including marine debris.	-	-	
Wandering Albatross	National Recovery Plan for Albatrosses and Petrels (2022)	Human disturbance, climate change and marine pollution, including marine debris.	f	f	
Gibson's Albatross	National Recovery Plan for Albatrosses and Petrels (2022)	Human disturbance, climate change and marine pollution, including marine debris.	f	f	N/A
Northern Royal Albatross	National Recovery Plan for Albatrosses and Petrels (2022)	Human disturbance, climate change and marine pollution, including marine debris.	-	-	
Sooty Albatross	National Recovery Plan for Albatrosses and Petrels (2022)	Human disturbance, climate change and marine pollution, including marine debris.	-	-	

Common Name	Conservation Advice or Recovery Plan	Key Threats (relevant to petroleum activities)	BIA		
			OA	ZPI	Map
Buller's Albatross	National Recovery Plan for Albatrosses and Petrels (2022)	Human disturbance, climate change and marine pollution, including marine debris.	f	f	
Shy Albatross	National Recovery Plan for Albatrosses and Petrels (2022)	Human disturbance, climate change and marine pollution, including marine debris.	f	f	
Chatham Albatross	National Recovery Plan for Albatrosses and Petrels (2022)	Human disturbance, climate change and marine pollution, including marine debris.	-	-	
Campbell Albatross	National Recovery Plan for Albatrosses and Petrels (2022)	Human disturbance, climate change and marine pollution, including marine debris.	f	f	

Common Name	Conservation Advice or Recovery Plan	Key Threats (relevant to petroleum activities)	BIA		
			OA	ZPI	Map
Black-browed Albatross	National Recovery Plan for Albatrosses and Petrels (2022)	Human disturbance, climate change and marine pollution, including marine debris.	f	f	
Salvin's Albatross	National Recovery Plan for Albatrosses and Petrels (2022)	Human disturbance, climate change and marine pollution, including marine debris.	-	-	
White-capped Albatross	National Recovery Plan for Albatrosses and Petrels (2022)	Human disturbance, climate change and marine pollution, including marine debris.	-	-	
Grey-headed Albatross	National Recovery Plan for Albatrosses and Petrels (2022)	Human disturbance, climate change and marine pollution, including marine debris.	-	-	
Southern Giant Petrel	National Recovery Plan for Albatrosses and Petrels (2022)	Human disturbance, climate change and marine pollution, including marine debris.	-	-	
Northern Giant Petrel	National Recovery Plan for Albatrosses and Petrels (2022)	Human disturbance, climate change and marine pollution, including marine debris.	-	-	
Indian Yellow-nosed Albatross	National Recovery Plan for Albatrosses and Petrels (2022)	Human disturbance, climate change and marine pollution, including marine debris.	f	f	

Common Name	Conservation Advice or Recovery Plan	Key Threats (relevant to petroleum activities)	BIA		
			OA	ZPI	Map
Common Diving Petrel	No approved Conservation Advice or Recovery Plan	-	f, b	f, b	
White-faced Storm Petrel White-bellied Storm-Petrel	Lord Howe Island Biodiversity Management Plan	None identified	f	f, b	
Blue Petrel	Approved Conservation Advice for *Halobaena caerulea* (Blue Petrel)	None identified	-	-	
Gould's Petrel	Gould's Petrel (*Pterodroma leucoptera leucoptera*) Recovery Plan	Oceanic oil spills	-	-	

Common Name	Conservation Advice or Recovery Plan	Key Threats (relevant to petroleum activities)	BIA		
			OA	ZPI	Map
Black-faced Cormorant	No approved Conservation Advice or Recovery Plan	-	f	f, b	
Greater Sand Plover	Approved Conservation Advice for Charadrius leschenaultii (greater sand plover)	Habitat loss and degradation from pollution	-	-	
Lesser Sand Plover	Approved Conservation Advice for *Charadrius mongolus* (Lesser Sand Plover)	Habitat loss and degradation from pollution	-	-	
Hooded Plover (eastern)	Approved Conservation Advice for *Thinornis rubricollis* (Hooded Plover, Eastern)	Oil spills Entanglements and ingestion of marine debris	-	-	
Curlew Sandpiper	Approved Conservation Advice for *Calidris ferruginea* (Curlew Sandpiper)	Habitat loss and degradation from pollution Environmental pollution	-	-	
Short-tailed Shearwater	No approved Conservation Advice or Recovery Plan	-	f, b	f, b	

Common Name	Conservation Advice or Recovery Plan	Key Threats (relevant to petroleum activities)	BIA		
			OA	ZPI	Map
Little penguin	No approved Conservation Advice or Recovery Plan	-	f, b	f, b	
Australian Fairy Tern	Approved Conservation Advice for *Sternula nereis nereis* (Fairy Tern)	Oil spills, particularly in Victoria, where the close proximity of oil facilities poses a risk of oil spills that may affect the species' breeding habitat	-	-	
White-fronted Tern	No approved Conservation Advice or Recovery Plan	-	-	f, b	
Tasmanian Wedge-tailed Eagle	Threatened Tasmanian Eagles Recover Plan, 2006-2010 (2006)	Oiling, entanglement, pollution	-	-	
Australasian Bittern	National Recovery Plan for the Australasian Bittern (Botaurus poiciloptilus) (2023)	Reduced water quality as a result of increasing salinity, siltation and pollution	-	-	
Red Knot	Approved Conservation Advice for *Calidris canutus* (Red Knot) (2024)	Habitat loss and degradation from environmental pollution or contamination impacts	-	-	
Great Knot	Approved Conservation Advice for *Calidris*	Habitat loss, disturbance, and pollution	-	-	

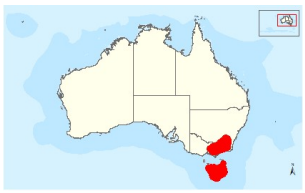
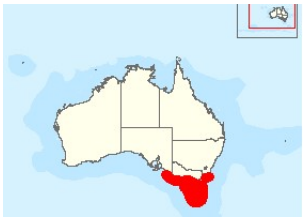
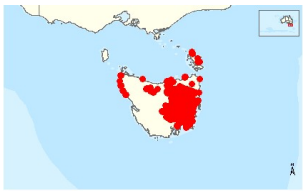
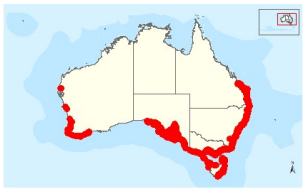
Common Name	Conservation Advice or Recovery Plan	Key Threats (relevant to petroleum activities)	BIA		
			OA	ZPI	Map
	tenuirostris (Great Knot) (2024)				
Red Knot, Great Knot, Bar-tailed Godwit, Greater Sand Plover	Wildlife conservation plan for migratory shorebirds (2015)	Habitat loss and degradation from environmental Pollution Pollution or contamination impacts	-	-	
Eastern Bristlebird	National Recovery Plan for Eastern Bristlebird (*Dasyornis brachypterus*) (2022)	None identified	-	-	
Swift Parrot	National Recovery Plan for the Swift Parrot Lathamus discolor (2024)	None identified	-	-	
Bar-tailed Godwit	Conservation Advice for Limosa lapponica baueri (Alaskan bar-tailed godwit) (2024)	Habitat loss and degradation from pollution	-	-	
Tasmanian Masked Owl	-	-	-	-	
Alaskan Bar-tailed Godwit	Conservation Advice for Limosa lapponica baueri (Alaskan bar-tailed godwit)(2024)	Habitat loss and degradation from pollution	-	-	
Black-tailed Godwit	Conservation Advice for Limosa limosa (black-tailed godwit) (2024)	Excessive industrial, and aquaculture discharges	-	-	
Orange-bellied Parrot	National Recovery Plan for the Orange-bellied Parrot (*Neophema chrysogaster*) (2016)	None identified	-	-	
Eastern Curlew	Approved Conservation Advice for Numenius madagascariensis (far eastern curlew)(2023)	Environmental pollution	-	-	
Fairy Prion (southern)	Approved Conservation Advice for *Pachyptila turtur subantartica* (Fairy Prion Southern)	None identified	-	-	

Common Name	Conservation Advice or Recovery Plan	Key Threats (relevant to petroleum activities)	BIA		
			OA	ZPI	Map
Australian Painted Snipe	Approved Conservation Advice for *Rostratula australis* (Australian Painted Snipe)	None identified	-	-	
Forty-spotted Pardalote	Conservation Advice Pardalotus quadraginatus forty-spotted pardalote (2016)	None Identified	-	-	
Regent Honeyeater	Conservation Advice Anthochaera phrygia regent honeyeater. Canberra: Department of the Environment (2015)	None Identified	-	-	
Tasmanian Azure Kingfisher	Approved Conservation Advice for *Ceyx azureus diemenensis* (Tasmanian Azure Kingfisher) (2010)	None Identified	-	-	
Painted Honeyeater	Conservation Advice Grantiella picta painted honeyeater. Canberra: Department of the Environment (2015)	None Identified	-	-	
Marine Reptiles					
Loggerhead Turtle	Recovery Plan for Marine Turtles in Australia, 2017-2027	Marine debris Chemical discharge Light pollution Habitat modification Vessel disturbance Noise interference	-	-	
Green Turtle			-	-	
Leatherback Turtle	Recovery Plan for Marine Turtles in Australia, 2017-2027 Approved Conservation Advice for *Dermochelys coriacea* (Leatherback Turtle)	As above	-	-	

3.1.2.2 Threatened Ecological Communities

The ecological communities considered in this section are considered likely to occur within the ZPI of activities, are listed as endangered or vulnerable within the MNES in Appendix D and are potentially impacted by the offshore activities discussed in this EP, they are listed in Table 3-2.

Table 3-2: List of Threatened Ecological Communities within the ZPI (summarised from Appendix D)

Community Name	Location	Threatened Category	Conservation Advice or Recovery Plan	Key Threats (relevant to offshore petroleum activities)
Alpine Sphagnum Bogs and Associated Fens		Endangered	Alpine Sphagnum Bogs and Associated Fens Recovery Plan (2016)	Onshore – N/A
Giant Kelp Marine Forests of South East Australia		Endangered	Approved Conservation Advice for Giant Kelp Marine Forests of South East Australia (2012)	Introduction of invasive species.
Lowland Native Grasslands of Tasmania		Critically Endangered	Approved Conservation Advice for Lowland Native Grasslands of Tasmania ecological community (2009)	Onshore – N/A
Natural Damp Grassland of the Victorian Coastal Plains		Critically Endangered	Approved Conservation Advice (including listing advice) for the Natural Damp Grassland of the Victorian Coastal Plains (2015)	Onshore – N/A
Subtropical and Temperate Coastal Saltmarsh		Vulnerable	Conservation Advice for Subtropical and Temperate Coastal Saltmarsh	Pollution/litter - pollution and litter from stormwater or dumping of waste can smother coastal saltmarsh plants and introduce contaminants such as heavy metals or organic chemicals. Oil spills are also a major potential threat.

To manage the key threats in these areas, TGPPL identifies the risk through its Environmental Risk Assessment (ERA) process (Section 0) and controls to ALARP. For the management of introduction of invasive species, the relevant Commonwealth legislation such as the Australian Maritime Safety Authority Act 1990 along with Biosecurity and Ballast Water Management requirements in legislation and International Agreements and Conventions will be adhered to (refer to Section 4.1). The control measures for reducing introduction of invasive species are addressed in detail in Section 6.8.4.

3.1.3 Cultural Environment

A number of studies were undertaken prior to construction of the Offshore TGP to identify:

- The potential for the presence of submerged terrestrial sites dating from the period prior to the creation of Bass Strait (prehistoric)
- Potential and actual submerged archaeological remains associated with European period sites situated close to or on the coast near the proposed landfalls
- Known and potential shipwrecks within 5 nautical miles (nm) of the Offshore TGP route

The potential for impact of the Offshore TGP on submerged terrestrial sites is considered low, partly because of physical factors on surface deposits as sea levels rose, but also due to the subsequent sedimentation and burial of submerged terrestrial sites that would have occurred following inundation. No submerged terrestrial sites were identified during construction of the Offshore TGP.

The coastal zone of both Tasmania and Victoria potentially contains numerous heritage sites, predominantly of recent formation (last 1,000 years). However, archaeological surveys conducted prior to construction found little evidence within the pipeline route of sites of either Aboriginal or non-Aboriginal origin (Hydro Tasmania, 2001). All potential sites within the foreshore landform of the alignment were nonetheless avoided via use of directional drilling under the coastal zone.

3.1.3.1 Indigenous Culturally Significant Environments

The Bass Strait was not always covered by water, it was a plain or land bridge that used to extend from south-east Victoria to the north-east of Tasmania, populated by indigenous peoples first used approximately 40,000 years ago. After the ice-age ended and sea levels rose, the Bass Strait filled and became impassable by foot around 12,000 years ago (National Museum Australia, 2022).

It is important to understand that Indigenous people make no distinction between land and sea. They see themselves as having responsibilities and rights across the land and sea boundaries that have been put in place over the last 200 years. This corresponds to the idea that there is an unbroken custodianship with both the land and seas for many indigenous communities that value the health of the environment and connection with areas of cultural significance. Some of the major concerns when it comes to the South-East commonwealth marine environment are Coastal and marine resources remain very important to Indigenous people, particularly in relation to hunting and gathering. Protection of marine and land resources also fall within this, as these are often used in trade or other bargaining practices. The connection with land and sea, resources and environmental wellbeing is a holistic relationship, which remains frequently overlooked by non-Indigenous people (National Oceans Office, 2002).

These connections to land and sea remain the primary reasons for ensuring adequate consultation is conducted to best support and recognise any cultural impacts that activities within the Operating Area (OA) may have on the local indigenous communities. This is considered through community consultation (see Section 10.2, Table 10-1).

Within Tasmania, there are currently no native titles, but there are many community groups. Currently, there has been funding granted by the Australian Government to create a Tayaritja/Bass Strait Islands Sea Country Indigenous Protected Area (IPA), the area surrounds Tayaritja/Bass Strait Islands and the northeast waters of Lutruwita/Tasmania. The aims of creating the IPA are to support the Palawa Community to connect with milaythina muka / Sea Country, and partner with others to understand, protect and manage milaythina muka. This will be the first IPA project in Lutruwita, and as of writing the EP is in the stage of community consultation (Centre, 2024)

The Gunai-Kurnai native title determination area in Victoria covers approximately 45,000 hectares and extends from west Gippsland near Warragul, east to the Snowy River and north to the Great Dividing Range. The area includes 10 parks and reserves that are jointly managed by the State government and the Gunai-Kurnai people (NNTT, 2010). Areas within and adjacent to the Ninety Mile Beach Marine National Park (refer to Section 3.2.5) are considered culturally and spiritually significant to the relevant indigenous communities. Additionally, an IPA has been created from Nanjit to Mallacoota, the coastal waters of the Gippsland region in Victoria. The area comprises numerous marine and coastal parks and includes the Ramsar listed Gippsland Lakes and Raymond Island, a highly significant cultural site.

Although this Offshore EP applies to the offshore component of the TGP pipeline, the native title determination area is relevant given that the boundary extends to 200 m offshore between Lakes Entrance and Marlo. At the time of writing a Native Title Claimant Application was registered by the Gunai-Kurnai people for an area covering Wilsons Promontory (NNTT, 2010).

There are no native title determination areas in Tasmania however there are seven Indigenous Protected Areas on the islands of the Ferneaux Group in Bass Strait (shown on map as 2 - Preminghana, 3 – Risdon Cove, 4 - Putalina, 10 – Badger Island, 26 – Babel Island, 27 – Great Dog Island, and 28 - Iungatalanana) (NIAA, 2023).

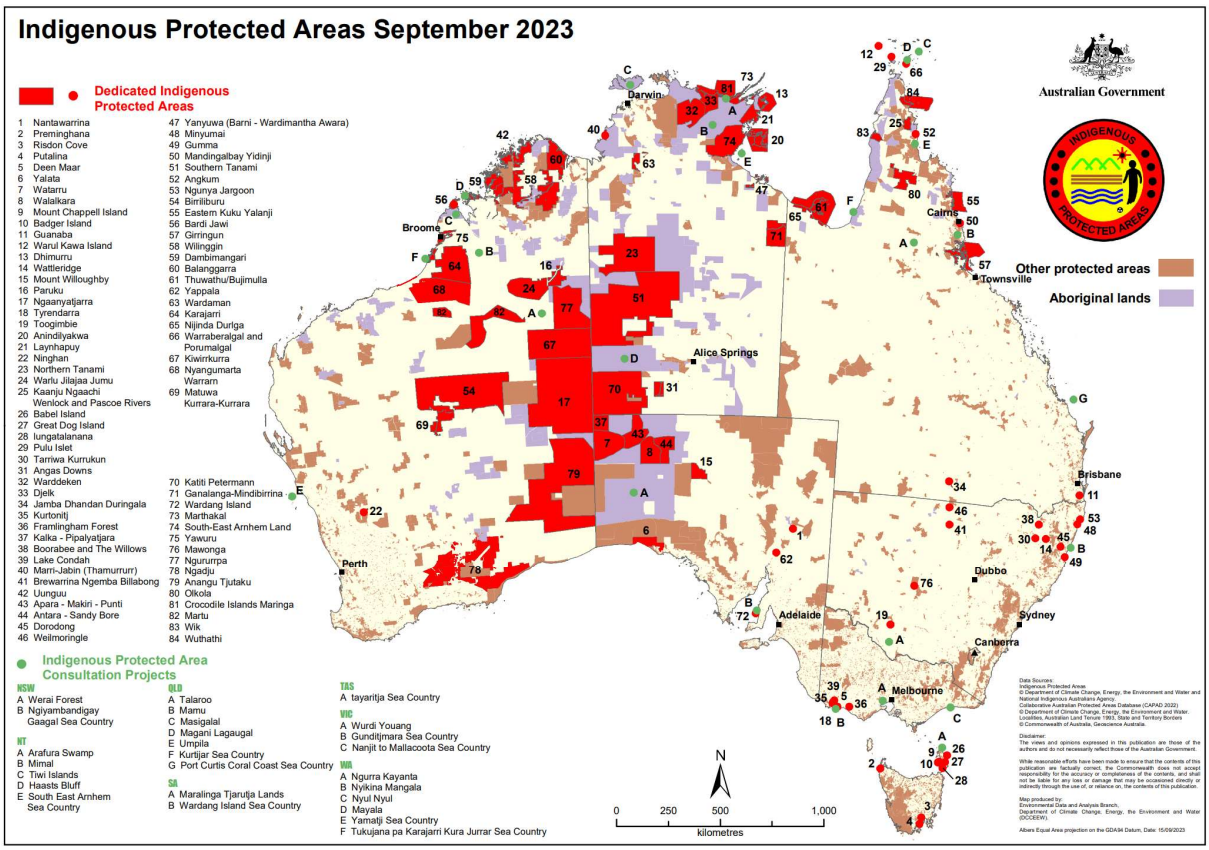


Figure 3-3: Indigenous Protected Areas Map - Australia 2023 (NIAA, 2023)

3.1.3.2 Shipwrecks and other Historical Environments

Data on shipwrecks in the region indicates a significant number are present throughout Bass Strait and coastal Victoria and Tasmania. Figure 3-4 shows the shipwrecks that are recognised through the Protected Matters Search Tool (Earthstar Geographics, 2024), however, exact resting places for most of other wrecks in the region are unknown, some of these include:

- The wreck SS Glenelg - reported to be situated in close proximity to the pipeline, although estimates of its location vary from close to Lakes Entrance to being 40 nm west of Lakes Entrance
- The Norfolk, which also has conflicting locations (one report has it situated 30 nm from Lakes Entrance, while another records a location between Seaspray and Woodside). Several wrecks have been listed as 'lost Ninety Mile Beach'
- Beagle Marine Park contains two shipwrecks within its Multiple Use Zone, the SS Cambridge (1940) and the SS Queensland (1876)
- The wrecks Fear Not and Oberlin situated close to the shore at Hogan Island
- The wreck of Bulli lies almost intact in West Cove, Erith Island within the Kent Group

- A number of wreck locations in the Five Mile Bluff region, including an unidentified coaster (1843) and the Royal Oak

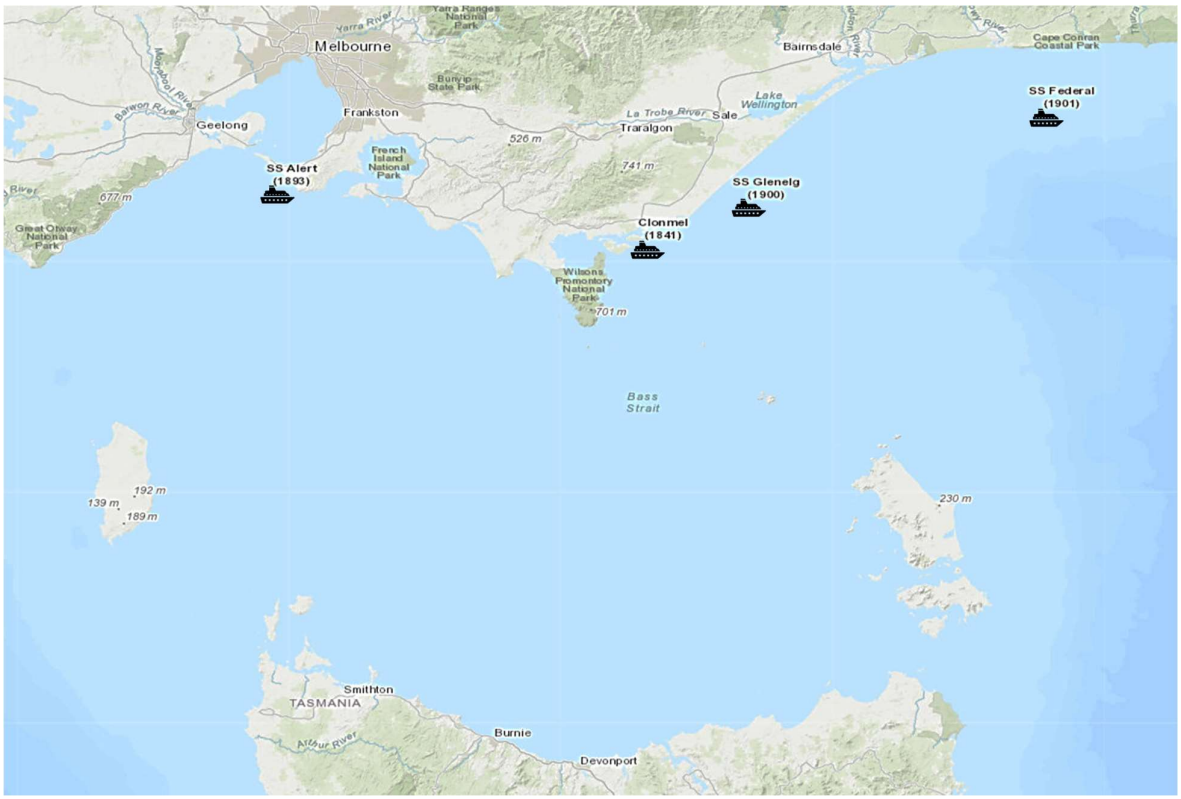


Figure 3-4: Shipwrecks represented by the Protected Matters Mapping Tool (Earthstar Geographics, 2024)

While it is important to be aware of the possibility of cultural artefacts within the vicinity of the pipeline, no sites of Aboriginal or non-Aboriginal significance (including shipwrecks) were evident along the pipeline route during pre-construction surveys conducted in September 2000 (Hydro Tasmania, 2001)) and none have been raised through consultation. The Offshore TGP and its operation is therefore considered unlikely to have any impact upon values of heritage significance (Hydro Tasmania, 2001).

3.1.4 Socio-Economic Environment

A wide range of human activities occur in the waters of Bass Strait, including commercial oil and gas fields, shipping, commercial and recreational fishing, and other recreational activities.

- **Commercial Fisheries** - Several commercial fisheries operate in the general vicinity of the Offshore TGP depending on the season, including the: Southern Bluefin Tuna Fishery, Eastern Tuna and Billfish Fishery, Eastern Skipjack Tuna Fishery, Small Pelagic Fishery, the Bass Strait Scallop Fishery (Central Zone) and the Southern Squid Jig Fishery. School whiting (*Sillago bassensis* and *S. flindersi*) and flathead (*Platycephalus* and *Neoplatycephalus spp.*) are the most significant commercial species.
- **Commercial shipping** - Bass Strait is one of Australia's busiest shipping areas, with passengers and freight being transported between the mainland and Tasmania as well as New Zealand. The highest volumes of shipping traffic travel in an east-west direction, with connections to Melbourne and Geelong. Substantial volumes of shipping traffic also occur between Melbourne/Geelong and Tasmania moving in a north-south direction (see Figure 3-5)
- **Recreational activities** - Most recreational activities occur in nearshore environments, including fishing, boating and diving, whale watching and are often controlled by conditions within the open waters of the Strait. Several of the islands in the region are also available for visiting, although access may be controlled by permit systems managed by the Tasmanian Parks and

Wildlife Service. Popular recreational activities offered by the Bass Strait islands include birdwatching, fishing and diving around reefs and shipwrecks.

- **Oil and Gas Infrastructure** - The Gippsland Basin has been producing significant oil and gas resources since the 1960s and includes several operating fields. Petroleum permits have been issued for exploration and production within the central Bass Strait region, with the closest operating field located at least 3 km to the east of the Offshore TGP, these fields can be seen in Figure 2-2.
- **Other infrastructure** - The Victorian shore crossing of the Offshore TGP is adjacent to existing pipeline easements or infrastructure, including EAPL/BHP pipeline, BASSLINK Interconnector and Indigo Cable. These have been outlined in Section 2.1.6. In pursuit of renewables, there is also area being proposed for offshore wind turbines that could intersect with the TGP.

Due to the depth and location of the Offshore TGP, and periodic nature of inspection and maintenance activities, Offshore TGP activities should pose minimal hindrance to socio-economic activities in Bass Strait.

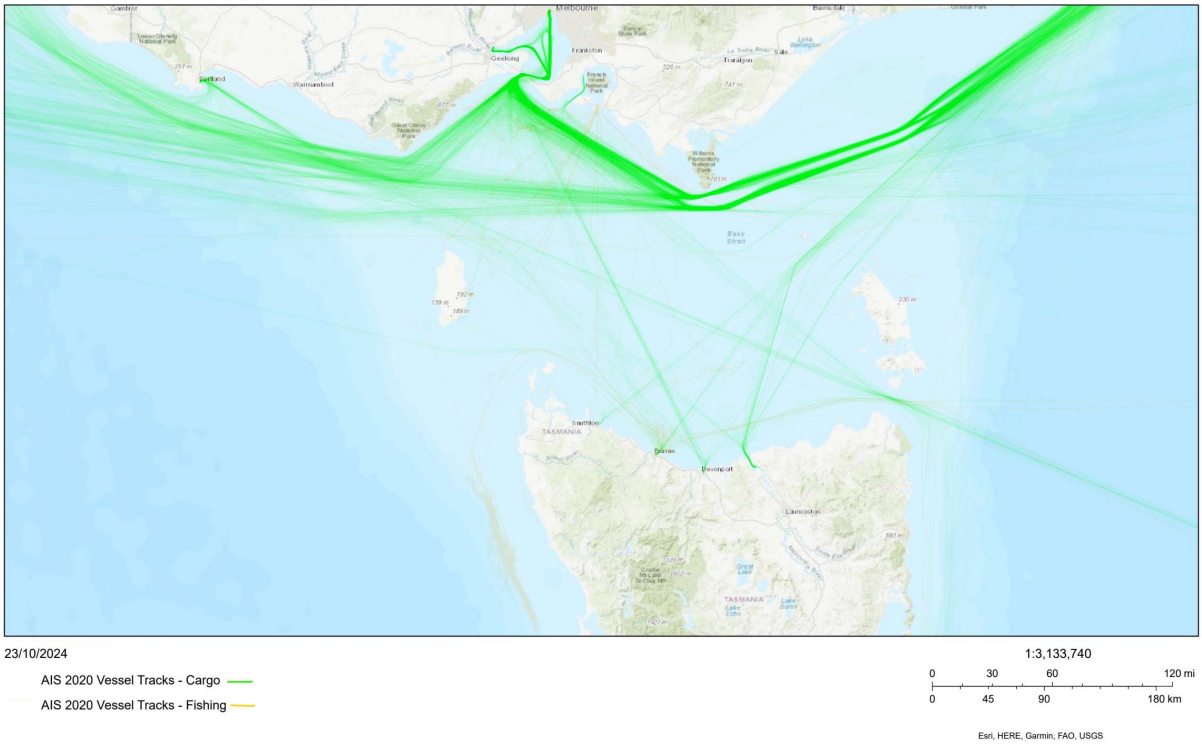


Figure 3-5: Shipping routes through Bass Strait (AMSIS, 2024)

3.2 Matters of National Environmental Significance (MNES)

TGPPL reviewed the contents of the MNES report by identifying the MNES and other matters protected by the EPBC Act that could reasonably be considered to be within or near to the TGP route and OA, or potentially impacted within the ZPI shown in the oil spill modelled in Section 2.2.2.2.

Appendix D shows the full list of the Protected Matters Report generated using the ZPI, within the section below, the most relevant are discussed to best identify the potential threats related to TGPPL Activities (or general petroleum activities). These identified threats are then discussed further with controls implemented by TGP described in Section 6.

3.2.1 Wetlands of International Importance (Ramsar Wetlands)

3.2.1.1 Corner Inlet

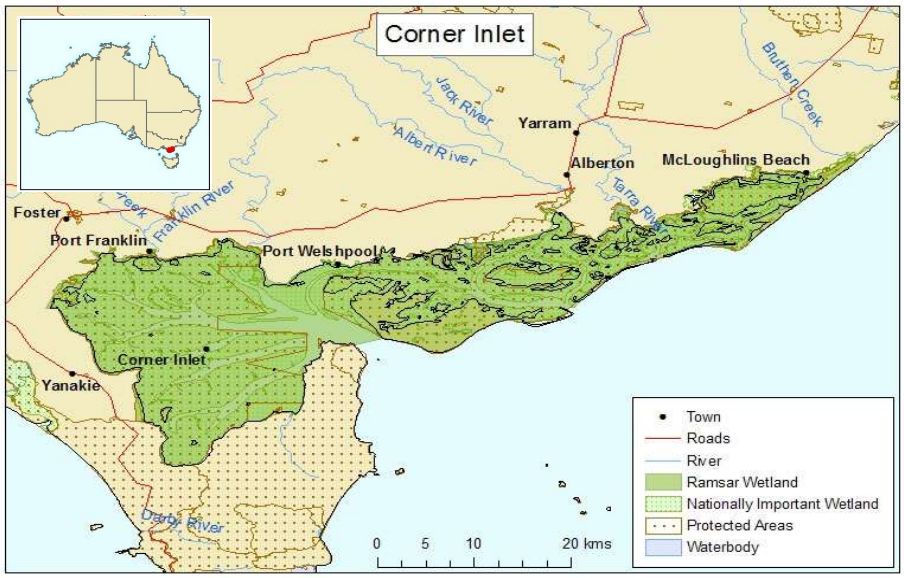


Figure 3-6: Corner Inlet Ramsar Wetland Location (DCCEEW, 2019)

The Corner Inlet Ramsar Site is located on the south-east coast of Victoria (Figure 3-6). It is bounded to the west and north by the South Gippsland coastline, in the south-east by a series of barrier islands and sandy spits lying end to end and separated by narrow entrances, and to the south by the hills of Wilsons Promontory.

The Corner Inlet Ramsar Site also meets six of the Ramsar criteria: 1, 2, 4, 5, 6 and 8 (as described in (DCCEEW, 2021))

Corner Inlet is a very good example of a wetland enclosed by barrier islands in Victoria and contains the most extensive intertidal mudflats in Victoria. The area contains the only extensive bed of the Broad-leafed seagrass in Victoria. The islands of Corner Inlet, although not rich in plant diversity, are of high biogeographical significance as a result of their geological history and connectivity to the mainland during ice ages. The islands also contain significant areas of saltmarsh and mangroves, both of which are communities of very limited distribution. These communities filter pollutants, stabilize sediments and protect the shoreline from erosion.

Corner Inlet provides breeding habitat for a variety of waterbirds, including several species listed as threatened at the State level and/or occurring in significant numbers and habitat for significant aggregations of waterbirds during post-breeding, and as a refuge during adverse environmental conditions. Corner Inlet regularly supports well over 20,000 waterbirds including species such as the Eastern Curlew, Curlew Sandpiper, Bar-tailed Godwit, and Double-banded Plover.

The site supports more than 390 species of marine invertebrates and 390 species of native flora, and as mentioned has a high diversity of bird species. Wading species benefit from the nature of the wetland specifically, with thirty-two wader species recorded. As the inlet provides extensive tidal flats that are exposed at low tide, they create important feeding areas for waders, this is reflected in the populations particular over winter as it is estimated that nearly 50 per cent of the overwintering migratory waders in Victoria occur in Corner Inlet.

The Corner Inlet Ramsar Site has regularly supported more than one per cent of the population of the Pied Oystercatcher, Sooty Oystercatcher, Pacific Gull, Fairy Tern, Red Knot, Red-necked Stint and Chestnut Teal.

Corner Inlet supports the nationally critically endangered Orange Bellied Parrot as well as several other vulnerable and endangered species, including the Growling Grass Frog and Australian

Grayling. The Southern-right Whale, Leathery Turtle, Swift Parrot and Shy Albatross have all also been recorded at the site.

Corner Inlet provides important habitats, feeding areas, dispersal and migratory pathways, and spawning sites for numerous fish species.

Corner Inlet was used traditionally by Indigenous people and many archaeological sites including scarred trees, burial sites, artefact scatters, shell middens and camps have been found. Currently, the Ramsar site is used for biological conservation, ports with servicing facilities for off-shore oil and natural gas exploration, commercial fishing, recreational fishing, and other recreational activities. Diving is popular around the numerous shipwreck sites in Corner Inlet and around the barrier islands (DCCEEW, 2019).

The site is protected as a Ramsar site by the Nooramunga and Corner Inlet Marine and Coastal Parks, and by part of it lying within the Corner Inlet Marine National Park (Section 3.2.5). In the context of the TGP operations and predicted extent of the ZPI, critical components (C)/processes (P) /services (S) that may be affected by a diesel spill event include seagrass, mangroves, saltmarshes and intertidal and subtidal waters (C1), waterbird breeding (P1), threatened species (S1) and fish abundance (S2) (DSEWPC, 2011)

West Gippsland Catchment Management Authority issued a *2014-2022 West Gippsland Waterways Strategy* that included the Corner Inlet site and created the *Corner Inlet Water Quality Improvement Plan 2013*. These work in with the federal EPBC Act for managing Ramsar sites.

3.2.1.2 East Coast Cape Barren Island Lagoons

Figure 3-7: East Cape Barren Island Lagoons Ramsar Site Location (DCCEEW, 2019)

The East Coast Cape Barren Island Lagoons (ECCBIL) Ramsar site is located on the east coast of Cape Barren Island, one of the Furneaux Group of islands which lie in Bass Strait to the north-east of Tasmania. The site extends from just north of Tar Point down to Jamieson's Bay and extends westwards from the coast for a distance varying from one to four kilometres.

Listed in 1982, the East Coast Cape Barren Island lagoons met criteria 1 and 3, (as described in (DCCEEW, 2021)).

ECCBIL has a significant place in recent history of the Tasmanian Aboriginal community Cultural Heritage and is of spiritual and religious significance and is a regional example of a near natural coastal wetland. The sandy soils and low relief create a context for the development of wetlands and numerous shallow saline lagoons. The largest lagoon is Thirsty Lagoon located in the southern sector. It is a barred estuary connected by a narrow neck to Little Thirsty Lagoon. Most of the

remaining lagoons are small un-named ephemeral water bodies that are not connected to the sea (DSEWPC, 2012).

These wetlands are located on the east side of the Cape Barren Island (see Figure 3-7), located just outside the scope of the ZPI.

3.2.1.3 Flood plain lower Ringarooma River

Located in the far north-east coast of Tasmania as show in Figure 3-8, between Cape Portland and Waterhouse Point. The site is situated on the sandy flood plain of the Lower Ringarooma River which encompasses extensive marshlands and a few shallow lagoons including Shantys Lagoon, Blueys Lagoon and Bowlers Lagoon. The Ringarooma River drains out into Ringarooma Bay which is located within the ZPI. The wetlands extend over 3500 hectares and vary in wetland type across this area.

The Flood plain lower Ringarooma River site meets four of the Ramsar criteria: 1, 2, 3, and 4 (as described by (DCCEEW, 2021)).

The site has been included as the hydrology of this site is influenced by tidal flows, river flows and local groundwater. However, the bulk of the wetland area is above the tidal limit and is largely controlled by inflows from the Ringarooma River. Birds and wetland dependent species, including migratory and threatened species use the wetlands as a habitat. (DCCEEW, 2019)

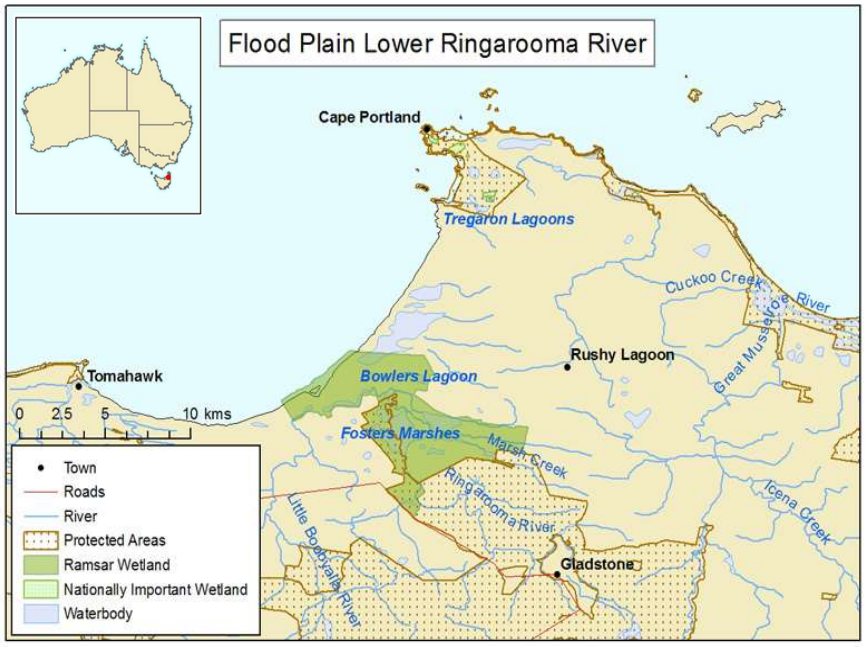


Figure 3-8: Flood Plain Lower Ringarooma River Ramsar Wetland Location (DCCEEW, 2019)

3.2.1.4 Gippsland Lakes

The Gippsland Lakes Ramsar Site is located in Victoria, south of the Eastern Highlands and to the east of the La Trobe Valley, see Figure 3-9. Covering a vast area, the lakes are a series of large, shallow, coastal lagoons approximately 70 km in length and 10 km wide, separated from the sea by sand dunes. The surface area of the lakes is approximately 364 km^2 and the three main water bodies are Lakes Wellington, Victoria and King (DCCEEW, 2019).

The Gippsland Lakes Ramsar Site meets six of the Ramsar criteria:1, 2, 4, 5, 6 & 8 (as described in (DCCEEW, 2021)).

The Gippsland Lakes is a particularly good representative example of a natural or near-natural wetland, characteristic of the biogeographical region. It forms one of the largest coastal lagoon systems in the Drainage Division and contains a distinctive landscape of wetlands and flat coastal plains. The site supports a broad range of wetland types in close proximity to each other, including

periodically inundated palustrine marshes, permanently inundated palustrine marshes, shallow lacustrine (lake) features, deep lacustrine features, lagoons with narrow inlets, and broad embayments. The site supports several nationally threatened wetland fauna species at various stages of their life cycle including two nationally threatened frog species, the vulnerable Australian Painted Snipe, a vulnerable fish species (the Australian Grayling) and three nationally vulnerable and endangered wetland-associated flora species.

The site supports habitat and conditions that are important for critical life cycle stages of a variety of wetland-dependent fauna species. The permanence of the main lakes and the relatively regular flooding of the adjacent wetlands mean that this wetland is an important drought refuge for many water birds and other aquatic species, including as permanent refuges and breeding sites for two threatened frog species.

The Gippsland Lakes have been identified as being of outstanding importance for waterbirds, regularly supporting more than 20,000 waterfowl. Waterbird species which are considered to have met the one per cent population threshold are: Red-necked Stint, Black Swan, Sharp-tailed Sandpiper, Chestnut Teal, Musk Duck, Fairy Tern and Little Tern.

Gippsland Lakes provides important habitats, feeding areas, dispersal and migratory pathways, and spawning sites for numerous fish species of direct and indirect fisheries significance. These fish have important fisheries resource values both within and external to the site. Currently, parts of the Lakes system are heavily used for commercial and recreational fisheries and boating activities, while the immediate hinterland has been developed for agricultural use, and limited residential and tourism purposes (DCCEEW, 2019).

The Lakes are protected as a Ramsar site by the Lakes National Park and the Gippsland Lakes Coastal Park (Refer Section 3.2.5). In the context of the TGP operations and predicted extent of the ZPI, critical components (C)/ processes (P)/ services (S) that may be affected by a diesel spill event include marine sub-tidal aquatic beds (C1), waterbird breeding (P2), threatened species (S1) and fisheries resource values (S2). The greatest threat identified that relates to the activities of TGP is vessel oil spill impact to direct oiling of wildlife (EGCMA, 2015). Oil spill management is discussed in Section 9.4.

Figure 3-9: Gippsland Lakes Ramar Site Location (DCCEEW, 2019)

3.2.1.5 Logan Lagoon

Logan Lagoon is part of an extensive eastern Flinders Island parallel dune-coastal barrier system, stretching across 2257 hectares, the Ramsar site is located in the south-east corner of Flinders Island in Bass Strait, Tasmania, approximately six kilometres north-east of the township of Lady Barron (DSEWPC, 2012). Like the East Coast Cape Barren Island Lagoon, the site falls just outside the scope of the ZPI as it is situated on the east coast of the Tasmanian Bass Strait islands.

Logan Lagoon Ramsar site meets five of the nine criteria; 1, 2, 3, 4, and (as described in (DCCEEW, 2021)).

When full, the lagoon provides feeding and resting habitat for several migratory waders including the Red-necked Stint, Common Greenshank, Eastern Curlew, Bar-tailed Godwit and Double-banded Plover. The wetland is an important part of the East Asian - Australasian Flyway, and twenty migratory bird species listed under internationally agreements use the site. Currently, the primary use of the site is for conservation, education, research, and recreation such as walking, sightseeing, bird watching, off-road vehicle driving and beach fishing (DCCEEW, 2019).

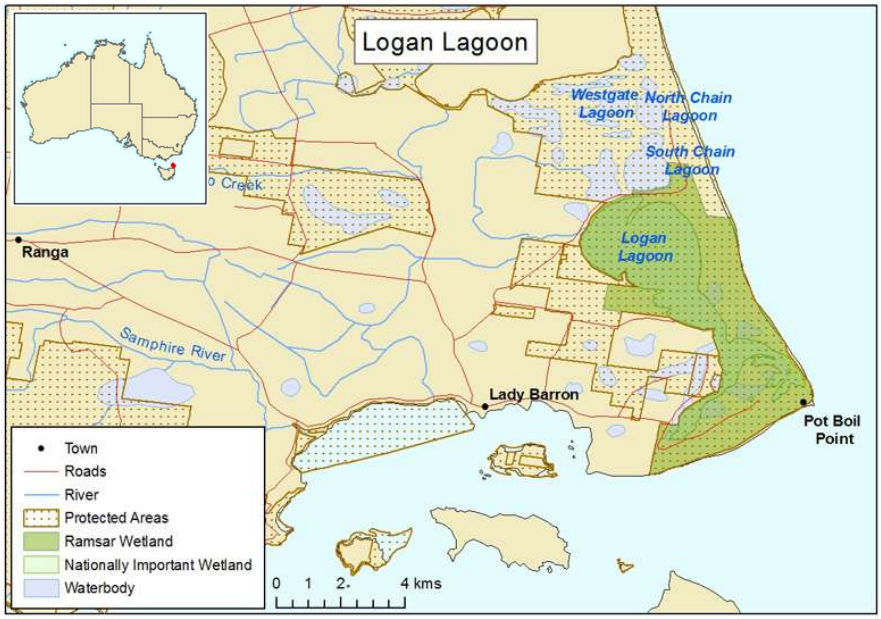


Figure 3-10: Logan Lagoon Ramsar Site Location (DCCEEW, 2019)

3.2.1.6 Threatened Ecological Communities

The communities described in detail below are more likely to be encountered or impacted by TGP activities, however a comprehensive list from Appendix D is also shown in Table 3-3 with key threats, and relevant conservation advice or recovery plans identified.

- **Giant Kelp Marine Forests of South East Australia** – As of August 2012, these areas have been protected under the EPBC Act, as a threatened ecological community (TEC). Giant kelp (*Macrocystis pyrifera*) is the foundation species of the community, with other components including a large range of algae, reef associated fish and numerous invertebrates that shelter, feed and reproduce within the kelp (DSEWPaC, 2012)). Remaining populations occur along coastal Tasmania and Victoria and in small patches around the Kent Group. Giant kelp marine forests favour temperate southeast waters on rocky reefs, where conditions are cool and relatively nutrient rich. The Offshore TGP route passes through deeper waters and does not impact directly on any known populations.

  There is currently no threat abatement plan for this ecological community.

- **Littoral Rainforest and Coastal Vine Thickets of Eastern Australia** - is listed as a critically endangered TEC under the EPBC Act. The ecological community is a complex of rainforest and coastal vine thickets on the east coast of Australia influenced by its proximity to the sea; and provides habitat for over 70 threatened plants and animals and provides important stepping stones along the eastern Australian coast for various migratory and marine birds.

  Littoral Rainforest is comprised of a complex of wet or monsoon tropical to warm temperate rainforests and coastal vine thickets, and notably it differs from other types of rainforest (such as lowland or upland rainforest) due to its location, typically located within two kilometres of the coast or adjacent to a large salt water body, such as an estuary (DoEE, 2019).

  The rainforest is highly valued by Indigenous Australians, and a number of sites across the Littoral Rainforest are located within recognised Native Titles. Cultural artefacts have been found within parts of the forest and in Victoria, a women's sacred site and birthing place have been discovered. (DoEE, 2019).

  Key threats to the rainforest are increased fragmentation from clearing of vegetation, degradation of abiotic factors (such as water, nutrients or soil, introduction and establishment of invasive species, and pollutants entering the ecological community that kill or inhibit growth of local species.

  The Offshore TGP route does not impact directly on the closest occurrence of this TEC at Lakes Entrance, and offshore activities will not impact the ecological community directly.

- **Subtropical and Temperate Coastal Saltmarsh** - Is listed as a vulnerable TEC under the EPBC Act, and its known distribution includes the southern and eastern coasts of Australia. The Subtropical and Temperate Coastal Saltmarsh ecological community occurs within a relatively narrow margin along the Australian coast, within the subtropical and temperate climatic zones; and includes coastal saltmarsh occurring on islands within these climatic zones. The physical environment for the ecological community is coastal areas under regular or intermittent tidal influence (TSSC, 2013).

  The ecological community consists mainly of salt-tolerant vegetation (halophytes) including: grasses, herbs, sedges, rushes and shrubs. Many species of non-vascular plants are also found in saltmarsh, including epiphytic algae, diatoms and cyanobacterial mats. The ecological community is inhabited by a wide range of infaunal and epifaunal invertebrates, and temporary inhabitants such as prawns, fish and birds (and can often constitute important nursery habitat for fish and prawn species). Insects are also abundant and an important food source for other fauna, with some species being important pollinators. The dominant marine residents are benthic invertebrates, including molluscs and crabs that rely on the sediments, vascular plants, and algae, as providers of food and habitat across the intertidal landscape (TSSC, 2013).The key threats affecting the ecological community include: clearing and fragmentation, invasive species, damage from recreational activities and pollution (including oil spills) (TSSC, 2013). The Offshore TGP route does not impact directly on any known communities.

Table 3-3: Key Threats to relevant Threatened Ecological Communities within ZPI from MNES list (Appendix D)

Name	Threatened Category	Conservation Advice or Recovery Plan	Key Threats (relevant to petroleum activities)	Located within Offshore OA
Assemblages of species associated with open-coast salt-wedge estuaries of western and central Victoria	Endangered	Approved Conservation Advice (including Listing Advice) for the Assemblages of species associated with open-coast salt-wedge estuaries of western and central Victoria ecological community (2018)	Invasive species – although the advice discussed onshore invasive species of flora and fauna, which is unlikely to be introduced by TGP activities.	N

Name	Threatened Category	Conservation Advice or Recovery Plan	Key Threats (relevant to petroleum activities)	Located within Offshore OA
Giant Kelp Marine Forests of South East Australia	Endangered	Approved Conservation Advice for Giant Kelp Marine Forests of South East Australia (2012)	Invasive species	Y
Gippsland Red Gum (Eucalyptus tereticornis subsp. mediana) Grassy Woodland and Associated Native Grassland	Critically Endangered	Approved Conservation Advice for Gippsland Red Gum (Eucalyptus tereticornis subsp. mediana) Grassy Woodland and Associated Native Grassland (2008) and Threat abatement plan for disease in natural ecosystems caused by Phytophthora cinnamomic (2018)	None identified	N
Littoral Rainforest and Coastal Vine Thickets of Eastern Australia	Critically Endangered	Approved Conservation Advice for the Littoral Rainforest and Coastal Vine Thickets of Eastern Australia ecological community (2015) and National Recovery Plan for the Littoral Rainforest and Coastal Vine Thickets of Eastern Australia Ecological Community (2019)	None identified	N
Natural Damp Grassland of the Victorian Coastal Plains	Critically Endangered	Approved Conservation Advice (including listing advice) for the Natural Damp Grassland of the Victorian Coastal Plains (2015)	None identified	N
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Conservation Advice for Subtropical and Temperate Coastal Saltmarsh (2013)	Oil spills	N

3.2.2 Commonwealth Marine Areas

Six marine regions have been identified in Commonwealth waters around Australia. The ZPI lies within the South-east Marine Region. The 2013 South-east Commonwealth Marine Reserves Network Management Plan expired on 30 June 2023, during the renewal process of the EP, Parks Australia is preparing a new management plan for the South-east Network.

The key conservation values of the South-east Marine Region are:

- Features with high biodiversity and productivity, such as the east Tasmania subtropical convergence zone, Bass Cascade, Upwelling East of Eden, Seamounts south and east of Tasmania and Bonney Upwelling.
- Breeding and resting areas for Southern-right Whale.
- Migration areas for Blue, Fin, Sei, Southern-right and Humpback Whales. Foraging areas for Australian Sea-lion, White Shark, Harrison's Dogfish, Killer and Sei Whales, Australasian Gannet, Fairy Prion, Black-faced Cormorant, Little Penguin, Crested Tern, and several species of seal, albatross, petrel, shearwater and gull.
- Wrecks of MV City of Rayville, SS Cambridge and ketch Eliza Davies.
- 10 provincial bioregions and 17 seafloor types are represented in the network (DoE, 2015)

3.2.3 Key Ecological Features

Key Ecological Features (KEF) are elements of the Commonwealth marine environment that are considered to be of regional importance for either a region's biodiversity or its ecosystem function and integrity. KEFs are not matters of national environmental significance (Appendix D) and have no

legal status in their own right. However, they are components of the Commonwealth marine area. There was one KEF that was likely to occur within the ZPI of TGP Operations.

The Upwelling East of Eden is defined as a key ecological feature as it is an area of high productivity and aggregations of marine life. Dynamic eddies of the East Australian Current cause episodic productivity events when they interact with the continental shelf and headlands. The episodic mixing and nutrient enrichment events drive phytoplankton blooms that are the basis of productive food chains including zooplankton, copepods, krill and small pelagic fish. The upwelling supports regionally high primary productivity that supports fisheries and biodiversity, including top order predators, marine mammals and seabirds. This area is one of two feeding areas for Blue Whales and Humpback Whales, known to arrive when significant krill aggregations form. The area is also important for seals, other cetaceans, sharks and seabirds. This feature displays seasonal and annual variation, and is present along the eastern Victorian and southern NSW coasts (DoE, 2015).

3.2.4 Australian Marine Parks

Beagle Australian Marine Park (AMP) - Declared in June 2007, covers 2,928 km^2 of Commonwealth Ocean territory, and incorporates the Kent Island Group, Hogan Island Group and Curtis Island Group. It is situated within shallow topography, mostly at depths of 46 m to 77 m, with the north-western edge abutting Victorian waters to the south-east of Wilson's Promontory (Parks Australia, 2023). The Offshore TGP is oriented between the Hogan and Kent Island Groups, traversing the entire marine reserve in a north-south direction. The Marine Reserve is traversed by the Offshore TGP between KP 110 and KP 170 (the marine parks can be seen in Figure 3-11). The Reserve is zoned for 'Multiple Use' (category VI under the classification system established by the International Union for Conservation of Nature (IUCN) and adopted by the Commonwealth government), however it should be noted that at the time of the EP the South-East marine park zoning is under review as the 2013 *South-east Commonwealth Marine Reserves Network Management Plan* expired on 30 June 2023, therefore zones may change in the next update. This should have minimal impact on the activities or processes that TGPPL currently follow to initiate activities in the region due to approvals given prior to the plan as the pipeline is a prior use right.

The Reserve is effectively a managed resource protected area that is administered to ensure long-term protection and maintenance of biological diversity, but with a sustainable flow of natural products and services to meet community needs. The general zoning allows for a number of activities including mining exploration and development activities, select commercial fishing methods, recreational and charter fishing, shipping and general transit, scientific research and commercial tourism. Demersal trawl, scallop dredging, mesh netting and Danish seine commercial fishing methods, however, are not permitted (DoE, 2015).

Table 3-4: Beagle AMP: SE Commonwealth Marine Reserves Network Management Plan 2013-2023 (DoE, 2015)

Proclaimed	28 June 2007			
IUCN category assigned by this Management Plan and reserve management zone name	IUCN VI—Multiple Use Zone			
Assigned zones in reserve:	IUCN Ia	IUCN II	IUCN IV	IUCN VI
				Multiple Use Zone
Depth of reserve below seabed	100 m			
Total area	2,928 km^2 (292 800 ha)			
Major conservation values	Ecosystems, habitats and communities associated with: • the Southeast Shelf Transition. and associated with sea-floor features: • basin • plateau • shelf			

	• sill Important migration and resting on migration area for: • Southern-right Whale Important foraging area for: • Australian Fur Seal • Killer Whale • Shy Albatross, Australasian Gannet, Short-tailed Shearwater, Pacific and Silver Gulls, • Crested Tern, Common Diving Petrel, Fairy Prion, Black-faced Cormorant and Little Penguin • White Shark Cultural and heritage sites: • the wreck of the steamship SS Cambridge • the wreck of the ketch Eliza Davies
Location	The Beagle Commonwealth Marine Reserve lies entirely within Bass Strait, with its north-western edge abutting Victorian waters south-east of Wilson's Promontory. It is a shallow-water reserve surrounding a collection of Bass Strait islands.
General description of the reserve	The Beagle Commonwealth Marine Reserve represents an area of shallow continental shelf ecosystems in depths of about 50–70 m that extends around south-eastern Australia to the east of Tasmania. The sea floor that it covers formed a land bridge between Tasmania and Victoria during the last ice age 10 000 years ago. Its boundary encloses Tasmania's Kent Group Marine Reserve and the Hogan and Curtis Island groups. Nearby to the north-east is Victoria's Wilsons Promontory Marine National Park. The reserve encompasses the fauna of central Bass Strait, which is expected to be especially rich based on studies of several sea floor–dwelling animal groups. Its ecosystems are similar to those documented for the deeper sections of the Kent Group Marine Reserve, especially those based around habitats of rocky reefs supporting beds of encrusting, erect and branching sponges, and sediment composed of shell grit with patches of large sponges and sparse sponge habitats. Islands encompassed by the reserve and nearby islands support important breeding colonies for many seabirds and for the Australian Fur Seal. The waters of the reserve provide an important foraging area for those species breeding nearby. The rich marine life also attracts top predators, such as the White Shark and Killer Whales. The SS Cambridge, a British freighter, which lies in the reserve to the east of Wilson's Promontory, was sunk in 1940 by a WWII mine. The trading ketch Eliza Davies, which lies in the reserve to the east of Wilson's Promontory, sunk under tow in 1924.

3.2.5 National Parks and Reserves

Several areas adjacent to or within Victorian and Tasmanian State waters have been declared as National Parks or Marine Protected Areas. These are shown in Figure 3-11 and include the following reserves within the vicinity of the Offshore TGP:

- **The Lakes National Park (Tatungalung Country)** – One of the jointly managed parks with Parks Victoria and the Gunaikurnai people and recognised as an internationally significant werland for migratory bird species. For the indigenous community, many of these species are considered totem species, and there are many rare or endangered species found throughout the year. The Lakes National Park is a bushland that covers 2389 ha located in central Gippsland with prominent geographical features of the peninsula of Sperm Whale Head, Rotamah and Little Rotamah Islands. The main lakes of the park are Lake Victoria and Lake Reeve. The area is managed to support recreational activities, such as walking trails, kayaking, sailing, bird watching and educational group camping (Board, Gunaikurnai Traditional Owner Land Management, 2018).

  The Gippsland Lakes are a group of large coastal lagoons in eastern Victoria, separated from the sea by sand dunes and fringed on the seaward side by Ninety Mile Beach. The main lakes - Wellington, Victoria and King cover an area of 340 km2 and have a shoreline of 320 km. The Gippsland Lakes receive water from six major rivers, are subject to dynamic hydrologic al and tidal processes and are surrounded by a complex mix of land use including a griculture, fisheries, urban development and tourism (Board, Gunaikurnai Traditional Owner

Land Management, 2018). The largest of the rivers are the Latrobe River and the Avon River (flowing into Lake Wellington), and the Mitchell River, Nicholson River and Tambo River (flowing into Lake King). The system is linked to the sea by an artificial entrance near the eastern end, opened in 1889, where the town of Lakes Entrance is now situated (Parks Victoria, 1999)

Gippsland Lakes Coastal Park is a narrow coastal reserve covering 17,688 ha along approximately 90km of Ninety Mile Beach from Seaspray to Lakes Entrance. The Lakes National Park contains large areas of diverse and relatively undisturbed flora and fauna communities representative of the inner barrier of the Gippsland Lakes system. Gippsland Lakes Coastal Park takes in extensive coastal dune systems, woodlands and heathlands, as well as water bodies such as Lake Reeve and Bunga Arm. The Gippsland Lakes system is listed under the Convention on Wetlands of International Importance (Ramsar), they provide important feeding, resting and breeding habitat for approximately 80 waterbird species, and the lakes, and associated swamps and morasses, regularly support approximately 40,000 to 50,000 waterbirds (Parks Victoria, 1999).

Clydebank Morass, Macleod Morass and Jones Bay (within Lake King) support many species of migratory waders. Lake Wellington, Lake Victoria and Lake King support migratory seabirds, including the Little Tern and Fairy Tern, as well as a range of other waterfowl. Lake Reeve provides significant habitat for several migratory waders and is listed as one of the five most important areas for shorebirds in Victoria. Bunga Arm supports breeding populations of threatened species e.g. Little Tern, Fairy Tern, Hooded Plover and White-bellied Sea-eagle (Parks Victoria, 1999).

The history of the area contains both indigenous artefacts and remnants of the shell middens, as well as evidence of the changes from European settlement. This includes remains of equipment and buildings used in the construction of the permanent entrance to the Park include steel rails on timber sleepers, a jetty, remains of a pier, th two buildings at Entrance Bay, and a three-legged crane. These are parts of the New Works Hisotric Complex listed on the Victorian Heritage Register under the provisions of the Heritage Act. Similar relics on the eastern side of the entrance managed by the Shire of East Gippsland include a World War II fighter plane that crashed into Lake Reeve, and the shipwreck *Trinculo* which was beached in 1858 (Board, Gunaikurnai Traditional Owner Land Management, 2018).

The far south-western boundary of the park is located approximately 100 m north-east of the Offshore TGP commencement point.

- **Ninety Mile Beach Marine National Park** – Is located 550 m southwest of Seaspray, Victoria and is managed by Parks Victoria. The Park covers 2750 ha and stretches south-west along 5 km of coastline and 3 NM offshore to the boundary of Victorian waters. The park is recognised as an internationallyt significant sandy environment recognised for the high diversity of marine invertebrates.

  Marine habitat consists of sandy beach, sub tidal soft sediment and 8 ha of low profile calcarenite reef offshore that support the variety of invertebrates including colourful sponge gardens. The long sandy beach of the the Park is frequented by a number of threatened shorebird species including the Hooded Plover (Thinornis rubricollis), Little Egret (Egretta garzetta), Little Tern (Sterna albifrons sinensis), Royal Spoonbill (Platalea regia) and Whiskered Tern (Chlidonias hybridus). The area contains diverse fish species, with schools of pelagic fish including pike, school whiting and snapper common to the area. The area is also a nursery and feeding ground for Great White Sharks (Carcharodon carcharias) (Parks Victoria, 2006).

  The park is commonly used for a variety of recreational activities, including boating and water sports, diving and snorkelling, dog walking, horse riding, tourism and walking.

  The Park is located approximately 2 km west of the Offshore TGP.

- **Corner Inlet and Nooramunga Marine and Coastal Parks** - Corner Inlet Marine and Coastal Park is part of an Aboriginal cultural landscape that includes the traditional Country of the Gunaikurnai Peoples. Nooramunga Marine and Coastal Park is approximately 20,170 ha and Corner Inlet Marine and Coastal Park covers around 28,500 ha and are situated 200km southeast of Melbourne. These Parks are protected from Bass Strait by sand barrier islands and Wilsons Promontory. Corner Inlet and Nooramunga consist of shallow marine waters, intertidal

mudflats and a series of sand islands. The park includes one of 64 wetland areas in Australia listed under the Ramsar Convention. This internationally listed wetland protects 67,186ha of diverse habitats, including coastal woodland, vast mangrove communities, saltmarsh areas, intertidal zones and unique marine values such as Broadleaf Seagrass forests. (Parks Victoria, 2024). Seaward of the mangroves are extensive areas of intertidal mud and sand flats which provide food for thousands of migratory wading birds each year.

Thirty-two species of migratory waders have been recorded, including the largest concentrations of Bar Tailed Godwit and Great Knot in southeastern Australia (Parks Victoria, 2024). In summer, the ocean beaches and sand spits are also used as nesting sites by shorebirds like the Pied Oystercatcher, Crested Tern, Caspian Tern, Fairy Tern, Hooded Plover and the endangered Little Tern. Fringing the saltmarshes and mangroves on the mainland and islands are stands of swamp paperbark and coast tea-tree, and further inland woodlands of coast banksia and manna gum. These are home for a variety of animals including the New Holland Mouse, Swamp Antechinus, Orange-bellied Parrot, Ground Parrot and White-bellied Sea Eagle (DoEE, 2017).

The Corner Inlet Marine National Park is located north and east of Wilson's Promontory adjacent to the southern shores of Corner Inlet. The National Park protects large areas of seagrass including the only extensive Posidonia australis meadow in southern Australia. Amongst the seagrass live over 300 marine invertebrates including crabs, seastars, sea snails, squid and many fish including pipefish, stingrays, flathead, whiting and flounder. The seagrass and surrounding marshes are particularly important for international migratory birds such as the Eastern curlew (Parks Victoria, 2005). The area has been listed as part of the Corner Inlet Ramsar Site.

The park has long been part of the sacred Country of Yiruk for the Gunai / Kurnai and Wamoom for the Boonwurrung Indigenous people. Seascapes of the park and surrounding landscapes and waters are culturally and spiritually significant to relevant Indigenous communities (Parks Victoria, 2005).

The parks are used for several recreational activities, notably fishing and boating, hunting and camping.

- **Wilsons Promontory Marine and National Park** - Is Victoria's largest Marine Protected Area at 15,550 ha and is located around the southern tip of Wilsons Promontory. There is a diversity of marine life including octopus, sharks and rays. It is a popular location for recreational divers particularly around the sponge gardens. The offshore islands support many colonies of fur seals and oceanic birds such as Little Penguins, Fairy Prions, Silver Gulls and Pacific Gulls (Parks Victoria, 2024).

  Wilsons Promontory Marine National Park is assigned the International Union for the Conservation of Nature and Natural Resources (IUCN) Category II of the United Nation’s List of National Parks and Protected Areas. Category II areas are managed primarily for ecosystem protection and recreation (Parks Victoria, 2006). This terrestrial park is important for its range of plants and animals, including many threatened species including the New Holland Mouse, Ground Parrot and White-bellied Sea Eagle. Coastal features include expansive intertidal mudflats, sandy beaches and sheltered coves interrupted by prominent headlands and granite cliffs in the south, backed by coastal dunes and swamps.

  The avifauna recorded for Wilsons Promontory includes around half of all Victorian bird species. Significant species of migratory wading birds feed on the tidal mudflats of Corner Inlet within and adjoining the park. The offshore islands have breeding and roosting sites for sea birds, including multiple species of Short-tailed Shearwaters (Parks Victoria, 2002).

  Indigenous tradition indicates that the waters surrounding Wilsons Promontory are integral to the dreaming and culture of the Gunai / Kurnai and Boonwurrung Indigenous people. Indigenous tradition indicates that the planning area is part of the sacred Country of Yiruk for the Gunai / Kurnai people, and Wamoom for the Boonwurrung people (Parks Victoria, 2006).

  These parks are popular tourist destination due to its coastal scenery and diverse natural environments. Tourist activities include walking, camping, sightseeing, viewing wildlife, fishing, boating, diving, sea kayaking and surfing.

- **The Kent Group National Park and Marine Reserve** – A terrestrial park managed by the Parks and Wildlife Service of Tasmania. The islands were part of the original land bridge that connected what we now know as Tasmania and Victoria, allowing the movement of people and animals over 10,000 years ago. There are three major islands (Deal, Dover and Erith), two minor islands (North East and South West) and Judgement Rocks incorporated into the national park. The Offshore TGP is oriented in close proximity to South West Island and Judgement Rocks, with KP 130.7 positioned approximately 10 km west of the park boundary. Breeding seabird colonies are large, particularly on the two small islets known as North East and South West islands. Common Diving Petrels, Short-tailed Shearwaters, Little Penguins, Pacific Gulls, Sooty Oystercatchers and cormorants are the primary inhabitants as are the Little Tern (Sterna albifrons sinensis), endangered under Tasmanian legislation, and the Fairy Prion (Pachyptila turtur subantarctica) listed as vulnerable under the EPBC Act (Parks and Wildlife Services Tasmania, 2005). Judgement Rocks is also an important Australian Fur Seal (Arctocephalus pusillus) breeding colony, being the largest within Tasmanian waters (Tasmania Parks and Wildlife Service, 2020). However, the distance of approximately 10 km is expected to buffer nesting sites from Offshore TGP activities.

  The National Park's most prominent legacy was built in 1848 – a 22m tall lighthouse was Australia's first offshore island lighthouse, however it is now deactive since 1992 due to it's height above sea level regularly shrouding the light in. The Deal Island lighthouse is one of the most important light stations in Australia and is on the Register of the National Estate, as well as the Tasmanian Heritage Register cloud (Tasmania Parks and Wildlife Service, 2020).

  Below the waterline of the national park, the Kent Group Marine Reserve surrounds the national park, protecting a diverse array of kelp, and an extraordinarily high number of fish species – both the result of the convergence of three ocean currents.

  The Kent Group Marine Reserve is also managed by the Parks and Wildlife Service of Tasmania, extends 3 NM (about 5.6 km) offshore from the main islands of the Kent Group, and includes a Habitat Protection Zone (restricted take) and Sanctuary Zone (no take). The submarine topography surrounding these islands is dominated by massive granite blocks interspersed with clefts, ledges and caverns. The diversity in fish species is considered unusually high given the proximity to more homogenous substrates across the Bass Strait. It is considered unique in faunal assemblage and of high scientific value, partly due to its unique biogeographical location at the convergence of the three marine biogeographical regions. The Sanctuary Zone covers the western part of the Kent Group, including Dover and Erith Islands and Murray Passage, as well as part of the western coast of Deal Island. The two steamship wrecks Bulli and Karitane are in shallow water in West Cove and Squally Cove respectively and are an added highlight of the area (Tasmania Parks and Wildlife Service, 2024).

  The Kent Group national park and marine reserves facilitate fishing, snorkelling and scuba among many other recreational activities. Due to the remote location, access is only available via chartered boat or for highly experienced and well-equipped sea-kayakers.

  The Marine Reserve lies 23 km east of the Offshore TGP.

- Several other islands lying about 10 km to 25 km from the Offshore TGP are listed as nature reserves under the Nature Conservation Act 2002 (Tasmania). They include: West Moncoeur Island, East Moncoeur Island, Bass Pyramid, Curtis Island, Devils Tower, Tenth Island and Wright Rock. The islands not only provide resting sites from foraging, but also serve as breeding sites for some species of birds and, in some cases, for seals.

  All wildlife is protected by State or Commonwealth laws within declared nature reserves. The Offshore TGP route was originally chosen to minimise impacts on these sensitive areas, with the only area in direct contact with the Offshore TGP being the Beagle AMP. Management Guidelines, to ensure National Parks, Marine Reserves and all environmentally significant areas remain protected, are outlined in Section **Error! Reference source not found.**.

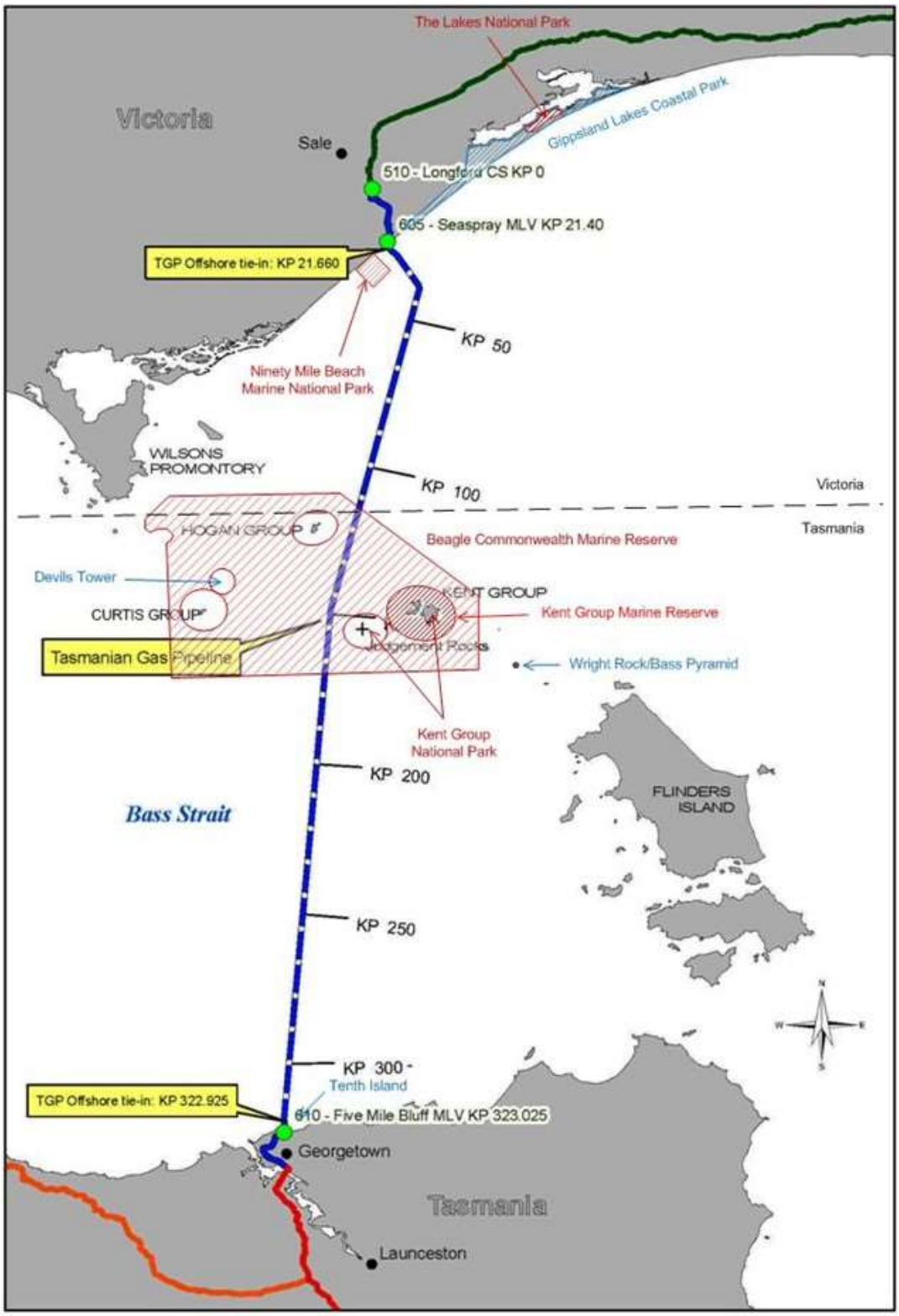


Figure 3-11: Environmentally Significant Areas along the Offshore TGP route

4. ENVIRONMENTAL LEGISLATION, REGULATIONS AND REQUIREMENTS

4.1 Legislative and Regulatory Requirements

The TGP is operated in accordance with strict statutory and regulatory requirements and company policy which includes provisions for environmental protection. The Offshore TGP route spans three administrative jurisdictions:

- Victoria – Seaspray high water mark to 3 NM offshore
- Commonwealth – 3 NM offshore from Seaspray to 3 NM offshore from Five Mile Bluff in Tasmania
- Tasmania – 3 NM offshore to Five Mile Bluff low water mark

The Offshore TGP is subject to the requirements of State and Commonwealth legislation, and operation of the offshore pipeline must comply with a range of acts, regulations, codes, licences and policies under State and Commonwealth jurisdictions. Those relevant to environmental management and the EP are listed in the following sections. A summary of relevant Commonwealth and State legislation is also provided in **Error! Reference source not found.**.

4.1.1 Commonwealth OPGGS Act and Environmental Regulations

The Offshore Petroleum and Greenhouse Gas Storage Act 2006 (OPGGS Act) provides the regulatory framework for all offshore petroleum exploration, production and greenhouse gas activities in Commonwealth waters. The OPGGS Act is supported by regulations and directions covering matters such as safety, diving, petroleum resource management and environmental management.

The objective of the OPGGS Act is to ensure that offshore petroleum operations are performed in a way that is consistent with the principles of ecologically sustainable development (ESD), through an accepted EP with agreed environmental outcomes and performance standards.

Approvals required of a titleholder under the OPGGS Act relevant to the activity include the following:

- Environment Plan (EP) assessment and acceptance
- Oil Pollution Emergency Plan (OPEP) (see Section 9.4) assessment and acceptance

NOPSEMA has responsibility for the assessment and acceptance of this EP in accordance with the provisions of the OPGGS(E) Regulations.

Prior to accepting an EP, NOPSEMA must be reasonably satisfied that the titleholder has demonstrated compliance with the financial assurance requirements of subsection 571(2) of the OPGGS Act in a form acceptable to NOPSEMA.

The Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (OPGGS(E) Regulations) are intended to ensure that petroleum activities are consistent with the principles of ecologically sustainable development (ESD), and in accordance with an accepted EP that has appropriate environmental performance outcomes and standards, as well as measurement criteria for determining whether the objectives and standards are met.

The OPGGS(E) Regulations define the following core elements as critical components of the EP:

- Identifying the applicable environmental regulatory requirements
- Identifying and assessing the potential environmental effects and risks associated with normal (routine), as well as unforeseen (non-routine) events
- Documenting the environmental outcomes, performance standards and measurement criteria to be implemented to reduce potential environmental effects of the activity to ALARP
- Documenting the environmental management strategies that are to be implemented to manage potential environmental effects associated with the activity
- Demonstration of appropriate levels of consultation with defined stakeholders

- The OPGGS(E) Regulations have been made under the OPGGS Act with the objective of ensuring that any petroleum or greenhouse gas activity carried out in the offshore area is carried out in a manner:
  - Consistent with the principles of ecologically sustainable development (ESD) as set out in Section 3A of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)
  - By which the environmental impacts and risks of the activity will be reduced to as low as reasonably practicable (ALARP)
  - By which the environmental impacts and risks of the activity will be of an acceptable level

The main sections of the OPGGS(E) Regulations that are applicable to this Offshore EP are Part 2, which addresses the requirements for environment plans; and Part 3, which describes the requirements for notification of reportable and recordable incidents, reporting environmental performance and storage and accessibility of records.

4.1.2 EPBC Act

The EPBC Act is the Australian Commonwealth Government's central piece of environmental legislation. The EPBC Act provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places, which are defined in the EPBC Act as matters of national environmental significance (MNES). The 9 MNES to which the EPBC Act applies are:

- World heritage properties
- National heritage places
- Wetlands of international importance (often called 'Ramsar' wetlands after the international treaty under which such wetlands are listed)
- Nationally threatened species and ecological communities
- Migratory species
- Commonwealth marine areas
- The Great Barrier Reef Marine Park
- Nuclear actions (including uranium mining); and
- A water resource, in relation to coal seam gas development and large coal mining development

With respect to operation, inspection and maintenance of the Offshore TGP, the relevant MNES are wetlands of international importance; nationally threatened species and ecological communities; migratory species; and Commonwealth marine areas. These have been identified and discussed in the previous section (Section 3.2).

Under the EPBC Act, activities in Commonwealth areas that could potentially result in killing, injuring, taking, trading, keeping or moving a member of a listed threatened species or ecological community, a member of a listed migratory species or a member of a listed marine species are illegal without a permit. Also, under the EPBC Act, all cetaceans (whales, dolphins and porpoises) are protected in Australian waters. The Australian Whale Sanctuary includes all Commonwealth waters from the 3 NM State waters limit out to the boundary of the Exclusive Economic Zone (i.e. out to 200 NM and further in some places). It is an offence to injure, take, trade, keep, move, harass, chase, herd, tag, mark or brand a cetacean in the Australian Whale Sanctuary without a permit.

NOPSEMA's environmental management authorisation process has been endorsed by the Federal Minister for the Environment as a program that meets the requirements of Part 10 (Section 146) of the EPBC Act. Since February 2014, NOPSEMA has responsibility for assessing oil and gas activities under the EPBC Act as part of its EP assessment process.

The OPGGS Act requires all activities to be consistent with the principles of ecological sustainable development (ESD), as defined by the EPBC Act (Part 3A). TGPPL has incorporated the principles of

ESD into the assessment methodology described in Section 5, in the development of control measures, the criteria for risk acceptance and in the definition of environmental performance outcomes and standards for each impact or risk. TGPPL believes that the commitments made within this EP demonstrate that the environmental management of the activity will be conducted in accordance with the principles of ESD.

TGPPL has confirmed in writing (letter from Director of National Parks dated 1 November 2013) that the pipeline licences issued under the Petroleum (Submerged Lands) Act 1967 are usage rights in relation to the seabed for the purposes of Section 359 of the EPBC Act and that as the licences were held immediately before the Beagle Australian Marine Park commenced, a permit is not required from the Director of National Parks to undertake repairs and maintenance.

4.1.3 Other Relevant Legislation

Commonwealth

- Aboriginal and Torres Strait Islander Heritage Protection Act 1984
- Australian Heritage Council Act 2003
- Australian Maritime Safety Authority Act 1990
- Biosecurity Act 2015 and Regulations 2016
- Biosecurity Amendment (Ballast Water and Other Measures) Act 2017
- Australian Ballast Water Management Requirements (Department of Agriculture, Water and Environment (DAWE, 2020)
- Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)
- Environment Protection and Biodiversity Conservation Regulations 2000
- Environment Protection (Sea Dumping) Act 1981
- Environment Protection (Sea Dumping) Regulations 1983
- National Environment Protection Council Act 1994
- National Greenhouse and Energy Reporting Act 2007
- Navigation Act 2012
- Navigation Regulations 2023
- Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023
- Ozone Protection and Synthetic Greenhouse Gas Management Act 1989
- Protection of the Sea (Harmful Antifouling Systems) Act 2006
- Protection of the Sea (Prevention of Pollution from Ships) Act 1983
- Protection of the Sea (Prevention of Pollution from Ships) (Orders) Regulations 1994
- Protection of the Sea (Powers of Intervention) Act 1981
- Protection of the Sea (Powers of Intervention) Regulations 1983
- Protection of the Sea (Civil Liability for Bunker Oil Pollution Damage) Act 2008
- Protection of the Sea (Shipping Levy) Act 1981
- Submarine Cables and Pipelines Protection Act 1963
- Underwater Cultural Heritage Act 2018

Victoria

- Aboriginal Heritage Act 2006

- Aboriginal Heritage Amendment Act 2016
- Aboriginal Heritage Regulations 2018
- Dangerous Goods Act 1985
- Dangerous Goods (Storage and Handling) Regulations 2022
- Emergency Management Act 2013 and Regulations 2003
- Environment Protection Act 2017
- Flora and Fauna Guarantee Act 1988
- Flora and Fauna Guarantee Regulations 2020
- Heritage Act 2017
- Heritage Amendment Act 2023
- Heritage Regulations 2017
- Heritage (Underwater Cultural Heritage) Regulations 2017
- Heritage (Historic Shipwrecks) Regulations 2007
- Marine and Coastal Act 2018
- Marine Safety Act 2010
- Marine Safety Regulations 2023
- Marine (Drug, Alcohol and Marine Pollution) Act 1988
- Marine (Drug, Alcohol and Marine Pollution) Regulations 2022
- Marine (Drug, Alcohol and Pollution Control) Amendment Regulations 2017
- National Parks Act 1975
- Offshore Petroleum and Greenhouse Gas Storage Act 2010
- Offshore Petroleum and Greenhouse Gas Storage Regulations 2021
- Pollution of Waters by Oils and Noxious Substances Act 1986
- Pollution of Waters by Oil and Noxious Substances Regulations 2022
- Wildlife Act 1975
- Wildlife Regulations 2024
- Wildlife (Marine Mammals) Regulations 2019.

Tasmania

- Aboriginal Heritage Act 1975
- Aboriginal Relics (Consequential Amendments) Act 2017
- Emergency Management Act 2006
- Environmental Management and Pollution Control Act 1994
- Historic Cultural Heritage Act 1995
- Marine-related Incidents (MARPOL Implementation) Act 2020
- Nature Conservation Act 2002
- National Parks and Reserves Management Act 2002
- Petroleum (Submerged Lands) Act 1982
- Petroleum (Submerged Lands) (Management of Environment) Regulations 2022

- Pollution of Waters by Oil and Noxious Substances Regulations 2017
- State Policy on Water Quality Management 1997
- Threatened Species Protection Act 1995
- Threatened Species Protection Regulations 2016
- Whales Protection Act 1988
- Whales Protection Amendment Act 2012

4.1.4 International Agreements and Conventions

Australia is a signatory to various international agreements that have marine environment protection aspects. Activities within Commonwealth waters are expected to comply with the relevant requirements of each agreement and convention, including:

- Agreement on the Conservation of Albatrosses and Petrels 2018 (ACAP)
- China-Australia Migratory Bird Agreement 1986 (CAMBA)
- Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties 1969 (the Intervention Convention)
- Convention on the International Regulations for Preventing Collisions at Sea 1972 (COLREGs)
- Convention on the Conservation of Migratory Species of Wild Animals 1983 (Bonn Convention)
- Convention on the Prevention of Marine Pollution by Dumping of Waste and Other Matter 1972 [London Convention]
- Convention on the Protection of the Underwater Cultural Heritage (UNESCO 2001)
- Convention on the Suppression of Unlawful Acts against the Safety of Maritime Navigation 1988
- Convention on Wetlands of International Importance 1971 (Ramsar Convention)
- Framework Convention on Climate Change 1992
- International Convention on Civil Liability for Oil Pollution Damage 1992
- International Convention for the Control and Management of Ships' Ballast Water and Sediments 2004
- International Convention on the Control of Harmful Anti-fouling systems on ships 2001 (HAFS Convention)
- International Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC) - 1990
- International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)
    - Annex I (Prevention of pollution by oil)
    - Annex II (Control of pollution from noxious liquid substances)
    - Annex III (Prevention of pollution by harmful substances in packaged form)
    - Annex IV (Prevention of pollution by sewage from ships)
    - Annex V (Prevention of pollution by garbage from ships)
    - Annex VI (Prevention of air pollution from ships)
- International Convention on the Safety of Life at Sea 1974 (SOLAS Convention)
- International Convention on Standards of Training, Certification and Watchkeeping for Seafarers 1978 (STCW)
- Japan-Australia Migratory Bird Agreement 1974 (JAMBA)
- Minamata Convention on Mercury 2013

- Montreal Protocol on Substances that Deplete the Ozone Layer 1987
- Protocol on the Prevention of Marine Pollution by Dumping of Waste and Other Matter 1996 [London Protocol]
- Protocol Relating to Intervention on the High Seas in Cases of Marine Pollution by Substances other than Oil 1973
- Protocol on Preparedness, Response and Cooperation to Pollution Incidents by Hazardous and Noxious Substances (OPRC-HNS Protocol)
- Republic of Korea-Australia Migratory Bird Agreement 2002 (ROKAMBA).
- United Nations Declaration of the Rights of Indigenous Peoples 2007
- Vienna Convention on the Protection of the Ozone Layer 1985

References to legislation governing the environmental impacts of Offshore TGP operations are summarised in **Error! Reference source not found.**. A Compliance Calendar identifying the key legislative compliance requirements is maintained by the General Manager TGPPL and includes relevant environmental requirements within the online maintenance system. Refer also to Section 8.6 for further information regarding environmental reporting requirements.

Detailed, current and cross-referenced guidance for all relevant environmental regulatory requirements in Victoria and Tasmania are available to all staff via the TGPPL Intranet. TGPPL also maintains a few subscription services with external service providers to ensure that management are informed when there are legislative or regulatory changes (refer to Section 8.5.1 for further detail).

4.2 Standards, Industry Codes and Guidelines

The principal relevant industry codes of practice, Australian Standards (AS) and guidelines applicable to Offshore TGP operations are provided below. These documents are to be referenced during operations to aid in environmental management of the Offshore TGP.

4.2.1 NATPLAN

The National Plan for Maritime Environmental Emergencies (NATPLAN) (AMSA, 2020) is managed by AMSA and sets out national arrangements, policies and principles for the management of maritime environmental emergencies. It gives administrative effect to Australia's emergency response obligations relating to the:

- International Convention on Oil Pollution Preparedness, Response and Co-operation 1990
- Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances 2000
- International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties 1969
- Articles 198 and 221 of the United Nations Convention on the Law of the Sea (UNCLOS) 1982.

Further details on NATPLAN and oil spill response are described in detail within the OPEP in Section 9.4.

4.2.2 Industry Codes of Practice

- Australian Petroleum Production & Exploration Association (APPEA) - Code of Environmental Practice 2008
- AMSA 2013, Technical Guideline for the Preparation of Marine Pollution Contingency Plans for Marine and Coastal Facilities,
- International Marine Contractors Association (IMCA) - Code of practice for the safe and efficient operation of remotely operated vehicles 2009 (IMCA R 004)

- International Maritime Organisation (IMO) - International Maritime Dangerous Goods (IMDG) Code 2008
- International Maritime Organisation - 2023 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species (Biofouling Guidelines)
- Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(2004)]
- Globally Harmonized System of Classification and Labelling of Chemicals (GHS)
- Safe Work Australia – Managing Risks of Hazardous Chemicals in the Workplace – Code of Practice (July 2012).

4.2.3 Industry Standards or Guidelines

- ASME B31.8: 2020 - Gas Transmission and Distribution Piping Systems
- AS 1940: 2017 - The storage and handling of flammable and combustible liquids
- AS 2885.1: 2018 – Pipelines – Gas and Liquid Petroleum – Part 1: Design and construction
- AS 2885.3: 2022 – Pipelines – Gas and Liquid Petroleum – Part 3: Operation and maintenance
- AS 2885.4: 2016 - Pipelines - Gas and Liquid Petroleum – Submarine Pipeline Systems
- AS 3780: 2023 - The storage and handling of corrosive substances
- AS ISO 19600:2023 – Compliance Management Systems – Guidelines
- AS/NZS ISO 14001: 2016 Environmental Management Systems – Requirements with guidance for use
- AS/NZS ISO 31000: 2009 - Risk Management – Principles and Guidelines
- SA/SNZ HB 436: 2013 – Risk Management Guidelines – Companion to AS/ZS ISO 31000: 2009)
- DNV Standard DNV-OS-F101: 2000 – Submarine Pipeline Systems (latest version 2021)
- DNV-RP B401: 2005 – Recommended Practice - Cathodic Protection Design (latest version 2021-05)
- DNV-RP-F105: 2006 Recommended Practice – Free Spanning Pipelines (Edition 2017-06 0 Amended 2021-09)
- DNV-RP-F109: 2010 - On-bottom Stability Design of Submarine Pipelines (previously DNV-RP E305: 1988) (Edition 2021-05)
- DNV-RP-C205: 2014 – Environmental Conditions and Environmental Loads (previously DNV CN 30.5) (Edition 2019-09 - Amended 2021-09)
- DNV-RP-F111: 2014 - Interference between Trawl Gear and Pipelines (Edition 2017-05 - Amended 2021-10)
- HB 203: 2012 – Managing environment-related risk
- IMCA D042 - Diver and ROV based concrete mattress handling, deployment, installation, repositioning and decommissioning (also IMCA R016 2011), Rev. 1 (September 2011).

4.2.4 Other Environmental Guidelines

- Australian National Guidelines for Whale and Dolphin Watching 2017 (DoEE)
- EPBC Act Significant Impact Guidelines 1.1 – Matters of National Environmental Significance
- Environmental Management in Oil and Gas Exploration and Production, International Association of Oil and Gas Producers (OGP) (1997)
- National biofouling management guidance for the petroleum production and exploration industry (Commonwealth of Australia, April 2009)

- National Strategy for Ecologically Sustainable Development, ESDSC (1992)
- NOPSEMA Guidance Notes (including but not limited to the following Guidance Notes):
  - GN-0166 – ALARP
  - GN-0271 - Control measures and performance standards
  - GN-0926 - Notification and Reporting of Environmental Incidents
  - GN-1065 - Risk assessment
  - GN-1344 - Environment Plan Content Requirements
  - GN-1488 - Oil Pollution Risk Management
  - GN-1785 - Petroleum Activities and Australian Marine Parks

5. ENVIRONMENTAL MANAGEMENT FRAMEWORK

The environmental management of the Offshore TGP will be guided by this Offshore EP, AS/NZS ISO 14000 and the environmental policies of PIMS / TGPPL and its contractors.

AS / NZS 2885.1:2018, Clause 2.5 also requires the threats to the environment from each part of the life cycle of the pipeline to be identified and control measures implemented so that the risks to the environment are reduced to an acceptable level.

5.1 Environmental Risk Management Process

TGPPL has undertaken an environmental risk assessment (ERA) to identify potential environmental risks associated with operation, inspection and maintenance of the Offshore TGP to ensure that identified risks are reduced to ALARP and will be of an acceptable level consistent with TGPPL and industry standards. The environmental risk management process is outlined in Section 5.1.2 below.

This section of the Offshore EP only addresses the environmental risk management process however, the overall TGP Risk Management process is a whole of life process conducted during the three project phases of design, pre-commissioning, post-commissioning and continuing through ongoing operations and eventually de-commissioning. The process incorporates a range of activities to ensure that all risks to people, the facilities, environment and continuity of supply are identified and managed to be ALARP and acceptable.

5.1.1 Definitions

The following definitions in Table 5-1 are relevant to the ERA and management process. Where not specifically referenced, the definitions are from AS/NZS ISO 31000: 2009 – Risk Management – Principles and Guidelines.

Table 5-1: Definitions for Environmental Risk Assessment Terminology

Term	Definition
Consequence	Outcome of an event affecting objectives. An event can lead to a range of consequences, and a consequence can be certain or uncertain and can have positive or negative effects on objectives. Consequences can be expressed qualitatively or quantitatively. Initial consequences can escalate through knock-on effects.
Control	Measure that is modifying risk, and may include any process, policy, device, practice, or other actions which modify risk.
Environmental aspect	Element of an organization's activities or products or services that can interact with the environment (AS/NZS ISO 14001: 2004).
Environmental impact	Any change to the environment or a component of the environment, whether adverse or beneficial, wholly or partly resulting from an organisation's environmental aspects (AS/NZS ISO 14001: 2004).
Event	Occurrence or change of a particular set of circumstances. An event can sometimes be referred to as an "incident" or "accident", and an event without consequences may be referred to as a "near miss".
Inherent risk	Is essentially the risk prior to risk treatment, i.e. without any mitigation measures / management controls in place.
Likelihood	Chance of something happening, whether defined, measured or determined objectively or subjectively, qualitatively or quantitatively, and described using general terms or mathematically (such as a probability or a frequency over a given time/period).
Level of risk	Magnitude of a risk or combination of risks, expressed in terms of the combination of consequences and their likelihood.

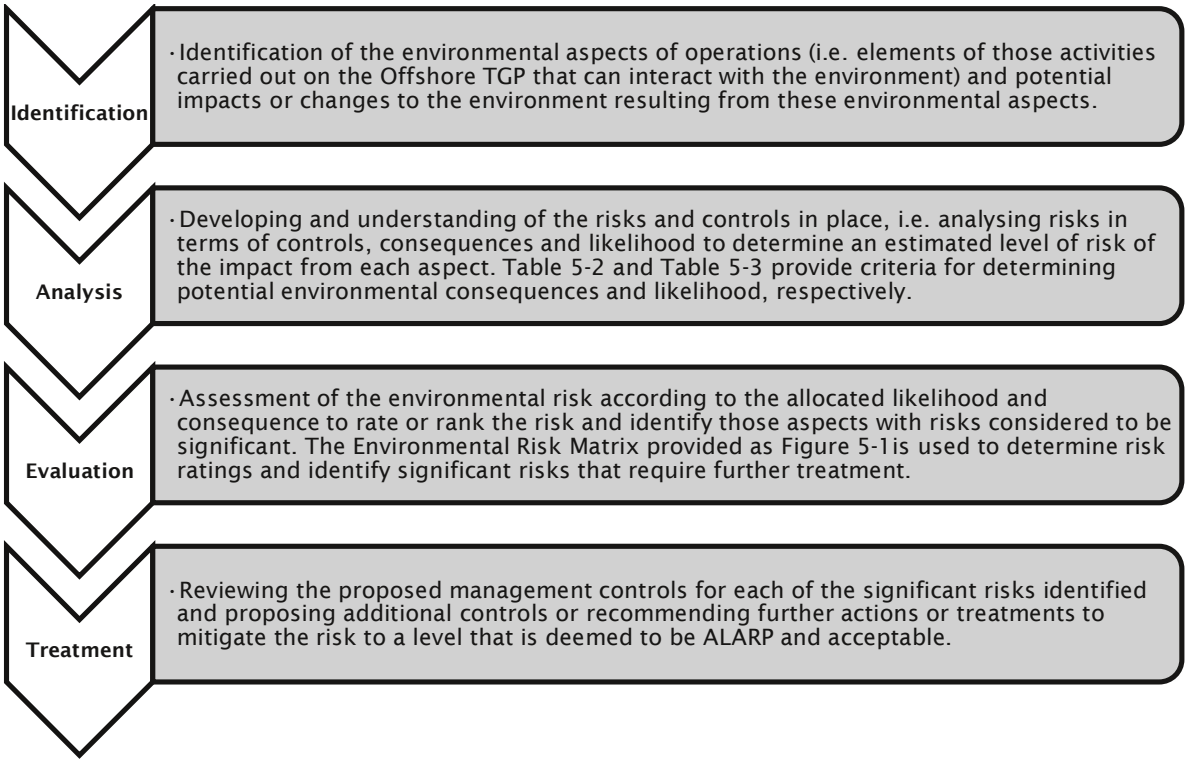
Term	Definition
Monitoring	Continual checking, supervising, critically observing or determining the status in order to identify change from the performance level required or expected. Monitoring can be applied to a risk management framework, risk management process, risk or control.
Residual risk	Risk remaining after risk treatment.
Review	Activity undertaken to determine the suitability, adequacy and effectiveness of the subject matter to achieve established objectives. Review can be applied to a risk management framework, risk management process, risk or control.
Risk	Effect of uncertainty on objectives.
Risk analysis	Process to comprehend the nature of risk and to determine the level of risk.
Risk assessment	The overall process of risk identification, risk analysis and risk evaluation.
Risk criteria	Terms of reference against which the significance of a risk is evaluated.
Risk evaluation	Process of comparing the results of risk analysis with risk criteria to determine whether the risk and/or its magnitude is acceptable or tolerable.
Risk identification	Process of finding, recognizing and describing risks.
Risk management	Coordinated activities to direct and control an organization with regard to risk.
Risk management process	Systematic application of management policies, procedures and practices to the activities of communicating, consulting, establishing the context, and identifying, analysing, evaluating, treating, monitoring and reviewing risk.
Risk source	Element which alone or in combination has the intrinsic potential to give rise to risk.
Risk treatment	Process to modify risk. Risk treatment can involve: avoiding the risk by deciding not to start or continue with the activity that creates the risk; taking or increasing risk in order to pursue an opportunity; removing the risk source; changing the likelihood; changing the consequences; sharing the risk with another party or parties (including contracts and risk financing); and retaining the risk by informed decision. Risk treatments that deal with negative consequences are sometimes referred to as "risk mitigation", "risk elimination", "risk prevention" and "risk reduction".

5.1.2 Environmental Risk Management Model

Environmental risk assessment and management for this Offshore EP has been undertaken using a methodology that is consistent with the approach outlined in the following standards and guidelines:

- AS/NZS ISO 14001: 2004 - Environmental Management Systems- Requirements with Guidance for Use
- AS/NZS 2885.1: 2018 - Pipelines - Gas and Liquid Petroleum, Part 1 – Design and Construction
- AS/NZS 31000: 2009 - Risk Management – Principles and Guidelines
- HB 203: 2012 – Managing environment-related risk

The model used to evaluate and manage environmental risks potentially resulting from Offshore TGP operation and associated inspection and maintenance activities comprises the following main components:



It should be noted that, although AS/NZS 2885.1 details a risk management process specific to pipelines, a more general ERA process was adopted to more effectively address environmental risks associated with pipeline operation, inspection and maintenance activities in the marine environment. Therefore, although there are some similarities, the consequence, likelihood and risk matrix tables provided below (Table 5-2, Table 5-3 and Figure 5-1, respectively) do not resemble those in AS/NZS 2885.1. For further details of the AS/NZS 2885.1 risk assessment process employed as part of the Formal Safety Assessment (FSA) for the Offshore TGP, refer to Section 3.4 of the *TGP Offshore Safety Case (TGP-698-SC-HSE-004).*

During development of the Offshore EP, inherent risk was also determined based on a scenario which considered that there were no management controls / mitigation measures in place, i.e. pre-treatment. This enabled the effectiveness of the controls, resulting in the residual risk, to be determined.

The environmental risk management process includes the identification of hazards or risks that are applicable to operational and maintenance activities and determination of the possible causes that could lead to the environmental risks identified. Each risk is evaluated using the Environmental Risk Matrix provided in Figure 5-1 to determine a risk ranking based on a combination of the expected frequency of the event occurring and the projected consequences from the event. As a result of the assessment, the appropriate management and control measures or treatments are implemented to keep the risks at a level considered to be ALARP. Further information is provided in Sections 0 and 5.1.4 below.

Table 5-2: Environmental Consequences Classification

Consequence classification	Biodiversity		Environmental Quality			Societal considerations		
	Protected species	Ecological diversity	Water quality	Marine sediment quality	Air quality	Protected areas	Cultural matters	Compliance
Catastrophic (A)	Eradication of local population. Loss of critical habitats or activities.	Significant and permanent effects on ecological diversity on a regional scale.	Continuous or regular water contamination above background, national / international quality standards and/or known biological effect concentrations on a regional scale.	Permanent to long-term contamination above background, national / international quality standards and/or known biological effect concentrations on a regional scale.	Continuous exceedance of national or international air quality standards. Human fatalities possible.	Significant permanent impact on one or more of protected-areas values.	Significant permanent effect on aesthetic, heritage, economic or recreational values. Overall societal benefits do not outweigh impacts.	Significant and continuous licence, regulatory or company target exceedances. Fines and/or prosecutions incurred or expected.
Severe (B)	Extensive impact on population(s). Significant impact on critical habitats or activities.	Significant and permanent effects on ecological diversity on large scale.	Continuous or regular water contamination above background, national / international quality standards and/or known biological effect concentrations on a large scale.	Permanent to long-term contamination above background, national / international quality standards and/or known biological effect concentrations on a large scale.	Frequent and sustained exceedance of national or international air quality standards. Human fatalities possible.	Significant long-term impact on one or more of protected-areas values.	Significant long-term effect on aesthetic, heritage, economic or recreational values. Overall societal benefits do not outweigh impacts.	Frequent and significant licence, regulatory or company target exceedances. Fines or prosecutions likely.
Major (C)	Minor disturbance to significant portion of population. Minor impacts on critical habitats or activities. No threat to overall population viability.	Significant and permanent effects on ecological diversity on medium scale.	Continuous or regular discharge, with contamination above background, national / international quality standards and/or known biological effect concentrations on a medium scale.	Permanent to long-term contamination above background, national / international quality standards and/or known biological effect concentrations on a medium scale.	Frequent, short-term exceedance of national or international air quality standards. Human illness and environmental impacts possible.	Moderate long-term or permanent impact on one or more of protected-areas values.	Moderate effect on aesthetic, heritage, economic or recreational values. Overall societal benefits do not outweigh impacts.	Frequent, minor to moderate licence, regulatory or company target exceedances. Fines or prosecutions possible.
Moderate (D)	Minor disturbance or impact on a small portion of population. Minor and temporary impact on critical habitat or activity. No threat to overall population viability.	Loss of ecological diversity on a medium scale. Community or habitat maintains ecological integrity but some change in species composition or abundance. Communities, habitats and species well represented regionally.	Continuous or regular discharge, with contamination above background, national / international quality standards and/or known biological effect concentrations on a local or medium scale.	Short- to medium-term contamination above background, national / international quality standards and/or known biological effect concentrations on a medium scale.	Frequent temporary exceedance of national or international air quality standards. Human illness and environmental impacts possible.	Moderate medium term impact on one or more of protected-areas values. Full recovery expected.	Moderate effect on aesthetic, heritage, economic or recreational values. Overall societal benefits outweigh impacts.	Occasional significant licence, regulatory or company target exceedances. Fines or prosecutions possible.
Minor (E)	Minor and temporary disturbance to small portion of population. No impact on critical habitat or activity.	Loss of ecological diversity on a localised scale. Community or habitat maintains ecological integrity but some change in species composition or abundance. Communities, habitats and species well represented regionally.	Continuous or regular discharge, with contaminants reduced to below background, national / international quality standards and/or known biological effect concentrations within a small mixing zone.	Short- to medium-term contamination above background, national / international quality standards and/or known biological effect concentrations on a localised scale.	Occasional and temporary exceedance of national or international air quality standards. No effect on human health or the environment.	Minor medium-term impact on one or more of protected-areas values. Full recovery expected.	Minor effect on aesthetic, heritage, economic or recreational values.	Occasional minor licence, regulatory or company target exceedances. No fines or prosecutions.
Slight (F)	Behavioural responses of negligible ecological significance.	Minor loss of ecological diversity on localised scale. Communities, habitats and species well represented on medium scale.	Occasional discharge, with contaminants reduced to below background, national / international quality standards and/or known biological effect concentrations within a small mixing zone	Short-term contamination above background, national / international quality standards and/or known biological effect concentrations over a very small area (<1 km^2).	Very infrequent and temporary exceedance of national or international air quality standards. No effect on human health or the environment.	Negligible impact on protected-areas values.	Negligible effect on aesthetic, heritage, economic or recreational values.	Very infrequent minor licence, regulatory or internal target exceedances.

Table 5-3: Likelihood Class

Likelihood class	Likelihood description
1. Highly Likely	Has occurred frequently at the location
2. Likely	Has occurred frequently within the company
3. Possible	Has occurred once or twice in the company
4. Unlikely	Has occurred several times within the industry but not within the company
5. Highly Unlikely	Has occurred once or twice in the industry
6. Remote	Unheard of in the industry

			Likelihood					
			6	5	4	3	2	1
			Remote	Highly unlikely	Unlikely	Possible	Likely	Highly likely
Consequence	A	Catastrophic						
	B	Severe					Critical	
	C	Major				High		
	D	Moderate			Medium			
	E	Minor		Low				
	F	Slight						

Risk Level	Description	Risk Management Actions
Critical	Intolerable	Undertake an ALARP assessment to try to modify the threat, likelihood or consequences. For an operating pipeline or existing activity, the risk should be reduced immediately.
High	Tolerable	Further assess risk and manage to an ALARP level. For an operating pipeline or existing activity, the risk should be reduced as soon as possible, typically within a few weeks.
Medium		Review to ensure that adequate barriers and controls are in place. Try to implement additional mitigation measures / controls to further reduce risk.
Low	Acceptable	Manage by operational documentation / procedures. No further risk reduction required.

Figure 5-1 Environmental Risk Matix

5.1.3 Environmental Risk Assessment (ERA) Process

The ERA process applied is a detailed and systematic assessment of the risk associated with each identified hazard, including an assessment of the consequences and likelihood of each potential incident. The process is summarised as follows:

- ERAs are undertaken as structured workshops facilitated by an independent facilitator, with involvement from members of the workforce (where appropriate) and other external personnel with experience and knowledge appropriate to issues being considered
- The identified hazards or potential incidents are reviewed, and the associated risks (without controls) are analysed in terms of the likelihood of their occurrence and the consequences that would result if they did occur. Based on the combination of likelihood and consequences, a resultant risk ranking (inherent risk) is attributed using the Risk Matrix in Figure 5-1
- Controls and mitigation measures in place to prevent, mitigate or recover from the potential risk are then analysed and the likelihood and consequences of the risk, following the application of these controls and consideration of any assumptions and uncertainties, is re-evaluated. Relevant legislation, policy and management / threat abatement plans are also considered in the measures where applicable.
- This results in a residual risk ranking, which is also assigned using the Risk Matrix in Figure 5-1. Where the risk assessment is a review of previous risk assessments, only the existing residual risk ranking is reviewed in consideration of any new information relevant to the hazard being considered
- As detailed in Section 5.1.4 below, residual risks that are rated as “Low” are considered “Acceptable”, whereas residual risks classified as “Critical” are considered “Intolerable” risks that must be managed immediately to reduce the risk
- “High” and “Medium” level risks are considered “Tolerable”, however, they must be subject to an ALARP assessment to determine whether the risks can be further reduced by implementing additional controls and mitigation measures
- ALARP assessments are reviewed for relevance and consistency as part of the ERA review process (refer below)
- Matters requiring action are recorded in an Action Plan. It is a requirement that these action plan items are followed up and closed out in a timely manner
- The TGP Offshore ERA / Environmental Aspects and Impacts Register (Appendix A) is updated as part of the ERA process

It should be noted that the TGP Offshore ERA/Environmental Aspects and Impacts Register (Appendix A) is a “live” document that is used and continually updated, as required, during operation, inspection and maintenance of the Offshore TGP to facilitate the appropriate management of all identified environmental risks. The environmental risk associated with Offshore TGP activities will be continually assessed as part of the “continual improvement” component of the environmental management process. The TGP Offshore ERA / Environmental Aspects and Impacts Register will be reviewed and updated, where required, whenever a review and amendment of the Offshore EP is required (refer to Section 8.5.5).

5.1.4 Risk Acceptance and ALARP Demonstration

The residual risk rankings from the ERA process are then evaluated to determine whether identified risks were considered acceptable or whether further management controls and mitigation measures were deemed necessary.

ALARP is defined as a level of risk that is tolerable and cannot be further reduced without the expenditure of costs that are disproportionate to the benefit gained or where the solution is impractical to implement. Consequently, a risk reduction measure could be considered as being reasonably practicable if the costs to implement it are not grossly disproportionate to the reduction in risk achieved.

As per Section 3.6.3 of *HB 203: 2012 Managing environment-related risk*, environmental risks with adverse impacts can generally be placed into the following 3 categories:

- **Intolerable Risks** – Risks that are unacceptable in any circumstances or at any level, or exceed thresholds set by regulations.
- **Tolerable Risks** – Risks that require further consideration to decide whether and how to treat them. This could involve a more detailed analysis to better understand the risk or a cost-benefit analysis of different potential treatment options. Risks are referred to as "tolerable" because they are tolerated under particular circumstances or for a specified time.
- **Acceptable Risks** – Risks that are at an acceptable level and do not need to be considered further.

As shown in Figure 5-1, residual risks classified as "Critical" are considered "Intolerable" risks that must be managed immediately to reduce the risk. Risks classified as "Low" are considered "Acceptable" risks, with no further risk reduction required. "High" and "Medium" level risks are considered "Tolerable", however, they must be subject to an ALARP assessment to determine whether the risks can be further reduced by implementing additional controls and mitigation measures. "High" level risks must be managed as a higher priority and within a shorter timeframe than those risks classified as "Medium" level.

In alignment with NOPSEMA's ALARP Guidance Note (N-04300-GN0166, 2022) TGP have adopted the approach developed by Offshore Energies UK (OEUK) (formerly Oil and Gas UK) (OGUK, 2014) for use in the environmental context to determine and the assessment technique required to demonstrate that potential impacts and risks are ALARP (Figure 5-2).

Good practice controls are considered sufficient demonstration of ALARP in cases where the risk is relatively well understood, the potential impacts are low, activities are well practiced, and there are no conflicts with company values or significant media interest. This is referred to as Decision Context A.

An engineering risk assessment is required to demonstrate ALARP in cases where there is greater uncertainty or complexity around the activity and/or the risk / potential impact is moderate, it may attract local media attention and some persons may object. This is referred to as a Decision Context B.

Where the impact is sufficiently complex, has a high potential, uncertainty, or relevant person influence to require the precautionary approach, this is referred to as a Decision Context C. In this case, relevant good practice is still necessary, along with engineering risk assessment. The precautionary approach is to be applied for those controls that only have a marginal cost benefit.

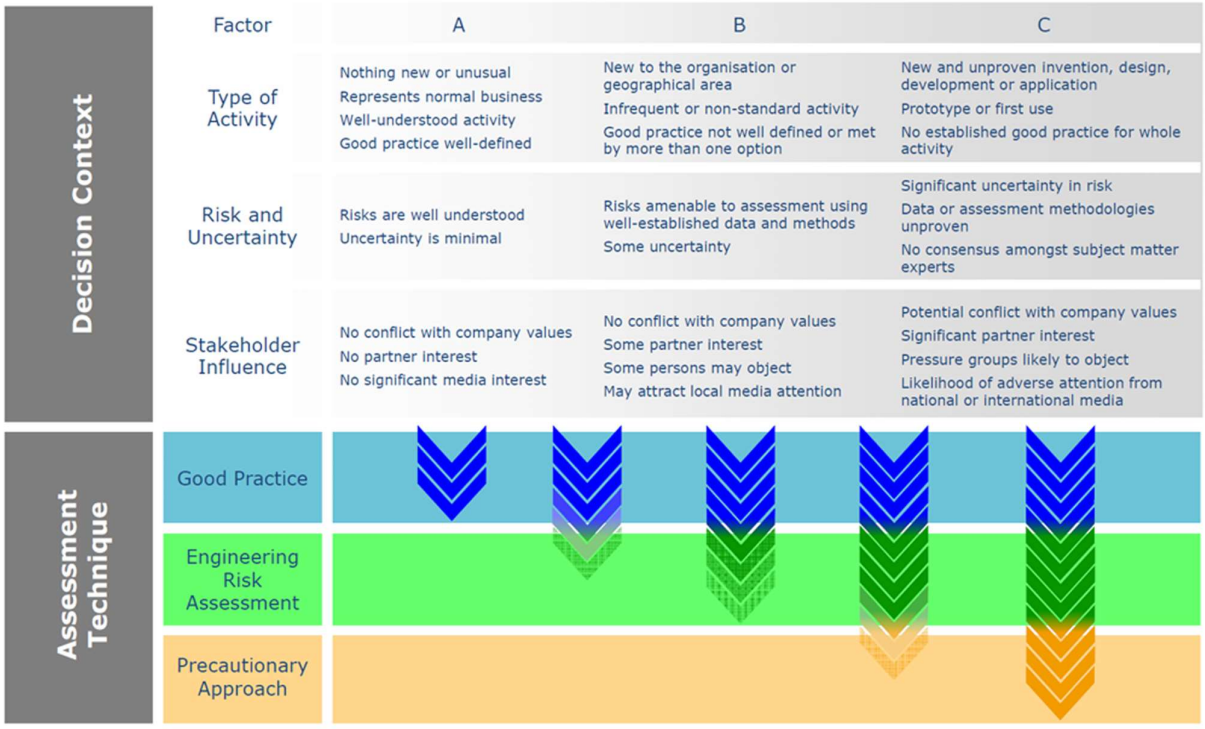


Figure 5-2: Risk Related Decision Support Framework (NOPSEMA, 2022)

5.1.4.1 Good practice

Good practice can be used as a generic term for those controls that are recognised as satisfying the law. For this EP, sources of good practice include:

- Requirements from Australian legislation and regulations.
- Relevant Australian policies.
- Relevant Australian Government guidance.
- Relevant industry standards and/or guidance.
- Relevant international conventions.

If Decision Context A is determined, then further assessment (engineering risk assessment) is not required to identify additional controls.

5.1.4.2 Engineering risk assessment

Where good practice is not well defined or where circumstances are not fully within the scope of current good practice, a more detailed engineering risk assessment is required. This assessment should include an assessment of risks, costs, environmental and socioeconomic benefits (OGUK, 2014).

5.1.4.3 Precautionary approach

If the assessment, taking account of all available engineering and scientific evidence is insufficient, inconclusive or uncertain, then a precautionary approach to hazard management is needed (OGUK, 2014).

A precautionary approach will mean that environmental considerations are expected to take precedence over economic considerations, and a control measure that may reduce environmental impact is more likely to be implemented.

5.1.5 Demonstration of Acceptable Level of Risk

An environmental impact or risk is reduced to acceptable levels if:

- The level of residual environmental risk was assessed as being ALARP; per Section 5.1.4); and
- The level of residual environmental risk was either Low or Medium; and
- The activity is commonplace in current offshore practice, and is compliant with current industry/TGPPL policy and standards, and Australian legislation; and
- The level of residual environmental risk does not affect biological diversity, ecological integrity or has the potential to result in serious or irreversible environmental damage; and
- Valid claims or objections to the risk from relevant persons or stakeholders, if any, are considered.

These factors are used to demonstrate acceptability in Section 6.

5.1.6 Principles of ESD and the Precautionary Approach

Under Section 391(2) of the EPBC Act, a lack of full scientific certainty should not be used as a reason for postponing a measure to prevent degradation of the environment where there may be threats of serious or irreversible environmental damage. Acceptability evaluations against the principles of ESD are provided in Table 5-4.

Table 5-4: Principles of ESD

Principle	Relevant to Acceptability
Decision making processes should effectively integrate both long term and short term economic, environmental, social and equitable considerations.	This principle is inherently met through the EP assessment process. This principle is not considered separately for each acceptability evaluation.
If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.	An evaluation is completed to determine if the activity will result in serious or irreversible environmental damage. Where the activity has the potential to result in serious or irreversible environmental damage, further assessment is undertaken to determine if there is significant uncertainty in the evaluation.
The principle of inter-generational equity, where the present generation should ensure that the health, diversity and productivity of the environment in maintained or enhanced for the benefit of future generations.	Where the potential impacts and risks are determined to be serious or irreversible, the precautionary principle is implemented to ensure the environment is maintained for the benefit of future generations.
The conservation of biological diversity and ecological integrity should be fundamental in decision making.	An assessment is completed to determine if there is a potential to impact biological diversity and ecological integrity.
Improved valuation, pricing and incentive mechanisms should be promoted.	This is not considered relevant for a pipeline operation activity acceptability demonstration.

5.1.7 Environmental Risk Management Review

The General Manager TGPPL ensures that the TGP Offshore ERA/Environmental Aspects and Impacts Register (Appendix A) is maintained and that a regular review of the contents of the register is undertaken to ensure that the information contained is both current and accurate as it relates to TGPPL's operations. As discussed in Section **Error! Reference source not found.** above, as an integral component of the Offshore EP, the TGP Offshore ERA / Environmental Aspects and Impacts

Register will also be reviewed and amended, as required, in line with the requirements of Section 8.5.5.

The General Manager TGPPL also manages an *Incident Management System* (IMS) for the TGP. This system registers all TGP incidents and the progress of actions to resolve issues and is available to all TGPPL personnel.

5.2 Sources of Environmental Risk

5.2.1 Planned Activities

The main sources of environmental risk associated with the Offshore TGP relate to activities which are planned and undertaken on a periodic basis only (approximately every 5 years – refer to Table 2-3 for more detail on planned activities frequency). Examples of these sources of environmental risk include:

- Routine inspection surveys, including the timing, location, use and presence of vessels and inspection equipment.
- Pipeline maintenance activities, such as span correction and anode replacement.
- Storage, handling and disposal of waste and chemicals on board vessels during inspection and maintenance activities.

Generally, the potential environmental impacts associated with planned activities are less significant than those potentially resulting from unplanned activities or incidents. However, as these sources of risk relate to planned activities occurring on a routine basis, this Offshore EP and associated TGP Offshore ERA/Environmental Aspects and Impacts Register (Appendix A) contain controls and mitigation measures to ensure environmental impacts and risks are reduced to ALARP and are of an acceptable level.

For further details regarding potential environmental impacts from Offshore TGP activities and the proposed controls and mitigation measures to minimise these impacts, refer to Section 6 and Appendix A.

5.2.2 Unplanned Activities

Unplanned activities or events that could potentially impact on the Offshore TGP are largely related to management of pipeline integrity. TGPPL has additional documented measures to manage such issues are that addressed in the *TGP Offshore Pipeline Integrity Management Plan (TGP-698-PA-IP-002)* and discussed in more detail in Section 6.10.

The TGP is licensed to carry natural gas only, i.e. it contains no liquid hydrocarbons or contaminating compounds. Therefore, in the event of loss of pipeline integrity, the Offshore TGP is not considered a credible source of liquid hydrocarbon spills. As detailed in Section 2.2.2.1, a subsea gas leak due to loss of pipeline integrity is not expected to have any adverse environmental impacts.

During the ERA process, a number of unplanned activities or environmental incidents that could potentially result in environmental impacts were also identified, including: vessel collision with marine megafauna, potentially resulting in injury or death (refer to Section 6.1); small scale chemical spills from vessel decks and inspection/maintenance equipment (refer to Section 6.7); introduction of invasive marine species from vessel ballast water discharge or biofouling (refer to Section 6.8) and relatively large scale fuel spills caused by vessel accidents (refer to Section 6.9).

Response requirements in the event of an emergency or incident are discussed in Section 9 of this Offshore EP, and oil spill response requirements are detailed in Section 9.4 Oil Pollution Emergency Plan (OPEP).

5.3 Other TGP Risk Management Studies

The other Risk Management Studies conducted by TGPPL in addition to the ERA for the offshore TGP are the Define Phase Risk Assessment and the Operations Risk Assessments.

From the Design Phase, the risk management documentation and processes related to safety and pipeline integrity for TGP offshore operations are detailed in the:

- *TGP Offshore Safety Case (TGP-698-SC-HSE-004)*, provides information on how TGPPL ensures the integrity and safe operation of the Offshore TGP; and
- *TGP Offshore Pipeline Integrity Management Plan (TGP-698-PA-IP-002),* which outlines the risks associated with loss of pipeline structural integrity, both internally and externally

The Operations Risk Assessments are considered more 'live' and dynamic, following the TGPPL document control and regular review processes. The assessments include:

- A formal risk assessment for any new onshore pipeline lateral designs using the *AS/NZS 2885.1* methodology, and the Pipeline Risk Assessment Database updated with the outcomes of the new risk assessment studies
- HAZOP studies are performed for any design changes related to onshore facilities
- Procedural risk control measures identified during either the *AS/NZS 2885.1* risk assessment process or the HAZOP process are documented in procedures and work instructions before the new onshore laterals or modified onshore facilities come online. Changes introduced by new designs are managed using a formal change management process in accordance with the *TGP Change Management Plan (TGP-698-PA-CM-001)*
- Development and maintenance of the TGP Operational Risk Register to identify and manage hazards associated with work activities on the Offshore TGP
- Development and maintenance of the TGP Offshore ERA / Environmental Aspects and Impacts Register to identify and manage environmental impacts associated with work activities on the Offshore TGP
- Hazard Identification (HAZID) risk assessment performed prior to any Offshore TGP inspection or maintenance activities being carried out
- The Job Hazard Analysis (JHA) risk assessment process is used for all work activities on the TGP to identify and control hazards and reduce associated risks. The JHA is an integral component of the *TGP Permit to Work (PTW) Procedure (TGP-698-PR-HSE-004)*
- A full *AS/NZS 2885.1* pipeline risk assessment (Safety Management Study) is conducted at least every five years, with changes managed using the GIS system, operator knowledge and the TGP Risk Register
- An annual AS/NZS 2885.1 pipeline risk assessment / review is conducted on the Offshore TGP in accordance with the *TGP Offshore Pipeline Integrity Management Plan (TGP-698-PA-IP-002).* The most recent pipeline integrity review report was undertaken in January 2024.
- Any alterations to the Offshore TGP will be in accordance with the *TGP Change Management Plan (TGP-698-PA-CM-001)* and will be subject to a thorough engineering review. However, no modifications to the Offshore TGP are envisaged at the time of submitting the EP.

6. ENVIRONMENTAL IMPACTS, RISKS AND CONTROL MEASURES

This section will discuss the environmental impacts associated with this activity, assess the consequences and the control measures to be implemented to reduce impacts to ALARP and acceptable levels. Part of the ALARP assessment includes an examination of controls considered and assessed against the acceptability criteria. Environmental protection objectives (EPOs), controls, environmental protection standards (EPSs) and measurement criteria are provided for each aspect in Section 7.

A summary of the impacts and risks is provided in Table 6-1.

Table 6-1: Summary of impact assessment

Section Reference	Aspect	Inherent Consequence Level	Residual Consequence Level	Residual Risk Level
6.1	Physical presence – marine flora and fauna	Moderate	Minor	Low
6.2	Physical present – marine environment	Minor	Slight	Low
6.3	Physical present – disruption to other marine users	Minor	Slight	Low
6.4	Planned emissions – sound	Minor	Slight	Low
0	Planned emissions – air emissions	Slight	Slight	Low
6.6	Waste management	Minor	Minor	Low
6.7	Chemical management	Minor	Minor	Low
6.8	Ballast water and biofouling management	Minor	Slight	Low
6.9	Unplanned discharge – loss of containment (fuel)	Moderate	Minor	Low
6.10	Pipeline integrity management	Moderate	Minor	Low

6.1 Protection of Marine Flora and Fauna

Marine flora and fauna species; and communities have been identified along the Offshore TGP route as detailed in Section 3.1.2.

Threatened species and communities listed under the EPBC Act are protected by legislation and include species listed as endangered or vulnerable, migratory species including birds and mammals, and cetaceans including whales and dolphins. In addition, State legislation protects threatened species, communities, and whales in coastal waters (refer to **Error! Reference source not found.**). Under State and Commonwealth legislation it is an offence to kill, injure, take or interfere with threatened species, migratory species and cetaceans.

TGP offshore inspection and maintenance activities have the potential to impact on marine flora and fauna through the presence and use of vessels and inspection/maintenance equipment. Benthic fauna and flora may also be affected by any activities that lead to disturbance to the seabed. There are currently no species of marine flora listed under the EPBC Act or listed marine ecological

communities within the direct vicinity of the Offshore TGP. Therefore, the following sections will only address potential impacts related to marine fauna.

6.1.1 Impact of Activities

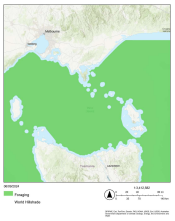
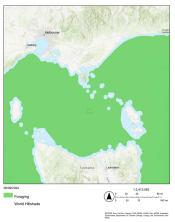
TGP. Daily pipeline operations (i.e. continuous transport of gas) are completely internal to the pipeline, with no offshore activities or external effects during standard operating conditions. Impacts to marine fauna will only potentially occur during Offshore TGP inspection and maintenance activities. Activities and incidents associated with the Offshore TGP that could potentially result in impacts to marine fauna include:

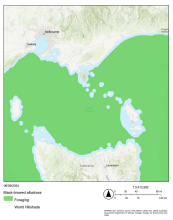
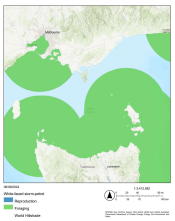
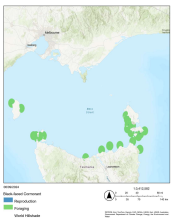
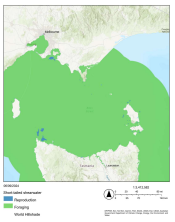
- Vessel movements resulting in vessel strike (Australian National Guidelines for Whale and Dolphin Watching 2017)
- Operation of vessel and maintenance equipment creating underwater noise (refer to Section 6.4)
- Pipeline inspection / survey activities, e.g. use of ROV / AUV or SSS (underwater noise) (refer to Section 6.4)
- Inappropriate ballast water or biofouling management on vessels (refer to Section 6.8)
- Dropped objects from vessels (including inspection and maintenance equipment) (refer to Section 6.2)
- Pipeline maintenance activities (e.g. span correction) (refer to Section 6.2)
- Vessel anchor dragging along the seabed (refer to Section 6.2)
- Light Pollution – particularly for turtles, All: National Light Pollution Guidelines for Wildlife (DCCEEW, 2023)

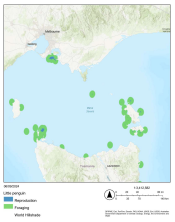
In Table 6-2, several species with BIA's that intersect either OA or ZPI are identified with reference to key threats that are mentioned in the Conservation advice or Recovery plan. Section 6.1.2 details the threats to these species in more detailed where the BIA intersects with the planned activities, where Section 6.9.2 further elaborates on environmental impact to marine flora and fauna in more detail.

Table 6-2: Table of Control Measure Sections relevant to EPBC Protected Species with BIA Map and Conservation Advice

Common Name	Key Threats (relevant to petroleum activities)	Control Measure(s) Sections	BIA Time Frame	Conservation Advice or Recovery Plan	BIA Map
Great White Shark	None identified	N/A	None specified	Recovery Plan for the White Shark	
Pygmy Blue Whale	Noise interference Habitat modification from marine debris or chemical discharge Vessel strike	Section 6.4 Sections 6.6, 6.7 and 6.8 Section 6.1	None specified	Conservation Management Plan for the Blue Whale, 2015-2025	

Common Name	Key Threats (relevant to petroleum activities)	Control Measure(s) Sections	BIA Time Frame	Conservation Advice or Recovery Plan	BIA Map
Southern-right Whale	Noise interference Pollution Vessel strike	Section 6.4 Sections 6.6, 6.7 and 6.8 Section 6.1	**Reproduction:** approx. May-December **Migration:** approx. April - October	Conservation Management Plan for the Southern-right Whale, 2011-2021, National Recovery Plan for the Southern Right Whale (Eubalaena australis) 2024	
Antipodean Albatross	Human disturbance Marine pollution, including marine debris	Section 6.1 Sections 6.6, 6.7 and 6.8	None specified	National Recovery Plan for Albatrosses and Petrels (2022)	
Wandering Albatross	Human disturbance Marine pollution, including marine debris	Section 6.1 Sections 6.6, 6.7 and 6.8	None specified	National Recovery Plan for Albatrosses and Petrels (2022)	
Buller's Albatross	Human disturbance Marine pollution, including marine debris	Section 6.1 Sections 6.6, 6.7 and 6.8	None specified	National Recovery Plan for Albatrosses and Petrels (2022)	
Shy Albatross	Human disturbance Marine pollution, including marine debris	Section 6.1 Sections 6.6, 6.7 and 6.8	None specified	National Recovery Plan for Albatrosses and Petrels (2022)	
Campbell Albatross	Human disturbance Marine pollution, including marine debris	Section 6.1 Sections 6.6, 6.7 and 6.8	None specified	National Recovery Plan for Albatrosses and Petrels (2022)	

Common Name	Key Threats (relevant to petroleum activities)	Control Measure(s) Sections	BIA Time Frame	Conservation Advice or Recovery Plan	BIA Map
Black-browed Albatross	Human disturbance Marine pollution, including marine debris	Section 6.1 Sections 6.6, 6.7 and 6.8	None specified	National Recovery Plan for Albatrosses and Petrels (2022)	
Indian Yellow-nosed Albatross	Human disturbance Marine pollution, including marine debris	Section 6.1 Sections 6.6, 6.7 and 6.8	None specified	National Recovery Plan for Albatrosses and Petrels (2022)	
Common Diving Petrel	Human disturbance Marine pollution, including marine debris	Section 6.1 Sections 6.6, 6.7 and 6.8	None specified	-	
White-faced Storm Petrel / White-bellied Storm-Petrel	None identified		None specified	-	
Black-faced Cormorant	None identified	-	None specified	-	
Short-tailed Shearwater	None identified	-	None specified	-	

Common Name	Key Threats (relevant to petroleum activities)	Control Measure(s) Sections	BIA Time Frame	Conservation Advice or Recovery Plan	BIA Map
Little penguin	None identified	-	None specified	-	
White-fronted Tern	None identified	-	None specified	-	

6.1.2 Identification of Environmental Risks

The key potential impacts to marine fauna in proximity to the Offshore TGP during pipeline inspection and maintenance activities are:

6.1.2.1 Injury to, or death of, marine megafauna (including listed species) because of vessel strike

From the planned activities outlined in Section 2.2.1, inspection and maintenance vessels are expected to be required less than once every 2 years on average, with the length of any one voyage generally less than 4 weeks. Any activities are localised to the pipeline route, with no activity of long-term duration at any one location.

The majority of Offshore TGP inspection and maintenance activities occur in the open ocean and vessels appropriate to this environment will be contracted to perform the required work. No vertebrate fauna populations are known to inhabit the immediate area of the pipeline outside the coastal zone, with inspection and maintenance activities confined to areas located at least 8 km from the nearest onshore breeding or home habitat.

There is the potential for some larger marine megafauna (cetaceans, pinnipeds, turtles, etc.) to traverse the Offshore TGP route when pipeline inspection and maintenance activities are being undertaken as evidenced by the BIA's in Table 6-2 although it doesn't specify clear areas of aggregation or likelihood of encounter. Encounters with these species are likely to occur in the vicinity of the marine reserves noted in Section 3.2.

Collisions with marine fauna can occur anywhere, the risk increases in breeding areas and along migration routes. Collision risk also increases in shallow waters where a vessel has less under-keel clearance, leaving the animal less room to avoid the vessel (AMSA, 2023). Vessel strike data has been collected for the period of 1997 to 2015 (Peel & Smith, 2016), which show that less than 10 strikes have occurred in Victorian waters and approximately 10 have occurred in Tasmanian waters (refer to Figure 6-1 and Figure 6-2).

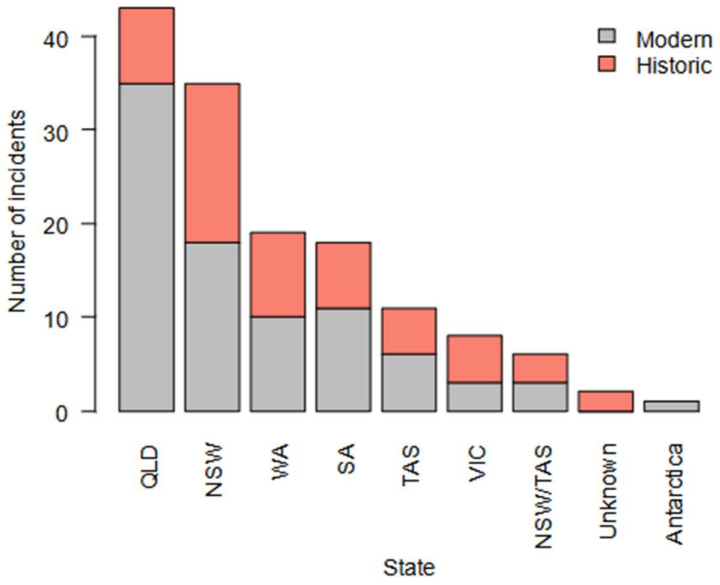


Figure 6-1: Total Number of Reported Vessel Strikes by Australian State and Territory from Historic (<1995) and Modern (>1995) Data (Peel & Smith, 2016)

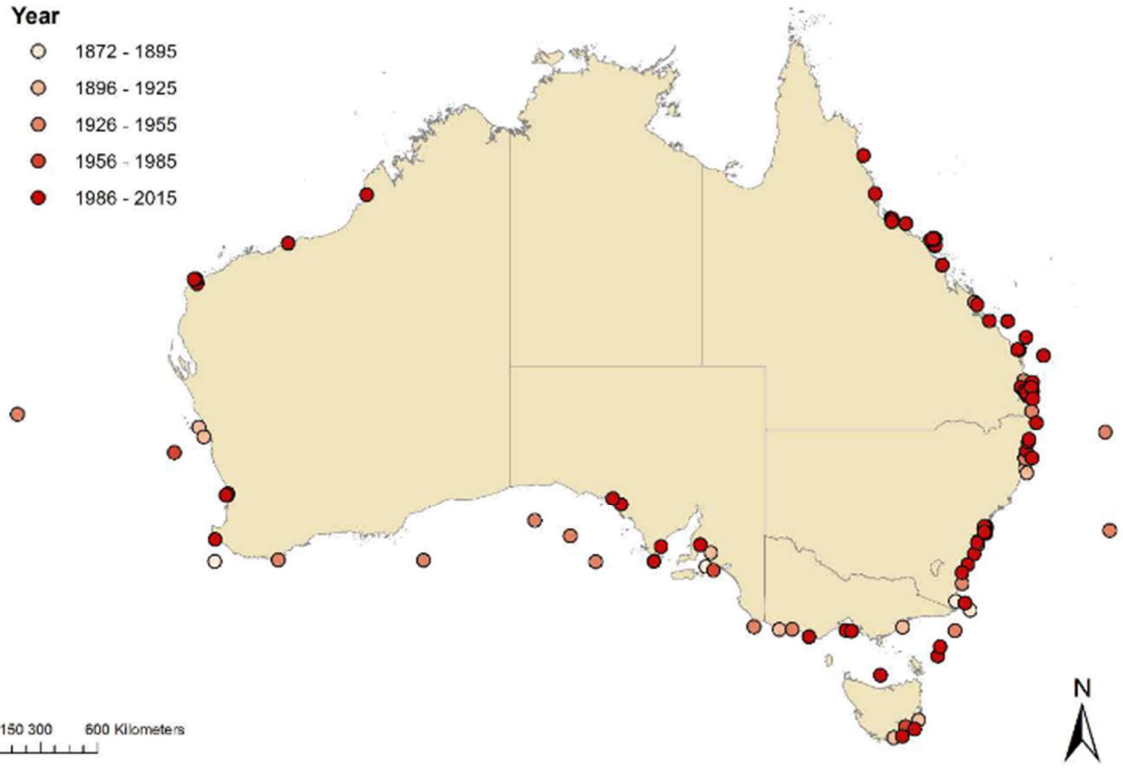


Figure 6-2: Approximate Locations of Reported Vessel Strike Collisions (Peel & Smith, 2016)

Vessel strike is referenced as a key threat in the Conservation Advice / Management Plans for Pygmy Blue Whale and Southern Right Whale. The OA overlaps Pygmy Blue Whale distribution and possible foraging habitat but is not within a recognised feeding area such as the Bonney Upwelling (DOEE,

2015c). The Southern Right Whale migration BIA overlaps the TGP OA, and as such the EPBC Act Policy Statement 2.1 should be reviewed thoroughly to support decision making on use of whether the Standard Management Procedure is sufficient, or if activity is to be conducted during migration time frame, whether additional measures are reasonable to adopt from the Additional Management Procedure section.

For the Southern Right Whale, foraging and feeding occurs in a broad latitudinal range between at least 30˚S and 65˚S, particularly in offshore areas associated with large-scale features such as the Subtropical and Polar Fronts shown in Figure 6-3 (Torres et al. 2013, Carman et al. 2019). This is located much further south and beyond the OA and ZPI of TGP, so the likelihood of interaction with the population during the foraging season is considered low, compared to breeding months. Around breeding times, in Victoria there is a regular aggregation area in waters off Warrnambool at Logans Beach and increasing numbers of sightings along the Gippsland coast (east from Wilsons Promontory), and relatively regular sightings along the southeast coast of Tasmania (Stamation et al. 2020, Watson et al. 2021) (DCCEEW, 2024). Therefore, consideration of timing of activities is critical in managing the opportunity of vessel strike with cetaceans, and more specifically the Southern Right Whale.

The Australian and New Zealand fur seals are highly agile species that haul themselves onto rocks or other structures, as available, easily avoiding collision with a moving vessel.

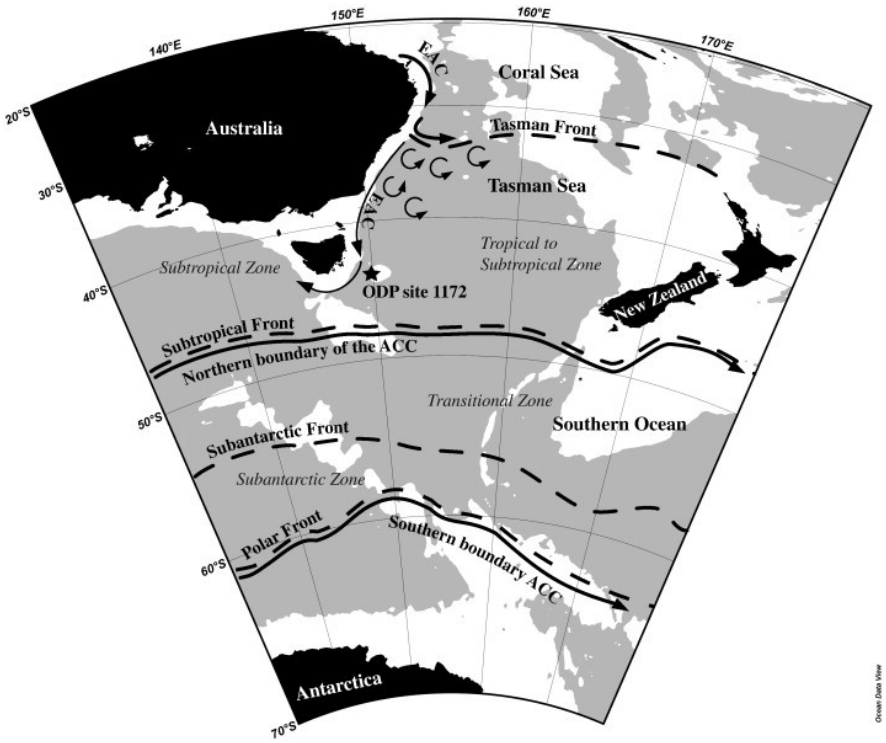


Figure 6-3 Map of Subtropical and Polar Fronts (Ballegeer, et al., 2012)

During inspection and maintenance activities, the vessel is either stationary or moving slowly. The risk of vessel strike during Offshore TGP inspection and maintenance activities is therefore considered very low.

6.1.2.2 Disturbance to marine fauna (including altered feeding, nesting, nursing, mating or migrating behaviour) as a result of underwater noise generated by the vessel or inspection activities (refer to Section 6.4)

Potential impacts on marine megafauna associated with underwater noise from vessels and inspection/maintenance equipment (e.g. SSS and ROV / AUV operation) are addressed in Section 6.4 of this EP.

6.1.2.3 Disturbance to marine fauna (including altered feeding, nesting, nursing, mating or migrating behaviour) as a result of artificial lighting on inspection and maintenance vessels.

Despite the high level of shipping activities present in the Bass Strait, ambient night-time lighting is recorded as Bortle Class 2 – average dark sky, in coastal areas to Bortle Class 1 – excellent dark sky, over most of the offshore pipeline route (Figure 6-4).

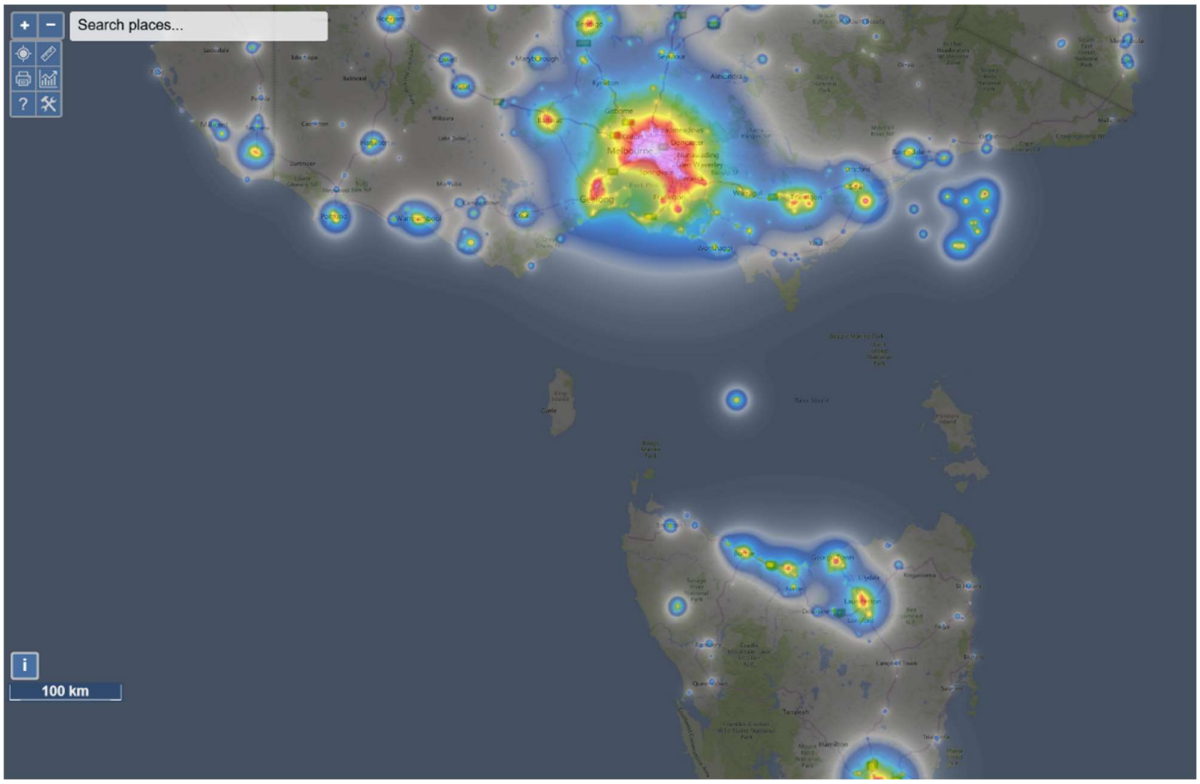


Figure 6-4: Light Pollution in South East Australia (NASA, 2024)

Light emissions are generated from vessel navigation and safety lighting, and from maintenance activities such as operating an ROV. As described in Section 2.2.1.2, vessels could be present in the operating area once every two years for less than 4 weeks, typically.

Woodside undertook modelling of light emissions from a pipelay vessel, which indicated that light emissions would return to ambient levels within 5.7 km of the vessel (Woodside , 2020). Behavioural impacts were likely to occur within 0.6 km of the vessel. The model outputs are provided in radiance, relative to full moon radiance and are considered applicable to a range of different fauna with similar wavelength perception, including turtles and seabirds. Given the size of vessels utilised for TGP inspection and maintenance activities, these light impacts represent a worst-case scenario.

Artificial nighttime light has the potential to affect a diverse array of ecological processes in the marine environment, such as orientation, reproduction, feeding and communication (Davies, et al., 2018). Light emissions may result in a localised change to marine fauna behaviour. Marine species with the greatest sensitivity to light include marine turtles, seabirds, and migratory shorebirds. The National Light Pollution Guidelines for Wildlife (DCCEEW, 2023) indicate that a 20 km buffer or exposure area can provide a general precautionary light impact limit based on observed effects of sky glow on marine turtle hatchlings and on grounded fledgling seabirds.

Studies conducted in the North Sea indicate that migratory birds are attracted to artificial lights when travelling within a radius of <5km from the light source (Joop, et al., 2008). For seabirds outside of this zone it is unlikely they will be affected.

Artificial lighting is identified as a threat within the Wildlife Conservation Plan for Migratory Shorebirds (Commonwealth of Australia, 2015) and light pollution is identified as a threat within the

Wildlife Conservation Plan for Seabirds (Commonwealth of Australia, 2020) and the National Recovery Plan for Albatrosses and Petrels 2022 (DCCEEW, 2022).

The effect of light on turtle behaviour and survivorships likely to be of concern if it can be seen from turtle nesting beaches, nearshore or adjacent waters (DCCEEW, 2023), however there are no known BIA for turtles along the offshore TGP route. As stated in Section **Error! Reference source not found.** and as shown in Table 3-1, although some of the islands in the vicinity of the Offshore TGP route are known breeding colonies for seals and seabirds, there are no recognised aggregation areas (nesting, resting, breeding and feeding areas) for protected turtles within the area. Protected cetaceans are also unlikely to breed or rest in the offshore sections of the TGP, however may be found close to onshore sections in the State Waters. The risk of disturbance to marine fauna associated with vessel lighting is therefore considered not credible with regards to the Offshore EP activities discussed.

6.1.2.4 Disturbance to benthic communities due to dropped objects or dragging of vessel anchors or inspection / maintenance equipment on the seabed (refer to Section 6.2); and

The occasional use of inspection equipment such as ROV / AUV and SSS may have potential for minor physical impacts as they pass through the survey area. However, the small size of the equipment and its position above the pipeline within the water column ensures no disruption to the seabed or epibenthos. Also, as stated in Section 3.1, the substrate along the Offshore TGP route represents a largely homogenous habitat type, which is not significantly diverse from other regions within Bass Strait. Most of these species are widely distributed throughout the region. Inspection and maintenance vessels will avoid anchoring (unless in an emergency). In the highly unlikely event that vessels anchor, any impacts will be localised, and unique faunal elements are unlikely to be disturbed.

Works in near coastal environments at either end of the Offshore TGP are generally undertaken using smaller vessels than those used for open ocean work. Such operations are generally diver-based operations and therefore of a smaller scale than the major open ocean surveys. The risk of impact to marine fauna during inspection and maintenance activities in the nearshore area is therefore considered to be very low.

6.1.2.5 Introduction of marine pests due to inappropriate vessel ballast water and biofouling management (refer to Section 6.8), potentially displacing native species, altering ecosystem function and affecting biodiversity

Potential impacts on marine megafauna associated with introduction of pest, poor management of vessel ballast water and biofouling management from vessels are addressed in Section 6.8 of this EP.

6.1.3 ERA Summary

The complete ERA for the offshore component of the TGP is provided in Appendix A. The risk assessment associated with protection of marine fauna is summarised in Table 6-3.

Table 6-3: ERA Summary

Activity	Potential incident / hazard	Potential environmental impacts	Residual risk
Offshore TGP inspection or maintenance using vessels and equipment (e.g. ROV / AUV, SSS).	Vessel movements – vessel strike (ERA Ref No. .1)	Injury or death to marine megafauna.	Low
	Artificial lighting on inspection and maintenance vessels (ERA Ref No. 3).	No credible risk of disturbance to marine fauna.	-

Activity	Potential incident / hazard	Potential environmental impacts	Residual risk
	Dropped objects or dragging of vessel anchors or inspection / maintenance equipment on the seabed. (ERA Ref No. 5, 10)	Refer to Section 6.2.3	Section 6.2.3
	Pipeline maintenance activities (e.g. span correction). (ERA Ref No. 20)	Refer to Section 6.10.3	Section 6.10.3
	Underwater noise. (ERA Ref No. 4, 18, 19)	Refer to Section 6.4.3	Section 6.4.3

6.1.4 Environmental Control Measures

The following controls measures have been adopted to ensure appropriate environmental management of Offshore TGP inspection and maintenance activities to reduce the risk of impacts to marine fauna to ALARP:

- **CM1:** Vessel Masters
- **CM2:** Fauna interaction management actions
- **CM3:** Fauna observations
- **CM35:** Vessel crew and navigational equipment
- **CM39:** Lighting
- **CM40:** Whale sightings
- **CM41:** End of survey report
- **CM42:** Seabird sightings

Control measures for dropped objects and dragging of vessel anchors are found in Section 6.2.4.

Control measures for underwater noise are found in Section 6.4.4.

Control measures for vessel ballast water and biofouling management are found in Section 6.8.4.

Refer to Table 7-1 for corresponding descriptions of EPOs, EPSs and measurement criteria.

6.1.5 Assessment of ALARP

Given the control measures listed above, and the infrequent nature, relatively small scale and short duration of Offshore TGP inspection and maintenance activities, the risk of disturbance to marine fauna is considered low and therefore ALARP.

Table 6-4: ALARP Decision Context and Justification

ALARP Decision Context	Justification
A	Offshore commercial vessel operations and associated light emissions are commonplace in offshore environments nationally and internationally. The risk of cetacean vessel strike is well managed through legislative controls that are considered industry best practice.

ALARP Decision Context	Justification
	Vessel operations are infrequent (<1 every 2 years) and of short duration (generally less than 4 weeks). During consultation with relevant persons, no objections or claims regarding impact on marine flora and fauna were made. TGPPL believes ALARP Decision Context A should apply.

Table 6-5: Good Practice Controls

Good Practice	Control	Rationale
Part 8 Division 8.1 of the EPBC Regulations. Australian National Guidelines for Whale and Dolphin Watching 2017	**CM1:** Vessel Masters **CM2:** Fauna interaction management actions **CM3:** Fauna observations **CM40:** Whale sightings **CM41:** End of survey report	The Vessel Master has responsibility for ensuring the requirements of these Regulations and Guidelines are followed. The Guidelines describe strategies to ensure cetaceans are not harmed during vessel operations.
Marine Order 30 (Prevention of Collisions) 2016	**CM35:** Vessel crew and navigation equipment	TGPPL will ensure vessel will comply with Marine Order 30, with regards to navigational lighting requirements.
National Light Pollution Guidelines for Wildlife (2023)	**CM39:** Lighting **CM42:** Seabird sightings	Controls will be implemented to minimise the lighting onboard vessels to that required for personnel to conduct their activities in a safe manner, and minimise spill. Actions relative to breeding season have not been adopted due to the absence of breeding BIAs for light sensitive seabird species that may forage in the ZPI. Reporting will be undertaken as per Section 8.6.

Table 6-6: Engineering Risk Assessment

Additional, alternative control	Benefit	Cost/feasibility	Adopted
N/A	N/A	N/A	N/A

6.1.6 Demonstration of Acceptability

Table 6-7: Demonstration of Acceptability Test

Factor	Demonstration criteria	Rationale
Principles of ESD	No potential to affect biological diversity and ecological integrity.	TGP operations were assessed to have a minor risk consequence from vessel strikes and light emissions. This is not considered to have the potential to result

Factor	Demonstration criteria	Rationale
	Activity does not have the potential to result in serious or irreversible environmental damage.	in serious or irreversible environmental damage; or potentially affect biological diversity and ecological integrity. No further evaluation against the principles of ESD is required.
Legislative and other requirements	Legislative and other requirements have been identified and met.	The control measures proposed in Section 6.1.4 to manage this risk meet all relevant standards (Industry best practice) and Australian legislative requirements, including: • Navigation Act 2012 • EPBC Regulations – Part 8 Division 8.1: Interacting with cetaceans • Conservation Advice for Humpback Whales 2015 • National Recovery Plan for Southern Right Whale 2024 • Conservation Advice for Sei Whales 2015 • Conservation Advice for Fin Whales 2015 • National Light Pollution Guidelines for Wildlife • Wildlife Conservation Plan for Migratory Shorebirds • Wildlife Conservation Plan for Seabirds • National Recovery Plan for Albatrosses and Petrels 2022 • Recovery Plan for Marine Turtles in Australia, 2017-2027
Internal context	Consistent with PIMS Environment Policy Statement.	Proposed activities are consistent with the PIMS Environment Policy Statement, in particular "comply with all relevant legislation, regulations, codes of practice and standards" and "conducting all activities in a manner consistent with the principles of sustainable management and caring for the environment".
External context	Relevant person concerns have been considered/addressed through the consultation process.	From consultation, no additional environmental impacts or control measures were identified, however Tuna Australia emphasised the importance and value of SBT and ETBF species in the region and the migratory pathways (refer to Table 10-2). The control measures as described are consistent with this feedback and agreed to demonstrate consideration and appropriate management of environmental impacts to these species and BIA's.
Acceptability outcome	**Acceptable**	

6.2 Protection of Marine Environment

The entire offshore component of the TGP traverses a marine environment which includes Victorian and Tasmanian coastal waters and the sea strait of Bass Strait.

A few ecologically significant areas are identified along sections of the Offshore TGP route which have important environmental features including the significant fauna communities in Section

3.1.2**Error! Reference source not found.**. These include a number of Commonwealth or State declared marine reserves, most of which (except for the Beagle Australian Marine Park) lie outside the Offshore TGP area (refer to Section 3.2**Error! Reference source not found.**).

6.2.1 Impact of Activities

There are no expected impacts to the marine environment during the normal day to day operation of the Offshore TGP. Daily pipeline operations (i.e. continuous transport of gas) are completely internal to the pipeline with monitoring through the SKADA system as described in Section 2.2.1.1, with no offshore activities or external effects during standard operating conditions.

For planned activities, impacts to the marine environment will only potentially occur during Offshore TGP inspection and maintenance activities. Activities and incidents that could potentially result in impacts to the marine environment in the vicinity of the Offshore TGP include:

- Chemical spills from vessels and inspection / maintenance equipment (refer to Section 6.7**Error! Reference source not found.**)
- Vessel accidents / collisions leading to fuel spills (refer to Section 6.9)
- Inappropriate management of wastes from vessels (refer to Section 6.6)
- Vessel anchor or inspection / maintenance equipment dragging along the seabed
- Dropped objects from vessels (including inspection and maintenance equipment)
- Pipeline maintenance activities (e.g. span correction, refer to Section 6.10)
- Inappropriate discharge of vessel ballast water (refer to Section 6.8)**Error! Reference source not found.**
- Poor biofouling management (refer to Section 6.8)

Impacts from unplanned events are discussed further in Section 6.10.

6.2.2 Identification of Environmental Risks

The key potential impacts to the marine environment in proximity to the Offshore TGP during pipeline inspection and maintenance activities are:

6.2.2.1 Contamination of the local marine environment leading to degradation of marine ecosystems (including ecologically significant areas such as National Parks and Marine Reserves) and potential toxicity impacts on marine biota (refer to Section 6.1 and 6.9)

Error! Reference source not found. Adverse impacts on the shoreline or sensitive marine ecosystems in the event of a fuel spill from Offshore TGP inspection and maintenance vessels are highly unlikely (refer to Section 6.9) due to: the size of vessels used; properties of hydrocarbons that could potentially be spilled; expected maximum spill volumes; high energy marine environment of Bass Strait; and the distance from the Offshore TGP to sensitive receptors (e.g. islands / shorelines).

6.2.2.2 Oiling of the coastal environment (refer to Section 6.9Error! Reference source not found.)

As above.

6.2.2.3 Visible pollution / reduction of visual amenity (refer to Sections 6.6 and 6.7)

Inspection and maintenance vessels are expected to be required less than once every 2 years on average, with the length of any one voyage likely to be less than 4 weeks. Any activities are localised, with no activity of long-term duration at any one location. Due to the short duration of Offshore TGP inspection and maintenance activities, the amount of waste and chemicals stored on-board vessels will be minimal therefore potential pollution to the environment is considered low risk.

Best practice and control measures for vessel waste and chemical management are further discussed in Sections 6.6 and 6.7.

6.2.2.4 Introduction of marine pests due to inappropriate vessel ballast water and biofouling management (refer to Section 6.8), potentially displacing native species, altering ecosystem function and affecting biodiversity

Potential impacts on marine megafauna associated with introduction of pest, poor management of vessel ballast water and biofouling management from vessels are addressed in Section 6.8.

6.2.2.5 Disturbance to sensitive benthic marine ecosystems due to dropped objects or dragging of vessel anchors or inspection / maintenance equipment on the seabed (Section 6.2)

Damage to the seabed from Offshore TGP inspection and maintenance activities is only considered likely in the event of a dropped object from the vessel or ROV / AUV, because of emergency anchoring or repair activities such as jetting to remove high points, installation of concrete mattresses or grout bags.

As stated in Section 3.1, the substrate along the Offshore TGP route represents a largely homogenous habitat type, which is not significantly diverse from other regions within Bass Strait. Furthermore, it is expected that recolonisation and recovery would occur relatively quickly following any disturbance resulting in no long-term disturbance to the infauna communities (Dernie, et al., 2003).

The occasional use of inspection equipment such as ROV/AUV and SSS may have potential for minor physical impacts as they pass through the survey area. However, the small size of the equipment and its position above the pipeline within the water column ensures no disruption to the seabed or epibenthos.

Inspection and maintenance vessels will avoid anchoring (unless in an emergency). In the event of inclement weather, the vessels will seek shelter nearer the coast or at a designated port in Victoria or Tasmania. In the highly unlikely event that vessels must anchor, any impacts on the benthic marine environment will be localised.

6.2.2.6 Disturbance to benthic marine habitats due to maintenance activities e.g. jetting to remove high points, installation of grout bags or concrete mattresses.

Installing grout bags or concrete mattresses may cause some disturbance of the seabed and potentially impact associated benthic organisms. Any impact will be limited to the immediate vicinity of the pipeline and thus the extent is considered to be quite localised.

6.2.3 ERA Summary

The complete ERA for the offshore component of the TGP is provided in Appendix A, however, the risk assessment associated with protection of the marine environment is summarised in Table 6-8.

Table 6-8: ERA Summary

Activity	Potential incident / hazard	Potential environmental impacts	Residual risk
Offshore TGP inspection or maintenance using vessels and equipment (e.g.	Chemical spills from vessels and inspection / maintenance equipment. (ERA Ref No. 14, 17)	Refer to Section 6.7.3.	Section 6.7.3
	Vessel accidents / collisions leading to fuel spills. (ERA Ref No. 15)	Refer to Section 6.9.3	Section 6.9.3

Activity	Potential incident / hazard	Potential environmental impacts	Residual risk
ROV / AUV and SSS).	Inappropriate management of vessel wastes. (ERA Ref No. 13)	Refer to Section 6.6.3.	Section 6.6.3
	Inappropriate ballast water and biofouling management. (ERA Ref No. 7, 8)	Refer to Section 6.8.3	Section 6.8.3
	Dropped objects from vessels (including inspection and maintenance equipment) (ERA Ref No. 10).	Disturbance to sensitive benthic marine ecosystems.	Low
	Vessel anchors or inspection / maintenance equipment dragging along the seabed (ERA Ref No. 5).		
	Pipeline maintenance activities (e.g. span correction) (ERA Ref No. 20 – 24).		

6.2.4 Environmental Control Measures

The following controls and mitigation measures have been adopted to ensure appropriate environmental management of Offshore TGP inspection and maintenance activities to reduce the risk of impacts to the marine environment to ALARP.

- **CM4:** No anchoring
- **CM5:** Lifting procedures
- **CM6:** Maintenance and repair procedures
- **CM7:** Compliance with weather limitations
- **CM8:** Planned Maintenance System (PMS) – lifting gear
- **CM9:** Cargo securing manual
- **CM10:** Procedure to recover dropped objects

Control measures related to waste management refer to Section 6.6.4

Control measures related to chemical management refer to Section 6.7.4

Control measures related to ballast water and biofouling management refer to Section 6.8.4

Control measures related to fuel management and spill response refer to Sections 6.9.4

The environmental performance outcomes and environmental performance standards for the controls above are given in Table 7-1.

6.2.5 Assessment of ALARP

Given the control measures listed above, and the infrequent nature, relatively small scale and short duration of Offshore TGP inspection and maintenance activities, the risk of disturbance to the marine environment is considered extremely low and therefore ALARP.

As requested through consultation with the Director of National Parks, an evaluation of the impact on ecosystem values is explored in this section, and the control measures demonstrate reduction of risks to ALARP as requested.

Table 6-9: ALARP Decision Context and Justification

ALARP Decision Context	Justification
A	Seabed disturbance from offshore activities is well understood both nationally and internationally. Vessel operations are infrequent (<1 every 2 years) and of short duration (generally less than 4 weeks). Impacts to the seabed from inspection and maintenance activities are well understood and executed in a controlled manner by industry. The area of disturbance is known and identified as having a Slight (lowest) consequence level. During consultation with relevant persons, no objections or claims regarding impact on the seabed were made. TGPPL believes ALARP Decision Context A should apply.

Table 6-10: Good Practice Controls

Good Practice	Control	Rationale
No anchoring	**CM4:** No anchoring	To minimise disturbance to the seabed, anchors will not be deployed.
Lifting equipment	**CM5:** Lifting procedures	Lifting equipment is used in accordance with approved procedure and equipment is regularly maintained and inspected in accordance with PMS schedule.
Pipeline maintenance and repair	**CM6:** Maintenance and repair procedures	All pipeline maintenance activities (i.e. jetting, installing concrete mattress/grout bags is undertaken in accordance with approved procedures.
Weather monitoring	**CM7:** Compliance with weather limitations	Maintenance activities are undertaken during acceptable weather conditions.
Cargo securing	**CM9:** Cargo securing manual	Cargo is securely fastened and stored in accordance with approved Cargo Securing Manual.
Recovering dropped objects	**CM10:** Procedure to recover dropped objects	Where equipment/objects are lost overboard they are recovered in accordance with an approved procedure.

Table 6-11: Engineering Risk Assessment

Additional, alternative control	Benefit	Cost/feasibility	Adopted
N/A	N/A	N/A	N/A

6.2.6 Demonstration of Acceptability

Table 6-12: Demonstration of Acceptability Test

Factor	Demonstration criteria	Rationale
Principles of ESD	No potential to affect biological diversity and ecological integrity.	The potential impacts associated with this aspect are considered localised and short-term. It is not considered to have the potential to affect biological diversity or ecological integrity.
	Activity does not have the potential to result in serious or irreversible environmental damage.	The activities were evaluated as having the potential to result in a Consequence Level – Slight. This is not considered to have the potential to result in serious or irreversible environmental damage.
Legislative and other requirements	Legislative and other requirements have been identified and met.	The activities align with the requirements of the OPGGS Act: • Section 280(2) – No interference with conservation of the resources of the sea and seabed to a greater extent than is necessary for the exercise of the rights conferred by titles granted. • Section 572 – Requirement to remove from the relevant title areas structures and all equipment and other property that is neither used nor to be used in connection with the operations.
Internal context	Consistent with PIMS Environment Policy Statement.	Proposed activities are consistent with the PIMS Environment Policy Statement, in particular "comply with all relevant legislation, regulations, codes of practice and standards" and "conducting all activities in a manner consistent with the principles of sustainable management and caring for the environment".
External context	Relevant person concerns have been considered/addressed through the consultation process.	No specific relevant person concerns have been raised concerning seabed disturbance.
Acceptability outcome	**Acceptable**	

6.3 Protection of Other Marine Users

6.3.1 Impact of Activities

As detailed in Section 3.1.4**Error! Reference source not found.**, a wide range of human activities occur in the waters of Bass Strait, including commercial oil and gas fields, other energy infrastructure such as offshore wind turbines, shipping, commercial and recreational fishing, and other recreational activities.

Due to the placement of the Offshore TGP on the seabed at water depths of up to approximately 80m, there will be no impacts to other users of Bass Strait during normal day to day operation of the subsea pipeline.

Impacts to other users of the marine environment will only potentially occur during Offshore TGP inspection and maintenance activities. Activities and incidents associated with the Offshore TGP that could potentially result in impacts to other users of the marine environment include:

- Collision of inspection/maintenance vessels with other vessels (e.g. recreational vessels, fishing vessels and commercial shipping traffic) leading to fuel spills (refer to Section 6.9)
- Presence of inspection and maintenance vessels along the pipeline route
- Pipeline inspection/survey activities, e.g. vessel anchoring or towing of ROV/AUV or SSS equipment behind vessels

6.3.2 Identification of Environmental Risks

The key potential impacts to other users of the marine environment in proximity to the Offshore TGP during subsea pipeline inspection and maintenance activities are:

6.3.2.1 Vessel collisions, leading to fuel spills and subsequent contamination of the local marine environment, oiling of coastal environments and visible pollution / reduction of visual amenity (refer to Section 6.1)

Inspection and maintenance vessels are expected to be required less than once every 2 years on average, with the expected duration of any one voyage likely to be less than 4 weeks. Refer to Section 2.2.1 on the planned activities. Any activities undertaken by TGPPL are localised along the pipeline route, with most activities of long-term duration generally not stationed at any one location.

6.3.2.2 Disruption to other marine users (e.g. recreational vessels, fishing vessels and commercial shipping traffic) through movement of inspection and maintenance vessels

As above.

6.3.2.3 Interference to commercial fishing activities (including damage to fishing equipment) through vessel anchoring and towing of equipment (e.g. ROV/AUV or SSS) behind vessels

The use of inspection equipment such as ROV/AUV and SSS could potentially cause minor disturbance to user marine users (particularly commercial fishing activities), however, this is highly unlikely due to the very infrequent use, small size of the equipment and the fact that the equipment is towed near the stern of the vessel.

Inspection and maintenance vessels will avoid anchoring (unless in an emergency) and, therefore, potential damage to commercial fishing equipment through dragging anchors is also highly unlikely.

6.3.3 ERA Summary

The complete ERA for the offshore component of the TGP is provided in Appendix A, however, the risk assessment associated with protection of other marine users is summarised in Table 6-13.

Table 6-13: ERA Summary

Activity	Potential incident / hazard	Potential environmental impacts	Residual risk
Offshore TGP inspection or maintenance using vessels	Vessel movements (ERA Ref No. 2).	Disruption to other marine users such as commercial fishing (including damage to fishing equipment).	Low
	Vessel anchoring (ERA Ref No. 6).		
	Towing of inspection / maintenance equipment (e.g. ROV / AUV and SSS) behind vessels (ERA Ref No. 16).		
	Vessel collision leading to fuel spill. (ERA Ref No. 15)	Refer to Section 6.9.3	Section 6.9.3

6.3.4 Environmental Control Measures

The following controls and mitigation measures have been adopted to ensure appropriate environmental management of Offshore TGP inspection and maintenance activities to reduce the risk of impacts to other marine users to ALARP:

- **CM11:** Pre-start notifications
- **CM12:** Navigation charts

The environmental performance outcomes and environmental performance standards for the controls above are given in Table 7-1.

6.3.5 Assessment of ALARP

Given the control measures listed above, and the infrequent nature, relatively small scale and short duration of Offshore TGP inspection and maintenance activities, the risk of disturbance to other marine users is considered extremely low and therefore ALARP.

Table 6-14: ALARP Decision Context and Justification

ALARP Decision Context	Justification
A	Offshore pipeline maintenance and inspection activities are widely undertaken locally, nationally and internationally. Vessel operations are infrequent (<1 every 2 years) and of short duration (generally less than 4 weeks). Impacts associated with marine user interactions are well managed via legislative control measures. These controls are understood and well implemented by industry. During consultation with relevant persons, no objections or claims regarding impact on interaction with other marine users were made. TGPPL believes ALARP Decision Context A should apply.

Table 6-15: Good Practice Controls

Good Practice	Control	Rationale
Pre-start notifications	**CM11:** Pre-start notifications	Under the Navigation Act, the AHO is responsible for maintaining and disseminating nautical information including: Notices to Mariners and AUSCOAST warnings. AMSA JRCC will be notified prior to activities commencing to allow for AUSCOAST warnings to be distributed. AHS will be notified to allow for the generations of Notice to Mariners. Pre-start notifications will be provided to all relevant persons approximately 4 weeks and then 1 week prior to the start of activities.
Mapping of the pipeline route	**CM12:** Navigational charts	TGP has been included on marine navigation charts.

Table 6-16: Engineering Risk Assessment

Additional, alternative control	Benefit	Cost/feasibility	Adopted
N/A	N/A	N/A	N/A

6.3.6 Demonstration of Acceptability

Table 6-17: Demonstration of Acceptability Test

Factor	Demonstration criteria	Rationale
Principles of ESD	No potential to affect biological diversity and ecological integrity.	The potential impacts associated with this aspect are considered localised and short-term. It is not considered to have the potential to affect biological diversity or ecological integrity.
	Activity does not have the potential to result in serious or irreversible environmental damage.	The activities were evaluated as having the potential to result in a Consequence Level – Slight. This is not considered to have the potential to result in serious or irreversible environmental damage.

Factor	Demonstration criteria	Rationale
Legislative and other requirements	Legislative and other requirements have been identified and met.	Legislation and other requirements considered relevant include: OPGGS Act, Section 280 requires a person carrying on activities in an offshore area must carry on these activities in a manner that does not interfere with navigation or fishing and others to greater extent than necessary for the exercise of the rights conferred by the titles granted. Navigation Act, Chapter 6, Part 6 deals with safe navigation including provision of reporting vessel movements.
Internal context	Consistent with PIMS Environment Policy Statement.	Proposed activities are consistent with the PIMS Environment Policy Statement, in particular "comply with all relevant legislation, regulations, codes of practice and standards".
External context	Relevant person concerns have been considered/addressed through the consultation process.	Through consultation, the main issues raised were concerns of notification of activities by government departments and fishery groups. TGPPL has ensured within the control measures to support stakeholder engagement and awareness of vessel activity through notifying of inspection and maintenance activities to be conducted on TGP.
Acceptability outcome	**Acceptable**	

6.4 Noise Management

6.4.1 Impact of Activities

There are expected to be no noise impacts from the normal day to day operation of the Offshore TGP. Daily pipeline operations (i.e. continuous transport of gas) are completely internal to the pipeline, with minimal external effects during standard operating conditions.

The material of construction for the TGP and its wall thickness were selected, in part, to minimise any noise issues during pipeline operation. The omission of valves and other flow restriction points within the Offshore TGP also further reduces noise and vibration produced by the subsea pipeline, while the concrete coating provides an additional buffer from any internal pipeline noise.

There is the potential for sediment movement around the subsea pipeline to lead to an unsupported length of pipeline or "span" that could in turn result in vortex induced vibration (VIV). Evidence for such spans is one of the objectives of the ongoing Offshore TGP inspection surveys.

During operation, inspection and maintenance of the Offshore TGP, the following activities and incidents could potentially result in noise impacts:

- Vessel movements/operation
- Offshore TGP inspection/survey activities, e.g. use of ROV / AUV or SSS
- Pipeline pigging

6.4.2 Identification of Environmental Risks

The potential for impacts from underwater noise are most likely to occur during vessel-based Offshore TGP inspection and maintenance activities. The key potential impacts from noise generation in proximity to the subsea pipeline are:

6.4.2.1 Injury to marine megafauna (including listed species protected under State or Commonwealth legislation or International Conventions) because of underwater noise exposure during Offshore TGP inspection activities (e.g. use of ROV / AUV or SSS)

The occasional use of survey equipment such as ROV / AUV and SSS could potentially have minor noise impacts on marine megafauna as they pass through the Offshore TGP inspection / maintenance work area. Due to the small size of the ROV / AUV equipment, the underwater noise generated is expected to be negligible in comparison to the vessel noise. However, underwater noise generated by SSS could potentially have more of an impact on marine megafauna.

SSS systems operate at high frequencies (typically 100-500 kHz), which are outside the hearing thresholds of cetaceans and well above the hearing level of other marine mammals and fish (Genesis, 2011). Although sound output levels for SSS can be relatively high (220-226 dB (rms) re 1µPa@1m), high frequency noise attenuates more quickly than lower frequency and, hence, sound levels will decrease rapidly away from the source (Genesis, 2011). SSS surveys do not use air-guns and are considered less intrusive than surveys for oil exploration where air gun penetration is expected to be in the range of 3 km to 4 km. SSS systems used in the geophysical surveys of the subsea pipeline typically penetrate the seabed only to 10 m and the source noise level of sub bottom profile equipment is only approximately 60-70 dB re 1µPa@1m (refer to Section **Error! Reference source not found.**).

The intermittent nature of SSS signals also results in lower noise doses than for continuous signals and, therefore, it is considered that there is a negligible risk of underwater noise from SSS causing injury to cetaceans (Genesis, 2011). As per recent subsea pipeline surveys, it is TGPPL's preference to use AUV / ROV for inspections rather than SSS.

Following the advice of the EPBC Act Policy Statement 2.1 as a guide, and through risk assessment process of the activity being conducted, a crew member will visually monitor for cetaceans within the vicinity of the vessel and report sightings within the caution zone to enable the Vessel Master to implement interaction management actions as practicable.

In the event that a span with potential to lead to VIV is located, it will be subject to further engineering analysis and if required, scheduled for correction during the next maintenance activity. The potential risk of disturbance to marine fauna from underwater noise impacts associated with VIV is considered not credible.

Maintenance works, such as the correction of unsupported subsea pipeline spans or coating repairs, do not generate significant noise levels either below or above the sea surface. The risk of underwater noise impacts on marine megafauna during Offshore TGP inspection and maintenance activities is therefore considered to be very low.

Pigging operations, to assess the internal condition of the pipeline, are planned to occur only every 10 years. Any underwater noise during this activity will be transitory and temporary as the pig moves through the pipeline and the potential risk of disturbance to marine fauna is considered not credible.

6.4.2.2 Disturbance to marine fauna (including altered feeding, nursing, mating or migrating behaviour) as a result of noise generated by the vessel movements or inspection / maintenance equipment;

Offshore TGP inspection and maintenance activities are expected to be required less than once every 2 years on average, with the standard length of any one voyage likely to be less than 4 weeks. Any activities are localised along the route of the TGP, and generally activities of long-term duration do not occur at any one location.

The majority of Offshore TGP inspection and maintenance activities will be occurring in the open ocean and vessels appropriate to this environment will be contracted to perform the required work.

No vertebrate fauna populations are known to inhabit the immediate area of the Offshore TGP outside the coastal zone, with inspection and maintenance activities confined to areas located at least 8 km from the nearest onshore breeding or home habitat. Therefore, noise impacts to seabirds and seal colonies are considered extremely unlikely.

Underwater noise has the potential to affect marine mammals (e.g. whales and dolphins) and other animal groups (e.g. fish and turtles). Underwater noise is influenced by several factors, including the frequency of the sound, absorption losses, the sound speed profile throughout the water column, the bathymetry of the area, water quality parameters (e.g. salinity, suspended solids / turbidity), the nature of the seabed (affects the reflection and absorption of noise), water depth, intervening landmasses (e.g. reefs, shoals and mudflats), and local weather conditions (e.g. thunderstorms with heavy precipitation). Potential impacts of underwater noise on marine fauna can include: physiological damage (injury) and death; temporary hearing damage; and adverse behavioural responses (e.g. altered feeding, nursing, mating or migrating behaviour).

As detailed in Section **Error! Reference source not found.**, there is the potential for some larger marine megafauna (cetaceans, pinnipeds, turtles, etc.) to traverse the Offshore TGP route when subsea pipeline inspection and maintenance activities are being undertaken. Therefore, there is the potential for marine megafauna to be affected by noise from vessels and inspection / maintenance equipment.

Anthropogenic noise including noise from vessels is referenced as a key threat in the Conservation Advice / Management Plans for Pygmy Blue Whale and Southern Right Whale. The OA overlaps Pygmy Blue Whale distribution and possible foraging habitat but is not within a recognised feeding area such as the Bonney Upwelling (DOEE, 2015c). The Southern Right Whale migration BIA overlaps the Victorian coastal section of the OA.

The OA is also within the breeding and distribution BIA for the White Shark, however sharks differ from bony fish in that they do not have accessory organs of hearing such as a swim bladder and are therefore unlikely to respond to acoustical pressure (Myrberg, 2001).

6.4.2.3 Disturbance to other marine users due to noise generated by vessels or inspection / maintenance equipment

The level of noise generated by inspection and maintenance vessels will be similar to that of, or less than, commercial vessels expected in the area. Vessels used are generally smaller than most commercial shipping traffic, and activities at any one location will be temporary as the vessel proceeds along the Offshore TGP route. The size of vessels used and short duration of Offshore TGP inspection and maintenance activities is therefore unlikely to lead to any major noise and vibration impacts on marine megafauna or other marine users. Therefore, the risk of disturbance associated with vessel noise is considered extremely low.

6.4.3 ERA Summary

The complete ERA for the offshore component of the TGP is provided in Appendix A, however, the risk assessment associated with noise management is summarised in Table 6-18.

Table 6-18: ERA Summary

Activity	Potential incident / hazard	Potential environmental impacts	Residual risk
Offshore TGP inspection or maintenance using vessels and equipment	Vessel movements / operation (ERA Ref No. 4).	Noise potentially resulting in disturbance to marine fauna (including altered feeding, nursing, mating or migrating behaviour).	Low

Activity	Potential incident / hazard	Potential environmental impacts	Residual risk
	Pipeline inspection - use of SSS (ERA Ref No. 18).	Underwater noise potentially causing injury or resulting in disturbance to marine fauna. (including altered feeding, nursing, mating or migrating behaviour).	Low

6.4.4 Environmental Control Measures

The following controls and mitigation measures have been adopted to ensure appropriate environmental management of Offshore TGP inspection and maintenance activities to reduce the risk of noise impacts to ALARP:

- **CM1:** Vessel Master
- **CM2:** Fauna interaction management actions
- **CM3:** Fauna observations
- **CM13:** Acoustic survey procedures

Although Offshore TGP inspection activities are not considered seismic in nature, any acoustic activity exceeding 160 dB may disturb cetacean navigation and behaviour. With respect to the possibility of cetacean encounters during SSS surveys, the control measure **CM43:** Cetacean management for SSS surveys will apply.

The environmental performance outcomes and environmental performance standards for the controls above are given in Table 7-1.

6.4.5 Assessment of ALARP

Given the control measures listed above, and the infrequent nature, relatively small scale and short duration of Offshore TGP inspection and maintenance activities, the risk of disturbance or injury related to noise is considered very low and therefore ALARP.

Table 6-19: ALARP Decision Context and Justification

ALARP Decision Context	Justification
A	Impacts from underwater sound emissions are relatively well understood for marine mammals and most fish species. Impacts are well managed via legislative control measures. These controls are understood and well implemented by industry. Vessel operations are infrequent (<1 every 2 years) and of short duration (generally less than 4 weeks). The area of disturbance from underwater sound emissions is known and identified as having a Slight (lowest) consequence level. During consultation with relevant persons, no objections or claims regarding impact on marine fauna from underwater sound emissions were made. TGPPL believes ALARP Decision Context A should apply.

Table 6-20: Good Practice Controls

Good Practice	Control	Rationale
EPBC Regulations, Part 8, Division 8.1 Australian National Guidelines for Whale and Dolphin Watching 2017	**CM1:** Vessel Master **CM2:** Fauna interaction management actions **CM3:** Fauna observations	The Vessel Master has responsibility for ensuring the requirements of these Regulations and Guidelines are followed. The Guidelines describe strategies to ensure cetaceans are not harmed during vessel operations.
EPBC Act Policy Statement 2.1 – Interaction between offshore seismic exploration and whales	**CM13:** Acoustic survey procedures	Conduct a risk assessment in line with requirements outlined in EPBC Act Policy Statement 2.1 prior to undertaking activities to identify if additional control measures are required to minimise impact with cetaceans.
	CM43: Cetacean management for SSS surveys	For activities with an underwater sound emission of exceeding 160 dB (such as SSS surveys) controls will be implemented to watch for whales entering a radius of 3 km of the vessel prior to commencing. If whales are encountered start-up procedures will be delayed.

Table 6-21: Engineering Risk Assessment

Additional, alternative control	Benefit	Cost/feasibility	Adopted
N/A	N/A	N/A	N/A

6.4.6 Demonstration of Acceptability

Table 6-22: Demonstration of Acceptability Test

Factor	Demonstration criteria	Rationale
Principles of ESD	No potential to affect biological diversity and ecological integrity.	The potential impacts associated with this aspect are considered localised and short-term. It is not considered to have the potential to affect biological diversity or ecological integrity.
	Activity does not have the potential to result in serious or irreversible environmental damage.	The activities were evaluated as having the potential to result in a Consequence Level – Slight. This is not considered to have the potential to result in serious or irreversible environmental damage.
Legislative and other requirements	Legislative and other requirements have been identified and met.	Requirements of Part 8, Division 8.1 of EPBC Regulations, and the EPBC Act Policy Statement 2.1 have been adopted. Threats from underwater noise are recognised in the following conservation management plans. The proposed control measures are consistent with conservation/management actions.

Factor	Demonstration criteria	Rationale
		• Conservation Management Plan for Blue Whale 2015-2015 • Conservation Advice for Humpback Whales 2015 • The National Recovery Plan for Southern Right Whales 2024 • Conservation Advice for Fin Whales 2015 • Conservation Advice for Sei Whales 2015 • Recovery Plan for Marine Turtles in Australia 2017-2027 • Recovery Plan for the White Shark (*Carcharodon carcharias)* 2013
Internal context	Consistent with PIMS Environment Policy Statement.	Proposed activities are consistent with the PIMS Environment Policy Statement, in particular "comply with all relevant legislation, regulations, codes of practice and standards" and "conducting all activities in a manner consistent with the principles of sustainable management and caring for the environment".
External context	Relevant person concerns have been considered/addressed through the consultation process.	No specific relevant person concerns have been raised concerning underwater noise emissions.
Acceptability outcome	**Acceptable**	

6.5 Air Emissions

6.5.1 Impact of Activities

6.5.1.1 Atmospheric Pollutants

There has been no air quality monitoring by TGPPL (or the previous operators or owners of the TGP) in Bass Strait, although air quality has been monitored since 1976 by the Cape Grim Baseline Air Pollution Station in north-west Tasmania. Ambient air quality in the Bass Strait region is subject to occasional air pollutants from major urban and industrial areas of South Australia, Victoria and Tasmania due to wind patterns across Bass Strait. However, air quality is dominated by the transportation of unpolluted air by the Roaring Forties across the Southern Ocean.

There will be no impacts from emissions to the atmosphere during the normal day to day operation of the Offshore TGP. Daily operations (i.e. continuous transport of gas) are completely internal to the pipeline with no offshore activities or external effects during standard operating conditions.

Environmental impacts related to air emissions will only potentially occur in the event of a rupture of the Offshore TGP (emergency / unplanned event) or during subsea pipeline inspection and maintenance activities. The key activity likely to generate air emissions is the operation of offshore support vessels and associated machinery. Activities and incidents associated with the Offshore TGP that could potentially result in air emissions include:

- Subsea pipeline rupture (refer to Section 6.9); and
- Vessel operations (engine exhaust emissions)

6.5.1.2 Greenhouse Gas Emissions

Greenhouse (GHG) emissions are generated during the combustion / venting of hydrocarbons, specifically Marine Diesel Oil (MDO) used to power engines and generators on the vessel and in equipment (such as ROVs and cranes).

As per the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (World Resources Institute and World Business Council for Sustainable Development) 2004; GHG emissions are classified as:

- Scope 1 – emissions that a company makes directly
- Scope 2 – emissions that a company makes indirectly through the purchase of electricity (Not applicable to TGP)
- Scope 3 – emissions not associated with the company, but that the company is indirectly responsible for. For example, from buying products from its suppliers and emissions associated with making the products; or from a customer's use of the company's products.

For this EP, the following applies:

- Scope 1 – emissions associated with vessel operations, i.e. combustion of MDO from the vessel engines, generators and equipment used.
- Scope 2 – is not relevant to TGP as no electricity is purchased.
- Scope 3 – emissions associated with ongoing management of the pipeline.

The sources of GHG emissions are defined in Table 6-23.

Table 6-23: Sources of GHG Emissions

Emissions Type	Source	Annual Emissions (tCO_2-e)	Emissions over life of EP (5 years) (tCO_2-e)
Scope 1	Inspection/maintenance activities (based on 1 survey every two years for 20 days), using 1 m^3 of fuel/day.	27	135
Scope 3	Management/consultant support on ongoing management of the pipeline includes travel by PIMS staff, IT related items, professional services, consultants, accounting, legal	150	750
Total		177	885

Australia generated a total of 467 $MtCO_2$-e in 2023 (CER, 2023). The latest GHG emissions data for the Victoria and Tasmania was from 2021, with Victoria contributing 80.1 $MtCO_2$-e (DEECA, 2023) and Tasmania -4.8 $MtCO_2$-e (CCO, 2023). Together Victoria and Tasmania represented 16.2% of Australia's GHG emissions (DEECA, 2023). GHG emissions from TGP are negligible in comparison (less than 0.0003%). Consequently, no further evaluation has been undertaken.

6.5.2 Identification of Environmental Risks

The key potential environmental impacts from air emissions during Offshore TGP inspection and maintenance activities are:

6.5.2.1 Increased levels of atmospheric pollution (nitrogen oxides (NOx), sulphur oxides (SOx) and particulates) and greenhouse gases, leading to localised reduction in air quality;

Offshore TGP inspection and maintenance activities are expected to be required less than once every 2 years on average, with the standard length of any one voyage likely to be less than 4 weeks. Any activities are localised along the route of the TGP, and generally activities of long-term duration do not occur at any one location.

The engines of inspection and maintenance vessels generate air emissions of NOx, SOx and particulates. The volume and duration of these emissions is not expected to be significant as such emissions will occur intermittently and over dispersed locations.

MARPOL Annex VI, first adopted in 1997, limits the main air pollutants contained in ships' exhaust gas, including SOx and NOx, and prohibits deliberate emissions of ozone depleting substances. MARPOL Annex VI also regulates shipboard incineration, and the emissions of volatile organic compounds (VOCs) from tankers. Regulation 18 of Annex VI also regulates suppliers of marine fuel oil to control the quality of fuel used by vessels (particularly the sulphur content), hence reducing vessel exhaust emissions (particularly SOx).

Due to the small size of vessels used, the infrequent nature and short duration of activities, and compliance with MARPOL requirements, exhaust emissions from Offshore TGP inspection and maintenance vessels are expected to be insignificant in the overall context of shipping traffic in Bass Strait. Vessel exhaust emissions are therefore not expected to have any noticeable impacts on local air quality or visual amenity.

6.5.2.2 Reduced visual amenity (e.g. black smoke and particulates)

If not properly serviced and maintained, exhaust emissions from vessels could potentially generate black smoke. There is no other credible source of smoke or particulates from the TGP activities described.

6.5.3 ERA Summary

The complete ERA for the offshore component of the TGP is provided in Appendix A, however, the risk assessment related to air emissions is summarised in Table 6-24.

Table 6-24: ERA Summary

Activity	Potential Incident / hazard	Potential environmental impacts	Residual risk
Offshore TGP inspection and maintenance using vessels	Vessel operations - engine exhaust emissions (ERA Ref No. 11).	Increased levels of atmospheric pollution (NOx, SOx and particulates) and greenhouse gases, leading to localised reduction in air quality. Reduced visual amenity (e.g. black smoke and particulates).	Low

6.5.4 Environmental Control Measures

The following controls and mitigation measures have been adopted to ensure appropriate environmental management of Offshore TGP inspection and maintenance activities to reduce the environmental risks associated with air emissions to ALARP:

- **CM14:** Compliance with MARPOL Annex VI

The environmental performance outcomes and environmental performance standards for the controls above are given in Table 7-1.

6.5.5 Assessment of ALARP

Given the control measures listed above, and the infrequent nature, relatively small scale and short duration of Offshore TGP inspection and maintenance activities, the risk of disturbance or injury related to noise is considered very low and therefore ALARP.

Table 6-25: ALARP Decision Context and Justification

ALARP Decision Context	Justification
A	Air emissions from fuel combustion on vessels is a common occurrence both nationally and internationally. Managing the impacts is well understood with good practice controls that are implemented by the industry. From Table 6-23, it can be seen under a worst-case scenario of one survey every two years (as opposed to the planned frequency of one survey every 5 years), GHG emissions are negligible. Vessel operations are infrequent (<1 every 2 years) and of short duration (generally less than 4 weeks). Air emissions from these activities will dissipate rapidly and the consequences of any impact is assessed as Consequence Level - Slight During consultation with relevant persons, no objections or claims regarding air emissions or GHG emissions were made. TGPPL believes ALARP Decision Context A should apply.

Table 6-26: Good Practice Controls

Good Practice	Control	Rationale
MARPOL Annex VI Regulations for the Prevention of Air Pollution from Ships	**CM14:** Compliance with MARPOL Annex VI	MARPOL Annex VI specifically requires vessels (as appropriate to class) hold an International Air Pollution Prevention certificate for each diesel engine of >130 kW; vessel engine NOx emission levels comply with Regulation 13; sulphur content of any fuel oil used on board is <0.5%; and the ongoing maintenance of engines, generators and deck equipment to ensure efficient operation.

Table 6-27: Engineering Risk Assessment

Additional, alternative control	Benefit	Cost/feasibility	Adopted
N/A	N/A	N/A	N/A

6.5.6 Demonstration of Acceptability

Table 6-28: Demonstration of Acceptability Test

Factor	Demonstration criteria	Rationale
Principles of ESD	No potential to affect biological diversity and ecological integrity.	The potential impacts associated with this aspect are considered localised and short-term. It is not considered to have the potential to affect biological diversity or ecological integrity.
	Activity does not have the potential to result in serious or irreversible environmental damage.	The activities were evaluated as having the potential to result in a Consequence Level – Slight. This is not considered to have the potential to result in serious or irreversible environmental damage.
Legislative and other requirements	Legislative and other requirements have been identified and met.	The requirements of MARPOL Annex VI have been adopted. The following legislative requirements are considered relevant as they apply to the implementation of MARPOL. • Protection of the Sea (Prevention of Pollution from Ships) Act 1983 • Navigation Act 2012 – Chapter 4 (Prevention of Pollution) • Marine Order 97 (Marine Pollution Prevention – Air Pollution) 2013

Factor	Demonstration criteria	Rationale
Internal context	Consistent with PIMS Environment Policy Statement.	Proposed activities are consistent with the PIMS Environment Policy Statement, in particular "comply with all relevant legislation, regulations, codes of practice and standards" and "conducting all activities in a manner consistent with the principles of sustainable management and caring for the environment".
External context	Relevant person concerns have been considered/addressed through the consultation process.	No specific relevant person concerns have been raised concerning air emissions.
Acceptability outcome	**Acceptable**	

6.6 Waste Management

6.6.1 Impact of Activities

There will be no wastes generated during the normal day to day operation of the Offshore TGP. Daily operations (i.e. continuous transport of gas) are completely internal to the pipeline with no offshore activities or external effects during standard operating conditions.

Inspection and maintenance activities related to the Offshore TGP also produce minimal waste. However, the following activities and incidents associated with the Offshore TGP could potentially generate waste(s):

- Pipeline maintenance activities (e.g. span correction, removal of dropped objects and replacement of sacrificial anodes)
- Pipeline inspection activities (e.g. pigging, ROV / AUV or SSS)
- Vessel operations (e.g. sewage/grey water generation, food preparation, domestic waste generation, hazardous waste management/spill clean-up, deck drainage and bilge water management)

Wastes generated by pigging operations will be received and managed at TGP onshore facilities and will, therefore, not be considered further in this Offshore EP. Where required, wastes associated with Offshore TGP maintenance activities (e.g. waste grout and bags, old sacrificial anodes and dropped objects collected from the seabed) will be stored on the vessel and returned to shore for appropriate waste management. Such wastes are not expected to have any adverse impacts on the marine environment. Offshore TGP waste management procedures shall be based on the following principles, listed in order of priority:

- Avoid wastes
- Reduce wastes at the source
- Reuse materials where possible
- Recycle wastes where practicable
- Dispose of wastes appropriately and responsibly

Inspection and maintenance vessels could potentially release wastes to the marine environment, either through planned discharge (e.g. sewage / grey water and food scraps) or through inappropriate waste management practices (e.g. loss of containment or dumping of domestic wastes and hazardous wastes).

6.6.2 Identification of Environmental Risks

Potential environmental impacts related to waste management will only occur during Offshore TGP inspection and maintenance activities using vessels. The key potential environmental impacts related to inappropriate vessel waste management practices are:

6.6.2.1 Very minor, localised, short-term contamination of the marine environment through uncontrolled or inappropriate disposal of liquid wastes (e.g. sewage, grey water, deck drainage, bilge water and hazardous/chemical wastes), no impact on marine ecosystems or marine fauna expected

Offshore TGP inspection and maintenance activities are expected to be required less than once every 2 years on average, with the standard length of any one voyage likely to be less than 4 weeks. Any activities are localised along the route of the TGP, and generally activities of long-term duration do not occur at any one location.

6.6.2.2 Injury to, or death of, marine fauna through entanglement in, or ingestion of, plastic and other solid wastes

The majority of Offshore TGP inspection and maintenance activities will be occurring in open ocean and no marine megafauna populations are known to inhabit the immediate area of the Offshore TGP outside the coastal zone. Activities during Offshore TGP inspection and maintenance will be confined to areas located at least 8 km from the nearest onshore breeding or home habitat. Should an accidental discharge of waste occur, the risk of adverse environmental impact is considered extremely low given the small volume of wastes generated and stored, and rapid dispersion in the high energy, open ocean environment.

6.6.2.3 Visible pollution / reduction of visual amenity

Works in near coastal environments at either end of the Offshore TGP are generally undertaken using smaller vessels than those used for open ocean work. Such operations are generally diver-based operations and of smaller scale than the major open ocean surveys. Therefore, the volume of wastes generated during nearshore inspection and maintenance works and, hence the environmental risk, will be lower than during open ocean activities.

6.6.3 ERA Summary

The complete ERA for the offshore component of the TGP is provided in Appendix A, however, the risk assessment associated with waste management is summarised in Table 6-29.

Table 6-29: ERA Summary

Activity	Potential incident / hazard	Potential environmental impacts	Residual risk
Offshore TGP inspection or maintenance using vessels	Uncontrolled or inappropriate disposal of liquid wastes (e.g. sewage / grey water (ERA Ref No. 12), deck drainage / bilge water (ERA Ref No. 9) and hazardous / chemical wastes (ERA Ref No. 13) from the vessel.	Very minor, localised, short-term contamination of the marine environment, no impact on marine ecosystems or marine fauna expected. Very minor, localised, short-term visible pollution / reduction of visual amenity.	Low

Activity	Potential incident / hazard	Potential environmental impacts	Residual risk
	Uncontrolled or inappropriate disposal of solid wastes (e.g. plastic) from the vessel (ERA Ref No. 13).	Injury to, or death of, marine fauna through entanglement in, or ingestion of, plastic and other solid wastes. Very minor, localised visible pollution / reduction of visual amenity.	Low

6.6.4 Environmental Control Measures

The following controls and mitigation measures have been adopted to ensure appropriate environmental management of Offshore TGP inspection and maintenance activities to reduce the risk of impacts from waste to ALARP:

- **CM15:** Compliance with MARPOL Annex IV
- **CM16:** Planned Maintenance System – Sewage Treatment Plant
- **CM17:** Food waste macerated
- **CM18:** Discharge criteria of food waste
- **CM19:** Planned Maintenance System – food macerator
- **CM20:** Compliance with MARPOL Annex I
- **CM21:** Discharge criteria of oily water separator
- **CM22:** Compliance with MARPOL Annex V
- **CM23:** Waste handling and storage procedures

The environmental performance outcomes and environmental performance standards for the controls above are given in Table 7-1.

6.6.5 Assessment of ALARP

Given the control measures listed above, and the infrequent nature, relatively small scale and short duration of Offshore TGP inspection and maintenance activities, the risk of adverse environmental impacts associated with inappropriate management of waste streams is considered extremely low and therefore ALARP.

Table 6-30: ALARP Decision Context and Justification

ALARP Decision Context	Justification
A	The discharge of treated bilge and deck drainage, sewage, greywater and food waste from vessels is a commonly practiced activity. Vessel operations are infrequent (<1 every 2 years) and of short duration (generally less than 4 weeks). At both the national and international level, potential impacts are well regulated through legislative instruments that specify best practice control measures. The Consequence Level was identified as Slight (the lowest level). During consultation with relevant persons, no objections or claims regarding waste management were made. TGPPL believes ALARP Decision Context A should apply.

Table 6-31: Good Practice Controls

Good Practice	Control	Rationale
MARPOL Annex I Regulations for Prevention of Pollution by Oil MARPOL Annex IV Regulations for Prevention of Pollution by Sewage from Ships MARPOL Annex V Regulations for the Prevention of Pollution from Garbage from Ships	**CM15:** Compliance with MARPOL Annex IV **CM16:** Planned Maintenance System – Sewage Treatment Plant **CM17:** Food waste macerated **CM18:** Discharge criteria of food water **CM19:** Planned Maintenance System – food macerator **CM20:** Compliance with MARPOL Annex I **CM21:** Discharge criteria of oily water separator **CM22:** Compliance with MARPOL Annex V **CM23:** Waste handling and storage procedures	MARPOL Annex I Regulations for the Prevention of Pollution by Oil requires vessels (as appropriate to class) to hold an International Oil Pollution Prevention Certificate, are equipped with an approved oil discharge monitoring and control system that ensures oil in water concentration of treated bilge water is <15 ppm, and that the vessel maintains an Oil Record Book. MARPOL Annex IV Regulations for the Prevention of Pollution by Sewage from Ships specifically requires vessels (as appropriate to class) to hold an International Sewage Pollution Prevention certificate. Sewage treated in a MARPOL-compliant sewage treatment plants may be discharged no less than 3 nm from shore, and untreated sewage no less than 12 nm. MARPOL Annex V Regulations for the Prevention of Pollution by Garbage from Ships specifically requires that food waste is macerated or ground to particle size. Vessels use deck cleaning products which are not classed as a harmful substance as defined in MARPOL Annex III nor contain a component that is carcinogenic, mutagenic or reprotoxic.

Table 6-32: Engineering Risk Assessment

Additional, alternative control	Benefit	Cost/feasibility	Adopted
N/A	N/A	N/A	N/A

6.6.6 Demonstration of Acceptability

Table 6-33: Demonstration of Acceptability Test

Factor	Demonstration criteria	Rationale
Principles of ESD	No potential to affect biological diversity and ecological integrity.	The potential impacts associated with this aspect are considered localised and short-term. It is not considered to have the potential to affect biological diversity or ecological integrity.

Factor	Demonstration criteria	Rationale
	Activity does not have the potential to result in serious or irreversible environmental damage.	The activities were evaluated as having the potential to result in a Consequence Level – Slight. This is not considered to have the potential to result in serious or irreversible environmental damage.
Legislative and other requirements	Legislative and other requirements have been identified and met.	MARPOL Annexes I, IV and V requirements have been adopted. The following legislative requirements are considered relevant as they apply to the implementation of MARPOL in Australia. • Protection of the Sea (Prevention of Pollution from Ships) Act 1983 • Navigation Act 2012 – Chapter 4 (Prevention of Pollution) • Marine Order 91 (Marine Pollution Prevention – Oil) 2014 • Marine Order 95 (Marine Pollution Prevention – Garbage) 2018 • Marine Order 96 (Marine Pollution Prevention – Sewage) 2018
Internal context	Consistent with PIMS Environment Policy Statement.	Proposed activities are consistent with the PIMS Environment Policy Statement, in particular "comply with all relevant legislation, regulations, codes of practice and standards" and "conducting all activities in a manner consistent with the principles of sustainable management and caring for the environment".
External context	Relevant person concerns have been considered/addressed through the consultation process.	No specific relevant person concerns have been raised concerning waste management.
Acceptability outcome	**Acceptable**	

6.7 Chemical Management

6.7.1 Impact of Activities

There will be no environmental impacts associated with chemical management during the normal day to day operation of the Offshore TGP. Daily pipeline operations (i.e. continuous transport of gas) are completely internal to the pipeline, with no use of chemicals or liquid hydrocarbons.

Environmental impacts from chemicals can only potentially occur during Offshore TGP inspection and maintenance activities using vessels, however the range of chemicals used in the operation and maintenance of the Offshore TGP is expected to be relatively minor. The main chemicals used during subsea pipeline inspection and maintenance activities are:

- Hydraulic oils used in ROVs / AUVs and vehicle recovery equipment

- Minor, working volumes of miscellaneous chemicals on board the vessel; and
- Grout (concrete) used in subsea pipeline span correction

As described in Section 2.2.1.8, Offshore TGP maintenance activities may include span correction, in which supports are installed, in the form of grout-filled bags, underneath the centre of the span. Each bag is placed under the subsea pipeline using a ROV and inflated with grout (concrete) via a hose connection to the support vessel. Due to its chemical properties, infrequent use and small volumes used, grout used in Offshore TGP maintenance is not expected to have any adverse impacts on the marine environment. Loss of grout is expected to only occur when grout hose decoupling from grout bag, releasing residual grout entrained within the nozzle with negligible quantities. In the event of an unplanned release e.g. caused by a hose rupture the maximum volume released (conservatively, on the basis of a 2" hose in 70m of water) is 250 kg. Grouting operations will be monitored by ROV / AUV, therefore, any loss of grout during filling of bags will be easily identified and the pump stopped. Thus, the volume of grout lost will be what is within the hose.

The maximum volume of other liquid chemicals stored on-board vessels will be no greater than 75 L.

Shipboard chemical management (i.e. chemicals used in typical operation of all commercial vessels, such as biofouling materials, etc.) are generally covered in vessel maintenance manuals and are required to be provided as part of tender documentation for TGP projects.

Therefore, the only credible scenarios identified for the Offshore TGP that could potentially result in a chemical spill to the marine environment are:

- Rupture of, or leak from, a hydraulic hose on a ROV/AUV (maximum 100 L)
- Rupture of, or leak from, a grout hose (maximum 250 kg)
- Loss of containment of other liquid chemicals from the vessel deck (maximum 75 L)

6.7.2 Identification of Environmental Risks

The key potential environmental impacts related to loss of hydraulic oil from an ROV / AUV, accidental release of grout or spill of other liquid chemicals from the vessel deck during Offshore TGP inspection and maintenance activities are:

- *Very minor, localised, short-term contamination of the local marine environment, no impact on marine ecosystems or marine fauna expected; and*
- *Very minor, localised, short-term visible pollution / reduction of visual amenity*

Offshore TGP inspection and maintenance vessels are expected to be required no more than once every 2 years on average and only for a limited number of days. The short survey time and size of vessels will limit the amount of chemicals used or stored on board (other than fuels – refer to Section 6.9) during Offshore TGP inspection / maintenance activities.

Most of the inspection and maintenance activities will be occurring in open ocean and no marine megafauna populations are known to inhabit the immediate area of the Offshore TGP outside the coastal zone. Activities during Offshore TGP inspection and maintenance will be confined to areas located at least 8 km from the nearest onshore breeding or home habitat. Should a spill occur, the risk of adverse environmental impact is considered extremely low given the use of low impact chemicals, the small volume of chemicals stored and rapid dispersion of any spilled chemical in the high energy, open ocean environment.

Works in near coastal environments at either end of the Offshore TGP are generally undertaken using smaller vessels than those used for open ocean work. Such operations are generally diver-based operations, of smaller scale than the major open ocean surveys and, therefore, the volume of chemicals used will be lower.

It is considered that the greatest risk associated with chemical use would be a leak from, or rupture of, a hydraulic line on survey equipment. However, risks associated with hydraulic oil spills are minimal due to the following factors:

- Controls currently in place (equipment checks, audits, ROV/AUV procedures, qualified personnel, weather windows of operation, etc.)
- Minimal volumes of hydraulic oil (maximum 100 L)
- Very rare deployment of an ROV/AUV
- Closed loop system with no planned discharge and use of internationally recognised low environmental impact hydraulic fluids

6.7.3 ERA Summary

The complete ERA for the offshore component of the TGP is provided in Appendix A, however, the risk assessment associated with chemical management is summarised in Table 6-34.

Table 6-34: ERA Summary

Activity	Potential incident / hazard	Potential environmental impacts	Residual risk
Offshore TGP inspection or maintenance using vessels	Release of grout during bag filling (maximum 250 kg) (ERA Ref No. 21)	Very minor, localised, short-term contamination of the local marine environment, no impact on marine ecosystems or marine fauna expected. Very minor, localised, short-term visible pollution / reduction of visual amenity.	Low
	Rupture of, or leak from, a hydraulic hose on a ROV / AUV (maximum 100 L) (ERA Ref No. 17).		Low
	Loss of containment of chemicals stored on the vessel (maximum total storage 75 L) (ERA Ref No. 14).		Low

6.7.4 Environmental Control Measures

The following controls and mitigation measures have been adopted to ensure appropriate environmental management of contractor vessels along the Offshore TGP route and to reduce environmental risks and impacts associated with chemical management to ALARP:

- **CM24:** ROV operating procedures
- **CM25:** Planned Maintenance System - ROV
- **CM26:** Chemical storage and handling procedures
- **CM6:** Maintenance and repair procedures
- **CM27:** SOPEP
- **CM28:** Chemical selection process
- **CM44:** Grouting procedures
- **CM45:** ROV IMCA Audit

The environmental performance outcomes and environmental performance standards for the controls above are given in Table 7-1.

6.7.5 Assessment of ALARP

Given the control measures listed above, and the infrequent nature, relatively small scale and short duration of Offshore TGP inspection and maintenance activities, the likelihood of a chemical/hydraulic oil spill to the environment is considered extremely low. The risk to the environment is therefore considered low and the risks associated with all chemical or hydraulic oil spill scenarios are considered to be ALARP.

Table 6-35: ALARP Decision Context and Justification

ALARP Decision Context	Justification
A	Handling and storing chemicals on vessels is commonplace in offshore environments nationally and internationally. There is a good understanding of the sources of potential spills, and the control measures required to manage these. Vessel operations are infrequent (<1 every 2 years) and of short duration (generally less than 4 weeks). The impacts associated with chemical management were assessed as Consequence Level Minor. During consultation with relevant persons, no objections or claims regarding impact from chemical management were made. TGPPL believes ALARP Decision Context A should apply.

Table 6-36: Good Practice Controls

Good Practice	Control	Rationale
ROV condition check	**CM24:** ROV operating procedures **CM25:** Planned Maintenance System – ROV **CM45:** ROV IMCA Audit	Prior to chartering an ROV, it is industry good practice to obtain an International Marine Contractors Association (IMCA) survey report. An IMCA audit is a verification tool which states an ROV and operational readiness. ROV operations will be undertaken in accordance with approved operating procedures, and the ROV will be maintained in accordance with the PMS schedule.
Pipeline maintenance and repair	**CM6:** Maintenance and repair procedures	All pipeline maintenance activities (i.e. jetting, installing concrete mattress/grout bags is undertaken in accordance with approved procedures.
Shipboard Oil Pollution Emergency Plan (SOPEP)	**CM27:** SOPEP	MARPOL Annex I Regulations for the Prevention of Pollution by Oil specifically require that a SOPEP (or equivalent, according to class) is in place. To prepare for a spill event, the SOPEP details: • response equipment available to control a spill event • review cycle to ensure that the SOPEP is kept up to date • testing requirements, including the frequency and nature of these tests. In the event of a spill, the SOPEP details:

Good Practice	Control	Rationale
		• reporting requirements and a list of authorities to be contacted • activities to be undertaken to control the release • procedures for coordinating with local authorities.
Containment of chemicals and oils to prevent spills overboard.	**CM26:** Chemical storage and handling procedures **CM28:** Chemical selection process	The storage of oils and chemicals are to be adequately contained in line with industry good practice. Chemicals planned to be discharged will meet the OCNS classification of CHARM Gold or Silver, or non-CHARM E or D.
Grouting operations	**CM44:** Grouting procedures	Grouting equipment will be operated and maintained in accordance with approved procedures to minimise release into the marine environment.

Table 6-37: Engineering Risk Assessment

Additional, alternative control	Benefit	Cost/feasibility	Adopted
N/A	N/A	N/A	N/A

6.7.6 Demonstration of Acceptability

Table 6-38: Demonstration of Acceptability Test

Factor	Demonstration criteria	Rationale
Principles of ESD	No potential to affect biological diversity and ecological integrity.	The potential impacts associated with this aspect are considered localised and short-term. It is not considered to have the potential to affect biological diversity or ecological integrity.
	Activity does not have the potential to result in serious or irreversible environmental damage.	The activities were evaluated as having the potential to result in a Consequence Level – Minor. This is not considered to have the potential to result in serious or irreversible environmental damage.

Factor	Demonstration criteria	Rationale
Legislative and other requirements	Legislative and other requirements have been identified and met.	MARPOL Annex I requirements have been adopted. The following legislative instruments are considered relevant as they apply to the implementation of MARPOL in Australia. • Protection of the Sea (Prevention of Pollution from Ships) Act 1983 • Navigation Act 2012 – Chapter 4 (Prevention of Pollution) • Marine Order 91 (Marine Pollution Prevention – Oil) 2014
Internal context	Consistent with PIMS Environment Policy Statement.	Proposed activities are consistent with the PIMS Environment Policy Statement, in particular "comply with all relevant legislation, regulations, codes of practice and standards" and "conducting all activities in a manner consistent with the principles of sustainable management and caring for the environment".
External context	Relevant person concerns have been considered/addressed through the consultation process.	No specific relevant person concerns have been raised concerning chemical management.
Acceptability outcome	**Acceptable**	

6.8 Ballast Water and Biofouling Management

6.8.1 Impact of Activities

An invasive marine species (IMS) is a species occurring, as a result of human activities, beyond its accepted normal distribution and which threaten the environment, human health or economic values by the damage it causes (DCCEEW, 2024). Not all non-indigenous marine species introduced into new environments will cause demonstrable effects, some are relatively benign, and few have spread widely beyond ports and harbours. The following Offshore TGP maintenance and inspection activities and incidents have the potential to result in the introduction of IMS in the activity area:

- Discharge of ballast water from support vessels containing foreign species; and
- Translocation of foreign species through biofouling of support vessel hull and niches (e.g. sea chests, bilges, strainers)

6.8.2 Identification of Environmental Risks

Potential environmental impacts related to ballast water and biofouling management will only occur during Offshore TGP inspection and maintenance activities using vessels. The key potential environmental impacts related to inappropriate ballast water and biofouling practices are:

- *Potential displacement of native species, altering ecosystem function and affecting biodiversity*

Successful IMS invasion requires the following three steps:

- Colonisation and establishment of the marine pest on a vector (e.g., vessel hull) in a donor region (e.g., home port)
- Survival of the settled marine species on the vector during the voyage from the donor to the recipient region (e.g., project area)
- Colonisation (e.g., dislodgement or reproduction) of the marine species in the recipient region, followed by successful establishment of a viable new local population

It is estimated that there are more than 250 exotic species in the Australian marine environment and that about one in six to ten introduced marine species become 'pests' (i.e. the effects of the introduced organisms are sufficiently severe) (McDonald, 2008).

IMS are likely to have little or no natural competition or predators, thus potentially outcompeting native species for food or space, preying on native species, or changing the nature of the environment.

Marine pest species can also deplete fishing grounds and aquaculture stock, with between 10% and 40% of Australia's fishing industry being potentially vulnerable to marine pest incursion. For example, the introduction of the Northern Pacific Sea Star (*Asterias amurensis*) in Victorian and Tasmanian waters was linked to a decline in scallop fisheries. Similarly, the New Zealand screw shell (*Maoricolpus roseus*), thought to have been introduced on dry ballast or through the live oyster trade, may threaten other mollusc species, including scallops. The New Zealand screw shell can densely blanket the sea floor with live and dead shells, and faecal pellets and therefore also smother other seafloor species (ABC Science, 2000).

Marine pests can also damage marine and industrial infrastructure, such as encrusting jetties and marinas or blocking industrial water intake pipes. By building up on vessel hulls, they can slow the vessels down and increase fuel consumption.

The benthic habitat within the operational area is characterised by a soft sediment and shell/rubble seabed, infauna communities, and epibiotic communities (typically sponges).

Once established, some pests can be difficult to eradicate and therefore there is the potential for a long-term or persistent change in habitat structure. It has been found that highly disturbed environments (such as marinas) are more susceptible to colonisation than open-water environments, where the number of dilutions and the degree of dispersal are high (Paulay, et al., 2002).

Compliance with regulatory requirements for the management of ballast water and ensuring all vessels are assessed as posing a low biofouling risk in accordance with national guidelines will significantly reduce the likelihood of translocation of an IMS. Successful colonisation in the recipient region would be difficult given the nature of the benthic habitats near the operational area (i.e. predominantly bare sands with patchy occurrences of hard substrate). If an IMS was introduced, and if it did colonise an area, it is expected that any colony would remain fragmented and isolated. Therefore, there is the potential for localised loss of ecological diversity.

The operational area does not present an environment conducive to IMS introduction or establishment, the risk is considered greatest in shallow coastal waters (Knight, et al., 2007) in areas where large numbers of vessels are present and are stationary for an extended period. It is considered Highly Unlikely that this activity would result in the introduction of an IMS and any subsequent impact to receptors.

6.8.3 ERA Summary

Table 6-39: ERA Summary

Activity	Potential incident / hazard	Potential environmental impacts	Residual risk
Offshore TGP inspection or maintenance using vessels	Inappropriate ballast water (ERA Ref No. 8) and biofouling (ERA Ref No. 7) management.	Introduction of exotic marine pests, potentially displacing native species, altering ecosystem function and affecting biodiversity.	Low

6.8.4 Environmental Control Measures

With respect to marine pests and biofouling, the following control measures are to be implemented, where applicable to the vessel used:

- **CM29:** Ballast Water Management Plan and Certificate
- **CM30:** Ballast water records
- **CM31:** Biosecurity clearance when entering Australia
- **CM32:** Biofouling Management Plan and records
- **CM33:** Invasive Marine Species risk assessment process
- **CM34:** Immersible retrievable equipment cleaning

The environmental performance outcomes and environmental performance standards for the controls above are given in Table 7-1.

6.8.5 Assessment of ALARP

Given the control measures listed above, and the infrequent nature, relatively small scale and short duration of Offshore TGP inspection and maintenance activities, the risk of adverse environmental impacts associated with inappropriate management of ballast water and biofouling is considered low and therefore ALARP.

Table 6-40: ALARP Decision Context and Justification

ALARP Decision Context	Justification
A	Controls to manage the introduction of invasive marine species from ballast water or biofouling are well understood and managed by national and international regulations and industry guidelines. The potential for an irreversible (localised) effect on benthic habitats has been assessed as having a Consequence Level of Slight (the lowest level). During consultation with relevant persons, no objections or claims regarding impact from the introduction of invasive marine species were made. TGPPL believes ALARP Decision Context A should apply.

Table 6-41: Good Practice Controls

Good Practice	Control	Rationale
Ballast Waste Management (BWM) Convention	**CM29:** Ballast Water Management Plan and Certificate **CM30:** Ballast water records	The Ballast Water Management Convention requires signatory flag states to ensure that ships flagged by them comply with standards and procedures for the management and control of ships' ballast water and sediments. The Convention aims to prevent the spread of harmful aquatic organisms from one region to another and halt damage to the marine environment from ballast water discharge, by minimising the uptake and subsequent discharge of sediments and organisms. The Convention requires all vessels designed to carry ballast water to implement a ballast water management plan and to carry out ballast water management procedures in accordance with approved methods. Specifically, these are: • Use of a ballast water management system • Ballast water exchange in an acceptable area (at least 12NM from land and in at least 50 m water depth) • Use of low-risk ballast water • Retention of high-risk ballast water on board • Discharge to an approved ballast water reception facility • Maintenance of ballast water record system in accordance with Regulation B-2 of the Annex to the IMO Ballast Water Management Convention including: - start and finish coordinates - actual pumping times - residual volume remaining in the tank at the end the empty cycle prior to refill (empty refill method only)
Australian Biofouling Management Requirements (DAWE, 2022)	**CM32:** Biofouling Management Plan and records **CM33:** Invasive Marine Species risk assessment process **CM34:** Immersible retrievable equipment cleaning	Consistent with the best practice approach set out in the IMO Guidelines for Management of Ships Biofouling, the TGP IMS risk assessment will consider: • transport method (dry vs wet haulage) • presence and age of antifouling coating • evidence of in-water inspection by divers or inspection in dry dock and cleaning of hull • presence and operation of internal seawater treatments systems, if applicable

Good Practice	Control	Rationale
		Where the assessment results in "low risk", the assessment is provided to the Principal Officer IMS, Department of Jobs, Precincts and Regions. The vessel is considered acceptable if the Principal Officer is satisfied that no further action is necessary. If the risk is assessed as uncertain or high, or the Principal Officer recommends further action, an IMS expert is consulted to determine if the vessel risk can be reduced through additional controls. If the risk can not be reduced an alternative vessel will be sought.
Australian Ballast Water Management Requirements (DAWE, 2020) Biosecurity Act 2015	**CM31:** Biosecurity clearance when entering Australia	• Compliance with the Australian Ballast Water Management Requirements • Where applicable (if the vessel has mobilised from outside Australian waters), submission of detailed pre-arrival information to the DAFF, via the Maritime Arrivals Reporting System (MARS), no later than 12 hours prior to arrival in Australian waters. The vessel operator must comply with this requirement under Section 193 of the Biosecurity Act 2015

Table 6-42: Engineering Risk Assessment

Additional, alternative control	Benefit	Cost/feasibility	Adopted
N/A	N/A	N/A	N/A

6.8.6 Demonstration of Acceptability

Table 6-43: Demonstration of Acceptability Test

Factor	Demonstration criteria	Rationale
Principles of ESD	No potential to affect biological diversity and ecological integrity.	The risk of introducing invasive marine species was assessed as Low and is therefore considered acceptable.
	Activity does not have the potential to result in serious or irreversible environmental damage.	The likelihood of introducing invasive marine species with the adoption of the proposed control measures was assessed as being Very Unlikely.
Legislative and other requirements	Legislative and other requirements have been identified and met.	The requirements of the Ballast Water Management Convention have been adopted. The following legislative requirements are considered relevant as they apply to the implementation of the Ballast Water Management Convention in Australia.

Factor	Demonstration criteria	Rationale
		• Biosecurity Act 2015 • Protection of the Sea (Harmful Anti-fouling Systems) Act 2006 • Marine Order 98 (Marine Pollution – Anti-fouling Systems) 2013 Requirements for assessing and mitigating biofouling risk in accordance with the National Biofouling Guidelines for the Petroleum Production and Exploration Industry (DAWE, 2022) have been adopted.
Internal context	Consistent with PIMS Environment Policy Statement.	Proposed activities are consistent with the PIMS Environment Policy Statement, in particular "comply with all relevant legislation, regulations, codes of practice and standards" and "conducting all activities in a manner consistent with the principles of sustainable management and caring for the environment".
External context	Relevant person concerns have been considered/addressed through the consultation process.	No specific relevant person concerns have been raised concerning the introduction of invasive marine species.
Acceptability outcome	**Acceptable**	

6.9 Fuel Management

6.9.1 Impact of Activities

There will be no environmental impacts associated with fuel during the normal day to day operation of the Offshore TGP. Daily pipeline operations (i.e. continuous transport of gas) are completely internal to the pipeline, with no use of fuel or other liquid hydrocarbons.

Environmental impacts from fuel can only potentially occur during Offshore TGP inspection and maintenance activities using vessels. Fuel used for vessel operation can pose a threat to the marine environment and vessel personnel if it is not managed appropriately and is allowed to escape to the environment.

While the size of vessels used in Offshore TGP inspection and maintenance activities may vary according to availability and scale of the required works, the type of fuel used for vessel operations is restricted to low sulphur Marine Diesel Oil (MDO) or Marine Gas Oil (MGO).

The only credible scenarios identified for the Offshore TGP that could potentially result in a fuel spill to the marine environment are:

- Fuel tank breach through vessel accidents (including grounding) during extreme weather events; and
- Fuel tank rupture due to collision between vessels

As stated in Section 2.2.1.2, the fuel capacity of vessels potentially used in Offshore TGP inspection and maintenance activities ranges from 48 m^3 to 530 m^3, and the fuel is spread between numerous tanks. However, based on AMSA (2012), the maximum credible fuel spill volume associated with

inspection / maintenance vessels is 40,000 L, being the maximum fuel capacity of one fuel tank of the largest expected vessel.

6.9.2 Identification of Environmental Risks

The key potential environmental impacts from vessel fuel storage and use in proximity to the Offshore TGP are:

6.9.2.1 Contamination of the local marine environment, leading to degradation of marine ecosystems and potential toxicity impacts on marine biota (e.g. death, injury)

On release to the marine environment, diesel would be distributed over time into the following components:

- surface
- (in-water) entrained (non-dissolved oil droplets that are physically entrained by wave action)
- (in-water) dissolved (principally the aromatic hydrocarbons)
- evaporated; and
- decayed

Of these components, surface hydrocarbons and in-water entrained hydrocarbons and dissolved aromatics have the most significant impact on the marine environment. These are discussed in further detail below.

As detailed in Section 2.2.1.2, oil spill trajectory modelling with a spill volume of 40,000 L of fuel oil was undertaken to determine the areas that may be impacted (See Figure 2-8). The potential environmental impacts to receptors within the ZPI are discussed in Table 6-44.

Table 6-44: Consequence Evaluation to Receptors within the ZPI - sea surface, shoreline and in-water

Receptor	Exposure Evaluation	Consequence Evaluation
Plankton	Plankton are likely to be exposed to entrained hydrocarbons. Effects will be greatest in the upper layer of the water column and areas close to the spill source where hydrocarbon concentrations are likely to be highest.	Relatively low concentrations of hydrocarbon are toxic to both zooplankton and ichthyoplankton (fish eggs and larvae)] which risk exposure through ingestion, inhalation and dermal contact. Phytoplankton are typically not sensitive to the impacts of oil, though they do accumulate it rapidly (Hook *et al.*, 2016) due to their small size and high surface area to volume ratio. Phytoplankton exposed to hydrocarbons may affect their ability to photosynthesize. Plankton are numerous and widespread but do act as the basis for the marine food web, meaning that an oil spill in any one location is unlikely to have long-lasting impacts on plankton populations at a regional level. Once background water quality conditions have re-established, the plankton community may take weeks to months to recover (ITOPF, 2011).

Receptor	Exposure Evaluation	Consequence Evaluation
Fish	Since fish and sharks do not generally break the sea surface, the exposure of surface hydrocarbons to fish and shark species are unlikely to occur. Near the sea surface, fish are able to detect and avoid contact with surface slicks meaning fish mortalities rarely occur in the event of a hydrocarbon spill in open waters (Volkman *et al.*, 2004). Entrained hydrocarbon droplets can physically affect fish exposed for an extended duration (weeks to months). Effects will be greatest in the upper layer of the water column and areas close to the spill source where hydrocarbon concentrations are likely to be highest. Several fish communities in these areas are demersal and therefore more prevalent towards the seabed, which is not likely to be exposed. Therefore, any impacts are expected to be highly localised. The Australian grayling spends most of its life in fresh water, with parts of the larval or juvenile stages spent in coastal marine waters, therefore it is not expected to be present in offshore waters in large numbers. There is a known foraging BIA for the White shark in the ZPI, however, it is not expected that this species spends a large amount of time close to the surface where concentrations may be highest. The White shark breeding BIA, adjacent to Ninety Mile Beach, is also within the ZPI.	Pelagic free-swimming fish and sharks are unlikely to suffer long-term damage from oil spill exposure because dissolved/entrained hydrocarbons in water are not expected to be sufficient to cause harm (ITOPF, 2011). Subsurface hydrocarbons could potentially result in acute exposure to marine biota such as juvenile fish, larvae, and planktonic organisms, although impacts are not expected to cause population-level impacts. Impacts on fish eggs and larvae entrained in the upper water column are not expected to be significant given the temporary nature of the resulting change in water quality, and the limited areal extent of the spill. As egg/larvae dispersal is widely distributed in the upper layers of the water column it is expected that current induced drift will rapidly replace any oil affected populations. Pelagic species of shark are at greatest risk because of their risk of consuming contaminated prey. White sharks are known to aggregate near Ninety Mile Beach and philopatric characteristics means they may return to the place of birth to breed even if habitats are contaminated. This species is widely distributed and thus unlikely to suffer ecologically important declines in abundance.
Benthic habitats – bare substrate, macroalgae, corals	The predominant benthic habitat in the ZPI is bare substrate. Suitable hard substrate for macroalgal beds including the threatened 'Giant Kelp' occur in surrounding the Kent Island Group. Corals are not a common habitat type in the ZPI however solitary soft corals may occur where suitable hard substrate, such as rocky reef or man-made structures, is present.	Exposure to in-water hydrocarbons will occur predominantly in the surface layer and therefore any potential impact to benthic habitats will only occur in shallower nearshore waters. Impact by direct contact of benthic species with hydrocarbon in the deeper areas of ZPI is not expected given the surface nature of any diesel spill. Benthic invertebrate species closer to shore may be affected. Filter-feeding benthic invertebrates such as sponges, bryozoans, abalone and hydroids may be exposed to sub-lethal impacts however population level impacts are considered unlikely. Intertidal species of macroalgae are more prone to direct surface oil exposure than subtidal beds, however sub-lethal toxicity effects from in-water hydrocarbons may be observed. Sub-lethal toxicity effects on corals may result from direct contact with in-water hydrocarbons or indirectly through feeding on contaminated prey (plankton).

Receptor	Exposure Evaluation	Consequence Evaluation
Birds	Several listed Threatened, Migratory and/or listed marine species have the potential to be rafting, resting, diving and feeding within the spill area. Migratory or resident shorebirds, such as terns and plovers, foraging in the intertidal zone, or roosting or nesting on beaches and dunes along the Gippland, Bass Strait island and northern Tasmanian coastlines may also be exposed to oil. There are several foraging BIAs that are present within the area potentially exposed to surface hydrocarbons for albatross, petrel, and shearwater species. However, foraging BIAs are typically large broad areas. The birds can feed via surface skimming or diving – both exposing the bird to any oil on the water surface. Within the ZPI, breeding BIAs have been identified for the Common Diving and White-faced Storm Petrel around the Kent Group and Furneaux Group respectively. Foraging and breeding BIAs have also been identified for the Little Penguin around both the Kent and Furneaux Island groups.	Seabirds and shorebirds are sensitive to the impacts of oiling, with their vulnerability arising from the fact that they cross the air-water interface to feed, while their shoreline habitats may also be oiled (Hook *et al*., 2016). Species that raft together in large flocks on the sea surface are particularly at risk (ITOPF, 2011). Penguins may also be especially vulnerable to oil because they spend a high portion of their time in the water and readily lose insulation and buoyancy if their feathers are oiled (Hook *et al*., 2016). When first released, diesel has higher toxicity due to the presence of volatile components. Individual birds making contact close to the spill source at the time of the spill may be impacted; however, it is unlikely that many birds will be affected as sea surface oil is only predicted for the first 12 hours. Seabirds rafting, resting, diving or feeding at sea have the potential to encounter areas where hydrocarbons concentrations are greater than 10 g/m^2 (Geraci & St Aubin, 1988) in the vicinity of the spill location and due to physical oiling may experience lethal surface concentrations. As such, acute or chronic toxicity impacts (death or long-term poor health) to birds are possible but unlikely for a diesel spill as the number of birds would be limited due to the small area and brief period of exposure above 10 g/m^2. Therefore, potential impact would be limited to individuals, with population impacts not anticipated. The populations of seabird and shorebird species have a wide geographic range, meaning that impacts to individuals or even a population at one location will not necessarily extend to populations at other un-impacted locations.
Marine reptiles	There may be marine turtles in the area predicted to be exposed to surface oil. However, there are no BIAs or habitat critical to the survival of the species within this area. There are no turtle nesting beaches within the ZPI, so impacts to turtles from possible shoreline oiling will not occur.	Marine turtles are vulnerable to the effects of oil at all life stages. Marine turtles can be exposed to surface oil externally (i.e. swimming through oil slicks) or internally (i.e. swallowing the oil). Ingested oil can harm internal organs and digestive function. Oil on their bodies can cause skin irritation and affect breathing. The number of marine turtles that may be exposed to surface diesel is expected to be low as there are no BIAs or habitat critical to the survival of the species present; however, turtles may be transient within the ZPI. Sea surface oil is only predicted for the first 12 hours limiting the period when oiling may occur. Therefore, potential impact would be limited to individuals, with population impacts not anticipated.

Receptor	Exposure Evaluation	Consequence Evaluation
Marine mammals (pinnipeds)	There may be pinnipeds in the area potentially exposed to surface or in water entrained hydrocarbons. Although, there are no BIAs within this area breeding colonies are present on a number of the Bass Strait islands within the ZPI.	Breeding colonies (used to birth and nurse until pups are weaned) are particularly sensitive to hydrocarbon spills. Oiling may occur on the shorelines of Judgement Rocks and Tenth Island where fur seal colonies are located. Pinnipeds are vulnerable to sea surface exposures given they spend much of their time on or near the surface of the water, as they need to surface every few minutes to breathe. Exposure to surface oil can result in skin and eye irritations and disruptions to thermal regulation. Fur seals are particularly vulnerable to hypothermia from oiling of their fur however the characteristics of diesel reduce this risk. The number of pinnipeds that may be exposed to surface diesel is expected to be low. Sea surface oil is only predicted for the first 12 hours limiting the period when oiling may occur. Therefore, potential impact would be limited to individuals, with population impacts not anticipated. Exposure to entrained hydrocarbons in the water column or consumption of prey affected by the oil may cause sub-lethal impacts to pinnipeds. However, due to the temporary and localised nature of the spill, rapid loss of the volatile components of diesel in choppy and windy seas (such as that of the ZPI), and their widespread nature, is it not anticipated to result in long-term population viability effects.
Marine mammals (cetaceans	Several threatened, migratory and/or listed marine cetacean species have the potential to be migrating through or foraging within the area potentially exposed to surface or in water entrained hydrocarbons. There is a distribution and possible foraging BIA for Pygmy blue whales and a distribution and migration BIA for Southern right whales within the ZPI. Cetacean exposure to entrained hydrocarbons can result in physical coating as well as ingestion (Geraci and St Aubin, 1988). Such impacts are associated with 'fresh' hydrocarbon; the risk of impact declines rapidly as the diesel weathers.	Physical contact by individual cetaceans with a surface diesel spill is unlikely to lead to any long term impacts. Given the mobility of cetaceans, only a small proportion of the population would surface in the affected areas, resulting in short-term and localised consequences. The potential for impacts to whales and dolphins would be limited to a relatively short period following the release and would need to coincide with pod foraging or migration to result in exposure to a large number of individuals. However, such exposure is not anticipated to result in long-term population viability effects.
Shoreline habitat - sandy	The surface life of the diesel spill is predicted to be approximately 12 hours and therefore minimal shoreline contact is expected within the ZPI. The Gippsland and northern Tasmanian coasts which could possibly be contacted are dominated by sandy beaches with small rocky outcrops. Sandy beaches provide potential foraging and breeding habitat for numerous bird and pinniped species. These activities primarily occur above the high tide line, with exception of haul outs. Note, most of the oil on a sandy shore will be concentrated at, and below, the high tide mark. Sandy beaches are also inhabited by a diverse assemblage (although not always abundant) of infauna and macroinvertebrates.	Shoreline oiling may result in acute toxicity, and mortality, of invertebrate communities, especially as unweathered diesel will easily penetrate into sandy sediments. However, tidal action is expected to lead to rapid weathering of any hydrocarbons in the intertidal area and the populations of these communities would be likely to rapidly recover.

Receptor	Exposure Evaluation	Consequence Evaluation
- rocky	Rocky shores are more common on the islands of Bass Strait including the Hogan Island Group, Curtis Island Group, Kent Group, Bass Pyramid Group and Tenth Island which are located within the ZPI. Exposed rocky shores are typically less sensitive to oil spills, with the exception of when wildlife habitats or breeding grounds (see also potential impacts to pinnipeds above) are present. Because the rocks do not absorb much oil, the spilled material is mostly held offshore and any oil that is deposited remains on the rock surface where it is subject to weathering. The rate of such weathering is dependent on many factors, the wave exposure, weather conditions and the shore characteristics are most important (IPIECA, 1995). As the oil is weathered it becomes more viscous and less toxic, often leaving only a small residue of tar on upper shore rocks. This residue can remain as a unsightly stain but it is unlikely to cause any more ecological damage.	Oil is not normally retained on rocky shores in a form or quantity that causes long term impacts and also because most rocky shore species have a considerable potential for re-establishing populations (IPIECA, 1995).
Commercial fisheries	In-water exposure to entrained diesel may result in a reduction in commercially targeted marine species, resulting in impacts to commercial fishing and aquaculture. Actual, or perceptions of, contamination of seafood can affect commercial and recreational fishing and can impact seafood markets even after any actual risk to seafood from a spill has subsided (NOAA, 2002) which can have economic impacts to the industry. Several commercial fisheries overlap the ZPI.	Any acute impacts are expected to be limited to small numbers of juvenile fish, larvae, and planktonic organisms, which are not expected to affect population viability or recruitment. Impacts from entrained exposure are unlikely to manifest at a fish population viability level. Any exclusion zone established would be limited to the immediate vicinity of the release point, and due to the rapid weathering of diesel would only be in place 1-3 days after release, therefore physical displacement of vessels which excludes fishing effort is unlikely to be a significant impact.
Recreation and tourism	The surface life of the diesel spill is predicted to be approximately 12 hours and the modelling predicts surface oil extending into nearshore Victorian waters (including Ninety Mile Beach Marine National Park) and to the nearshore waters along the Ninety Mile Beach (part of which is in the Gippsland Lakes Coastal Park). Oil is predicted to contact the Kent Group Marine Reserve and the shorelines of Bass Strait islands including the Hogan and Kent Groups which offer opportunities for bird-watching, diving and recreational fishing.	Tourism and recreation is also linked to the presence of marine fauna (e.g. whales, seals, birdwatching), particular habitats and locations for diving / swimming, boating or recreational fishing (see also sections on fish, birds, pinnipeds, cetaceans and coastal habitats above). Short-term impacts to nature-based tourism and other human uses of beaches or marinas (and nearshore waters) with resultant socio-economic consequences in local communities may occur as a result of temporary closures to protect human health or due to aesthetic factors and perceptions of a polluted environment that is not desirable to visit. However, given the short duration and limited extent of predicted exposure only short term, minor public impacts are expected.
Cultural heritage - Indigenous and historic	Surface oil is predicted to encroach upon nearshore waters in the vicinity of the Gunai Kurnai Native Title Determination Area and a number of historic shipwrecks.	Visible sheen has the potential to reduce the visual amenity of cultural heritage sites such as indigenous or historic (e.g. shipwreck) protected areas. However, given the relatively short duration and limited extent of predicted exposure only short term, minor public impacts are expected.
AMP	The ZPI overlaps the Beagle Australian Marine Park.	Potential impacts to sensitive receptors related to the Beagle AMP such as plankton and other marine fauna, are discussed in the appropriate sections above.

Receptor	Exposure Evaluation	Consequence Evaluation
National Parks and Reserves	A number of areas adjacent to or within Victorian and Tasmanian waters have been declared as National Parks or Marine Protected Areas. The surface life of the diesel spill is predicted to be approximately 12 hours, and the modelling predicts surface oil contacting Ninety Mile Beach Marine National Park and the coastal waters along the Gippsland Lakes Coastal Park. Oil is predicted to contact the Kent Group Marine Reserve and the coastal waters of Bass Strait islands including the Kent Group National Park.	Potential impacts to sensitive receptors related to the shorelines of terrestrial National Parks and Reserves, such as shoreline habitats and birds, are discussed in the appropriate sections above. Potential impacts to the sensitive receptors related Marine National Parks and Marine Sanctuaries, such as fish and other marine fauna, are discussed in the appropriate sections above.
KEF	The diesel plume may encroach upon the western-most part of the KEF: Upwelling East of Eden.	Potential impacts to sensitive receptors related to the KEF: Upwelling East of Eden such as plankton and other marine fauna, are discussed in the appropriate sections above. While a spill would not affect the upwelling itself, if the spill occurs at the time of an upwelling event, it may result in krill being exposed to in-water phase hydrocarbons. Pygmy blue whales feeding at this time may suffer from reduced availability of prey however these impacts are expected to be localised and temporary.

6.9.2.2 Oiling of marine animals and coastlines

Most of the inspection and maintenance activities will be occurring in the open ocean and no marine megafauna populations are known to inhabit the immediate area of the Offshore TGP outside the coastal zone. Activities during Offshore TGP inspection and maintenance will be confined to areas located at least 8 km from the nearest onshore breeding or home habitat.

Further detailed in Table 6-44 above.

6.9.2.3 Disturbance to marine fauna including mammals, birds, reptiles and other organisms (i.e. altered feeding, nesting nursing, mating or migrating behaviour)

Offshore TGP inspection and maintenance activities are expected to be required less than once every 2 years on average, with the length of any one voyage likely to be less than 4 weeks. Any activities are localised along the TGP route, with no activity of long-term duration at any one location.

6.9.2.4 Visible pollution / reduction of visual amenity

Offshore TGP inspection and maintenance activities are expected to be required less than once every 2 years on average, with the length of any one voyage likely to be less than 4 weeks. Any activities are localised along the TGP route, with no activity of long-term duration at any one location.

Spills would be managed to minimise impact, as per Section 9.4. The visible pollution would not remain for an extended period, and due to controls is considered low likelihood.

6.9.2.5 Disruption to other marine users such as commercial fishing and recreational users

See above point.

6.9.3 ERA Summary

The complete ERA for the offshore component of the TGP is provided in Appendix A, however, the risk assessment associated with fuel management is summarised in Table 6-45.

Table 6-45: ERA Summary

Activity	Potential incident / hazard	Potential environmental impacts	Residual risk
Offshore TGP inspection or maintenance using vessels	Vessel accident during extreme weather events or vessel collision leading to fuel tank rupture and fuel spill (ERA Ref No. 15).	Contamination of the local marine environment leading to degradation of marine ecosystems and potential toxicity impacts on marine biota (e.g. death, injury). Oiling of marine animals and coastlines. Disturbance to marine fauna including mammals, birds, reptiles and other organisms (i.e. altered feeding, nursing, mating or migrating behaviour). Visible pollution / reduction of visual amenity. Disruption to other marine users such as commercial fishing and recreational users.	Low

6.9.4 Environmental Control Measures

The following controls and mitigation measures have been adopted to ensure appropriate environmental management of vessels along the Offshore TGP route and to reduce environmental risks and impacts associated with vessel fuel storage to ALARP:

- **CM35:** Vessel crew competency and navigational equipment
- **CM7:** Compliance with weather limitations
- **CM11:** Pre-start notifications
- **CM12:** Navigational charts
- **CM27:** SOPEP (or equivalent)
- **CM36:** OPEP
- **CM37:** OSMP

The environmental performance outcomes and environmental performance standards for the controls above are given in Table 7-1.

6.9.5 Assessment of ALARP

As stated in Section 2.2.2.2, adverse impacts on the shoreline or sensitive marine ecosystems in the event of a spill from Offshore TGP inspection and maintenance vessels are highly unlikely due to: the size of vessels used; properties of hydrocarbons that could potentially be spilled; expected maximum spill volumes; high energy marine environment of Bass Strait; and the distance from the Offshore TGP to sensitive receptors (e.g. islands / shorelines).

The potential risk is further reduced by the control measures listed above, and the infrequent nature, relatively small scale and short duration of Offshore TGP inspection and maintenance activities. Therefore, the environmental risk associated with fuel management is considered ALARP.

Table 6-46: ALARP Decision Context and Justification

ALARP Decision Context	Justification
A	Operating a vessel close to an offshore pipeline is common practice, that is well regulated with associated control measures and well understood locally, nationally and internationally. Vessel operations are infrequent (<1 every 2 years) and of short duration (generally less than 4 weeks). During consultation with relevant persons, no objections or claims regarding impact on marine flora and fauna were made. TGPPL believes ALARP Decision Context A should apply.

Table 6-47: Good Practice Controls

Good Practice	Control	Rationale
Pre-start notifications	**CM11:** Pre-start notifications	Under the Navigation Act, the AHO is responsible for maintaining and disseminating nautical information including: Notices to Mariners and AUSCOAST warnings. AMSA JRCC will be notified prior to activities commencing to allow for AUSCOAST warnings to be distributed. AHS will be notified to allow for the generations of Notice to Mariners. Pre-start notifications will be provided to all relevant persons approximately 4 weeks and then 1 week prior to the start of activities.
Mapping of the pipeline route	**CM12:** Navigational charts	TGP has been included on marine navigation charts.
Marine Order 30 (Prevention of Collisions) 2016 Marine Order Part 3 (Seagoing qualifications)	**CM35:** Vessel crew and navigation equipment	TGP will ensure vessel will comply with Marine Order 3 and 30, with regards to navigational equipment (including lighting and radar equipment) requirements and ensure crew are competent.
Weather monitoring	**CM7:** Compliance with weather limitations	Maintenance activities are undertaken during acceptable weather conditions.

Good Practice	Control	Rationale
Shipboard Oil Pollution Emergency Plan (SOPEP)	**CM27:** SOPEP (or equivalent)	MARPOL Annex I Regulations for the Prevention of Pollution by Oil specifically require that a SOPEP (or equivalent, according to class) is in place. To prepare for a spill event, the SOPEP details: • response equipment available to control a spill event • review cycle to ensure that the SOPEP is kept up to date • testing requirements, including the frequency and nature of these tests. In the event of a spill, the SOPEP details: • reporting requirements and a list of authorities to be contacted • activities to be undertaken to control the release • procedures for coordinating with local authorities.
Oil spill response planning	**CM36:** OPEP	Under the OPGGS (Environment) Regulations, NOPSEMA require that an accepted OPEP is in place before commencing petroleum activities. In the event a vessel collision occurs, the OPEP found in Section 9.4 will be implemented.
Oil spill monitoring plan	**CM37:** OSMP	The OSMP (Section 9.4.10) details: • arrangements for monitoring a hydrocarbon spill • scientific monitoring of environmental impacts of a spill and the response activities. Operational monitoring will provide information to facilitate decision making and ensure responses are timely, safe and appropriate. Scientific monitoring will identify if potentially longer-term remediation activities are required.

Table 6-48: Engineering Risk Assessment

Additional, alternative control	Benefit	Cost/feasibility	Adopted
N/A	N/A	N/A	N/A

6.9.6 Demonstration of Acceptability

Table 6-49: Demonstration of Acceptability Test

Factor	Demonstration criteria	Rationale
Principles of ESD	No potential to affect biological diversity and ecological integrity.	The potential impacts associated with this aspect are considered localised and short-term. It is not considered to have the potential to affect biological diversity or ecological integrity.
	Activity does not have the potential to result in serious or irreversible environmental damage.	The activities were evaluated as having the potential to result in a Consequence Level – Minor. This is not considered to have the potential to result in serious or irreversible environmental damage.
Legislative and other requirements	Legislative and other requirements have been identified and met.	Proposed control measures meet the requirements for the following legislative instruments: • OPGGS Act, Section 280 requires that a person carrying on activities in an offshore area under the permit, lease, licence, authority or consent must carry on those activities in a manner that does not interfere with navigation or fishing (among others) to a greater extent necessary than for the exercise of the rights conferred by titles granted. • Navigation Act 2012 – Chapter 6 (Safety of Navigation) Part 6 deals with safe navigation including provisions about reporting of movement of vessels. • Protection of the Sea (Prevention of Pollution from Ships) Act 1983 • Marine Orders 1 to 98 – Generally give effect to international obligations and standards and apply to regulated Australian vessels, foreign vessels, and some domestic commercial vessels • Marine Order 18 (Measures to enhance maritime safety) 2013 · Marine Order 27 (Safety of navigation and radio equipment) 2016 • Marine Order 30 (Prevention of collisions) 2016 · Rule 10 of COLREGs

Factor	Demonstration criteria	Rationale
Internal context	Consistent with PIMS Environment Policy Statement.	Proposed activities are consistent with the PIMS Environment Policy Statement, in particular "comply with all relevant legislation, regulations, codes of practice and standards" and "conducting all activities in a manner consistent with the principles of sustainable management and caring for the environment".
External context	Relevant person concerns have been considered/addressed through the consultation process.	No specific relevant person concerns have been raised concerning the introduction of invasive marine species.
Acceptability outcome	**Acceptable**	

6.10 Pipeline Integrity Management

6.10.1 Impact of Activities

There are no environmental impacts associated with the normal day to day operation of the Offshore TGP, as daily pipeline operations (i.e. continuous transport of gas) are completely internal to the pipeline.

However, loss of pipeline integrity could result in accidental release of gas from the Offshore TGP to the marine environment. Although highly unlikely, loss of subsea pipeline integrity could potentially result from:

- Physical damage (e.g. dropped objects, dropped / dragged anchors, grounding / sinking ships, dragged fishing equipment or intentional damage)
- Fatigue damage (free spans) due VIV or subsea currents / natural events (e.g. major storm or seismic activity)
- Internal corrosion of the pipeline

6.10.2 Identification of Environmental Risks

The key potential environmental impacts associated with a gas release from the Offshore TGP are:

- *Injury to, or death of, marine fauna in the immediate vicinity of the release*
- *Disturbance to marine fauna including mammals, reptiles and other organisms (i.e. altered feeding, nursing, mating or migrating behaviour)*
- *Scouring / physical damage to benthic communities*
- *Generation of a sediment plume in the water column, potentially leading to smothering of, or reduced light penetration to, benthic communities; and*
- *Temporary and localised change in water quality*

For further details of safety issues related to a subsea release of gas from the Offshore TGP (i.e. a flash fire or loss of vessel buoyancy) refer to Section 3 of the *TGP Offshore Safety Case (TGP-698-SC-HSE-004).*

Natural gas exhibits negligible solubility in water and hence, in event of a subsea gas leak, the impact on water quality is likely to be insignificant (Nord Stream, 2009). Due to the depth of the Offshore TGP along the most of its route, any gas release is most likely to be gradual and evidenced

by bubbles rising to the surface. Any explosive rupture would be buffered by the density of the water and would only affect the immediate vicinity of the pipeline. Impacts would therefore depend on the depth at which the failure occurred.

A short-term thermal impact (i.e. temperature drop due to the Joule-Thomson gas expansion effect) may occur in the surrounding water in the immediate vicinity of the subsea gas release. A subsea gas release could also potentially cause an updraft of bottom waters, resulting in sediment suspension in the water column. This could potentially lead to smothering of, and a short-term localised reduction in light penetration to, benthic flora and fauna. An updraft could also cause mixing of bottom and surface waters, potentially causing short-term changes to salinity, water temperature and dissolved oxygen (Nord Stream, 2009). However, as detailed in Sections 3.2, 6.1 and 6.2, there are no significant benthic communities in the vicinity of the Offshore TGP.

Modelling of a potential leak of gas as a result of a breach of the Offshore TGP was undertaken to determine the area that may be impacted. The potential gas leak scenarios modelled ranged from a hole of 5 mm to a full bore rupture (Cardno, 2013). Due to its low molecular weight, any gas escape from the Offshore TGP is expected to rise rapidly through the water column to the sea surface where it will dissipate to atmosphere. For the purposes of the model, it was assumed that gas will rise from the seabed as bubbles and reach the sea surface in an area represented by a circle with a radius dependent on the water depth and the rate of leakage. With this initial source on the surface, standard atmospheric dispersion was used to compute the gas concentration in the atmosphere as a function of the distance downwind (Cardno, 2013). Results of the modelling indicated that:

- Concentration of gas in the plume above the sea surface will drop rapidly to below the LEL within 5 km of the source
- Sea level gas concentrations are very much lower and, due to the plume rise, are well below the required limit beyond about 100 m from the source

The environmental impacts of a subsea gas leak would largely be due to its physical presence as it passes through the water column and into the atmosphere. Some of this gas may dissolve in the water column but is not generally considered toxic to marine biota. The main potential impacts are only likely to occur from the extreme cases of explosion, flammability or asphyxiation where it may accumulate in sufficient quantities. The open marine environment of the Offshore TGP is extremely unlikely to lead to this condition.

Potential exposure of marine fauna to gas hydrocarbons from a subsea pipeline rupture would require the coincident occurrence of fauna, such as marine mammals or birds, within the area of a recent leak. Although some of the islands in the vicinity of the Offshore TGP route are known breeding colonies for seals and seabirds, there are no recognised aggregation areas for protected whales or dolphins within the area.

In the open water offshore environment, the nearest land mass is located 10 km from the Offshore TGP and is unlikely to be impacted by gas escape from a subsea pipeline rupture.

For a gas leak in a nearshore environment, adverse effects could involve potential hazards associated with concentration of gas in air near the LEL, however atmospheric conditions prevailing at the time, and presence of ignition sources, will determine if there is any impact to the environment.

6.10.3 ERA Summary

The complete ERA for the offshore component of the TGP is provided in Appendix A, however, the risk assessment associated with pipeline integrity management is summarised in Table 6-50.

Table 6-50: ERA Summary

Activity	Potential incident / hazard	Potential environmental impacts	Residual risk
Offshore TGP operation	Subsea gas release due to loss of pipeline integrity (ERA Ref No. 19) because of:	Injury to, or death of, marine fauna in the immediate vicinity of the release.	Low

Activity	Potential incident / hazard	Potential environmental impacts	Residual risk
	Physical damage (e.g. dropped objects, dropped / dragged anchors, sinking / grounding ships, dragged fishing equipment or intentional damage); Fatigue damage (free spans) due VIV or subsea currents / natural events (e.g. major storm or seismic activity); Internal corrosion of the pipeline.	Disturbance to marine fauna including mammals, reptiles and other organisms (i.e. altered feeding, nursing, mating or migrating behaviour).	Low
		Scouring / physical damage to benthic communities; and generation of a sediment plume in the water column, potentially leading to smothering of, or reduced light penetration to, benthic communities.	Low
		Temporary and localised change in water quality.	Low

6.10.4 Environmental Control Measures

Measures to ensure the integrity of the Offshore TGP is maintained are fully discussed in the *TGP Offshore Safety Case (TGP-698-SC-HSE-004)*. The prime means by which pipeline integrity is maintained lies in the original design of the Offshore TGP (Section 2.4 of the TGP Offshore Safety Case) including the physical construction of the pipeline, which was devised to maintain the highest safety standards possible, and its selected route.

The following controls and mitigation measures have been adopted to ensure appropriate environmental management along the Offshore TGP route and to reduce environmental risks and impacts associated with pipeline integrity management to ALARP:

- **CM38:** TGP Offshore Safety Case.

The environmental performance outcomes and environmental performance standards for the controls above are given in Table 7-1.

6.10.5 Assessment of ALARP

Table 6-51: ALARP Decision Context and Justification

ALARP Decision Context	Justification
A	Loss of offshore TGP integrity resulting in a subsea gas release is a potential, but extremely unlikely, risk. The potential risk is further reduced by the control measures listed in Section 6.10.4, particularly the pipeline design (material selection, wall thickness and concrete coating), route selection and continuous monitoring of the TGP through a SCADA system in the RMC. TGP has been externally inspected at regular intervals over the past 12 years and was internally inspected in 2010. No evidence exists that the integrity of the Offshore TGP is compromised and is currently at approximately half its 40-year design life. The Offshore TGP has also been designed to withstand a 1 in 100 storm event and any seismic activity expected in the Bass Strait region. The main potential impacts are only likely to occur in the extreme cases of explosion/flammability or asphyxiation. However, due to the open, high energy marine environment of Bass Strait, any gas cloud is expected to disperse rapidly and not accumulate. It must also be noted that there are no recognised aggregation areas for protected whales or dolphins within the area, and there are also no significant benthic communities within the vicinity of the Offshore TGP. Therefore, the environmental risk associated with loss of Offshore TGP integrity is considered extremely low and therefore ALARP. During consultation with relevant persons, no objections or claims regarding impact on marine flora and fauna were made. TGPPL believes ALARP Decision Context A should apply.

Table 6-52: Good Practice Controls

Good Practice	Control	Rationale
Implement a safety management system that controls risks from major incidents	**CM38:** TGP operations safety case	Under the OPGGS (Safety) Regulations NOPSEMA requires the pipeline to have an accepted Safety Case in place before commencing activities.

Table 6-53: Engineering Risk Assessment

Additional, alternative control	Benefit	Cost/feasibility	Adopted
N/A	N/A	N/A	N/A

6.10.6 Demonstration of Acceptability

Table 6-54: Demonstration of Acceptability Test

Factor	Demonstration criteria	Rationale
Principles of ESD	No potential to affect biological diversity and ecological integrity.	The potential impacts associated with this aspect are considered localised and short-term. It is not considered to have the potential to affect biological diversity or ecological integrity.
	Activity does not have the potential to result in serious or irreversible environmental damage.	The activities were evaluated as having the potential to result in a Consequence Level – Minor. This is not considered to have the potential to result in serious or irreversible environmental damage.
Legislative and other requirements	Legislative and other requirements have been identified and met.	Operation of the pipeline aligns with the requirements of the OPGGS Act, Schedule 3 (Occupational Health and Safety) and the OPGGS (Safety) Regulations that require an operator to have an accepted Safety Case.
Internal context	Consistent with PIMS Environment Policy Statement.	Proposed activities are consistent with the PIMS Environment Policy Statement, in particular "comply with all relevant legislation, regulations, codes of practice and standards" and "conducting all activities in a manner consistent with the principles of sustainable management and caring for the environment".
External context	Relevant person concerns have been considered/addressed through the consultation process.	No specific relevant person concerns have been raised concerning the introduction of invasive marine species.
Acceptability outcome	**Acceptable**	

7. Environmental Performance Outcomes, Standards and Measurement Criteria

The following section summarises the environmental performance outcomes, performance standards and measurement criteria that have been developed by TGPPL as part of a systematic approach to environmental risk management for the Offshore TGP.

Table 7-1 provides details of specific performance outcomes, performance standards and measurement criteria for Offshore TGP operation, inspection and maintenance activities. TGPPL accepts and is committed to implementation of these environmental requirements. The performance outcomes, performance standards and documentation provided in Table 7-1 are used to assess TGPPL's overall environmental performance against stated environmental performance outcomes.

7.1 Environmental Performance Outcomes

As defined in NOPSEMA Guidance Note GN 1344, an environmental performance outcome is a measurable level of performance required for the management of environmental aspects of an activity to ensure that the environmental impacts and risks will be of an acceptable level. Environmental performance outcomes ensure that ongoing environmental performance will meet, or be better than, the acceptable levels defined in the Offshore EP.

Environmental performance outcomes set the level at which an incident becomes a 'recordable incident' (i.e. a breach of an environmental performance outcome) and are also be used as a basis for environmental performance reporting required by Regulation 26C of the Offshore Petroleum and Greenhouse Storage (Environment) Regulations 2023.

The performance outcomes listed in Table 7-1 are directly linked to the identified hazards, risks, and impacts from the ERA (refer to Section **Error! Reference source not found.**) and the controls and mitigation measures implemented to reduce risks and impacts to ALARP (refer to Section 6 and Appendix A). TGPPL will conduct audits of the performance standards and measurement criteria outlined in Table 7-1, both prior to and during Offshore TGP inspection and maintenance activities to verify the responsibilities and commitments of this Offshore EP are carried out.

7.2 Performance Standards

In accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, an environmental performance standard is a "statement of performance required of a control measure", which is a system, an item of equipment, a person or a procedure that is used as a basis for managing environmental impacts and risks for the duration of the activity. Performance standards are the parameters against which control measures are assessed to ensure that they consistently perform to reduce impact or risk to ALARP and to an acceptable level and are used to determine whether TGPPL is meeting its environmental performance outcomes.

It is acknowledged that a breach of an environmental performance outcome or performance standard constitutes a recordable incident, which must be reported in accordance with Section 8.6.4 of this Offshore EP.

Performance Standards related to Offshore TGP integrity and safety are provided in the *TGP Offshore Safety Case (TGP-698-SC-HSE-004)* and are also referenced in Section 6.10.4 above. The following Offshore Performance Standards have been developed by TGPPL to ensure the integrity of the Offshore TGP:

- *SCADA System / RMC (TGP-698-ST-RA-001)*
- *Mainline Valves MLV1 & MLV2 (TGP-698-ST-RA-002)*
- *Subsea Pipeline Free Spans & Stability (TGP-698-ST-RA-003)*
- *Corrosion Protection (TGP-698-ST-RA-004)*

- *Subsea Pipeline Wall Thickness (TGP-698-ST-RA-005)*
- *Gas Quality (TGP-698-ST-RA-006).*

7.3 Measurement Criteria and Records

In accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, Table 7-1 includes measurement criteria that have been developed by TGPPL to assess whether defined environmental performance outcomes and performance standards have been met.

Table 7-1 also includes reference to relevant documentation and records required to show whether performance standards for Offshore TGP operation, inspection and maintenance activities have been met.

Table 7-1: Environment Performance Outcomes, Performance Standards and Measurement Criteria

Environmental issue	Performance Outcomes	Controls	Performance Standards	Measurement Criteria
Physical interaction with marine fauna	No injury or death of marine megafauna resulting from vessel strike.	**CM1:** Vessel Master	Vessel Masters briefed on caution and 'no-approach' zones and other interaction management actions as defined in the EPBC Regulations 2000 (Part 8, Division 8.1) and Wildlife (Marine Mammals) Regulations 2019 (Part 3(9)).	Training records confirm that Vessel Masters have been briefed on caution and 'no approach' zones and interaction management actions as defined in the EPBC Regulations 2000 (Part 8, Division 8.1) and Wildlife (Marine Mammals) Regulations 2019 (Part 3(9)).
			A Vessel Master or delegate will be on duty at all times	Bridge watch records confirm a Vessel master or delegate on duty at all times.
		CM2: Fauna interaction management actions	Vessels adhere to the distances and vessel management practices of EPBC Regulations 2000 (Part 8, Division 8.1) and Wildlife (Marine Mammals) Regulations 2019 (Part 3(9)) where practicable to do so: • The no-approach and caution zones established for cetaceans will be adhered to; • Operating speeds of 6 knots will apply within caution zones, and Vessel Master to avoid sudden changes in speed or direction; • If the cetacean shows signs of being disturbed, the vessel will immediately move away from the caution zone at a constant speed of less than 6 knots; • The vessel will not restrict the path of, or pursue, the cetacean; • During seal pupping season (November to December), interaction with seals will be avoided and vessel speeds will be reduced to less than 10 knots within 200 m of a seal colony and 5 knots within 100 m of a colony; • During seal pupping season, vessels will not pass closer than 100 m of the seal colony; • At all other times of the year, vessels are to travel no closer than 50 m to a seal colony.	Daily Operations Reports note when cetaceans were sighted in the caution zone, interaction management actions implemented, and the reasoning for lack of action if none was taken.

Environmental issue	Performance Outcomes	Controls	Performance Standards	Measurement Criteria
		CM3: Fauna observation	Crew members on active-duty report observations of megafauna located within the caution zone to the Vessel Master (or their delegate) and TGPPL representatives, as soon as it is safe to do so.	Daily Operations Reports note when cetaceans were sighted in the caution zone.
			All crew members have completed an environmental induction covering the requirements for marine mammal/vessel interaction consistent with EPBC Regulations (Part 8) and Wildlife (Marine Mammals) Regulations 2019 (Part 3(9)) – and are familiar with the requirements. This includes a requirement to notify the bridge and TGPPL representatives if marine mammals are sighted.	Induction records verify that all crew members have completed an environmental induction.
		CM35: Vessel crew competency and navigational equipment	Vessels will meet the crew competency, navigation equipment, watchkeeping and radar requirements of AMSA Marine Order Part 3 (Seagoing qualifications) and Part 30 (Prevention of collisions).	Vessel class certifications are current.
		CM39: Lighting	Vessels will employ shutters/curtains on accommodation windows to minimise light spill at night. Night lights will be used to ensure safe operations, navigation and personnel movements on board the vessel.	Evidence of shutter/curtains used in accommodation areas.
		CM40: Whale sighting	Any whale sightings should be recorded on sightings form and emailed to portsandmarine@environment.gov.au	Records of reports sent to Ports and Marine
		CM42: Seabird sightings	Report all seabird interactions	Records of reports
			Record any migratory shorebird strikes.	Records of reports

Environmental issue	Performance Outcomes	Controls	Performance Standards	Measurement Criteria
		CM41: End of survey report	Maintain a record of procedures employed during operations and provide to the Department within two months of completed survey, containing information; • the location, date and start time of the survey; • name, qualifications and experience of any Marine Mammal Observers (or research scientists) involved in the survey • the location, times and reasons when observations were hampered by poor visibility or high winds • the location and time of any start-up delays, power downs or stop work procedures instigated as a result of whale sightings • the location, time and distance of any whale sighting including species where possible • the date and time of survey completion	End of survey report
Physical disturbance of marine environment	No disturbance to benthic habitats from anchoring.	**CM4:** No anchoring	No anchoring (unless in an emergency)	Vessel logs / anchoring records show no anchoring (unless in an emergency).
	No disturbance to benthic habitats due to dropped objects	**CM5:** Lifting procedures	Lifting procedures are in place and implemented by crane operators (and others such as dogmen).	Completed lifting procedure checklist, PTWs and/or risk assessments verify that procedures are implemented prior to each lift.
		CM6: Maintenance and repair procedures	Maintenance and repair activities e.g. jetting, concrete mattress / grout bag installation will be conducted in accordance with approved procedures.	Daily Operations Report verifies maintenance and repair activities conducted in accordance with procedures.

Environmental issue	Performance Outcomes	Controls	Performance Standards	Measurement Criteria
		CM7: Compliance with weather limitations	Weather conditions reviewed for acceptability prior to inspection and maintenance activities commencing. Vessel to seek shelter in the event of extreme weather.	Daily Operations Reports show weather conditions recorded and reviewed against weather limitation and task duration criteria prior to inspection and maintenance activities commencing and on a regular basis during the execution of the works. Daily Operations Report shows criteria applied in accordance with outcome of weather conditions review, and records weather downtime.
		CM8: Planned Maintenance System (PMS) – lifting gear	Visual inspection of lifting gear is undertaken every quarter by a qualified competent person (e.g. maritime officer) and lifting gear is tested regularly in line with the PMS.	PMS records and Lifting Register verifies that inspections and testing have been conducted to schedule.
		CM9: Cargo Securing Manual	All cargo securely fastened or stored during transport in accordance with approved Cargo Securing Manual.	A completed pre-departure inspection checklist verifies cargo is securely sea-fastened.
		CM10: Procedure to recover dropped objects	Lost equipment will be recovered where safe and practicable to do so.	Daily Operations Report shows attempts to recover dropped objects were undertaken where safe and practicable to do so.
Physical interaction with other marine users	Marine users are informed prior to commencement of inspection and maintenance activities such that they are able to plan their activities to	**CM11:** Pre-start notifications	AMSA JRCC notified before operations commence to enable AMSA to distribute an AUSCOAST warning.	Records confirm that information to distribute an AUSCOAST warning was provided to the JRCC before operations commenced. Issued AUSCOAST warning dated prior to, or on the date operations commenced.
			AHS notified before operations commence to allow generation of navigation warnings (including Notice to Mariners).	Issued Notice to Mariners dated prior to, or on the date operations commenced.

Environmental issue	Performance Outcomes	Controls	Performance Standards	Measurement Criteria
	avoid unexpected disturbance.		Relevant stakeholders are notified of activities approximately four weeks and again one week prior to commencement.	Stakeholder consultation records confirm that information was distributed to relevant stakeholders in required timeframes.
		CM12: Navigation charts	Pipeline route shown on marine navigation charts.	Marine navigation charts show TGP route.
Noise	Prevent injury to, or disturbance of, cetaceans due to noise generated during inspection and maintenance activities.	**CM1:** Vessel Master	Vessel Master will adhere to the distances and vessel management practices of EPBC Regulations (Part 8) and Wildlife (Marine Mammals) Regulations 2019 (Part 3(9)) where practicable to do so.	Daily Operations Reports note when cetaceans were sighted in the caution zone, interaction management actions implemented, and the reasoning for lack of action if none was taken.
		CM13: Acoustic Survey Procedures	Conduct an ERA on a case-by-case basis for the Survey and equipment used for conducting the activity, using the *EPBC Act Policy Statement 2.1 - Interaction between offshore seismic exploration and whales: Industry guidelines*, as the primary guide on appropriate control measures from the standards and framework. This includes selecting appropriate management procedure, precaution zones and where applicable understanding which additional management controls are required	Daily Operations Reports confirm Acoustic Survey Procedures including cetacean observations, and if required delayed start-up, implemented for acoustic sources exceeding 160 dB.
		CM43: Cetacean management for SSS surveys	For activities with an underwater sound emission of exceeding 160 dB (such as SSS surveys) controls will be implemented to watch for whales entering a radius of 3 km of the vessel prior to commencing. If whales are encountered start-up procedures will be delayed.	Daily Operations Report confirm controls implemented during SSS surveys and any cetacean observations.
Air emissions	Vessel combustion systems operate in accordance with	**CM14:** Compliance	Vessels (as appropriate to class) hold IAPP and operate in accordance with Ship Energy Efficiency Management Plan.	Certification documentation.

Environmental issue	Performance Outcomes	Controls	Performance Standards	Measurement Criteria
	MARPOL Annex VI (Prevention of Air pollution from Ships) requirements.	with MARPOL Annex VI .	Sulphur content of fuel complies with Regulation 14 (i.e. is no higher than 3.5% m/m).	Manifests for fuel transfers verify use of low sulphur fuel.
			All combustion equipment maintained in accordance with planned maintenance system (PMS)	PMS records verify that combustion equipment is maintained according to schedule.
			Vessels with diesel engines >130kW hold valid EIAPP certification and NOx emission levels comply with Regulation 13.	Certification documentation and records verify compliance with Regulation 13.
Wastes – sewage, food waste, treated bilge, deck-drainage, solid waste (garbage) and hazardous wastes	Sewage discharges comply with MARPOL Annex IV (Prevention of Pollution by Sewage from Ships)	**CM15:** Compliance with MARPOL Annex IV	Sewage treated in MARPOL-compliant STP.	International Sewage Pollution Prevention (ISPP) certification.
			Discharge of comminuted and disinfected sewage using a MARPOL-compliant STP at a distance of no less than 3NM from nearest land. Discharge of untreated sewage at a distance of no less than 12 NM from nearest land.	Daily Operations Report to confirm availability of STP. Daily Operations Report to confirm treated or untreated sewage discharged no less than 3NM or 12NM distant from nearest land, respectively.
		CM16: Planned maintenance system (PMS) - STP	STP maintained in accordance with the PMS schedule.	PMS records verify STP maintained in accordance with schedule.
	Food waste discharges comply with MARPOL Annex	**CM17:** Food waste macerated	Food waste macerated to ≤25 mm (using an onboard macerator) before discharge	Garbage Record Book shows that putrescible waste is macerated before discharge

Environmental issue	Performance Outcomes	Controls	Performance Standards	Measurement Criteria
	V (Prevention of Pollution by Garbage from Ships)	**CM18:** Discharge criteria for food waste	Macerated putrescible waste is only discharged overboard when the vessel is greater than 3 NM from the coastline and while proceeding en-route. Un-macerated putrescible waste is only discharged overboard when the vessel is more than 12 NM from the coastline and while proceeding en-route.	Discharge log verifies location of vessel is >3 NM from the coast (if waste is macerated) or >12 NM (and not within offshore platform PSZ) at time of discharge (if waste is not macerated).
		CM19: Planned maintenance system (PMS) - macerator	Macerator maintained in accordance with the PMS schedule.	PMS records verify macerator maintained in accordance with schedule.
	Bilge/deck drainage discharges from vessels comply with MARPOL Annex I (Prevention of Pollution by Oil)	**CM20:** Compliance with MARPOL Annex I	Vessel oily water treated in MARPOL –compliant oily water separator (OWS) (as appropriate to class).	International Oil Pollution Prevention (IOPP) certificate or equivalent appropriate to vessel class.
		CM21: Discharge criteria for oily water separator	For vessels (as appropriate to class), treated oily water discharge permitted if: Vessel is proceeding en-route Treatment is via a MARPOL-compliant OWS; The discharged oil-in-water (OIW) content is < 15 ppm; Oil Detection Monitoring Equipment (ODME) and control equipment are operating.	Certification documentation Daily Operational Report confirms availability of OWS and ODME. Vessel Oil Record Book verifies all discharges meet <15 ppm OIW Planned Maintenance System (PMS) records confirm OWS and ODME are routinely maintained and calibrated in accordance with PMS schedule. Vessel Oil Record Book verifies residual oil transferred to shore.
	No unplanned overboard release of solid waste or	**CM22:** Compliance with MARPOL Annex V	A Garbage Management Plan in accordance with MARPOL Annex V.	Review of the Garbage Management Plan confirms it is in place and maintained.
			A Garbage Record Book / log in accordance with MARPOL Annex V.	Review of the Garbage Record Book confirms it is in place and maintained

Environmental issue	Performance Outcomes	Controls	Performance Standards	Measurement Criteria
	hazardous waste overboard.	**CM23:** Waste handling and storage procedures	Handling of solid and hazardous wastes on-board will comply with the requirements of MARPOL Annex V including measures such as; • All solid and hazardous wastes generated at sea during the activity will be retained on the vessel and disposed of onshore (excluding bilge water / deck drainage, food waste and sewage). • All waste material that could reasonably be lost overboard is stored securely (e.g. lidded bins). • All wastes including hazardous wastes and chemicals will be segregated into clearly marked containers. • Any liquid waste storage on deck must have at least one barrier (i.e. bunding) to prevent leakage or spillage entering the marine environment.	Garbage Record Book verifies solid and hazardous waste transferred to shore for disposal Inspection verifies that waste is stored and handled according to its waste classification and waste receptacles are properly located, sized, labelled, covered and secured for the waste they hold.
Chemical / hydraulic oil spills	No unplanned overboard release of chemicals or hydraulic oil.	**CM24:** ROV operating procedures	ROV operations conducted in accordance with IMCA R 004 'Code of Practice for the safe and efficient operation of Remotely Operated Vehicles'.	Daily operational reports verify ROV operations in accordance with operating procedures.
		CM45: ROV IMCA Audit	Prior to chartering an ROV, it is industry good practice to obtain an International Marine Contractors Association (IMCA) survey report.	IMCA Audit report
		CM25: Planned maintenance system (PMS) - ROV	Maintenance of ROV hydraulic hoses and grout hoses in accordance with PMS schedule.	PMS records verify ROV hydraulic hoses and grout hoses maintained in accordance with schedule.
		CM44: Grouting procedure	Grouting equipment will be operated and maintained in accordance with approved procedures to minimise release into the marine environment.	Daily operations reports verify grouting equipment is operated in accordance with operating equipment.

Environmental issue	Performance Outcomes	Controls	Performance Standards	Measurement Criteria
		CM26: Chemical storage and handling procedures	Liquid chemicals stored, and where practicable handled, within secondary containment.	Inspection records confirm liquid chemicals stored within secondary containment.
		CM6: Maintenance and repair procedures	Maintenance and repair activities including grout bag filling and installation will be conducted in accordance with approved procedures.	Daily Operations Report verifies maintenance and repair activities conducted in accordance with procedures.
		CM27: SOPEP (or equivalent)	Spill kits available and maintained in accordance with the SOPEP (or equivalent).	Inspection records show spill kits available and maintained.
			Spill training undertaken in accordance with SOPEP (or equivalent).	Records confirm spill training undertaken.
	Minimise the impact on the environment from a grout release	**CM28:** Chemical selection process	All grout products are rated CHARM silver or gold or non-CHARMable D or E	Chemical inventory records show all grout products are rated CHARM silver or gold or non-CHARMable D or E
Ballast water and biofouling management	No introduction and establishment of IMS	**CM29:** Ballast Water Management Plan (BWMP) and Certificate (BWMC)	Ballast Water Management Plan approved in accordance with IMO Ballast Water Management Convention - Guidelines for Ballast Water Management and Development of Ballast Water Management Plans Ballast Water Management Certificate approved in accordance with Regulation E-1 of the Ballast Water Convention	Approved BWMP and BWMC

Environmental issue	Performance Outcomes	Controls	Performance Standards	Measurement Criteria
		CM30: Ballast Water Record System	A Ballast Water Record System will be maintained in accordance with Regulation B-2 of the Annex to the IMO Ballast Water Management Convention including: • start and finish coordinates • actual pumping times • residual volume remaining in the tank at the end the empty cycle prior to refill (empty refill method only)	Ballast water records.
		CM31: Biosecurity clearance when entering Australia	Vessel Master to obtain DAFF clearance to enter Australian territory through pre-arrival information reported through Maritime Arrivals Reporting System (MARS).	Records confirm DAFF clearance obtained if vessel is arriving in Australian territory from a foreign port or is under biosecurity control.
			Vessel Master to adhere to ABWM requirements for ballast water exchange.	Ballast water records show location of ballast water uptake and discharge.
		CM32: Biofouling records	Biofouling records maintained in accordance with IMO Guidelines for the Control and Management of Ships' Biofouling to Minimise the Transfer of Invasive Aquatic Species 2023 Guidelines for the Control and Management of Ships' Biofouling to Minimise the Transfer of Invasive Aquatic Species (Biofouling Guidelines).	Biofouling records collected in order to conduct biofouling risk assessment confirm these are maintained.
		CM33: IMS Risk Assessment process	Biofouling risk assessment conducted in accordance with National Biofouling Management Guidance for the Petroleum Production and Exploration Industry and 2023 Guidelines for the Control and Management of Ships' Biofouling to Minimise the Transfer of Invasive Aquatic Species (Biofouling Guidelines shows low risk.	Biofouling risk assessment record confirms vessel poses low risk of introducing IMS

Environmental issue	Performance Outcomes	Controls	Performance Standards	Measurement Criteria
		CM34: Immersible Retrievable - Equipment Cleaning	All immersible retrievable - equipment has been cleaned and / or inspected in accordance with National Biofouling Management Guidance for the Petroleum Production and Exploration Industry prior to commencement of the activity.	Records document cleaning and / or inspection of immersible retrievable - equipment.
Vessel fuel spills	No unplanned release of fuel from vessels to the marine environment.	**CM35:** Vessel crew and navigational equipment	Vessels will meet the crew competency, navigation equipment, watchkeeping and radar requirements of AMSA Marine Order Part 3 (Seagoing qualifications) and Part 30 (Prevention of collisions).	Vessel class certifications are current.
		CM11: Pre-start notifications	AMSA JRCC notified before operations commence to enable AMSA to distribute an AUSCOAST warning.	Records confirm that information to distribute an AUSCOAST warning was provided to the JRCC before operations commenced. Issued AUSCOAST warning dated prior to, or on the date operations commenced.
			AHS notified before operations commence to allow generation of navigation warnings (including Notice to Mariners).	Issued Notice to Mariners dated prior to, or on the date operations commenced.
			Relevant stakeholders are notified of activities approximately four weeks and again one week prior to commencement.	Stakeholder consultation records confirm that information was distributed to relevant stakeholders in required timeframes.
		CM7: Compliance with weather limitations	Weather conditions reviewed for acceptability prior to inspection and maintenance activities commencing. Vessel to seek shelter in the event of extreme weather.	Daily Operations Reports show weather conditions recorded and reviewed against weather limitation and task duration criteria prior to inspection and maintenance activities commencing and on a regular basis during the execution of the works. Daily Operations Report shows criteria applied in accordance with outcome of weather conditions review, and records weather downtime.

Environmental issue	Performance Outcomes	Controls	Performance Standards	Measurement Criteria
		CM12: Navigation charts	Pipeline route shown on marine navigation charts.	Marine navigation charts show TGP route.
	Minimise the impact on the environment from a fuel spill	**CM27:** SOPEP (or equivalent)	Spill kits available and maintained in accordance with the SOPEP (or equivalent).	Inspection records show spill kits available and maintained.
			Spill training exercises undertaken in accordance with SOPEP (or equivalent).	Records confirm spill training exercises undertaken.
		CM36: OPEP	Emergency response activities will be implemented in accordance with the OPEP.	Records confirm that emergency response activities have been implemented in accordance with the OPEP.
		CM37: OSMP	Operational and scientific monitoring will be implemented in accordance with the OSMP	Records confirm that operational and scientific monitoring have been implemented in accordance with the OSMP.
Loss of pipeline integrity – hydrocarbon gas leak	No unplanned release of gas from the pipeline.	**CM38:** TGP pipeline operations safety case	A NOPSEMA-accepted safety case is in place for the pipeline operations.	Records confirm a NOPSEMA-accepted safety case is in place for the pipeline operations.

8. IMPLEMENTATION STRATEGY FOR THE ENVIRONMENTAL PLAN

TGPPL, as facility operator of the TGP, has engaged experienced contractors to undertake inspection and maintenance activities along the Offshore TGP. TGPPL and its contractors are committed to responsible environmental management during TGP operations. Palisade Integrated Management Services (PIMS)/TGPPL has formalised this commitment in their Environment Policy (refer to Appendix B).

All employees and contractors working on the TGP are required to work in line with these policies, their HSEMS and requirements of the TGP Offshore EP. All Offshore TGP activities will be conducted in accordance with the approved Offshore EP as well as relevant International, Commonwealth and State legislation, regulations, conventions and guidelines.

8.1 Introduction

TPG's implementation strategy for this EP has been developed to comply with the requirements of Regulation 14(1) of the OPGGS(E) Regulations and describes the specific measures and arrangements that will be implemented for the duration of the activity to ensure that:

- All environmental impacts and risks of the activity will be continually identified and reduced to a level that is ALARP
- Control measures detailed in the EP are effective in reducing the environmental impacts and risks of the activity to ALARP and acceptable levels
- Environmental performance outcomes and standards set out in the EP are met
- Arrangements are in place to respond to, and monitor impacts of, oil pollution emergencies
- Stakeholder consultation is maintained throughout the activity as appropriate

8.2 Safety Management System

The TGP Safety Management System (SMS) has been developed and maintained to meet the requirements of AS/NZS ISO 9001: 2008, AS/NZS ISO 14001: 2016 and AS/NZS 4801: 2001 and the applicable legislative and regulatory requirements. The following graphical representation shown in Figure 8-1 of the HSEMS includes the System Requirements and their respective Elements.

This framework provides a systematic approach that can both assist with meeting legislative compliance and lead to sustained improvement in HSE performance. This approach will be universally applied across all areas of operation of the TGP. The TGP SMS provides full integration across System Requirements, System Elements, Works Procedures and all other relevant documentation.

All TGP contractors must operate under the TGP SMS or have their own management system that is compatible with the TGP SMS.

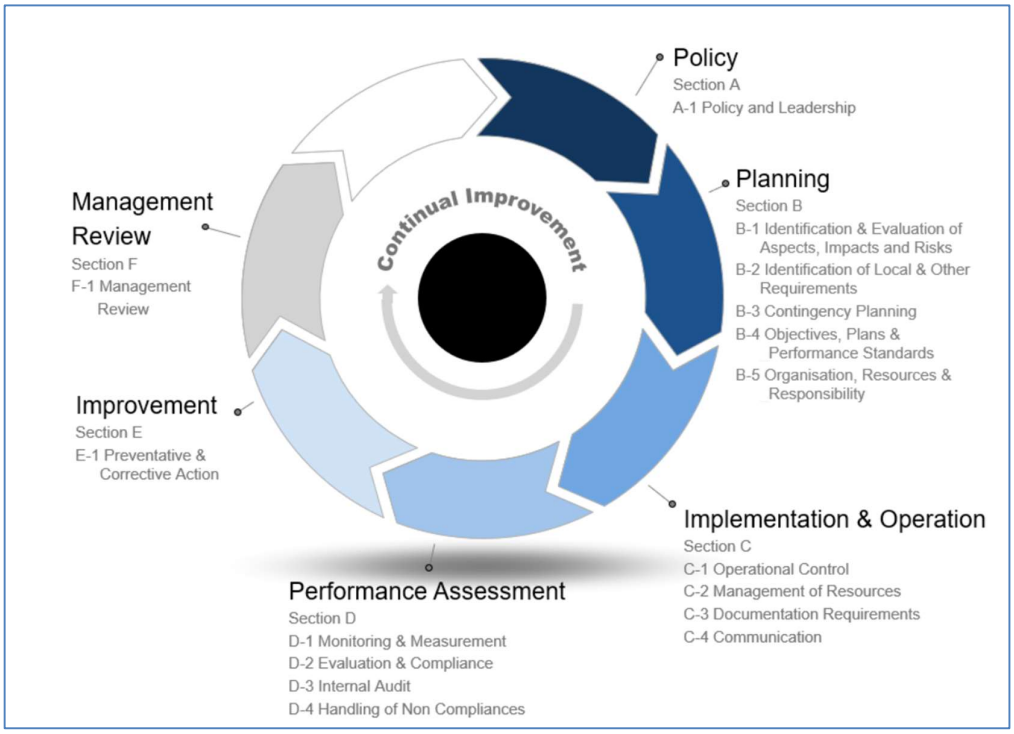


Figure 8-1 HSE Management System Framework

8.2.1 Management of Change

The TGP *Change Management Plan (TGP-698-PA-CM-001)* details the process by which improvements or changes to plant, systems and documentation are controlled from initiation through to completion. Effective change management ensures continuous improvement within the business. The TGP Change Management Plan applies to all TGPPL assets, both onshore (in Victoria and Tasmania) and offshore in the Bass Strait and details relevant to the EP from the Change of Management Plant are detailed below.

Changes within TGPPL's business can occur in two ways:

- Change imposed on the business from external influences. These changes typically involve changes in legislative requirements or changes in the applicable codes and standards which govern the construction, operations and maintenance activities carried out on the TGP assets
- Changes instigated within the business. These changes typically involve modifications to the assets, modifications to the procedures used to construct, operate and maintain or abandon the asset or changes to the personnel and organizational structures imposed as a result of promotion of personnel, resignations or company restructures

Both internally instigated and externally imposed changes related to the TGP assets need to be managed effectively through the following key steps:

- Notification – either by an internal request for change or an external notification of change
- Assessment – use of a suitable risk assessment tool whereby the threats to the business are identified and control measures put in place, or modified, to mitigate the risks of that change to tolerable levels
- Communication – use of appropriate methods of information dissemination to get the results of the risk assessment to all areas of the business that are affected
- Implementation – the monitoring and review of the Action Plan emanating from the risk assessment to ensure that the actions required to mitigate the risks from the change are effectively carried out

- Documentation – ensuring that the change management process is well documented and that any management plans or procedures that are required to be revised as a result of the change are actioned in a timely manner and approved
- Close out – ensuring that the change management process is completely closed out
- More specifically, the TGP Change Management process will ensure that:
  - Change is a controlled process, fully documented and compliant with the relevant codes, standards and statutory requirements
  - The proposed improvements or changes are technically sound and commercially justifiable
  - All improvements or changes to TGP assets are assessed and approved by competent people
  - All hazards associated with the change are identified and managed to ensure that environmental impacts and risks are managed to ALARP and an acceptable level
  - All documentation, including drawings and procedures, that are affected as a result of the change are updated to reflect the implemented change
  - Operations and Maintenance Management Systems, Emergency Response Systems, Hazard Registers, Equipment Registers and other relevant documents are revised to reflect the change both within TGP and also where applicable within any service provider systems

The TGP Change Management Plan provides details of the following aspects:

- Changes requiring application of the Change Management process and those that do not
- Drawing Change Management
- Change Management Procedure:
  - Change initiation
  - Change Request Form
  - Registering the change
  - Implementation of change
  - Close-out
- Technical Queries; and
- Audit of the Change Management process

Section 8.5.5 addresses changes which would result in this EP being revised for resubmission.

8.3 Environmental Responsibilities

Overall responsibility for environmental management of the TGP rests with TGPPL. The General Manager TGPPL is responsible for implementation of this Offshore EP and conducting operational, inspection and maintenance activities in line with Offshore EP requirements; including coordination of contractors offshore.

External contractors are engaged for all Offshore TGP operations, inspection and maintenance activities. Contractor supervisors manage on the ground activities, with the TGPPL Asset Engineer providing direct environmental management support for Offshore TGP inspection, maintenance and operations.

As described previously in Section 1.2.1, the RMC is managed by Worley as shown also in Figure 1-1. The RMC reports to TGPPL for all environmental matters.

Environmental support is provided by the corporate HSE and technical compliance groups in TGPPL, as well as specialised environmental consultants engaged by TGPPL. All personnel are responsible for ensuring their work complies with this Offshore EP. Figure 1-1 shows the organisational

relationships and roles between all TGP parties. Specific Environmental Responsibilities are listed in Table 8-1.

All personnel associated with activities on the Offshore TGP are required to be aware of the environmental responsibilities described in this Offshore EP and all other requirements related to working on and around the Offshore TGP. The Offshore EP is included as part of all contractual documents for works on the Offshore TGP and all contractors are required to comply.

Table 8-1: Environmental Responsibilities for TGPPL Roles and Contractors

Position Title	Environmental Responsibilities
CEO TGPPL	Overall accountability for ensuring TGP is managed in accordance with the Offshore EP.
General Manager TGPPL	Ensure the activity is undertaken as per the performance outcomes of the EP; Ensures that sufficient resources are provided for the implementation of the Offshore EP; Primary contact for all consultation with relevant stakeholders related to environmental issues associated with the Offshore TGP; Management of emergency response for the Offshore TGP; Review the EP as necessary and manage change requests (as described in Section 8.2.1).
Engineering/Operations Manager TGPPL	Maintenance of the Compliance Calendar; Maintenance of the TGP Offshore ERA/Environmental Aspects and Impacts Register (Appendix A); Management of the Incident Management System; Preparation of Training Plans based on training needs analysis for management, staff and contractors; Maintenance of all records that monitor performance and demonstration of compliance with TGP Offshore EP and other relevant TGP documentation; Maintenance of a schedule of compliance audits in accordance with the TGP Audit Management Plan (TGP-698-PA-AU-001). Ensure audits are documented, all corrective actions are implemented and review the effectiveness of corrective actions; Report environmental incidents in accordance with regulatory requirements; Responsible for implementation of the EP; Preparation, submission and revision of the EP with input by TGPPL staff and external consultants as required; Manages regulatory relationships and reports to regulatory authorities on environmental matters in accordance with legislative requirements; Coordinates offshore operations and maintenance activities; Manages relationships with contractors. Ensures environmental induction and training program is developed and implemented; Ensures requirements of the Offshore EP are undertaken by TGPPL personnel and contractors; Coordinates the environmental inspection and monitoring program; Monitors environmental performance against KPIs; Emergency Coordinator for the TGP; Ensure environmental incidents are reported and input to the Incident Management System; Contacts senior management and Palisade in the event of a major incident; Maintain liaison with Emergency Services as required; Ensure timely resolution of all environmental issues requiring corrective action as set out in work orders; Participate in emergency exercises and environmental risk assessments.

Position Title	Environmental Responsibilities
TGPPL Team, Melbourne	Document control; Record management; Analysing results of major inspections and surveys to determine appropriate additional measures as required; Ensuring adherence to codes, standards and regulations; Monitoring activity on the pipeline by its contractors and providing technical guidance on day-to-day operations; Contributing to planning and providing support for emergency simulation training exercises; Engaging suitable competent and qualified personnel; Undertake audits to ensure Offshore EP compliance; Management of legislation monitoring.
Emergency Management Team (EMT), TGPPL	Assist the General Manager TGPPL to develop and integrate the TGP Emergency Response Management Plan (ERMP); and Co-ordinate externally-provided emergency training and exercises.
Contractor Supervisor	Implementation of the Offshore EP; Implement the TGP ERMP in the event of an emergency; Ensure monitoring is undertaken as per this EP; Orders STOP WORK for any environmental breaches and reports incident to General Manager TGPPL; Production of monthly reports for the General Manager TGPPL Reports to General Manager TGPPL on all environmental matters, including public complaints, any field-based non-compliance; Ensure contractor personnel receive environmental induction.
RMC Manager, Worley	Implementation of the Offshore EP; Manage RMC activities; Ensure environmental responsibilities and due diligence are met; Ensure responsibilities in relation to Offshore EP requirements are adequately resourced; Provide environmental management induction to personnel.
Vessel Master (contractor)	Overall responsibility for HSE management aboard the vessel; Ensure safe execution for all operations of the vessel; Ensure vessel operations are being conducted in accordance with the legislative requirements and this EP, including waste management and emergency/oil spill response; Ensure vessel audits, inspections, emergency drills, training and inductions are undertaken; Communicates hazards and risks to the workforce and the importance of following good work practices. Maintains the site / vessel in a state of preparedness for emergency response. Implement the vessel's SOPEP in the event of an oil spill, including first response to an incident using the resources immediately available to the vessel; Immediately notify the Contractor Supervisor of any incidents/activities arising from vessel operations that are likely to have a negative impact on the performance outcomes detailed in this EP; Reports environmental incidents within the operational area to the Contractor Supervisor; Establish and maintain radio contact with other vessels in the operational area and adjacent waters;

Position Title	Environmental Responsibilities
	Notify AMSA and the General Manager TGPPL in the event of a notifiable oil spill.
Offshore operations / maintenance personnel or contractors	Assist with inspection and maintenance of the Offshore TGP; Adhere to the requirements of the Offshore EP; Undertake Offshore TGP inspection / maintenance activities in accordance with procedures; Participate in environmental induction and emergency response exercises; Report environmental incidents to Vessel Master and TGPPL Asset Engineer in a timely manner commensurate with the severity of incident and regulatory requirements; Participate in risk assessment programs in their designated area of responsibility.

8.4 Environmental Training and Communication

Personnel directly involved in TGP operations are required to be familiar with Offshore EP requirements and their statutory / regulatory obligations. Effective environmental training and communication is achieved through:

- Competency checks
- Environmental Induction and Job Specific Training
- SCADA system
- Risk assessment workshops
- Electronically including via the Intranet, in newsletters and on noticeboards

8.4.1 Competency of Personnel

All Offshore TGP works are to be undertaken by suitably qualified and competent persons.

Almost all the works undertaken on the Offshore TGP are performed by contractors. Due to the wide range of possible works and skills required, training and competency requirements will typically be defined in scopes of works and contractors required to submit these to TGP.

Skills and aptitudes that are assessed as part of the qualification process include:

- Awareness and knowledge of the existence and requirements of the relevant regulations
- Experience in similar operations
- Familiarity with good industry practice for each of the activities
- Technical competency to approve and monitor the application of engineering solutions during the conduct of the operation

Employee selection, induction, competencies, training requirements, performance review, and training records for TGPPL personnel are managed through PIMS system. Contractors working on the TGP (onshore and offshore) are required to have their own systems demonstrating their personnel have the required competencies to undertake their roles in a safe and efficient manner.

8.4.2 Environmental Induction Training

Each TGP team member, including contractors, must undergo a TGP Induction prior to, or on commencement of, work. Offshore activity specific inductions are given prior to commencement of work campaigns.

This includes an induction to all relevant TGPPL systems and procedures including the Offshore EP, and a field induction covering conditions for operation and maintenance including environment

management. The Induction has a particular reference to regulatory requirements and emergency response.

TGPPL will direct all employees and contractors to follow all permit conditions, environmental regulations and to meet the commitments made in this Offshore EP.

All TGGPL personnel and contractors involved in offshore inspection and maintenance campaigns will undergo environmental awareness training prior to the activities commencing as part of their induction.

The environmental awareness component of the induction will include the following:

- Environmental regulatory requirements
- Description of the environmental sensitivities and conservation values of the operational area and surrounding waters
- Roles and environmental responsibilities of key positions as defined in the EP
- Overview of marine fauna interaction management actions consistent with the EPBC Regulations – Part 8 Division 8.1 and Wildlife (Marine Mammals) Regulations 2019
- Overview of the waste management requirements
- Overview of housekeeping and spill prevention
- Procedures for reporting reportable and recordable environmental incidents
- Overview of emergency response and spill management procedures

It is the responsibility of the Contractor Supervisor to ensure that all personnel receive this induction prior to the commencement of inspection and maintenance campaign activities. All induction attendees will sign an attendance sheet to confirm their participation in, and understanding of, the induction which is retained in accordance with the TGP *Records Management Plan* (TGP-698-PA-DM-001).

8.5 Performance Monitoring and Review

The General Manager TGPPL is responsible for maintaining all records that monitor performance and demonstrate compliance with the requirements of the TGP Offshore EP and other relevant TGP documentation.

TGPPL's operations, systems and processes are monitored and, where required, measured to ensure the effectiveness of the TGP Offshore EP and compliance with relevant legal and other requirements.

Details of specific reporting requirements with respect to environmental performance are provided in Section 8.6.

8.5.1 Monitoring of Legislation

TGPPL is required to identify changes to codes and standards, review applicable procedures and ensure the knowledge is transferred to the relevant areas. The TGPPL Engineering/Operations Manager is responsible for ensuring that this monitoring occurs.

As detailed in the TGP *Compliance Plan (TGP-698-PA-RA-001),* TGPPL regularly reviews legislation (Acts and Regulations) to ensure that TGP policies, plans and procedures are current and legally compliant. TGPPL is also responsible for maintaining legislative compliance knowledge in the business and for updating the Compliance Register. These functions are achieved by:

- Subscribing to Standards Australia and appropriate legislative change alert service
- Assigning responsibilities for monitoring changes to standards, codes and legislation
- Ensuring that changes are communicated to all parts of the business in an effective manner
- Regular reviews of critical legislation, codes and standards; and

- Participation on industry and government committees and workshops on proposed changes

Up-to-date compliance requirements are listed in the TGP *Compliance Plan (TGP-698-PA-RA-001).* Upon the receipt of a notification of a change in legislation relevant to the business, the change management procedure is followed in accordance with the TGP *Change Management Plan (TGP-698-PA-CM-001).* This includes a risk assessment process which may result in the addition of compliance measures to the Compliance Plan.

Changes to legislation are to be communicated to all relevant TGPPL personnel and contractors.

8.5.2 Regulatory Audits

Regulatory audits will be conducted as required by regulatory authorities. Generally, this is anticipated to be annually by NOPSEMA. All regulatory audit schedules are subject to change based on the requirement of the authority and the occurrence of environmental incidents.

8.5.3 Audits, Assessments and Inspections

Environmental performance assurance of the TGP operations activities will be undertaken in a number of ways. Performance assurance is undertaken to ensure that:

- Controls are implemented in accordance with EPSs to achieve the EPOs
- Non-compliances and opportunities for improvement are identified
- Environmental monitoring and reporting requirements are met

8.5.3.1 Support Vessel Activities

A due-diligence pre-activity inspection/audit of support vessels will be carried out prior to inspection and maintenance work commencing (after contract award) to verify that procedures and equipment for managing routine discharges and emissions are in place (as described in pre-qualification material) to enable compliance with the TGP Offshore EP. This includes the relevant IMS inspections as detailed in Section 6.8.4.

8.5.3.2 Compliance Audits – Implementation Strategies

TGPPL will conduct audits of TGP performance outcomes, standards and measurement criteria outlined in Table 7-1 during Offshore TGP inspection and maintenance activities (and as scheduled for all other activities) to verify the responsibilities and commitments of this TGP Offshore EP are carried out.

TGPPL will ensure that:

- All activities are managed in accordance with the TGP Environmental Policy and relevant TGPPL procedures
- All activities comply with regulatory requirements
- Vessels carry all relevant certificates, procedures, logs, training records and equipment as outlined in this TGP Offshore EP
- All maintenance and repair activities are carried out consistent with Maintenance schedules and Work programs
- Vessel Emergency Response Plans (ERPs) are current and all emergency drills have been undertaken and recorded
- All personnel are aware of their environmental obligations and have received appropriate inductions and training; and
- All reporting requirements and schedules are met with adequate records kept

8.5.3.3 Compliance Audits – Environmental Plan

The General Manager TGPPL maintains a schedule of compliance audits for the Offshore TGP in accordance with the TGP *Audit Management Plan (TGP-698-PA-AU-001)*. Compliance audits of this Offshore EP are to be completed annually or when offshore activities are undertaken to ensure that it continues to conform to relevant legislative requirements. The TGP Audit Management Plan outlines the requirements for compliance audits.

The TGP Audit Management Plan covers all the activities involved in the maintenance and operation of the onshore and offshore sections of the TGP and describes the types of audits and the activities and resources necessary for planning, organising and conducting audits. The Audit Management Plan lists the types of audits and the specific activities and resources required to conduct the audits effectively and efficiently within the specified timeframes for the program, and describes the methodology to be used in conducting audits.

The General Manager TGPPL has ultimate responsibility for the TGP Audit Management Plan. The General Manager TGPPL will ensure the establishment, implementation, monitoring, review and improvement of the AMP every 12 months and ensure that the resources necessary to conduct the Audit Program are identified and provided. The General Manager TGPPL is also responsible for:

- Ensuring Offshore EP compliance audits are scheduled and performed
- Undertaking the ERAs as required
- Ensuring the results of audits are fully documented and maintained
- Ensuring that corrective actions are implemented for any non-compliances/non-conformances identified
- Reviewing the effectiveness of the corrective actions once completed

Copies of the results of these compliance audits will be made available to the appropriate regulatory authorities upon request.

The work that contractors perform to maintain the Offshore TGP will be audited in line with the TGP Audit Management Plan to ensure appropriate standards are met on routine and project works. This is anticipated to be on an annual basis. In addition, each major inspection and maintenance contractor will be visited at least annually for an end-to-end audit of their management systems and processes. Where shortfalls exist, corrective action requests will be raised and the close out of these items will be monitored through contractor management meetings.

For further details regarding TGP audits and the management of associated non-conformances, recommendations/corrective and preventative actions, refer to Sections 4.5.3, 4.5.4 and 4.6.2 of the *TGP Offshore Safety Case (TGP-698-SC-HSE-004).*

8.5.4 Monitoring of Emissions and Discharges

Table 8-2 provides a summary of the environmental monitoring requirements. The Contractor Supervisor is responsible for ensuring the monitoring is undertaken as per this EP.

Table 8-2: Environmental Monitoring and Reporting

Aspect	Criteria	Reporting
Accidental release of solid or hazardous waste	Waste type, volume	Incident report Annual Environmental Performance Report
Accidental release of hydraulic fluid or other liquid chemical	Chemical type, volume	Incident report Annual Environmental Performance Report
Accidental fuel spill	Volume	Incident report Annual Environmental Performance Report

Aspect	Criteria	Reporting
Anchoring	Occurrence	Incident Report Annual Environmental Performance Report
Unrecovered dropped object	Object type, location	Incident report Annual Environmental Performance Report
Interactions with marine megafauna	Interaction type, management actions taken, if any, and reason for no action	If incident breaches relevant EPO or EPS – incident report Annual Environmental Performance Report
Oily water (bilge) discharge	Volume, compliance with MARPOL (oil-in-water concentration, vessel moving or stationary)	If incident breaches relevant EPO or EPS – incident report Annual Environmental Performance Report
Putrescible waste discharge	Volume, compliance with MARPOL (macerated or unmacerated, vessel moving or stationary, distance from nearest land)	If incident breaches relevant EPO or EPS – incident report Annual Environmental Performance Report
Sewage discharge	Volume, compliance with MARPOL (treated or untreated, vessel moving or stationary, distance from nearest land)	If incident breaches relevant EPO or EPS – incident report Annual Environmental Performance Report
Ballast water uptake / discharge	Exchanged volume, distance from nearest land	If incident breaches relevant EPO or EPS – incident report Annual Environmental Performance Report
Waste to shore	Type, volume	Annual Environmental Performance Report

8.5.5 Review of the Offshore Environmental Plan

The Offshore EP shall be reviewed and resubmitted for approval by the Regulatory Authority (NOPSEMA) in the following circumstances:

- Every five (5) years from the date of last acceptance, as required under Section 19 of the Commonwealth Offshore Petroleum and Greenhouse Gas Storage Regulations (Environment) 2023
- In the event a significant new or increased environmental risk is identified
- In the event there is a change or proposed change in circumstances or operations that results in a significant additional or modified risk not provided for in the existing EP (refer to Section 8.2.1 for Change Management process)
- When requested by NOPSEMA

Other examples of changes that may require the Offshore EP to be revised and resubmitted include:

- Change in permit title holder or operator in relation to an activity
- Significant change in timing or location
- Introduction of a new stage of an existing activity, new facilities or activities or modification of existing facilities or activities that fall outside the accepted EP; and

- Following an event which highlights that environmental impacts or risks of an activity are greater than those predicted and agreed to in the accepted EP (e.g. chemical spill)
- New stakeholders raise new issues which after evaluation have the potential to significantly increase the risk of interference with the stakeholder interests beyond that addressed in the accepted EP

The EP revision shall include a re-evaluation of the ERA, environmental performance outcomes and implementation strategy.

8.6 Environmental Reporting

8.6.1 Internal Reporting

Regular contact is maintained between TGPPL and its contractors while offshore activities are being undertaken. Contractors are required to provide TGPPL with regular reports on their operations including environmental incidents reported, environmental issues identified, and environmental issues rectified.

All reports are kept in accordance with the TGP *Records Management Plan (TGP-698-PA-DM-002).*

8.6.2 Reporting to Regulatory Authorities

Regular contact will be maintained between TGPPL and Regulatory Authorities, with meetings held and reports prepared as required. A report shall be submitted by TGPPL to NOPSEMA on an annual basis to describe environmental performance of the Offshore TGP in accordance with the Offshore EP. The report shall provide sufficient information on the monitoring program to enable authorities to determine if the Offshore TGP environmental performance outcomes and standards have been met, and shall include:

- Description of inspection and maintenance activities completed and those planned within the next reporting period
- Outcomes of inspection and maintenance activities completed
- Performance against environmental performance outcomes and standards identified in the Offshore EP
- A summary and analysis of non-conformances and corrective action requests where they relate to the Offshore EP
- A summary and analysis of reportable and recordable environmental incidents occurring within the report period (refer to Sections 8.6.4 to 8.6.5 below)
- Trends in emissions and discharges
- A summary of complaints received from the public and any actions taken to rectify the identified issues
- Findings of any internal compliance audits conducted during the reporting period
- A summary of any environmental studies associated with the facility, technical improvements, consultation undertaken and any other relevant environmental information; and
- Opportunities for future improvements

An annual report is also submitted to the Tasmanian Department of State Growth (Mineral Resources Tasmania (MRT)) and Victorian Department of Jobs, Precincts and Regions (DJPR).

Where applicable, TGPPL is responsible for submitting an emissions report to the National Pollutant Inventory (NPI), a section of the Commonwealth Department of Climate Change, Energy, Environment and Water (DCCEEW). This occurs annually if the defined thresholds for any of the 93 listed NPI substances are exceeded.

8.6.3 Environmental Incident Reporting

'Incidents' are defined as unplanned events with undesirable consequences. The consequences of such incidents may result in environmental damage or asset loss.

If an environmental incident occurs with the potential for serious environmental harm, all personnel will take all reasonable actions to minimise any adverse environmental impacts. All environmental incidents shall be recorded and managed according to the TGP *Incident Reporting and Investigation Procedure (TGP-698-PR-HSE-002).*

All environmental incidents and near misses associated with Offshore TGP activities must be reported to the General Manager TGPPL, in particular:

- All loss of containment or releases of liquids, solid, or gas
- Any dangerous goods or hazardous substance spills (any volume or weight)
- Complaints by stakeholders
- Regulatory Breaches – Fines, Prosecutions, Improvement Notices, Breaches of licence conditions
- Property damage or loss
- Loss or damage to marine flora or fauna of significance

Reporting shall occur as soon as possible after the incident has occurred to ensure that TGPPL and its contractors meet their regulatory obligations. In some cases, reporting to the Regulatory Authority is required within 2 hours of the incident (refer to Table 8-3**Error! Reference source not found.**). The General Manager TGPPL shall ultimately determine whether the incident should be reported to the regulatory authorities.

Information recorded for all Offshore TGP incidents shall include:

- Initial Report & Notification detailing facts about the incident
- The classification of the incident including 'environment', 'injury / illness', 'damage (property / equipment, etc.)'
- For environmental incidents, the type of environmental impact including water, air, land, noise, flora / fauna, cultural heritage or waste management
- Whether the incident relates to a contaminant spill or release
- Specific details and sources if relating to fires
- Risk assessment based on TGP risk matrix
- Whether the incident resulted in Regulatory Non-compliance
- Whether the incident resulted in security breaches
- Investigation of the incident
- Actions for resolution

All Offshore TGP incidents are to be reported immediately and recorded on the TGP *Incident Report Form (TGP-698-FM-EM-001).* An incident involving a contractor or service provider undertaking work on TGPPL's behalf must be reported to TGPPL immediately and may be recorded on a contractor incident report form, if approved by TGPPL.

The completed TGP *Incident Report Form,* is sent to the General Manager TGPPL, or suitably qualified delegate, who will decide whether the incident is reportable or not. Environmental incidents requiring reporting to regulatory authorities and other government agencies are outlined in Section 8.6.5 below.

8.6.4 Recordable Environmental Incidents

A recordable incident is any breach of an environmental performance outcome or performance standard identified in this TGP Offshore EP, that is not a reportable incident. Performance outcomes and performance standards are listed in Table 7-1 of Section 7, as part of the Implementation Strategy for the Offshore EP.

Monthly reports of recordable incidents are submitted to NOPSEMA, DEECA and MRT at the end of each calendar month and contain details of:

- All recordable incidents that occurred during the month
- The material facts and circumstances relating to recordable incidents that the operator knows of or is able, by reasonable search and enquiry to find out
- Any action taken to avoid or mitigate any adverse environmental impacts of the incident; and
- The corrective / preventative action that has been taken, or is proposed to be taken, to prevent similar incidents

8.6.5 Reportable Environmental Incidents

Reportable environmental incidents are those that:

- have caused moderate to significant environmental damage; or
- have the potential to cause moderate to significant environmental damage

This includes but is not limited to those identified through the risk assessment as having a consequence ranking of I or II, or at a minimum the following incidents:

- An uncontrolled release of hydrocarbons or hazardous chemicals >80 L to the environment
- An uncontrollable gaseous release to atmosphere of >300 kg; and
- Disturbance to a particular sensitivity associated with an activity, e.g. injury or death of a species of conservation value or damage to habitat of importance to those species

Commonwealth and State regulatory requirements for reporting environmental incidents are summarised in Table 8-3**Error! Reference source not found.**. Reports to all Regulatory Authorities shall, as a minimum, cover the following:

- All material facts and circumstances concerning the incident that the operator knows of, or is able, by reasonable research or enquiry, to find out
- Any action taken to avoid or mitigate any adverse environmental impacts of the incident; and
- The corrective / preventative action that has been taken, or is proposed to be taken, to prevent similar incidents

Table 8-3: Environmental Reporting Obligations

Legislation	Reference	Obligation	Regulatory Authority	Frequency
Commonwealth				
Environment Protection and Biodiversity Conservation Act 1999	Section 199	**Notify** – Death or injury to listed threatened species or listed ecological community	DCCEEW	Notify the secretary within 7 days of becoming aware of the action, by telephone or by any other electronic equipment.
	Section 214	**Notify** – Death or injury to listed migratory species		
	Section 256	**Notify** – Death or injury to marine wildlife		
-	-	**Notify – Cetacean vessel strike**	DCCEEW	Within 3 days
Offshore Petroleum and Greenhouse Storage (Environment) Regulations 2023	Regulation 47	**Notify** – Reportable environmental incidents	NOPSEMA	NOPSEMA must be notified of all reportable environmental incidents as soon as practicable, but no later than 2 hours after the incident occurs or 2 hours after the operator becomes aware of the incident. The operator must, as soon as practicable, but not later than 3 days after the occurrence of a reportable environmental incident, submit a written report to NOPSEMA. Ph: (08)6461 7090 Email:submissions@nopsema.gov.au The written incident report must also be provided to the National Offshore Petroleum Titles Authority (NOPTA). Email:info@nopta.gov.au
	Regulation 48	**Report** – Reportable environmental incidents		
	Regulation 50	**Report** – monthly reporting of recordable incidents	NOPSEMA	End of each calendar month (before 15th day of following calendar month) if there has been an incident in that month. A nil incident report will not be submitted.
	Regulation 41	**Submit** – Revised Offshore Environment Plan (EP)	NOPSEMA	Every 5 years
Protection of the Sea (Prevention of Pollution by Ships) Act 1983	-	**Notify – Oil spill only**	AMSA	AMSA must be notified within 1 hour. Ph: 1800 641 792 Email: mdo@amsa.gov.au
Navigation Act 2012	Marine Order 91 (Marine pollution	**Notify** - Vessel Master to notify AMSA about a pollution incident involving:	AMSA	Verbally without delay. If requested a written report must be provided within 24 hours after AMSA asks for the report.

Legislation	Reference	Obligation	Regulatory Authority	Frequency
	prevention – oil) 2014 Marine Order 93 (Marine pollution prevention – noxious liquid substances) 2014 Marine Order 94 (Marine pollution prevention – packaged harmful substances) 2009	• a discharge (or probable discharge) of oil or noxious liquid substances in excess of permitted MARPOL discharge levels, quantities or rates, for whatever reason, including those for the purpose of securing the safety of the ship or for saving life at sea • a discharge (or probable discharge) of harmful substances in packaged form, including those in freight containers, portable tanks, road and rail vehicles and shipborne barges. **Report** - If AMSA asks for a written MARPOL report. Report to include: • name of ship/s involved • time, type and location of incident • quantity and type of harmful substance • assistance and salvage measures • any other relevant information		
-	-	**Notify** – Any observed suspected/known **Marine Pests** to be provided to DCCEEW and relevant state authorities (see below sections) with the following information. • Date and time • Species details (if known), including number sighted • Location, GPS coordinates if possible • Habitat type • Water depth • Photographs, including close-up and from different angles with reference item such as coin, bank note or ruler (if available)	DAFF	As soon as practicable. Report a pest: as per www.marinepests.gov.au website. For Commonwealth; Email: ccimpe@aff.gov.au Website: https://www.marinepests.gov.au/pests/identify
Victoria				
	Regulation 22	**Submit** – Revised Offshore Environment Plan (EP)	DEECA	Every 5 years

Legislation	Reference	Obligation	Regulatory Authority	Frequency
Offshore Petroleum and Greenhouse Storage Regulations 2011	Regulation 29	**Notify** – Reportable environmental incidents	DEECA	DEECA must be notified of all reportable environmental incidents as soon as practicable, but no later than 2 hours after the incident occurs or 2 hours after the operator becomes aware of the incident. The operator must, as soon as practicable, but not later than 3 days after the occurrence of a reportable environmental incident, submit a written report to DEECA.
	Regulation 30	**Report** – Reportable environmental incidents		
	Regulation 31	**Report** – monthly reporting of recordable incidents	DEECA	End of each calendar month
Marine (Drug, Alcohol and Pollution Control) Act 1988	Victorian Marine Pollution Contingency Plan	**Notify** – Incident that causes or may cause environmental harm	DEECA/STV	Notify DEDJTR (State Duty Officer) as soon as possible by phone followed by an email. Ph: 0409 858 715 Email: sccvic.sdo.dedjtr@scc.vic.gov.au
-	-	**Notify** – Oiled wildlife	DEECA	Immediately
-	-	**Notify** – Wildlife emergency	DEECA	DEECA Whale & Dolphin Emergency Hotline - 1300 136 017 Marine Response Unit – 1300 245 678.
-	Report a pest (as per marinepests.gov.au website):	**Notify** – Suspected or known introduction of IMS. Contact authority with the as much of the following information as possible. •Date and time •Species details (if known), including number sighted •Location, GPS coordinates if possible •Habitat type •Water depth •Photographs, including close-up and from different angles with reference item such as coin, bank note or ruler (if available)	DEECA	As soon as practicable. Contact DEECA on: Phone - 1300 502 656 Email - marine.pests@agriculture.vic.gov.au Online reporting – Complete online form https://agriculture.vic.gov.au/biosecurity/marine-pests/report-a-marine-pest-sighting Webpage - http://www.vic.gov.au/marine-pests
Tasmania				
Environmental Management and	Schedule 3	**Report** – Incident causing threatening environmental nuisance or serious or	Director, EPA Tasmania	By phone as soon as reasonably practicable, but not later than 24 hours. By hand or by fax, not later than 24 hours.

Legislation	Reference	Obligation	Regulatory Authority	Frequency
Pollution Control Act 1994		material environmental harm from pollution		
	Section 32(3)	**Notify** – Incident that causes or may cause environmental harm	Director, EPA Tasmania	By phone as soon as reasonably practicable, but not later than 24 hours. By hand or by fax, not later than 24 hours. Report the incident directly to EPA's Hotline: 1800 005 171.
Petroleum (Submerged Lands) (Management of Environment) Regulations 2012	Regulation 25	**Revise and Submit** – Environmental Management Plan	MRT	Every 5 years
	Regulation 32 Regulation 33	**Revise and Submit** – Environmental Management Plan	MRT	Every 5 years
	Regulation 32 Regulation 33	**Report** – environmental incidents	MRT	MRT must be notified of all reportable environmental incidents as soon as practicable, but no later than 2 hours after the incident occurs or 2 hours after the operator becomes aware of the incident. The operator must, as soon as practicable, but not later than 3 days after the occurrence of a reportable environmental incident, submit a written report to MRT.
	Regulation 34	**Report** – monthly reporting of recordable incidents	MRT	End of each calendar month
-	-	**Notify** – Wildlife emergency	Parks and Wildlife Service	Immediately
-	Report a pest (as per marinepests.gov.au website):	**Notify** – Suspected or known introduction of IMS. Contact authority with the as much of the following information as possible. •Date and time •Species details (if known), including number sighted •Location, GPS coordinates if possible •Habitat type •Water depth •Photographs, including close-up and from different angles with reference item such as coin, bank note or ruler (if available)	Department of Natural Resources and Environment (NRE) Tasmania	As soon as practicable. Contact NRE Tasmania on: Phone – 03 6165 3777 or 1300 368 550 Email - invasivespecies@nre.tas.gov.au or biosecurity.tasmania@nre.tas.gov.au Online reporting – Complete online form https://nre.tas.gov.au/biosecurity-tasmania/contact-us Webpage - https://nre.tas.gov.au/biosecurity-tasmania/aquatic-pests-and-diseases

8.6.6 Complaints Procedure

In the event of an environment-related complaint from the public regarding noise, waste, air emission or a general pipeline operational issue, the Contractor Supervisor should notify the General Manager TGPPL, who will document responses and actions to manage the complaint. However, it must be noted that public complaints related to the Offshore TGP and associated inspection and maintenance activities are highly unlikely since it is a subsea pipeline located at water depths of up to 80 m.

If required, the General Manager TGPPL will contact the relevant authorities in accordance with statutory/regulatory requirements.

8.6.7 Corrective / Preventative Actions

Any corrective/preventative actions resulting from environmental incidents, audits, monitoring or site inspections will be documented using the TGP Incident Management System. When an environmental incident occurs or personnel identify a potential incident, an improvement request is raised, and appropriate controls and corrective/preventative actions are developed and implemented to resolve any issues.

All incidents and associated corrective/preventative actions are recorded and maintained by the General Manager TGPPL and communicated to all relevant TGP personnel.

8.6.8 Incident Investigation and Corrective Actions

The General Manager TGPPL is responsible for the initial reporting of significant non-compliances with this Offshore EP or relevant legislation to TGPPL senior management and to the relevant regulatory authorities in accordance with legislative requirements.

The Contractor Supervisor is responsible for reporting any field based non-compliances to the General Manager TGPPL.

The General Manager TGPPL is the primary contact for government environmental agency officers regarding environmental issues. Other environmental responsibilities are described in Section 8.3**Error! Reference source not found.**.

8.7 Environmental Records and Document Control

8.7.1 Records

Retention of records is an integral part of environmental management of the Offshore TGP, as evidence of compliance with applicable legislation and Offshore EP requirements. All environmental management documentation is securely stored and managed according to the TGP *Records Management Plan (TGP-698-PA-DM-001)*.

In accordance with relevant regulations, documents to be stored shall include, but not be limited to:

- The Environment Plan (EP) in force for the activity
- Revisions of the EP
- Written reports (including inspection, monitoring, audit and review reports) about environmental performance or about the implementation strategy under the EP
- Records of calibration and equipment maintenance used in accordance with the EP
- Records and copies of report relating to reportable incidents and recordable incidents (refer to Section 8.6.
- Corrective action reports
- Environmental induction records

- Emission and discharge reports
- Waste log forms

All records shall be stored and retained for specific periods as outlined in the TGP *Records Management Plan (TGP-698-PA-DM-001).* This plan provides guidance on what information requires collecting and storing and timelines. Generally, legislation requires an operator to store and maintain records for a minimum period of 5 years.

8.7.2 Document Control

All TGP documents, including design, construction, commissioning and operational documentation, are securely stored in electronic format on a Document Management System (DMS), which is available to TGP personnel via a secure login only. TGP documents are managed in accordance with the TGP *Records Management Plan (TGP-698-PA-DM-001).*

All TGP documents are controlled within the TGP DMS to ensure that only the latest versions of documents are always available to TGP personnel. Printed or downloaded copies of TGP documents are deemed to be uncontrolled.

The TGPPL Engineering Manager is responsible for administration of the TGP DMS. The Document Controller is responsible for ensuring that the document management processes for TGP documents and records are applied. Hard copy records are also stored offsite at a Recall facility, with registers and catalogues available for each box in storage. Offsite records can generally be retrieved within 24 hours.

Hard copy manuals containing specific drawings and procedures are also located in the RMC, Zinfra field offices and at each Onshore station. All field staff are responsible for ensuring the hard copy manual is kept up-to-date with latest versions of drawings and procedures.

9. EMERGENCY PREPAREDNESS AND RESPONSE

9.1 Overview

The overall responsibility for management of emergency response for the Offshore TGP lies with the General Manager TGPPL. The General Manager TGPPL is accountable for ensuring that TGP emergency response arrangements are developed and implemented to facilitate coordinated and timely responses and ensure that risks associated with possible emergencies are reduced to be ALARP. Accordingly, TGPPL maintains an *Emergency Response Management Plan (ERMP) (TGP-698-PA-EM-001),* which outlines TGPPL's response management procedures in the event of emergencies occurring during the operation, inspection and maintenance of the TGP.

All major emergencies are coordinated primarily through the General Manager TGPPL. The General Manager TGPPL, or the manager's delegate, is accountable for leading the Emergency Response Team (ERT). At all times, adequate numbers of key personnel are available to respond to an emergency and to minimise its effects on personnel, the community, the environment, customers and the TGP.

In the event of an emergency, TGPPL will institute an emergency response structure as described in the TGP ERMP and subordinate documentation, as well as involving key TGPPL staff and managers in their relevant areas of expertise and roles.

Responsibility for Offshore TGP emergency field response lies with TGPPL. TGPPL may enlist the support of Zinfra if required, particularly in the event that isolation of the offshore section is required. If instructed to do so by TGPPL, Zinfra will close the MLVs through the RMC.

Details of the emergency response organisational structures are documented in the TGP *Emergency Response Management Plan (TGP-698-PA-EM-001)* and the accompanying TGP *Emergency Response Action Plan (TGP-698-PA-EM-003).* These emergency response documents are outlined in Section **Error! Reference source not found.** below.

Where the incident is deemed to be, or has the potential to escalate to, a crisis level then senior executives within TGPPL and PIMS will be engaged as part of the Crisis Management Team (CMT).

9.2 Emergency Management Documentation

A comprehensive suite of emergency management documentation is in place which describes emergency management protocols and provides alignment between TGPPL, Zinfra and key contractors and stakeholders. The documents address high level strategic issues through to field based tactical response methods. The primary documents related to emergency response for the TGP are listed below:

TGP *Emergency Response Management Plan (TGP-698-PA-EM-001)* (ERMP) is the overarching emergency response document comprising:

- Incident escalation and notification structure
- Emergency response – command and control structure
- Roles and responsibilities
- Details of support facilities; and
- Contact details

The ERMP is supported by a suite of subordinate plans and procedures related to TGP emergency management, including:

- *TGP Offshore Emergency Response Action Plan (TGP-698-PA-EM-003)*
- *Offshore Oil Pollution Emergency Plan (OPEP) (Section 9.4 of this EP)*
- *Offshore Repair Manual (TGP-600-PA-EM-002)*

- *Storage and Maintenance Plan for Offshore Repair Equipment (TGP-600-PA-EM-006)*

In the event of an emergency, the relevant emergency response documents are to be actioned and the General Manager TGPPL immediately notified.

For further details of emergency response documents related to the Offshore TGP, refer to Section 2.13.3 of the *TGP Offshore Safety Case (TGP-698-SC-HSE-004).*

9.3 Emergency Response Training

Personnel working on the TGP participate in regular training exercises that cover emergency response and pipeline isolation procedures, repair procedures and equipment mobilisation. All new staff receive emergency response induction training.

Exercises (which cover onshore and/or offshore scenarios) are held once a year and are designed and controlled by TGPPL.

For further details regarding emergency response training related to the Offshore TGP, refer to Section 2.13.9 of the *TGP Offshore Safety Case (TGP-698-SC-HSE-004).*

9.4 Oil Pollution Emergency Plan (OPEP)

The development of an Oil Pollution Emergency Plan (OPEP) is required by Regulation 22(8) of the OPGGS(E) Regulations 2023.

This OPEP comprises relevant components of the inspection and maintenance vessel's SOPEP and the National Plan for Maritime Environmental Emergencies (NATPLAN) (AMSA, 2020). Once contracting has been finalised, the SOPEP for the vessel selected for the inspection and maintenance activity will be incorporated into the OPEP arrangements for this EP. The vessel's SOPEP and response arrangements will be tested prior to the commencement of the inspection and maintenance activities, and in line with Section 9.4.7.

NATPLAN applies to all spills from vessels in Commonwealth waters. The SOPEP recognises the divisions of responsibility to provide effective response to marine pollution incidents, as defined under NATPLAN. The SOPEP is the principal response document that will be implemented in the event of a marine oil spill, which provides specifics and provision for guiding management response to mitigate oil spills from vessels. Examples of emergency procedures that are defined in SOPEPs include steps to control:

- Collision
- Hull damage
- Tank failure
- Vapour release
- Fire and explosion
- Bunkering spills
- Sinking

9.4.1 First Point of Contact Following a Spill

9.4.1.1 AMSA

In the event of a hydrocarbon release, the first point of contact is the Australian Maritime Safety Authority (AMSA) Rescue Co-ordination Centre via;

24 hour helpline: 1800 641 792

+61 2 6230 6811

Website: http://www.amsa.gov.au/contact-us/

Email: mdo@amsa.gov.au

Relay the key known facts about the spill – location, source, size and type – as well as incident factors causing the spill, and current assessed spill level.

If the spill is in State waters, or likely to move into State waters, the spill must be reported using the contact details below. If the spill occurs outside port jurisdictions, relevant port authorities will be notified as defined in the relevant State response plan.

9.4.1.2 Victoria

Control Agency: In the case of a **Level 1** release within the Gippsland Ports jurisdiction (state waters from SE point of Wilson's Promontory to New South Wales Border), Gippsland Ports will be the Control Agency.

Website: https://www.Gippslandports.vic.gov.au/contact-us/report-an-incident/

Gippsland Ports' Assistant Harbour Master:

Phone: 0429 174 606.

Alternative phone: 0437 002 707

Wherever possible the following information should be provided with the report, including any photographs of the incident:

- name and contact details
- where and when the pollution occurred
- the type of discharge or a description of the pollutant
- the extent or size of the area where the pollution is visible
- the source of pollution including vessel registration numbers if known.

Control Agency: For a **Level 2 or 3 spill**, or where a spill originates in Commonwealth waters and is likely to enter State waters (and where AMSA hand over Control Agency role), Safe Transport Victoria (STV) will be the Control Agency. Following the Machinery of Government (MoG) changes that came into effect 1 January 2019, the former DEDJTR was split into two departments: Safe Transport Victoria (STV) and the Department of Jobs, Precincts and Regions (DJPR). The Marine Pollution Team has been transferred to STV, effective 1 July 2019. Interim arrangements for the DEDJTR State Duty Officer (SDO) continue to provide a shared service to DJPR and STV until further notice. As such, any emergency notifications to the state should still go to the DEDJTR SDO

Phone: 0409 858 715

Email: sccvic.sdo.dedjtr@scc.vic.gov.au

Any incident notifications including POLREPS and SITREPS should also go to the

Email: semdincidentroom@ecodev.vic.gov.au

9.4.1.3 Tasmania

Control Agency: In the case of a **Level 1, 2 or 3 spill**, or where a spill originates in Commonwealth waters and is likely to enter State waters (and where AMSA hand over Control Agency role), the Tasmanian Environment Protection Authority (EPA) Tasmanian Marine Pollution Controller (TMPC) will be the Control Agency.

Telephone: +61 3 6165 4599 or 1800 005 171

The initial verbal notification must be followed up by an email containing a more detailed Pollution Incident Report to incidentresponse@epa.tas.gov.au.

9.4.1.4 Marine Parks

In the event of an oil or gas pollution incident that has either occurred within a marine park or is likely to impact upon a marine park, the Director of National Parks (DNP) should be notified through the following process.

Notification should be provided to the 24-hour Marine Compliance Duty Officer on 0419 293 465.

The notification should include:

- Titleholder details
- Time and location of the incident (including name of marine park likely to be effected)
- Proposed response arrangements as per the Oil Pollution Emergency Plan (e.g. dispersant, containment, etc.)
- Confirmation of providing access to relevant monitoring and evaluation reports when available
- Contact details for the response coordinator

When requested, the DNP may require daily or weekly Situation reports – this will depend on the scale and severity of the pollution incident.

9.4.2 NATPLAN

NATPLAN is the framework that integrates Commonwealth and State Government(s) response, facilitating an effective response to marine pollution incidents via Australian Emergency Management Arrangements. AMSA manages NATPLAN and is the Control Agency for vessel spills in Commonwealth waters. As such, AMSA works with State Governments, emergency services and relevant industries (shipping, oil and gas, exploration and chemical industries) to maximise Australia's response capability.

NATPLAN applies to Commonwealth waters seaward of the boundary of State Waters (3 NM offshore) and integrates with State response plans. NATPLAN identifies a number of the roles that are fulfilled by State agencies as defined in the relevant State contingency plan:

- Jurisdictional Authority (JA): a statutory responsibility required to ensure that an adequate spill response plan has been prepared. In the event of a spill, the JA also ensures that a satisfactory response can be implemented by the Control Agency. In Commonwealth waters, the JA for petroleum activities is NOPSEMA, and AMSA for vessel spills (not associated with petroleum activities)
- Control Agency (CA): is responsible for operational control and response to an oil spill in the marine environment. The Commonwealth waters CA for Offshore TGP inspection and maintenance vessels is AMSA. AMSA may request that State CAs assume the lead CA role, even where the spill has occurred in Commonwealth waters (but where there is a likelihood that spilled hydrocarbons may impact State resources/shorelines)

National Plan response equipment and resources are managed and controlled by AMSA's Marine Environment Protection (MEP) Division, and include:

- Maritime Emergency Response Commander (MERCOM)
- Oil spill response equipment managed via the Marine Oil Spill Equipment System (MOSES)
- Oil Spill Response Atlas (OSRA) which identified sensitive receptors (e.g. marine and shoreline ecosystems and biological resources)
- Oil Spill Trajectory Modelling (OSTM)

9.4.3 State Waters

If a hydrocarbon release occurs in State waters (or if it is likely to move into State waters), the following relevant State oil spill contingency plans will apply:

- The Victoria State plan is the Victorian State Emergencies Plan (Emergency Management Victoria, 2024), the relevant information for maritime is provided in the State Maritime Emergencies (Non-search and Rescue) Sub-Plan Edition 3 (Department of Transport and Planning, 2024) and the State Jurisdictional Authority (JA) and Control Agency (CA) is Safe Transport Victoria (STV).
- The Tasmania State plan is the Tasmanian Marine Oil Spill Contingency Plan (TasPlan) (DPIPWE, 2022), this document supports the National Plan for Maritime Environmental Emergencies (NatPlan) and the Tasmanian Emergency Management Arrangements (TEMA). The State JA is the Department of Natural Resources (NRE) Tasmania, and the State CA is the Tasmanian Environment Protection Authority (EPA) Tasmanian Marine Pollution Controller (TMPC)

The deployment of State resources in Commonwealth waters will be requested and coordinated by AMSA.

9.4.4 Roles and Responsibilities

AMSA is the Control Agency and hence responsible for managing response to all oil spills in Commonwealth waters under NATPLAN. Both MARPOL and the vessel's SOPEP require the vessel master to report to the nearest State whenever there is an incident involving actual or probably discharge. The vessel SOPEP is implemented to initiate clean up resources and control discharges.

The following roles will also provide key support:

- The Vessel Master will be responsible for notifications and reporting all spills to the sea to the AMSA JRCC, via a POLREP form included in the vessel SOPEP. Further reports will be sent at regular intervals to inform relevant stakeholders and agencies (AMSA, NOPSEMA, TGPPL, inspection and maintenance contractors, etc.)
- The TGPPL representative on board the vessel (where applicable) is responsible for reporting directly to TGPPL. The General Manager TGPPL is then responsible for notifying NOPSEMA of any spills in Commonwealth waters

AMSA will appoint the MERCOM, who is supported by statutory powers under the Protection of the Sea (Powers of Intervention) Act 1981. The responsibilities of the MERCOM include the management of emergency intervention issues during a response to maritime casualty incidents where there is a real (or even potential) risk of significant pollution.

AMSA do not require title holders to consult on EPs for offshore petroleum activities and have produced an advisory note. As of 2021, AMSA will no longer be entering into any direct agreements with Titleholders for support with oil spill preparedness and response into the future. AMSA will continue to fulfil its obligations under the National Plan for Maritime Environmental Emergencies for non-ship source pollution incidents on the formal request from the respective Offshore Petroleum Incident Controller(s).

9.4.5 Assessment of Spill Scenarios

The level of hydrocarbon release is used to identify the level of resources required to respond to the spill. This approach allows scaling of response in line with the evolving nature and scale of the incident. Incident classification (Levels 1 to 3) are defined in NATPLAN as follows:

- **Level 1** incidents with a release of 0 to 10 m3, and where sensitive species or habitats are not at risk. These incidents are generally resolved through a First Strike response (i.e. local or initial resources only)
- **Level 2** (10 to 1000 m3) incidents may require deployment of jurisdictional resources supplementary to the initial response due to the more complex size/duration/resource management/risks involved. A Level 1 release may be escalated to a Level 2 where sensitive environmental/socio-economic receptors may be at risk
- **Level 3** incidents (>1,000 m3) may require national and international resources, and where the incident controller must delegate all management functions and focus on strategic leadership and response coordination. A Level 2 release may be escalated to a Level 3 where sensitive environmental/socio-economic receptors may be at risk

The following spill scenarios have been identified in Section 2.2.2.2:

- **Level 1** (<100 L): Minor hydraulic oil spills (from an ROV /AUV)
- **Level 2** (40,000 L (approx. 40 m3) MDO): Complete loss of inventory from the largest fuel tank of the largest anticipated inspection and maintenance vessel resulting from collision or grounding

9.4.5.1 Zone of Potential Impact (ZPI)

The Zone of Potential Impact (ZPI) is the sea surface area, water column, seabed and any relevant shorelines that could be impacted by oil spilled from a petroleum activity.

The ZPI for a Level 1 minor hydraulic oil spill incident is expected to be limited to the immediate vicinity of the release point due to rapid spreading, evaporation and dilution of the spilled hydraulic oil and the actions taken under the vessel SOPEP.

The ZPI for a Level 2 spill is based on the outcomes of the spill modelling for 40m^3 fuel spill (see Section 2.2.2.2.2 for further details).

9.4.5.2 Protection Priorities Within the ZPI

The NATPLAN protection priority hierarchy has been used to define protection priorities and response objectives within the ZPI:

Priority Level	Description
PRIORITY 1	**Protection of human health and safety** - remove marine users and any potential casualties from areas considered to be a safety hazard
PRIORITY 2	**Protection of habitat and cultural resources**
PRIORITY 3	**Protection of rare and/or endangered fauna** - prevention of oil exposure to threatened fauna that are or may be present in (or in close proximity to) the operational area
PRIORITY 4	**Protection of commercial resources** - prevent exposure to commercial fisheries in (or in close proximity to) the operational area.

9.4.6 Spill Response Preparedness

Prior to commencement of inspection and maintenance activities:

- the Vessel Master will ensure that all relevant personnel have
  - undergone relevant inductions
  - are familiar with the SOPEP (and oil spill response arrangements therein)
  - are appropriately trained to undertake their responsibilities under the SOPEP
- the General Manager TGPPL and Vessel Master will ensure that notifications have been made to relevant stakeholders and agencies

9.4.7 OPEP Testing Arrangements

The OPEP will be tested prior to commencing inspection and maintenance activities. The schedule for testing of response arrangements will include:

- testing when response arrangements are introduced
- testing if/when response arrangements are significantly amended
- testing not later than 12 months after the most recent test

- testing for any new location(s) for the activity as soon as practicable after they have been added to the EP (if added after the most recent test, and before the next test is conducted)

Regulation (8A) requires testing of the objectives to ensure that they are appropriate to the nature and scale of the activity and that the response arrangements can be effectively implemented. Following testing, TGPPL will review the outcome of the test, identify any non-conformances and opportunities for improvement, and track corrective actions to completion using TGP *Incident Reporting and Investigation Procedure (TGP-698-PR-HSE-002)*. TGPPL will carry any non-conformances identified during the vessel activities forward for consideration in future activities as part of a continuous improvement in control measures and performance standards.

When the vessel for inspections and maintenance has been confirmed, TGPPL will make arrangements for testing of the vessel's SOPEP (including response arrangements) prior to the commencement of the offshore activities. All personnel on board the vessel will be trained and inducted in the application of the vessel's SOPEP and in compliance with MARPOL Annex 1, as appropriate to class. Regular drills and exercises will be carried out to maintain the crew's currency in response equipment use and in incident response procedures, as dictated by the SOPEP. These drills will include (but will not be limited to):

- spill response
- collision
- fire and explosion

All drills will be documented, debriefings undertaken, and corrective actions identified (including any revisions to the SOPEP) and tracked to completion by the Vessel Master.

9.4.8 Oil Spill Resources

Typical oil spill resources expected to be carried onboard the vessel are listed in the vessel's SOPEP. The vessel will carry spill containment and recovery kits with sufficient absorbent booms and materials to contain small to medium-scale deck spills. The Vessel Master will be responsible for ensuring that these kits are serviced and in-date (where relevant), and appropriately stocked at all times. Minor spills will be managed through good housekeeping practices and the use of absorbent materials. Deck spills will not be discharged into the ocean. Spill clean-up materials will be retained on board the survey vessel and stored in covered containers for subsequent disposal at an appropriate onshore facility.

9.4.9 Proposed Spill Response Strategies

Spill response strategies and tactics were considered for the credible scenarios identified in Section 9.4.5 (maximum 100 L hydraulic oil and 40 m^3 MDO) are presented in Table 9-1. In the unlikely event of a spill, the potential use of each spill response strategy/tactic would be assessed for feasibility/practicability and human health and safety, with the recommended responses subject to Net Environmental Benefit Analysis (NEBA).

For Level 1 fuel spills in Commonwealth waters, initial actions will be undertaken by the vessel in accordance with the vessel SOPEP, with subsequent actions determined in consultation with AMSA (under NATPLAN). In such situations, the Vessel Master (or delegate) will monitor the spill and notify AMSA of the situation status. AMSA will monitor and continue to assess this level of spill.

For Level 2 spills, the Vessel Master will notify AMSA (Section 9.4.1). AMSA is the responsible CA for oil spills from vessels within the Commonwealth jurisdiction and will respond in accordance with its Marine Pollution Response Plan, as approved by the AMSA Executive. Upon notification of an incident, AMSA will assume control of the incident. TGPPL will support the response as required. After ensuring the safety of the crew and fire prevention (and notifying AMSA), the Vessel Master will implement the SOPEP and consider relevant 'source control' actions (e.g. tank lightering) to reduce the fuel volume released to the environment. AMSA will determine the appropriate response strategies depending upon the protection priorities at risk within the ZPI. AMSA will determine the potential need for trajectory modelling and possible sea/aerial surveillance to confirm/inform trajectory predictions, depending on the location, prevailing weather conditions, available vessel responses and volume released. All selected response strategies will be in accordance with

NATPLAN. Recognising that there is potential for impacts associated with spill response activities, these risks would be assessed as part of any NEBA coordinated by AMSA, to which TGPPL would contribute if requested by AMSA.

The NEBA process requires a number of data and information inputs to allow a robust and transparent assessment. AMSA will require TGPPL to provide this information in a timely manner. Data/information requirements will comprise:

- information from the activity-specific EP, including available modelling
- data/information obtained immediately prior to and following the spill, such as any monitoring to support situational awareness and capability/logistical information to support spill response
- any available baseline data

Where hydrocarbons from the spill are likely to cross from Commonwealth to State waters, AMSA will undertake the NEBA in conjunction with representatives from the relevant State CAs.

The Vessel Master will continue to provide situation reports (SITREPs) throughout the response activity, at the direction of AMSA. AMSA will maintain the response until relevant termination criteria are achieved.

Priority actions in the event of a large fuel spill are to make the area safe (protect human life) and to stop the leak to prevent further spillage, for example by transferring fuel to another tank.

If AMSA identify that an oiled wildlife response is required in Commonwealth waters, this will be based on NATPLAN oiled wildlife response. Responses in State waters will be implemented by or under the direction of State CAs and align with current State oiled wildlife response plans. The accumulation of hydrocarbons on shorelines is considered unlikely based on the modelling and the credible scenarios; however, to allow for an adaptable response, consideration will be given to migratory shorebird feeding and roosting sites/nesting colonies and any seal colonies in and adjacent to the ZPI. In addition, species protected under Part 3 of the EPBC Act will be given particular attention, with consideration of information provided in relevant plans, guidelines and policies

For spills in Commonwealth waters, initial actions will be undertaken by the vessel in accordance with its SOPEP and the TGP Offshore OPEP. Under the OPEP, Type 1 operational monitoring will be carried out, which would be coordinated by AMSA and TGPPL as required. Type II scientific monitoring would be led by TGPPL if contact with sensitive receptors is expected (see Section 9.4.10 for further information).

Given the low risk of adverse environmental impacts from a fuel spill in the operational area, and the low risk of shoreline contact meaning that active response and clean-up are unlikely to be required, there is unlikely to be environmental benefit to be gained from implementing additional strategies beyond ‘monitor and evaluate’ as assessed and recommended in Table 9-1**Error! Reference source not found.**. A fuel spill requiring active clean-up response is not considered a credible scenario and it is unlikely that sensitive receptors will be impacted in the short time during which concentrations of hydrocarbons are present at potentially ecotoxic levels around the spill location. The vessel’s SOPEP and the OPEP would be implemented, and the residual risk is considered to be low. A NEBA would be undertaken shortly after the time of the spill to ensure environmental impacts arising from the response strategy are minimised. Full recovery of water quality and any affected biological assemblages or areas of shallow rocky reef is expected. TGPPL therefore considers the risk of potential impacts from the spill response to be ALARP and of an acceptable level.

Table 9-1: Spill Response Strategies

	Monitor and evaluate	Mechanical dispersion	Containment and recovery	Shoreline protection	Shoreline clean-up	Chemical dispersion
Relevance	Relevant to all spills.	Can be considered for use on surface hydrocarbons	Can be considered for use on surface hydrocarbons	Low risk of shoreline exposure	Low risk of shoreline exposure	Can be considered for use on surface (or subsurface) releases
Mobilisation	Visual observation is the most likely practicable option available for Level 1. Potential need for OSTM and additional sea/aerial surveillance to confirm/inform trajectory predictions, depending on the location, prevailing weather conditions, available vessel responses and volume released.	Undamaged vessel(s) in area may be used for this purpose if available (e.g. not undertaking other response operations, such as transfer of personnel or fuel from ruptured tanks, or securing damaged vessel)	No surface booms/ equipment will be on vessel (only sufficient for small- to medium-scale deck spills). Vessels would not be mobilised from port for this scenario as most hydrocarbon would have weathered and spread too thin during period to allow an effective response	Unlikely	Unlikely	Vessel-based (localised) dispersant application only if dispersants are on vessel. Airborne dispersant application would not be mobilised.
Efficacy	Information gathering for spills is critical for situational awareness and supporting a coordinated spill response for all spills	Limited and localised entrainment via propeller wash or through use of vessel's fire suppression hoses	Unlikely to be effective due to hydrocarbon type and thickness of slick. Limited effectiveness in offshore environments due to limitations of use (wind/sea conditions)	Not considered effective for fuel spills that are likely to have undergone substantial weathering or for thin surface films – such as offshore spills of this nature	N/A	Most of the spill will be removed by natural degradation (weathering) before a response could be implemented. Remaining hydrocarbon may not be amenable to dispersants (e.g. spread thinly or with a patchy surface distribution). Additionally, optimal weathering occurs at the surface, so

	Monitor and evaluate	Mechanical dispersion	Containment and recovery	Shoreline protection	Shoreline clean-up	Chemical dispersion
						entrainment will increase persistence.
Issues	Visual observations of surface hydrocarbons are limited to daylight. Understanding of entrained or dissolved hydrocarbon distribution is limited to spot-point water column sampling.	Potential human health and safety risks from e.g. VOCs. Optimal weathering will occur at the surface – entrainment increases persistence of hydrocarbons in the environment	Potential human health risks from VOCs	Potential for causing localised damage to shallow subtidal sensitive habitats (e.g. seagrasses, macroalgal communities, sponge beds) from anchoring of protection booms	The impacts of shoreline clean-up are related to the method(s) used. For example, mechanical clean-up involves removal of large volumes of contaminated beach sediment, which can affect shoreline profiles/coastal processes and remove feeding habitat of shorebirds; chemical clean-up involves use of chemical dispersants and control agents to remove hydrocarbons in situ, which can then wash into adjacent (potentially sensitive) environments; cropping removes saltmarsh foliage, which can for example impact saltmarsh recovery and disturb/ damage/ destroy nesting areas	Dispersants can have a certain inherent toxicity. The increased water accommodated fraction of dispersed hydrocarbons can be more toxic than either dispersants or hydrocarbons alone, and so this response poses a potential increase in environmental risk.

	Monitor and evaluate	Mechanical dispersion	Containment and recovery	Shoreline protection	Shoreline clean-up	Chemical dispersion
Summary	**Recommended**. This response will be implemented, with the scale of response appropriate to the nature and scale of the spill	Not likely to reduce risk, therefore **not recommended** at this stage.	Unlikely to be effective or practicable, therefore **not recommended** at this stage	**Not recommended** at this stage as unlikely to be effective and shorelines are not predicted to be sufficiently exposed to spilled hydrocarbons	**Not recommended** at this stage as shorelines are unlikely to be sufficiently exposed to spilled hydrocarbons and hence response may cause more impacts than spill exposure	**Not recommended** at this stage

9.4.10 Operational and Scientific Monitoring Plan (OSMP)

The specific operational and scientific monitoring program undertaken following an oil spill would be developed based on the following information:

- location of the spill
- nature and scale of the spill, and likely evolution
- types of values and assets within the ZPI
- potential for impact upon sensitive resources
- review of available baseline data. An assessment of gaps in available baseline data and potential/requirements for post-spill/pre-exposure baseline data collection will be considerations in the monitoring design.

TGPPL will provide immediate on-site first strike response and AMSA as the CA will direct and lead any ongoing spill response arrangements and monitoring requirements in the event of an oil spill, supported by TGPPL.

All monitoring personnel will be suitably experienced and qualified for their role. A pre-mobilisation assessment of experience and certifications will be used to allocate specific roles to personnel. Multiple personnel will be allocated to monitoring roles to allow for shift rotations (where multiple shifts per day are required) or maintenance/inspection programme rotations (where staff are rotated from the field as part of effective fatigue management planning). The availability of personnel with in-date certificates (e.g. offshore medical, BOSIET and MSIC) will then identify which personnel will support immediate mobilisation or comprise the second rotation.

In the event of an oil spill, the primary response will be to 'Monitor and Evaluate' as detailed in Section 9.4.9. This will involve oil spill tracking and quantification using a vessel and/or aerial surveillance to track the movement of the spill and determine the potential risk to people and sensitive receptors. If required, trajectory modelling and fate assessment will also be undertaken. Adverse impacts on the shoreline or sensitive marine ecosystems in the event of a spill from Offshore TGP inspection and maintenance vessels are highly unlikely due to the size of vessels used, properties of hydrocarbons that could potentially be spilled, expected maximum spill volumes, high energy marine environment of Bass Strait, and the distance from the Offshore TGP to sensitive receptors (e.g. islands/shorelines).

9.4.10.1 Operational Monitoring (Type I)

In the event of a hydrocarbon release, TGPPL would implement Operational (Type I) Monitoring in consultation with AMSA, and where appropriate, relevant State agencies. This monitoring will be implemented to;

- determine the extent and character of a spill
- track the movement and trajectory of surface hydrocarbon slicks
- identify areas/ resources potentially affected by surface slicks
- determine sea conditions/ other constraints
- identify the efficacy and potential impacts of spill response strategies and tactics (to inform any remediation activities and any subsequent NEBA assessments)

Oil Spill Trajectory Modelling (OSTM), used in conjunction with water quality monitoring, will help determine the potential extent and direction of travel of the plume of entrained hydrocarbon, and to determine the risk of hydrocarbon toxicity impacts to sensitive receptor locations.

This monitoring instigated by AMSA, will enable TGPPL to provide the necessary information to AMSA, to assist in planning appropriate response actions under NATPLAN.

Specific monitoring and data collection would include aspects of the following, as agreed with AMSA:

Immediate monitoring (approximately 0 to 6 hours):

- estimate of sea state
- estimates of wind direction and speed
- characteristics of the surface hydrocarbon slick (thickness and areal extent)
- GIS mapping
- OSTM triggered for a Level 2+ spills

Modelling if triggered, will be used in conjunction with other field observation/monitoring data to identify the likely direction, spread and potential speed of the slick. This will be used as a guide to support the planning for other operational monitoring scopes (e.g. water quality, sampling and fluorometers). This information will allow initial identification sites for sampling, which may also provide information on the subsurface distribution of hydrocarbons via vertical profiling of the water column (should sufficient levels of hydrocarbons remain to be detectable). Water column profiling data will be used to identify the sites and depths at which water samples will then be taken for laboratory analysis. Water sampling for hydrocarbons should be undertaken using suitable equipment by personnel trained in the relevant procedures. "Improvised" approaches will not be used as the samples obtained may result in inaccurate results or a failure or a delay in confirming the credible source of the spill.

To be mobilised (>6 hours):

- aerial surveillance for Level 2+ spills (if aircraft available offshore)
- GPS tracking using satellite drifter buoys (if available)
- measuring concentrations of entrained hydrocarbons through the water column (e.g. from water samples or using fluorometers)
- stochastic modelling predictions for Level 2+ spills.
- For potential additional consideration:
    - remote sensing (e.g. satellite-based optical imagery and Synthetic-Aperture Radar (SAR)) where available and practicable

Field-based operational monitoring will be restricted to daylight hours only, when surface slicks will be visible from either vessels or via aerial surveillance. Where available and practicable, remote sensing (e.g. using satellite-mounted optical imagery and Synthetic Aperture Radar (SAR)) may be used to provide situational awareness of the spatial distribution of the surface slick(s) during daylight, at night, or during overcast days.

The information gathered from this monitoring will be passed on to AMSA, but also via ongoing SITREP reports following the initial spill notification to JRCC Australia.

Should there be the need to implement field response activities using external parties, a response logistics plan would be developed and initiated immediately on notification of the spill. The plan would detail logistics, equipment personnel and detailed OSMP Implementation Plans.

TGPPL will implement, assist with, or contribute to (including funding if required) any other operational or scientific monitoring as directed by AMSA or outlined in this EP.

9.4.10.2 Scientific Monitoring (Type II)

Scientific (Type II) Monitoring would be triggered and implemented if there is a reasonable expectation that there may be adverse impacts to marine biota or habitats in the area. The key receptors for which scientific monitoring studies (SMP1 – SMP5) would be considered are;

- benthic sediments (particularly soft sediments able to retain hydrocarbons, infauna)
- subtidal marine benthos (filter-feeders, macroalgae)
- seabird populations (foraging individuals)
- non-avian marine wildlife (cetaceans, marine reptiles and fish)

To allow for a flexible and adaptable scientific monitoring approach, additional receptors may also be considered should the nature and scale of the actual spill result in potential hydrocarbon exposure to shorelines or fisheries (SMP6 – SMP7):

- intertidal sediments and habitats
- fisheries and aquaculture operations.

9.4.10.2.1. Initiation of Scientific Monitoring

After the Vessel Master provides notification to AMSA, TGPPL would implement scientific monitoring in the event of a Level 2 spill (or greater), in accordance with initiation criteria described in Table 9-2. A detailed OSMP Implementation Plan based on commonly-used, scientifically-robust and easily-accessible methods would be developed to ensure an efficient and technically-defensible response. This approach builds time efficiencies into development of the OSMP as existing TGPPL documentation (e.g. Health and Safety Plans) can be adapted to meet the requirements of the OSMP. Potential suppliers of available survey equipment would be identified as a priority, with a preference for those with existing contracts.

Relevant permit applications (e.g. for sediment/biota sampling) will be identified and submitted as soon as reasonably practicable. This approach does not work from the base assumption that permit requirements will be waived by relevant authorities in order to minimise potential delays in mobilisation and permit approval should permit requirements not be waived.

The OSMP Implementation Plan would detail the equipment required for each study, travel and freight arrangements, notifications, vessel support, HSE planning, and the sampling and analysis plan. Within 12 hours, a teleconference will be held between the TGPPL, AMSA, the nominated scientific personnel and the Vessel Master to finalise the requirements for implementation. Scientific teams can be on site within 48 to 72 hours of the implementation plan and budget being approved (and where permits are not required or have been approved). It is recognised that the spilled hydrocarbon is only likely to remain measurable on the water surface for a few days, and that realistically a response team would not be on site until it had dispersed. Given the extremely low probability of a catastrophic spill and hydrocarbon subsequently contacting sensitive biota, and the rapid weathering and likely dispersal of spilled hydrocarbons before a response team could be mobilised, TGPPL considers the costs associated with pre-emptive development of the Implementation Plan and full assembly and preparation of the response team to be grossly disproportionate to the benefit of a more rapid response; therefore this control has not been adopted.

The area of potential impact to be targeted in the scientific monitoring plan would be based on observations of the slick trajectory, water quality data collected during the operational phase, and available modelling. Due to the nature of the spill, potential for spread/dispersion, constrained spatial area of the ZPI, and likely field team mobilisation period, it is considered that post-spill pre-impact baseline data collection will likely not be feasible (but will remain a consideration for planning purposes).

Scientific monitoring would focus on determining potential short and long-term environmental impacts of the spill and response actions, and subsequent recovery). Scientific monitoring may continue for some time following the termination of the operational monitoring response.

Table 9-2: Scientific Monitoring Study Objectives, Key Receptors and Initiation/Termination Triggers

Scientific monitoring study objective	Key receptors	Initiation triggers	Termination triggers
SMP1: Monitoring for Hydrocarbons in Benthic Sediments **Aim:** To understand the characteristics, persistence and fate of hydrocarbons in sediments to provide data for the assessment of potential impacts on sea bed sediments. To understand the effect of hydrocarbon concentrations on infaunal macrobiota. **Objectives:** - Quantify hydrocarbon concentrations at locations within the ZPI - Quantify change in sediment hydrocarbon concentrations at sampling locations over time (considering seasonal and inter-annual change) - Provide sediment hydrocarbon data to support determination of potential cause-effect relationships between spill hydrocarbons and changes in benthic communities - Identify potential areas of benthic impact based on sediment hydrocarbon concentrations and impacts to benthic macroinfaunal assemblages.	Subtidal sediments within the ZPI, with particular focus on sensitive locations	Level 2 spill or greater **and** where modelling and/or operational monitoring (e.g. water quality) indicates likely exposure to benthic sediments	The results of the monitoring tasks achieved the objectives **and** appropriate, meaningful and scientifically defensible results have been achieved **and** sediment contamination results showed recovery to a point where hydrocarbon concentrations are no longer demonstrated to be a primary driver of infauna assemblage composition
SMP2: Monitoring and Surveys of Shoreline and Intertidal Benthos to Determine Impacts of Oil Spill and Recovery **Aim:** To determine and monitor the impact of the spill, dispersants or response activities and potential subsequent recovery for intertidal benthos at both individual (species) and community (habitat) levels. **Objectives:** - the monitoring of the spill and spill management operations on intertidal marine coastal habitats (like tidal seagrass, tidal mud flats, mangroves, intertidal saltmarsh and saltpans) - monitoring associated organisms (like fishes, crustaceans, arboreal mangrove biota, microphytobenthos, macroalgae, mangrove/saltmarsh plants, seagrass) - establish necessary responses - quantify the biological and ecological effects of the spill and response activities.	Invertebrates, Intertidal habitats, Seagrasses, Mangroves, Shorelines	Level 2 spill or greater **and** If modelling predicts possible shoreline/intertidal contact. **or** Any reports of shoreline/intertidal contact	Appropriate, meaningful and defensible scientific monitoring results for intertidal benthos have been achieved **and** All reasonable and practical measures have been taken to assess the impact of the spill on intertidal benthos **and** Affected intertidal benthos has returned to baseline (or reference site) conditions **and** Oil pollution impacts on critical intertidal benthos species and taxa are no longer identifiable.
SMP3: Monitoring of Subtidal Marine Benthos to Determine Impacts of Oil Spill and Recovery **Aim:** To enable assessment of impacts and potential for subsequent recovery of benthic marine habitats (soft and hard substrate habitats)	Filter feeders, benthic primary producers, demersal fishes, invertebrates	Level 2 spill or greater **and**	Reasonable and practicable scientifically-robust measures have been taken to assess the effects or impact of the spill on benthic habitats / communities

and associated macro-epibenthic organisms (e.g. macroalgae, seagrass, sponges and other filter feeders, motile invertebrates and associated fishes) in response to a spill event and associated response activities. Monitoring to document recovery of affected biota and habitats. **Objectives:** - characterise and quantify habitat composition and coverage/abundance of macro-epibenthic organisms and site-associated demersal fish - allow comparison with historical (baseline) data and seasonal/inter-annual surveys - define recovery in macro-benthic and demersal populations and recovery/change in habitat type.	(e.g. commercially important rock lobsters, scallops) – with particular focus on sensitive locations	where modelling and/or operational monitoring (e.g. water quality) indicates likely exposure to benthic habitats **or** any reports of contact	and oil pollution effects / impacts on benthos are no longer detectable, or impacts shown to be within accepted protection limits (to be defined in Sampling and Analysis Plan) and when a trend towards post-impact recovery or alternate developmental trajectory has been demonstrated (in comparison with control/reference sites) at sites that were exposed to elevated concentrations of hydrocarbons
SMP4: Undertaking Wildlife Surveys to Determine Impact of Oil Spill on Seabird and Shorebird Populations and Recovery **Aim:** To assess any short-term or longer-term environmental effects on seabird and shorebird populations within the study area that may have resulted from the oil spill (i.e. damage extent and recovery). Monitoring to document recovery of affected biota and habitats. **Objectives:** - quantify foraging seabird and shorebird populations - quantify foraging, nesting or breeding shorebird populations - quantify records of oiled birds and bird mortalities - allow comparison of changes in populations over time (seasonal and inter-annual)	Foraging seabird and coastal shorebird populations	Level 2 spill or greater **and** where post-spill observations indicate possible contact with foraging seabird populations **and/or** any reports of oiled or dead seabirds **and/or** shoreline oil indicates possible contact with shoreline bird habitats or populations	The extent of damage and rate of recovery of key seabird/shorebird behaviour and breeding activities has been quantified using scientifically-robust methods **and** The affected environment or natural resource has returned to baseline conditions (taking into account natural variability) in terms of breeding population (for seabirds) or counts (for shorebirds), with regard to reference sites and/or baseline data **and** oil pollution effects/impacts on critical species and taxa are no longer detectable
SMP5: Desk study and survey: Occurrences of Oiled/Mortalities of Non-Avian Marine Wildlife to Determine Impacts of Oil Spill and Recovery **Aim:** To assess any short-term or longer-term environmental effects on non-avian marine wildlife that may have resulted from the oil spill (i.e. damage extent and recovery). Monitoring to document recovery of affected biota and habitats. **Objectives** - quantify records of sightings of dead or oiled marine wildlife - allow seasonal or inter-annual comparison of records of dead or oiled wildlife	Marine mammals, sharks, rays, bony fishes, marine turtles	Level 2 spill or greater **and** where modelling indicates possible contact with populations **and/or** any reports of oiled or dead non-avian marine wildlife	Reasonable and practical measures have been taken to assess the effects or impact of the spill on non-avian marine wildlife **and** restoration or resumption of key biological processes (e.g. abundance, distribution, breeding) necessary to ensure post-impact recovery have been identified **and** oil pollution impacts on non-avian marine wildlife are no longer detectable

SMP6: Monitoring of Intertidal Receptors to Determine Impacts of Spill Hydrocarbons and Recovery **Aim:** To understand the behaviour, persistence and fate of hydrocarbons in intertidal sediments, and enable assessment of potential impacts and recovery to intertidal habitats. To identify the potential implications of changes in intertidal communities to other biota (e.g. shorebirds). **Objectives:** - quantify hydrocarbon concentrations at locations within the ZPI - characterise and quantify habitat composition and coverage/abundance of epibenthic and infaunal organisms - quantify change at sampling locations over time (considering seasonal and inter-annual change) - define recovery/change in habitat type and epibenthic and infaunal organisms - provide sediment hydrocarbon data to support determination of potential cause-effect relationships between spill hydrocarbons and changes in benthic communities.	Intertidal sediments, infaunal communities and epibiota, with particular focus on shorelines that have been observed to be, or are predicted to have been, exposed to spill hydrocarbons	Level 2 spill or greater **and** where modelling and/or operational monitoring indicates likely exposure to intertidal habitats.	The results of the monitoring tasks achieved the objectives **and** appropriate, meaningful and defensible scientific monitoring results have been achieved **and** sediment contamination results have shown recovery to a point where hydrocarbon concentrations are no longer demonstrated to be a primary driver of habitat composition.
SMP7: Impacts to Fisheries and Aquaculture **Aim:** To understand the potential short and long-term impacts and recovery of fisheries (should they be closed), and aquaculture facility/operation that have been exposed to spill hydrocarbons **Objectives:** - quantify hydrocarbons in tissue of organisms targeted by fisheries or aquaculture - determine potential effects on population size/structure - identify potential impacts to organism health - determine potential risks to human health.	Target areas or species of Fisheries or Aquaculture interest, with particular focus on shorelines that have been observed to be, or are predicted to have been, exposed to spill hydrocarbons	Level 2 spill or greater **and** where fisheries have been closed in response to a hydrocarbon spill **and/or** where modelling and/or operational monitoring indicates likely exposure to aquaculture operations or key broodstock collection locations.	he results of the monitoring tasks achieved the objectives **and** appropriate, meaningful and defensible scientific monitoring results have been achieved **and** sediment contamination results have shown recovery to a point where risks to human health are understood **and** data on population structure have shown that recovery is possible through retention of sexually-mature adults and demonstrated recruitment of juveniles.

9.4.10.2.2. Scientific Monitoring Team

In the event of the requirement to undertake scientific monitoring, TGPPL would engage a specialist subcontractor to rapidly finalise response plans and to deploy the required resources to undertake the monitoring activities. Primary scientific monitoring studies could include some, or all, of the elements described in Table 9-2 depending on the size, timing and location of the spill.

An adaptable scientific monitoring response must allow for the potential for operational monitoring or situational awareness obtained during a spill to indicate exposure to additional sensitive receptor types, depending on the nature and scale of the actual release.

For each SMP described in Table 9-2 a detailed study template would be developed following initiation. This is summarised in Table 9-3.

Table 9-3: Scientific Monitoring Studies Template

Study Heading	Description
Monitoring Objective and Rationale	Details the monitoring objectives for the study to focus sampling design
Natural Resource Description and/or Importance	Provides background information relevant to the context of the study; distribution, temporal patterns, life-stages present, critical habitats and processes
Activation Trigger for Monitoring Tasks	Criteria to initiate the scientific monitoring study, based on likely exposure to harmful concentrations (acute and/or chronic)
Potential Sensitivity to Spilled Hydrocarbon at Exposure Levels	General context of possible impacts associated with the spill, exposure pathways and effects concentrations. Range of measurable responses
Spatial awareness	Outcomes of operational monitoring that support survey design
Monitoring methods / sampling and analysis plan	
Overview of the Monitoring Method	Provides a scientific and practical context for the monitoring methods to be used. Includes consideration of statistical methods and sampling effort required to achieve the monitoring objectives
Details of the Survey Design, Methods, Standards and Techniques to be Utilised	Provides the information required to collect samples in a defined geographic area (based on operational monitoring data) as part of a robust scientific study program. Includes relevant specifications, standards and requirements of the study
Permits	Details any permit requirements and/or exemptions
Data Collection, Analysis and Reporting Requirements	Provides details on the necessary data requirements including baseline information, analytical parameters and detection limits, and metadata. Details the deliverables from the study
Personnel Resourcing Requirements, Qualifications and Skills	Provides minimum skill/experience, qualifications/certifications and resourcing requirements to deliver the study safely and robustly Considers shifts and survey rotations for effective fatigue management Includes contingency resource planning

Study Heading	Description
Field Equipment, Survey Platforms and Logistics	Details equipment and logistics requirements to fulfil the study requirements
Recommended Procedures for Data Collection, Sampling, Storage, Transport and Analysis	Provides the necessary sampling and analytical techniques, and standards to ensure data quality and ensure consistency throughout the study (including Chain of Custody (CoC) forms)
Risk Assessment, Occupational Health and Safety Considerations	Describes the risks and mitigation controls associated with undertaking the study
Data Management, QA/QC, Transmittal and Archiving	Provides QA / QC requirements for all data obtained as part of the study
Supporting Documents, Standards and References	Identifies the relevant guidelines and high-level references required to implement the study
Reporting Requirements	Provides description of reporting of the scientific outcomes of the survey(s), including identification and qualification/quantification of potential impacts and subsequent recovery Each survey report identifies the need for any further scientific monitoring based on the survey outcomes
Termination criteria	
Criteria for the Terminating the Monitoring Activity	Completion criteria to be met to demonstrate that study objectives have been achieved to terminate the study

10. ENVIRONMENTAL PLAN CONSULTATION

10.1 Introduction

Consultation with the community and key stakeholders has been a feature of the TGP from its inception and will continue for the duration of the life of the TGP. Initial consultation prior to construction and during pipeline operations from 1999 to 2012 were undertaken by the previous TGP operator, Tas Gas Networks. During this period most stakeholders indicated they did not have major concerns during construction or operation of the TGP and no issues were recorded.

For consultation on the Environmental Plan, TGPPL developed the document *Consultation Process for Environmental Plan TGP-698-PR-RA-003*. In matters of ongoing consultation, see Section 10.5.

The process was informed by a number of guidelines and relevant information on consultation best practice. Listed below are the key documents and information used.

Federal Court decisions and advice from:

- Santos NA Barossa Pty Ltd v Tipakalippa (2022)
- FCAFC 193 - Munkara v Santos NA Barossa Pty Ltd (No 3) (2024) FCA 9

NOPSEMA:

- GL 1721 – Environment Plan decision making – January 2024
- GL 1887 – Consultation with Commonwealth agencies with responsibilities in the marine area – January 2024
- GL 2086 – Consultation in the course of preparing an environment plan – May 2023
- GN 1847 – Responding to public comment on environment plans – January 2024
- GN 1344 – Environment plan content requirements – September 2020
- GN 1785 – Petroleum activities and Australian Marine Parks – January 2024
- Consultation on offshore petroleum environment plans – Information for the community

10.2 Identification of Relevant Persons

In accordance with Regulation 25 of the Environment Regulations, TGP has used the following to identify relevant persons in the preparation of this EP, those being:

(1) In the course of preparing an environment plan, or a revision of an environment plan, a titleholder must consult each of the following (a relevant person):

a) Each Department or agency of the Commonwealth to which the activities to be carried out under the EP, or the revision of the EP, may be relevant;
b) Each Department or agency of the State to which the activities to be carried out under the EP, or the revision of the EP, may be relevant;
c) The Department of the responsible State Minister[2]
d) Persons or organisations whose functions, interests or activities[3] may be affected by the activities to be carried out under the EP, or the revision of the EP; and
e) Any other person or organisation that are considered relevant

[2] As defined in the OPGGS Act 2006, the responsible State Minister, in relation to a State, means:
a) whichever of the following applies:
i) the Minister of the State (other than Tasmania) who is authorised under a law of the State to perform the functions, and exercise the powers, of a member of the Joint Authority for the State under this Act;
ii) the Minister of Tasmania who is responsible for the State Petroleum Submerged Lands Act for Tasmania; or
b) another Minister of the State acting for and on behalf of the Minister referred to in paragraph (a).

[3] Consistent with the Consultation in the course of preparing an environment plan Guideline, a 'Function" refers to a power or duty to do something; "Interest" refers to any interest possessed by an individual whether or not the interest amounts to a legal right or is a proprietary or financial interest or relates to reputation; and "Activities" may be interpreted in a broad sense, but are likely directed to activities that a relevant person is already doing.

TGP has a list of previous stakeholders that were contacted at the last renewal of the Environmental Plan from 2019 that it evaluated as a required group to recontact. Additional groups have been identified with a review of updates to legislation and regulations identified through the EP renewal process and updated descriptions of activities to be conducted by TGP over the next 5-year period.

In addition to the Environmental Regulations, the identification of relevant persons by TGP is informed from the decision made by the Federal Court of Australia in Tipakalippa v National Offshore Petroleum Safety and Environmental Management Authority (No 2) [2022] FCA 1121 on 21 September 2022 (Justice Bromberg's Decision) and subsequent appeal decision Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 (Appeal Decision) on the 2 December 2022, TGP recognises the updated requirements for petroleum titleholder's approach to identify and contact relevant persons and best practices throughout the stakeholder consultation process for the EP.

To identify other relevant persons that have not previously been identified in the course of consultation, TGP reviewed changes to Government departments, reviewed guidance notes from NOPSEMA to inform relevant stakeholders at the Commonwealth level, researched industry bodies that operate and other relevant groups within the zone of potential impact (ZPI) of TGP activities that fit the definitions in the sub sections of Section 1 of this document.

A list of the relevant persons and justifications can be found in Appendix F, a summary is presented below in Table 10-1.

Table 10-1: List of Relevant Persons (as per Regulation 25)

Stakeholder	Group Description
Commonwealth Department or Agency	• Department of Agriculture, Fisheries and Forestry • Department of Agriculture, Fisheries and Forestry – Biosecurity (marine pests) • Department of the Environment and Energy - Director of National Parks • Australian Maritime Safety Authority (AMSA) • Australian Fisheries Management Authority (AFMA) • Department of Defence • Department of Climate Change, Energy, the Environment and Water • Director of National Parks
State or Territory Department or Agency	• Victorian Fisheries Authority • Department of Environment, Land, Water and Planning (DELWP) (Victoria) • Safe Transport Victoria (STV) (Victoria) • Environment Protection Authority (Victoria) • Parks Victoria • Ports Victoria • Heritage Victoria • Department of Natural Resources and Environment Tasmania - Environment, Heritage and Land Division • Department of Natural Resources and Environment Tasmania - Parks & Wildlife Services • Department of Natural Resources and Environment Tasmania -Biosecurity Tasmania • Department of Natural Resources and Environment Tasmania -Marine Resources • Department of Natural Resources and Environment Tasmania -Marine Aquaculture • Environment Protection Authority (Tasmania) • Marine and Safety Tasmania • TasPorts
Department of the Responsible State Minister	• Department of Energy, Environment and Climate Action (Victoria) - Earth Resources Regulator • Department of State Growth – Mineral Resources Tasmania (MRT)
Relevant Persons or Organisations that may be impacted by activities in EP	• Wellington Shire Council (Victoria) • George Town Council (Tasmania) • Lakes Entrance Fishermen's Cooperative Limited (LEFCOL) • South East Trawl Fishing Industry Association (SETFIA)

Stakeholder	Group Description
	• Tuna Australia (ETBF Industry Association) • Australian Southern Bluefin Tuna Industry Association (ASBTIA) • Seafood Industry Victoria • South East Management Advisory Committee (SEMAC) • Scallop Management Advisory Committee • Victorian Scallop Fisherman's Association • Scallop Fishermen's Association of Tasmania • Seafood Industry Tasmania • Commonwealth Fisheries Association • Southern Shark Industry Alliance • Southern Rocklobster Limited • Tasmanian Rock Lobster Fisherman's Association • Abalone Council Australia • Victorian Abalone Council • Tasmanian Abalone Council • Gippsland Ports • Seafood Industry Australia • Esso Australia Resources Pty Ltd • Cooper Energy • APA Group - BassLink • Indigo Cable • Gunai-Kurnai Land Council • Mirimbiak Nations Aboriginal Corporation • Aboriginal Land Council of Tasmania • Tasmanian Aboriginal Heritage Council • The Cape Barren Island Aboriginal Association Inc. (CBIAA) • Flinders Island Aboriginal Association Inc. (FIAAI) • Tasmanian Regional Aboriginal Communities Alliance • Melythina tiakana warrana (Heart of Country) Aboriginal Corporation • Six Rivers Aboriginal Corporation • Tasmanian Aboriginal Centre • Australian Conservation Foundation • Friends of the Earth • Greenpeace • Wilderness Society Tasmania • Wilderness Society Victoria • Environment Victoria • Gippsland Environment Group Inc. • Wildcare Tasmania • Environment Tasmania
Other relevant persons (nominated/self-identified)	• VRFish

10.2.1 Department or agency of the Commonwealth

TGP used the updated NOPSEMA Guideline GL1887 - Consultation with Commonwealth agencies with responsibilities in the marine area to inform the selection of Departments and Agencies within the Commonwealth Government which had relevant functions or responsibilities that overlapped with the activities both planned and unplanned within the EP describing the Operations of the TGP.

10.2.2 Department or agency of the State

An evaluation of Government Agencies of the States in which the TGP Operates was made from previous EP in addition to identifying new departments or changes to departments since the last revision of the EP. From this list, TGP identified if the planned or unplanned activities would require action or input from the department or agency to determine relevance.

10.2.3 Department of the relevant State Minister

The Minister of the State (other than Tasmania) who is authorised under a law of the State to perform the functions, and exercise the powers, of a member of the Joint Authority for the State under this Act and as TGP operates in Tasmania, the Minister of Tasmania who is responsible for the State Petroleum Submerged Lands Act for Tasmania.

For the EP Version 13 for submission in 2024 these were:

- **Victoria:** Department of Energy, Environment and Climate Action – Earth Resources
- **Tasmania:** Department of State Growth – Mineral Resources Tasmania

10.2.4 Persons or Organisations impacted by Activities carried out under Environmental Plan

Within this group, TGP considers several agencies, organisations, groups and other persons may be impacted by the planned and unplanned activities conducted by TGP in the Operation of the pipeline. These include, but are not limited to; local government authorities, non-government organisations (research, environmental groups, industry, operations or other), first nations groups, commercial fisheries, tourism and recreational groups, and other marine users (within the EMBA).

10.2.4.1 Local Government

To obtain the local government relevant person contacts, TGPPL researched the local councils and municipalities within the geographical region of the OA and ZPI. There was one identified in each state that fell within the geographical limits of the scope of the defined geography.

10.2.4.2 Non-Government Organisations

These groups or organisations were considered again primarily by geography for operating in the area of the OA primarily and where significant impact was considered within the ZPI. This included researching other petroleum or energy organisations within close proximity to the OA, in addition to other organisations or third parties that intersect with the operation of the TGP.

Other considerations for this group of impacted organisations were

10.2.4.3 Indigenous Registered Aboriginal Parties (RAPs), Associations, and Corporations

Since 2007, the Declaration on the Rights of Indigenous Peoples by the United Nations General Assembly was a significant step in affirming equal rights for indigenous groups, and emphasizing the value of knowledge, traditions and culture. In particular reference to *Article 5 - Indigenous peoples have the right to maintain and strengthen their distinct political, legal, economic, social and cultural institutions, while retaining their right to participate fully, if they so choose, in the political, economic, social and cultural life of the State* (United Nations, 2007), TGPPL endeavour to understand potential cultural sensitivities, impacts of activities that are described in this EP and improve knowledge and awareness of areas of cultural significance in the OA and ZPI. For these reasons, TGPPL explored the following approaches to contact and identify relevant persons.

In Victoria using the Victorian Aboriginal Heritage Council resources (Victorian Aboriginal Heritage Council, 2024), identification of aboriginal relevant persons was done by reviewing Victoria's Registered Aboriginal Parties Map and overlaying with the OA and ZPI. TGPPL considered the RAPs identified as the primary point of contact for matters relating to assessment of the EP on behalf of the collective group. RAPs are responsible for the following core functions:

- evaluating Cultural Heritage Management Plans

- assessing Cultural Heritage Permit applications
- making decisions about Cultural Heritage Agreements
- providing advice on applications for interim or ongoing Protection Declarations
- entering into Aboriginal Cultural Heritage Land Management Agreements with public land managers
- nominating Aboriginal intangible heritage to the Victorian Aboriginal Heritage Register and managing intangible heritage agreements.

For Tasmania, the Department of Natural Resources and Environment Tasmania maintain a register of Aboriginal Community Organisations (Department of Natural Resources and Environment Tasmania, 2024). This was used as a starting point to research and understand geographical relevance to the TGP OA and ZPI, as well as the role and function of the organisation to determine if a relevant person/group.

Additionally, the Tasmanian Government has departments that support Aboriginal Heritage matters, Aboriginal Heritage Tasmania and Aboriginal Heritage Council, which were also considered relevant due to their role within the Department of Natural Resources and Environment for Tasmania.

To ensure any other relevant indigenous groups, corporations or communities were identified, a general search of terms associated with 'Tasmania', 'Aboriginal', 'indigenous', 'group' and contact information was done and results were filtered to ensure relevance to geographical OA and ZPI for TGPPL Operations.

All groups were considered relevant irrespective of whether they were government affiliated, as the nature of impacts and understanding of culturally significant areas is not well established currently, so TGPPL wanted to include feedback from as many relevant stakeholders as possible.

Where practicable, multiple lines of communication should be attempted with all stakeholders. If requested as explained in Section 10.4.1 by the RAPs or Aboriginal Community Organisations, additional consultation can be triggered to support a broader collection of responses. This is of more significance when considering the community groups that are required to meet with members of their respective group, community or other to make decisions or provide feedback, compared to the registered parties that have the authority to effectively make decisions on behalf of the group.

10.2.4.4 Fisheries

To determine relevant fisheries, the representative bodies were identified through the Commonwealth or State Commercial Fishery with a fishery management plan as recognised under the *Commonwealth Fisheries Management Act (1991)* for the Commonwealth, *Fisheries Act (1995)* for Victoria and *Living Marine Resources Management Act (1995)* for Tasmania.

Additionally, the Australian Fisheries Management Authority (AFMA) - *Petroleum industry consultation with the commercial fishing industry* (AFMA, 2024) provides a comprehensive methodology to contact the Commonwealth fisheries contacts, Fishing Industry Association contacts and provides resources to understand the boundaries of commonwealth fisheries to support understanding of potentially impacted fisheries.

Recently, representative bodies have begun to provide consultation services to support petroleum industry in contacting and collecting responses on Environmental Plans (and other) consultation. Where engaged to do so, TGPPL used these services and worked with the representative body to confirm information provided was consistent with the information package provided in Appendix E. This included contact information to provide the opportunity for members to self-identify to TGPPL if this was preferred.

As the bodies do not represent all fisheries, there was also additional fishery associations or groups identified from the geographical boundaries found using the AFMA and search tools, for example in Victoria the Abalone Council Victoria (ACV) is not represented by Seafood Industry Victoria (SIV). In the South-East area, rock lobster, shark, tuna and abalone were some of the fishery types that were considered separately to the State peak representative bodies and alternative relevant organisations or associations were identified and contacted.

10.2.4.5 Research and Conservation Groups

Australia has many recognised non-government organisations that support and advocate for research, environment and conservation relevant to the work and activities that TGPPL have presented within this EP. These groups provide important feedback for driving social change, developing communities and advocating for rights, welfare and beliefs of the local wildlife, environment and people.

To identify relevant bodies, the local, national and global context was taken into account for the operations and activities described within the document and the values of the organisations were considered to understand if there would be interest in the operation of the TGP.

Tasmania had a useful index of NGO's that could be filtered to find environmental, conservation and animal welfare groups specifically. This resource was used to identify the relevant groups in the state. For Victoria, a broader approach was used and a search of the ZPI was done do identify local community or state-based organisations that would have interest in the TGP Operations.

Lastly, national or broader organisations were identified based on their history with interaction with oil and gas infrastructure and operations within the South-east and Bass Strait.

10.2.5 Other relevant persons

TGP for this section relies on the referral from seeking nominations from previously identified stakeholders for other potentially relevant stakeholders and self-identification through community engagement posts and other communication platforms to develop and maintain a list of other relevant persons. These persons, groups or other identified organisations will be communicated with and given the opportunity to accept or decline future engagement from TGP for consultation.

10.3 Information and Consultation Period

In producing information for stakeholders and relevant persons to review and comment on during consultation, the following advice in accordance with Division 3, Regulation 25 - Consultation with relevant authorities, persons and organisations, etc. from the OPGGS Environmental Regulations was utilised to guide the updated information package to inform this EP revision.

The guidance is based on the following directly from Regulation 25 – Consultation with relevant authorities, persons and organisations, etc.;

(2) For the purpose of the consultation, the titleholder must give each relevant person sufficient information to allow the relevant person to make an informed assessment of the possible consequences of the activity on the functions, interests or activities of the relevant person.

(3) The titleholder must allow a relevant person a reasonable period for the consultation.

(4) The titleholder must tell each relevant person the titleholder consults that:

a) the relevant person may request that particular information the relevant person provides in the consultation not be published; and
b) information subject to such a request is not to be published under this Part.

The information sheet provided to each stakeholder is provided in Appendix E. Due to the nature of this operation being quite simple with few activities performed at low frequency, the standard consultation period of 30 business days noted across the industry has been considered as a reasonable time by TGPPL for consultation. Further to the 30 business days, an approach detailed in Section 10.4.2, Figure 10-1 on follow-up with no responses, and on the handling of objections or claims is added to ensure contact has been made and the stakeholder has had reasonable access to the information to make comment or provide feedback.

10.4 Consultation Process

To adhere to the guidelines provided by the Environment Regulations, and as guided by the NOPSEMA Consultation in the course of preparing an environment plan Guideline, the approach to consultation was to ensure transparency and collaboration with the stakeholders involved either directly with the activities or by interest in the operational area and environmental impacts.

To align in ensuring sufficient information, the initial information sheet developed was made available to all stakeholders, with the encouragement to ask for any additional information to promote two-way dialogue and open, honest and clear communication across the process with the interested parties.

10.4.1 Consulting with groups where interests are held communally

Where interests are held communally alternative methods of consultation may be required to effectively communicate with as many individuals within the collective group as is practical. It is also important to TGPPL that the communication to all stakeholders is aligned and that the persons or groups and the nature of their interests is held in mind when disseminating the information to the group or representative bodies or corporate entities that represent the group, whilst maintaining access to the information given to all other stakeholder groups.

Whilst email, mail and telephone are considered the primary communication method, TGPPL also recognises that providing of information via other methods may be required for certain groups to ensure information is conveyed and individuals or groups are presented information in a way in which it is appropriately consumable and understood.

If there are other communication strategies guided by the primary correspondent to the group, TGPPL will endeavour to support the preferred communication strategy. For example, where a Fishery Group Board representing many individuals suggests posting through their internal communication platform (newsletter, email, social media, etc.), TGPPL will provide clear information and dialogue appropriate to these communication channels and support the feedback process through these networks.

If it is found to be insufficient from initial contact and feedback from groups or individuals of groups, TGPPL will extend invitations to one-on-one or community meetings to groups and their members, such that there is appropriate representation and reasonable opportunity for members to participate in meaningful two-way dialogue.

Although applicable to other groups with communal interests, the discussion of group outreach primarily relates to First Nations groups and their members where interest in a group dialogue format is requested. With the above considered, TGPPL will also utilise the insight and advice of First Nations land councils or body corporates in relation to who and how the relevant stakeholder First Nations groups or individuals should be consulted where the above methodology is not considered appropriate or provides reasonable opportunity to these communities. As above, the primary forms of feedback will be utilised and when prompted and engaged to do so, TGPPL will follow-up with further engagement as advised.

10.4.2 Method of Communication with Stakeholders

TGPPL considers email, mail and telephone the primary methods of communication with stakeholders. Unless otherwise identified, stakeholders will be emailed the information sheet and contact information for TGPPL detailing 30 days for response as reasonable opportunity.

In the process in Figure 10-1 on the TGPPL Flowchart of the Consultation Process Description and Actions, any follow-up communication with stakeholders. This will be used as the basis of communication expectations for TGPPL to maintain integrity and transparency in its correspondence with stakeholders.

Where contact details emails were unknown, a process using the contact information on hand was followed. Often this was either through contacting through a general enquiry's website form or from a phone number where the organisation or individual was contacted to obtain the relevant person within the organisations best contact email. a phone number or enquiry form to submit to.

The groups, namely Indigenous groups and Environmental Non-Government Organisations (ENGOs) were also identified to have alternative communication follow-up to foster engagement, transparency and support communication with stakeholders with group interests to best identify if there was further need for meetings or other means of communications with the interested group members. Where possible phone communication was the preferred method to support this follow-up initial information package email.

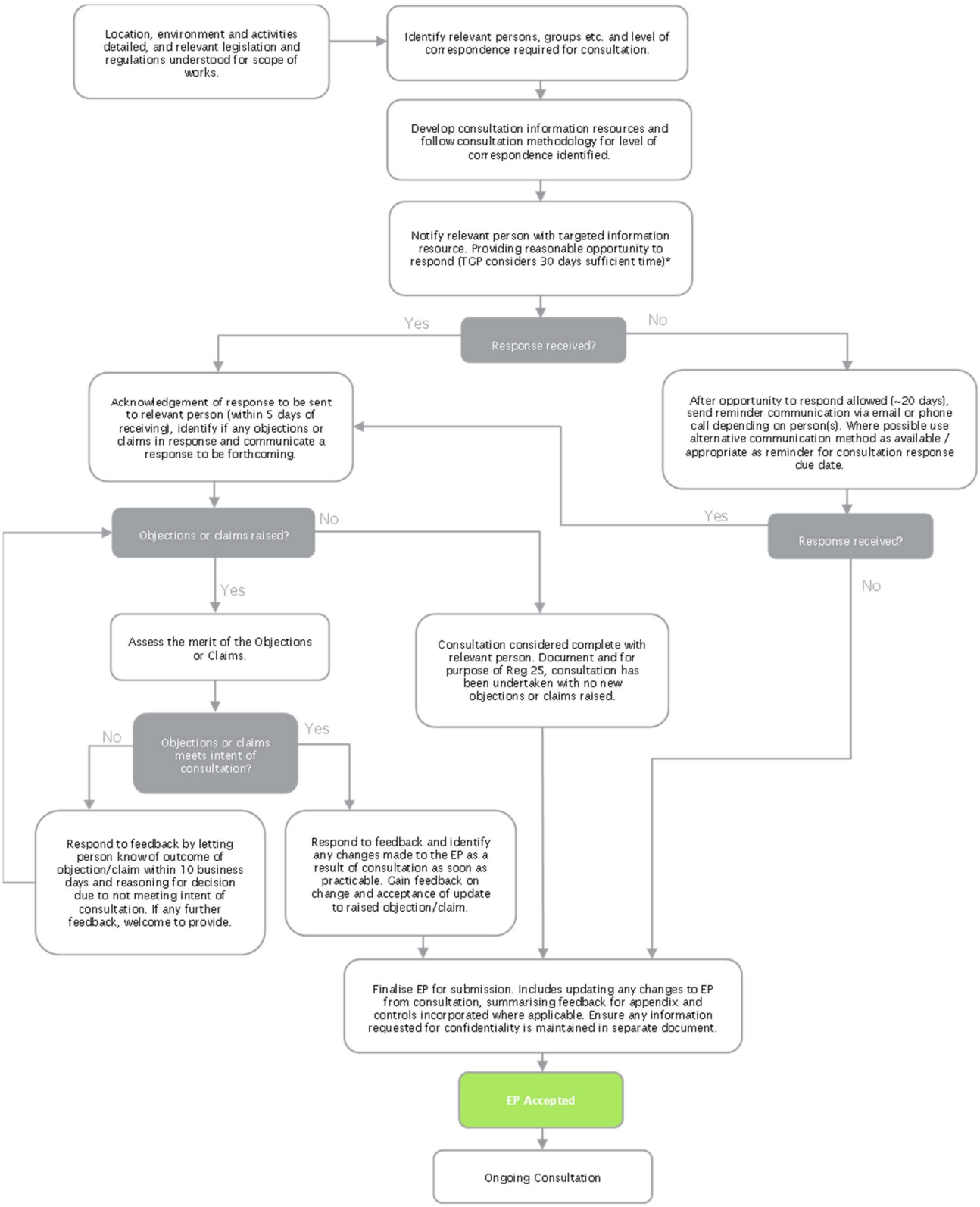


Figure 10-1 Flowchart of the Consultation Process Description and Actions

**Where relevant persons/groups identified, a follow-up will be completed within 2 weeks to confirm receipt of consultation.*

10.4.3 Assessment of Feedback

Using best practice industry evaluation and analysis processes, the Net Environmental Benefit Analysis (NEBA) aligned to the Risk Assessment Process will be used to respond and assess the feedback from Objections and Claims provided by relevant persons. Through using these processes, the responses will be evaluated with the balance of identifying impacts and potential risks or outcomes to environment, safety and community. The balance or trade-off for the risk of potential impact will be evaluated and where appropriate the response will demonstrate through ALARP principles, the decision for implementing or not requiring a countermeasure for the identified issue will be justified.

10.5 Ongoing Consultation

As the TGP operator, TGPPL undertakes environmental consultation on an as-needs basis. TGPPL has developed the TGP *Consultation Plan (TGP-698-PA-GEN-001)* to regularly assess stakeholder expectations and answer enquiries as they arise. The TGP Consultation Plan outlines the key resources, issues, messages and strategies for communication with those individuals and groups (stakeholders) who have a vested interest in the TGP.

The purpose of the TGP Consultation Plan is to:

- Keep key stakeholders up to date with TGP activities
- Ensure timely response to stakeholder issues; and
- Maintain dialogue with regulatory authorities
- Review responses from stakeholders in Appendix F – Ongoing Consultation – and maintain correspondence as requested.

A diverse range of stakeholders has been identified as having potential interest in the management of operations along the TGP. Table 10-1 identifies the relevant stakeholders that have been consulted with respect to the TGP and groups them into broad categories reflecting the Regulations and their differing interests.

Where stakeholders have requested information to be shared prior to activities, this will be noted and the organisations will be contacted accordingly. The relevant persons identified through the process will be maintained unless requested otherwise for future engagement where consultation is required.

10.6 Summary of Consultation Responses

There were limited responses to the consultation, of the responses collected there were none that required any assessment or further feedback from TGPPL, a summary can be found in Table 10-2. There were some actions raised with additional relevant persons/groups identified, they were contacted immediately and provided the same consultation content and consultation period.

A more comprehensive correspondence record is included in Appendix F.

Table 10-2: Summary of Consultation Responses, Assessments and Actions

Relevant Person	Feedback from Relevant Person	Assessment	Closed
Department of the Environment and Energy - Director of National Parks	Informed of changes to the SE Commonwealth Marine Reserve Management Plan upcoming. Advised on EP identifying marine park values, impacts and risks and addressing these (including ecosystem values). Referenced NOPSEMA Guidance Note (GN1785) with Marine Parks Australia	N/A **Action 1**: Reviewed the information within the EP against the Guidance Note to ensure compliance. **Action 2:** Added the DNP contact information to the OPEP if the	4/11/2024

Relevant Person	Feedback from Relevant Person	Assessment	Closed
	to be followed. Updated information on emergency response request for DNP to be contacted where spill occurs within or threatens a Marine Park.	situation arises where the spill occurs within or is likely to impact the National Park (Beagle Marine Park).	
Australian Fisheries Management Authority (AFMA)	Suggested additional relevant persons through AFMA consultation website: https://www.afma.gov.au/petroleum-industry-consultation-commercial-fishing-industry. No problems or further questions were raised.	N/A Action: Review list of contacts from AFMA website and confirm contacted relevant. (Completed, already engaged relevant stakeholders from list).	10/09/2024
Australian Maritime Safety Authority (AMSA)	A map visually representing the offshore vessel traffic around the TGP Operations was provided for reference. An update to contact details given. Ongoing consultation with respect to activities being conducted was advised and vessel collision risk raised as main area of concern, referencing the COLREGs and requirements to mitigate risks.	N/A as vessel collision addressed already with the same reference to COLREGs as per Section 6.9.4. **Action 1**: Update contact information as provided (Completed), **Action 2:** Ongoing consultation recorded in EP (Completed)	13/11/2024
Victorian Fisheries Authority	Suggested additional relevant persons.	N/A **Action:** Contact additional relevant persons identified (Complete, response received from SIV contact, no response from VRFish).	6/09/2024
Department of Environment, Land, Water and Planning (DELWP) (Victoria)	Remove the delwp.vic.gov.au email from your list, as that's a now redundant email address and department. Contact is Earth Resources Regulator through DEECCA.	N/A, **Action:** Remove DELWP email contact information and replace with up-to-date (Complete, removed DELWP contact, appropriate email and department already identified and contacted as part of consultation - no response received)	18/10/2024
Environment Protection Authority (Victoria)	As it is just an update to a plan and there are no new works proposed, we are happy not to review anything at this time.	N/A	2/10/2024
Environment Protection Authority (Tasmania)	No comment on EP renewal.	N/A	3/10/2024
Department of Natural Resources and Environment Tasmania - Environment, Heritage and Land Division	No issues or points of feedback have arose.	N/A **Action**: A preferred email was provided, change primary contact email for stakeholder (Completed)	14/10/2024
South East Trawl Fishing Industry Association (SETFIA)	No comment on EP renewal.	N/A	4/09/2024
Name withheld: RP#033	Reviewed and decided activities were low risk to the tuna fishing industry. Wanted to emphasise importance and value of SBT and ETBF species in the region, and BIA's in the Bass Strait, and how these have strong potential to	No further assessment required, concerns raised already discussed in EP when discussing the potential risks and control measures for protection of marine flora and fauna, marine environment and protection	25/10/2024

Relevant Person	Feedback from Relevant Person	Assessment	Closed
	interact with any energy exploitation-related activities. Welcomes further dialogue to deconflict any issues before they arise. Also suggested another relevant stakeholder (Australian Bluefin Tuna Industry Association).	of other marine users (Section 6.1, 6.2, and 6.3 respectively). **Action 1:** continuous dialogue with RP#033, particularly notification of activities where there is potential concurrent survey/maintenance work and fishing activities where vessels are likely to have close contact (referenced as Advance notice through the "48 hour look ahead" process implemented by some contracted oil and gas marine assets is acceptable and appreciated.) **Action 2:** Also consult with Australian Southern Bluefin Tuna Industry Association (complete already identified as relevant person/group)	
Seafood Industry Victoria (SIV)	Supported consultation with members, no feedback or responses given.	N/A	
Gippsland Ports	TGPPL does not impact Gippsland Ports Waters.	N/A	4/09/2024
APA Group - BassLink	No comments at this time.	N/A	21/10/2024

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APPENDICES

Appendix A TGP Offshore Environmental Risk Assessment (ERA) / Environmental Aspects and Impacts Register

Table A-1: 2024 TGP Offshore Environmental Risk Assessment (ERA)

Ref No.	Activity	Environmental Aspect	Source of Risk	Potential Impact	Inherent Risk			Controls & Mitigation Measures	Residual Risk			ALARP Outcome	Acceptability Outcome
					Likelihood	Consequence	Risk		Likelihood	Consequence	Risk		
		Elements of an organisations activities that can interact with the environment	*Source of potential harm or situation with potential to cause impact (including unplanned interactions)*	*Any change to the environment resulting from an environmental aspect*									
1	Pipeline inspection and maintenance activities	Presence of inspection / maintenance vessel	Vessel movements / timing and location of activities	Vessel strike resulting in injury to, or death of, marine megafauna (including listed species)	Highly Unlikely	Moderate	Medium	· Vessel Masters will be briefed on caution and 'no approach' zones and other marine megafauna interaction management controls. · Vessel Master or delegate will be on duty at all times. · Crew members on active duty will report observations of megafauna in the caution zone to the Vessel Master or delegate. · Vessel Crew have completed an environmental induction covering the requirements for vessel-marine fauna interaction management, including a requirement to notiy the bridge if marine megafauna are sighted in the caution zone. · Vessel Master will ensure management controls for interactions with cetaceans are in accordance with Part 8 of the EPBC Regulations and Wildlife (Marine Mammals) Regulations 2019, where practicable to do so. · Particular attention to species within BIA of activity should be considered, namely Southern Right Whale (with close to shore reproduction from May-Sep, and Migration across Bass Strait from Apr-Oct), consider activity timing and where practicable avoid times with greater strike opportunity. · Vessel Master will ensure management controls for interactions with seal colonies are in accordance with Part 2 of the Wildlife (Marine Mammals) Regulations 2019, where practicable to do so. · Short term, infrequent vessel activity along pipeline route · Vessel and associated equipment (e.g. ROV / AUV, SSS) either stationary or moving	Highly Unlikely	Minor	Low	ALARP	Acceptable

Ref No.	Activity	Environmental Aspect	Source of Risk	Potential Impact	Inherent Risk			Controls & Mitigation Measures	Residual Risk			ALARP Outcome	Acceptability Outcome
					Likelihood	Consequence	Risk		Likelihood	Consequence	Risk		
								slowly during inspection and maintenance activities along pipeline route.					
2				Disruption to other marine users (e.g. recreational vessels, fishing vessels and commercial shipping traffic)	Highly Unlikely	Minor	Low	· Pipeline route shown on navigation charts. · Pre-start notifications prior to commencement of inspection and maintenance activities – AMSA (AUSCOAST warning) and AHS (Notice to Mariners). · Relevant stakeholders notified of inspection and maintenance activities approximately four weeks and again one week prior to commencement. · Short term, infrequent vessel activity along pipeline route	Remote	Slight	Low	ALARP	Acceptable
3			Vessel lighting	Disturbance to marine fauna (including altered feeding, nesting, nursing, mating or migrating behaviour)			Not Credible	No control measures identified.					
4			Vessel noise	Disturbance to marine fauna (including altered feeding, nursing, mating or migrating behaviour)	Unlikely	Minor	Medium	· Vessel Master will ensure management controls for interactions with cetaceans are in accordance with Part 8 of the EPBC Regulations and Part 3(9) of the Wildlife (Marine Mammals) Regulations 2019, where practicable to do so. · Short term, infrequent vessel activity along pipeline route	Highly Unlikely	Slight	Low	ALARP	Acceptable
5			Vessel mooring / anchoring	Disturbance / damage to sensitive benthic marine fauna and ecosystems	Unlikely	Slight	Low	· Inspection and maintenance vessels will avoid anchoring (unless in an emergency). · Pipeline route selected to avoid areas of significant benthic habitat.	Highly Unlikely	Slight	Low	ALARP	Acceptable
6				Interference to commercial fishing activities (including damage to fishing equipment)	Unlikely	Minor	Low	· Inspection and maintenance vessels will avoid anchoring (unless in an emergency)	Highly Unlikely	Slight	Low	ALARP	Acceptable
7			Vessel biofouling	Introduction of exotic marine pests, potentially displacing native species, altering ecosystem function and affecting biodiversity	Highly Unlikely	Minor	Low	· Biofouling records maintained in accordance with IMO Guidelines for the Control and Management of Ships' Biofouling to Minimise the Transfer of Invasive Aquatic Species. · Biofouling risk assessment undertaken in accordance with the Australian Biofouling Management Requirements (DAWE, 2022), shows low risk of	Highly Unlikely	Slight	Low	ALARP	Acceptable

Ref No.	Activity	Environmental Aspect	Source of Risk	Potential Impact	Inherent Risk			Controls & Mitigation Measures	Residual Risk			ALARP Outcome	Acceptability Outcome
					Likelihood	Consequence	Risk		Likelihood	Consequence	Risk		
								introducing IMS. · All immersible retrievable - equipment has been cleaned and / or inspected in accordance with National Biofouling Management Guidance for the Petroleum Production and Exploration Industry prior to commencement of the activity.					
8			Vessel ballast water	Introduction of exotic marine pests, potentially displacing native species, altering ecosystem function and affecting biodiversity	Highly Unlikely	Minor	Low	· Approved Ballast Water Management Plan and Ballast Water Management Certificate in accordance with IMO Ballast Water Management Convention – Guidelines for Ballast Water Management and Development of Ballast Water Management Plans. · Compliance with the Australian Ballast Water Management Requirements (DAWE, 2020). · Where applicable (if the vessel has mobilised from outside Australian waters), submission of detailed pre-arrival information to the DAFF, via the Maritime Arrivals Reporting System (MARS), no later than 12 hours prior to arrival in Australian waters. · Maintenance of ballast water record system	Highly Unlikely	Slight	Low	ALARP	Acceptable
9			Vessel deck drainage / bilge (oily wastewater)	Very minor, localised, short-term contamination of the marine environment; and visible pollution / reduction of visual amenity	Unlikely	Slight	Low	· Vessel oily water treated in MARPOL –compliant oily water separator (OWS) (as appropriate to class). · For vessels (as appropriate to class), treated oily water discharge permitted if: - Vessel is proceeding enroute - Treatment is via a MARPOL-compliant OWS; - The discharged oil-in-water (OIW) content is < 15 ppm; - Oil Detection Monitoring Equipment (ODME) and control equipment are operating.	Highly Unlikely	Slight	Low	ALARP	Acceptable
10			Dropped objects from vessels	Disturbance / damage to sensitive benthic marine fauna and ecosystems	Unlikely	Slight	Low	· Vessel lifting equipment will be operated in accordance with lifting procedures. · Vessel lifting equipment will be regularly maintained in accordance with the PMS schedule. · Securing and restraining of loads on-board the vessel. · Compliance with weather limitations during inspection and maintenance activities and	Highly Unlikely	Slight	Low	ALARP	Acceptable

Ref No.	Activity	Environmental Aspect	Source of Risk	Potential Impact	Inherent Risk			Controls & Mitigation Measures	Residual Risk			ALARP Outcome	Acceptability Outcome
					Likelihood	Consequence	Risk		Likelihood	Consequence	Risk		
								vessel to seek shelter in the event of extreme weather. · Lost equipment recovered where safe and practicable to do so. · Pipeline route selected to avoid areas of significant benthic habitat.					
11			Vessel exhaust and greenhouse gas emissions	Increased levels of atmospheric pollution (NOx, SOx and articulates) and greenhouse gases, leading to: localised reduction in air quality; reduced visual amenity.	Unlikely	Slight	Low	· Vessels (as appropriate to class) hold valid International Air Pollution Prevention (IAPP) certification and operate in accordance with a Ship Energy Efficiency Management Plan · Vessels with diesel engines >130kW hold valid Engine International Air Pollution Prevention certification for each engine and NOx emissions comply with MARPOL Annex VI Regulation 13. · Sulphur content of any fuel used on board does not exceed 3.5% m/m. · Vessels are required to adhere to a planned maintenance system that ensures engines and thrusters are maintained for optimum performance during inspection and maintenance activities. · Infrequent, short-term nature of vessel activities	Highly Unlikely	Slight	Low	ALARP	Acceptable
12			Vessel sewage / grey water	Very minor, localised, short-term contamination of the marine environment; and visible pollution / reduction of visual amenity	Unlikely	Slight	Low	· Sewage treated in MARPOL-compliant STP. · Discharge of comminuted and disinfected sewage using a MARPOL-compliant STP at a distance of no less than 3NM from nearest land, discharge of untreated sewage at a distance of no less than 12 NM from nearest land. · STP maintained in accordance with the PMS schedule.	Highly Unlikely	Slight	Low	ALARP	Acceptable
13			Solid or hazardous / chemical wastes from vessel	Injury to, or death of, marine fauna through entanglement in, or ingestion of, plastic and other solid wastes; and very minor, localised visible pollution / reduction of visual amenity	Highly Unlikely	Minor	Low	· Food waste macerated to ≤25 mm (using an onboard macerator) before discharge · Macerated putrescible waste is only discharged overboard when the vessel is greater than 3 NM from the coastline and while proceeding enroute. Un-macerated putrescible waste is only discharged overboard when the vessel is more than 12 NM from the coastline and while proceeding enroute. · Macerator maintained in accordance with the PMS schedule.	Highly Unlikely	Minor	Low	ALARP	Acceptable

Ref No.	Activity	Environmental Aspect	Source of Risk	Potential Impact	Inherent Risk			Controls & Mitigation Measures	Residual Risk			ALARP Outcome	Acceptability Outcome
					Likelihood	Consequence	Risk		Likelihood	Consequence	Risk		
								· Garbage Management Plan in accordance with MARPOL Annex V. · A Garbage Record Book / log in accordance with MARPOL Annex V. · Handling of solid and hazardous wastes on-board will comply with the requirements of MARPOL Annex V including measures such as; - All solid and hazardous wastes generated at sea during the activity will be retained on the vessel and disposed of onshore (excluding bilge water / deck drainage, food waste and sewage). - All waste material that could reasonably be lost overboard is stored securely (e.g. lidded bins). - All wastes including hazardous wastes and chemicals will be segregated into clearly marked containers. - Any liquid waste storage on deck must have at least one barrier (i.e. bunding) to prevent leakage or spillage entering the marine environment.					
14			Minor chemical spill from deck (less than 75 L)	Very minor, localised, short-term contamination of the marine environment; and visible pollution / reduction of visual amenity	Unlikely	Slight	Low	· Hydraulic oils, lubricants and chemicals stored and, where practicable, handled within containment facilities, designed in accordance with relevant Australian / international codes and standards, to prevent the release of spilt substances to the marine environment. · Vessels have a SOPEP (or equivalent) in accordance with MARPOL Annex I - Spill kits available and maintained in accordance with the SOPEP (or equivalent). - Spill training and exercises undertaken in accordance with the SOPEP (or equivalent).	Highly Unlikely	Slight	Low	ALARP	Acceptable
15			Fuel spill (maximum volumes of 40,000 L) due to vessel collision / grounding	Contamination of the local marine environment leading to degradation of marine ecosystems and potential toxicity impacts on marine biota	Unlikely	Moderate	Medium	· Vessels will meet the crew competency, navigation equipment, watchkeeping and radar requirements of AMSA Marine Order Part 3 (Seagoing qualifications) and Part 30 (Prevention of collisions). · Compliance with weather limitations during inspection and maintenance activities and vessel to seek shelter in the event of extreme weather.	Highly Unlikely	Minor	Low	ALARP	Acceptable

Ref No.	Activity	Environmental Aspect	Source of Risk	Potential Impact	Inherent Risk			Controls & Mitigation Measures	Residual Risk			ALARP Outcome	Acceptability Outcome
					Likelihood	Consequence	Risk		Likelihood	Consequence	Risk		
				Disturbance to marine fauna. Oiling of marine animals and coastlines Visible pollution / reduction of visual amenity; Disruption to other marine users such as commercial fishing and recreational users				· Pipeline route shown on navigation charts. · Pre-start notifications prior to commencement of inspection and maintenance activities – AMSA (AUSCOAST warning) and AHS (Notice to Mariners). · Relevant stakeholders notified of inspection and maintenance activities approximately four weeks and again one week prior to commencement. · Vessels have a SOPEP (or equivalent) in accordance with MARPOL Annex I - Spill kits available and maintained in accordance with the SOPEP (or equivalent). - Spill training and exercises undertaken in accordance with the SOPEP (or equivalent). · Short term, infrequent vessel activity along pipeline route					
16		Use of ROV / AUV	Timing and location of activities / operation of ROV / AUV along pipeline route	Disruption to other marine users such as commercial fisheries (including damage to fishing equipment) and recreational users	Highly Unlikely	Minor	Low	See 2 above.	Highly Unlikely	Slight	Low	ALARP	Acceptable
17			Hydraulic oil leak (maximum volume 100 L)	Very minor, localised, short-term contamination of the marine environment; and visible pollution / reduction of visual amenity	Unlikely	Slight	Low	· ROV operations conducted in accordance with IMCA R 004 'Code of Practice for the safe and efficient operation of Remotely Operated Vehicles'. · Maintenance of ROV hydraulic hoses in accordance with PMS schedule. · Vessels have a SOPEP (or equivalent) in accordance with MARPOL Annex I - Spill kits available and maintained in accordance with the SOPEP (or equivalent). - Spill training and exercises undertaken in accordance with the SOPEP (or equivalent). · Infrequent deployment of ROV /AUV · Small volume of hydraulic oil (maximum 100 L) · Closed loop system, no planned discharge and use of low environmental impact hydraulic fluids	Highly Unlikely	Slight	Low	ALARP	Acceptable

Ref No.	Activity	Environmental Aspect	Source of Risk	Potential Impact	Inherent Risk			Controls & Mitigation Measures	Residual Risk			ALARP Outcome	Acceptability Outcome
					Likelihood	Consequence	Risk		Likelihood	Consequence	Risk		
18		Use of SSS	Underwater noise	Injury or disturbance to marine fauna (including altered feeding, nursing, mating or migrating behaviour)	Highly Unlikely	Minor	Low	· Observations for whales within a 3+ km radius of the survey vessel should commence at least 90 minutes prior to the use of acoustic sources exceeding 160 dB. Low power zone 1km radius from acoustic source and shut down zone 500m from acoustic source (see EPBC Act Policy Statement 2.1 for more information). · Particular attention to species with BIA in area of activity should be considered, namely Southern Right Whale (with close to shore reproduction from May-Sep, and Migration across Bass Strait from Apr-Oct), consider activity timing and where practicable avoid times with greater encounter opportunity. Refer to EPBC Act Policy Statement 2.1 for specific seismic guidelines and determining Management Procedure applicable to situation. · Discharge of acoustic services exceeding 140 dB are not to commence unless no whales are found within a minimum distance of 3km from the vessel. ·Start-up procedures will be delayed if whales are encountered within the 3km radius until they are observed to be travelling beyond this zone. See also 4 above	Highly Unlikely	Slight	Low	ALARP	Acceptable
19	Pipeline operation	Loss of pipeline integrity	Gas escape (max potential escape of 20T J}	Injury to / death of marine fauna (in the immediate vicinity) or disturbance to marine fauna (including altered feeding, nursing, mating or migrating behaviour) Scouring / physical damage to benthic communities; and generation of a sediment plume in the water column, potentially	Unlikely	Moderate	Medium	NOPSEMA -accepted Offshore Safety Case	Highly Unlikely	Minor	Low	ALARP	Acceptable

Ref No.	Activity	Environmental Aspect	Source of Risk	Potential Impact	Inherent Risk			Controls & Mitigation Measures	Residual Risk			ALARP Outcome	Acceptability Outcome
					Likelihood	Consequence	Risk		Likelihood	Consequence	Risk		
				leading to smothering of, or reduced light penetration to, benthic communities Temporary and localised change in water quality									
		Pipeline spans (unsupported)	Vortex induced vibrations (VIV) along the pipeline leading to underwater noise	Disturbance to marine fauna (including altered feeding, nursing, mating or migrating behaviour)			Not Credible						
		Pigging	Transitory underwater noise from pig movement through the pipeline	Disturbance to marine fauna (including altered feeding, nursing, mating or migrating behaviour)			Not Credible						
20	Pipeline maintenance	Corrections of spans outside specification	Jetting to remove high points	Disturbance / damage to benthic marine communities from physical damage and increased turbidity from jetting process	Unlikely	Minor	Low	· Maintenance activity procedures · Pipeline route selected to avoid areas of significant benthic habitat.	Remote	Trivial	Low	ALARP	Acceptable
21			Placement and filling of grout bags	Disturbance / damage to benthic marine communities	Unlikely	Minor	Low	· Maintenance activity procedures · Vessel lifting equipment will be operated in accordance with lifting procedures. · Vessel lifting equipment will be regularly maintained in accordance with the PMS schedule. · Compliance with weather limitations during inspection and maintenance activities and vessel to seek shelter in the event of extreme weather. · Pipeline route selected to avoid areas of significant benthic habitat.	Remote	Trivial	Low	ALARP	Acceptable
22		Repair of concrete coating	Placement of concrete mattress over damaged area	Disturbance / damage to benthic marine communities	Unlikely	Minor	Low	· Maintenance activity procedures · Vessel lifting equipment will be operated in accordance with lifting procedures. · Vessel lifting equipment will be regularly maintained in accordance with the PMS schedule. · Compliance with weather	Remote	Trivial	Low	ALARP	Acceptable

Ref No.	Activity	Environmental Aspect	Source of Risk	Potential Impact	Inherent Risk			Controls & Mitigation Measures	Residual Risk			ALARP Outcome	Acceptability Outcome
					Likelihood	Consequence	Risk		Likelihood	Consequence	Risk		
								limitations during inspection and maintenance activities and vessel to seek shelter in the event of extreme weather. · Pipeline route selected to avoid areas of significant benthic habitat.					

Appendix B TGP Regulatory Requirements Summary

Table B-1: TGP Regulatory Requirements

Legislation	Summary of Relevance	Application to TGP Personnel
International Agreements		
International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)	International marine environmental convention designed to minimise pollution of the seas including oil and exhaust pollution, sewage, garbage, air pollution and noxious liquid substances carried in bulk. Australia is a signatory to this convention and as such, is responsible for certifying compliance with MARPOL's pollution prevention standards for Australian registered ships. Requirements of the convention are managed by the Australian Maritime Safety Authority and implemented under Commonwealth legislation including Protection of the Sea (Prevention of Pollution from Ships) 1983 and state legislation including the Pollution of waters by Oils and Noxious Substances Act 1986 (Vic) and Pollution of Waters by Oil and Noxious Substances Act 1987 (Tas).	Offshore operations are to meet MARPOL standards.
Commonwealth		
Aboriginal and Torres Strait Islander Heritage Protection Act 1984	Enables the Commonwealth government to preserve and protect areas or objects that are of particular significance to Aboriginal and Torres Strait Islander People. The Act protects areas on land and within Australian waters and enables the Minister for the Environment and Water to make a declaration to protect an area or object of significance from a threat of injury or desecration.	Currently, no aboriginal areas/objects have been identified along the pipeline route, however; if any objects/areas are discovered the requirements of the Act are to be implemented.
Australian Heritage Council Act 2003	This Act identifies areas of heritage value listed on the Register of the National Estate and sets up the Australian Heritage Council and its functions.	Currently, no heritage areas have been identified along the pipeline route, however; if any areas are discovered the requirements of the Act are to be implemented.
Biosecurity Act 2015 (the Biosecurity Act)	From 16 June 2016, the Biosecurity Act 2015 (Biosecurity Act) replaces the Quarantine Act 1908 as Australia's primary piece of legislation used to manage the biosecurity threats to plant, animal and human health in Australia and its external territories. In the context of this EP, the main threat is posed by ballast water and sediments. For the petroleum industry, it regulates the condition of vessels and drill rigs entering Australian waters with regard to ballast water and hull fouling. The regulation stipulates that all information regarding the voyage of the vessel and the ballast water is declared correctly to the biosecurity officers. The survey and support vessels will adhere to biosecurity guidelines regarding biosecurity clearance to enter Australian ports and Territorial waters.	Offshore operations are to meet the requirements of the Biosecurity Act and Regulations.
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	Key Environmental Legislation in Australia. Identifies, protects and provides a management framework for matters of national environmental significance. These include: World Heritage properties; national heritage places; wetlands of international importance (Ramsar wetlands); threatened species (flora and fauna) and ecological communities; migratory species and	Any encounters with matters of environmental significance must adhere to requirements of this Act.

Legislation	Summary of Relevance	Application to TGP Personnel
	Commonwealth marine areas. Outlines offences under the act – Specifically, it is an offence to take, kill, injure, move, trade or keep a member of a listed Commonwealth species or ecological community or knowingly damage any part of a critical habitat (those listed above). Note: The Act does not explicitly regulate shipping operations, but it has jurisdiction over certain shipping activities, particularly in relation to actions that are likely to have a significant impact on a matter of national environmental significance. The jurisdiction mainly relates to actions or omissions in the operation of ships that damage, or are likely to damage, the marine environment and includes a regulatory power for controlling non-native species that could be introduced via shipping.	Environmental incidents require reporting under this Act.
Environment Protection (Sea Dumping) Act 1981	Regulates the dumping at sea of controlled material (including certain wastes and other matter), the incineration at sea of controlled material, loading for the purpose of dumping or incineration, export for the purpose of dumping or incineration, and the placement of artificial reefs. These activities are prohibited unless a special permit has been granted. The Act gives effect to Australia's obligations under the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 to prevent marine pollution by dumping of wastes and other matter. (thereby also fulfilling Australia's international obligations under the London Convention).	TGP operations are to adhere to requirements of this Act.
Underwater Cultural Heritage Act 2018 (Underwater Heritage Act) - replaced the Historic Shipwrecks Act as of 1 July 2019	Protects historic shipwrecks, sunken aircraft, and associated relics and provides for the establishment of protected zones around historic shipwrecks and sunken aircraft in Commonwealth waters. Specifically, all shipwrecks and associated relics more than 75 years old are protected under the Act. A wreck less than 75 years old may also be protected by a special declaration of the Minister. It is an offence to destroy or cause damage to an historic shipwreck or relic, cause interference with an historic shipwreck, sunken aircraft, or relic, cause the disposal of an historic shipwreck, sunken aircraft or relic, or cause an historic shipwreck, sunken aircraft or relic to be removed from Australia. Each of the States has complementary legislation, which protects historic shipwrecks and sunken aircraft in State waters.	Currently, no shipwrecks or sunken aircraft have been identified along the pipeline route, however; if any are discovered the requirements of the Act are to be implemented.
National Environment Protection Council Act 1994	The Council develops (in conjunction with other State authorities through the Intergovernmental Agreement on the Environment) consistent environmental standards to be adopted between states. These requirements take the form of a National Environmental Protection Measure (NEPM) and include the National Pollutant Inventory.	TGP operations are to adhere to requirements of this Act.
National Greenhouse and Energy Reporting Act 2007	Introduces a single national reporting framework for the reporting and dissemination of information about greenhouse gas emissions, greenhouse gas projects and energy use and the production of corporations.	TGP operations are to adhere to requirements of this Act.
Navigation Act 2012	This Act regulates ship-related activities in Australian waters, including elements of a number of international agreements such as the International Convention for the Prevention of Pollution from	TGP operations are to adhere to requirements of this Act.

Legislation	Summary of Relevance	Application to TGP Personnel
	Ships (MARPOL 73/78) relating to equipment and construction of ships. As the inspection and maintenance activity is a vessel-based survey in Australian waters, it is subject to the Act.	
Offshore Petroleum and Greenhouse Gas Storage Act 2006	Offshore petroleum operations beyond the three nautical mile limit are governed by this Act. The Act sets out a basic framework of rights, entitlements and responsibilities for governments and industry. The legislation allows for five types of title to be granted: exploration permits, retention leases, production licenses, pipelines licenses and infrastructure licenses. The Act is supported by regulations and directions covering environmental management (see below).	TGP operations are to adhere to requirements of this Act.
Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (OPGGS Regulations)	These regulations ensure that any petroleum activity is consistent with principles of ecologically sustainable development and in accordance with an environment plan that has appropriate environmental performance objectives and standards as well as measurement criteria for determining whether those objectives and standards are met. Specifically, the regulations outline the requirements of Environment Plans, revisions, incident reporting requirements and outlines records to be kept.	The EP must adhere to EP requirements under the regulations. Incident reporting is required under these regulations.
Ozone Protection and Synthetic Greenhouse Gas Management Act 1989	Regulates the manufacture, importation and use of ozone depleting substances (typically used in fire-fighting equipment and refrigerants). Applicable to the handling of any ozone depleting substances.	TGP operations are to adhere to requirements of this Act.
Protection of the Sea (Harmful Antifouling Systems) Act 2006	This Act regulates the use of antifouling compounds and systems in Australian waters. Vessels will be required to have a hull antifouling system in place and will be subject to this Act, in particular Part 2 Application or use of a harmful antifouling system and Part 3 Antifouling certificates and antifouling declarations. Amendments made in the Maritime Legislation Amendment Act 2022 will also be applicable with the extended controls on harmful antifouling chemical biocide, cybutryne from Jan 1 2023.	TGP operations are to adhere to requirements of this Act.
Protection of the Sea (Prevention of Pollution from Ships) Act 1983	Act to prevent pollution of air and water by oil, noxious and harmful substances including sewerage and garbage. Prohibits discharge of substances into Australian waters, carriage of certain substances and requirements for onboard emergency plans including oil spills and noxious liquid pollution. Also outlines requirements to retain reports on incidents involving oil spills. Also contains previously mentioned amendments from Maritime Legislation Amendment Act 2022.	Operations to adhere to requirements of this Act.
Protection of the Sea (Powers of Intervention Act) 1981	This Act gives AMSA appropriate powers to intervene in shipping operations to protect the sea from pollution by oil and other noxious substances discharged from ships.	TGP operations are to adhere to requirements of this Act.
Protection of the Sea (Civil Liability for Bunker Oil Pollution Damage) Act 2008	Sets up a compensation scheme for those who suffer damage caused by spills of oil that is carried as fuel in ships' bunkers. There is an obligation on ships over 1,000 gross tonnage to carry insurance certificates when leaving/entering Australian ports or leaving/entering an offshore facility within Australian coastal waters. The vessels undertaking inspection and maintenance activities will hold the necessary insurance certificates.	TGP operations are to adhere to requirements of this Act.

Legislation	Summary of Relevance	Application to TGP Personnel
Protection of the Sea (Shipping Levy) Act 1981	Provides that where, at any time during a quarter when a ship with tonnage length of no less than 24 m was in an Australia port, there was on board the ship a quantity of oil in bulk weighing more than 10 t, a levy is imposed in respect of the ship for the quarter. The survey and support vessels will adhere to the shipping levy.	TGP operations are to adhere to requirements of this Act.
Submarine Cables and Pipelines Protection Act 1963	This Act applies to submarine cables or pipelines beneath the high seas or in the exclusive economic zone. It prevents persons from breaking, injuring, interrupting or obstructing submarine pipelines.	If damage occurs to the pipeline, offences and liabilities implemented as outlined in the Act.
Victoria		
Aboriginal Heritage Act 2006	Enables the protection, preservation and management of Victoria's aboriginal heritage (including places, objects and human remains) through an Advisory Council and Registered Aboriginal Parties which represent Aboriginal people.	Currently, no aboriginal areas/objects have been identified along the pipeline route, however; if areas or objects are discovered the requirements of the Act are to be implemented.
Coastal Management Act 1995	The objectives of this Act include the planning and management of the use of Victorian coastal resources on a sustainable basis for recreation, conservation, tourism, commerce and similar uses; protecting and maintaining areas of environmental significance on the coast; and maintaining and improving coastal water quality. This is achieved via the implementation of Coastal Management plans to guide planning and management at a regional level. Under this legislation a person must not use or develop coastal Crown land unless the written consent of the Minister has first been obtained. Coastal crown land also includes marine environments from shore to 3 NM including the seabed.	Currently, TGPPL have no plans for any further projects within coastal area, however; if any projects are considered the requirements of the Act are to be implemented.
Emergency Management Act 2013	Provides for the establishment of governance arrangements for emergency management in Victoria, including the Office of the Emergency Management Commissioner and an Inspector General for Emergency Management. Provides for integrated and comprehensive prevention, response and recovery planning, involving preparedness, operational co-ordination and community participation, in relation to all hazards. These arrangements are outlined in the Emergency Management Manual Victoria. Administered by the Department of Justice and Regulation (Inspector General for Emergency Management).	TGP operations are to adhere to requirements of this Act.
Environment Protection Act 2017	Key environmental pollution legislation in Victoria. The main environmental legislation for the protection of the environment from pollution administered by the Environment Protection Authority Victoria (EPAV). The EPAV is responsible for preparing State Environment Protection Policies relating to general environmental duty to minimise risks of harm to human health and the environment from pollution or waste by improving the air, land and water environments by managing waters, control of noise and control of pollution (see summaries below). Waste Management Policies are also issued to	Pollution management guidelines are to adhere to requirements of the Act. Environmental Pollution is to be reported to EPA's general hotline: 1300 372 842

Legislation	Summary of Relevance	Application to TGP Personnel
	control specific types of pollution. The EPA issues approvals, licences, permits, pollution abatement notices and fines in relation to pollution.	
Flora and Fauna Guarantee Act 1988	Key flora and fauna legislation in Victoria. Establishes a legal and administrative structure to enable and promote the conservation of Victoria's native flora and fauna. It also provides procedures which can be used for the conservation, management or control of flora and fauna and the management of potentially threatening processes. This Act also establishes the Scientific Advisory Committee provides the lists of threatened species and their status in Victoria, and advises the Minister of new/potential listings	Any encounters with threatened flora and fauna should adhere to requirements of the Act.
Heritage Act 2017	Protects and conserves places and objects of cultural heritage significance through the Heritage Council and Victorian Heritage Register. Outlines offences, specifically, it is an offence to damage or remove a cultural object or place.	Currently, no heritage areas/objects have been identified along the pipeline route, however; if any areas/objects are discovered the requirements of the Act are to be implemented.
Marine (Drug, Alcohol and Marine Pollution) Act 1988	Manages pollution of State waters, implements International marine conventions and provides a framework for safe operation of vessels in State Waters.	All offshore vessels are to adhere to requirements of the Act.
Marine Safety Act 2010	This Act provides for safe marine operations in Victoria, including imposing safety duties on owners, managers and designers of vessels, marine infrastructure and marine safety equipment; marine safety workers, masters and passengers on vessels; regulation and management of vessel use and navigation in Victorian State waters; and enforcement provisions of Police Officers and the Victorian Director of Transport Safety. This Act reflects the requirements of international conventions – Convention on the International Regulations for Preventing Collisions at Sea and the International Convention for the Safety of Life at Sea. The Act also defines marine incidents and the reporting of such incidents to the Victorian Director of Transport Safety. Administered by Maritime Safety Victoria.	All offshore vessels are to adhere to requirements of the Act.
National Parks Act 1975	Established a number of different types of reserve areas onshore and offshore, including Marine National Parks and Marine Sanctuaries. A lease, licence or permit under the OPGGS Act that is either wholly or partly over land in a marine national park or marine sanctuary is subject to the National Parks Act 1975 and activities within these areas require Ministerial consent before activities are carried out. Administered by the DELWP.	Currently, TGPPL have no plans for any further projects within National Parks, however; if any projects are considered the requirements of the Act are to be implemented.
Offshore Petroleum and Greenhouse Gas Storage Act 2010	A framework for regulating petroleum exploration and recovery activities and petroleum facilities in Victorian Waters including: construction and operation of infrastructure facilities relating to petroleum or greenhouse gas substances; and construction and operation of pipelines for conveying petroleum or greenhouse gas substances.	Operations to adhere to requirements of the Act.

Legislation	Summary of Relevance	Application to TGP Personnel
Offshore Petroleum and Greenhouse Gas Storage Regulations 2011	Provide a framework for the elimination and minimisation, so far as is practicable, of the environmental, health and safety hazards and risks involved in undertaking petroleum and greenhouse gas activities. Specifically, the regulations outline the requirements of Environment Plans, revisions, incident reporting requirements and outlines records to be kept.	The EP must adhere to EP requirements under the regulations. Incident reporting is required under these regulations.
Pollution of waters by Oils and Noxious Substances Act 1986	The purpose of this Act is to make certain provisions for the protection of the sea and certain waters from pollution by oil and other noxious substances and to implement the MARPOL Convention. This Act is jointly administered by EPA and the Department of Transport.	TGP operations are to adhere to requirements of this Act.
State Environment Protection Policy (Waters of Victoria) 2003	Sets a framework to protect, rehabilitate and ultimately sustain the environmental quality of Victoria's streams, lakes, estuaries, and marine environments and the uses of those environments. Provides clear guidance on how to protect waterways.	Refer to policy for waterway management guidelines. Environmental Pollution is to be reported to EPA's general hotline: 1300 372 842
Wildlife Act 1975	Establishes a framework to protect and conserve wildlife including extinction prevention and sustainable use of. It prohibits and regulates the conduct of persons engaged in activities concerning or related to wildlife, making it an offence to harm wildlife in Victoria.	Any encounters with, or activities that may impact on wildlife must adhere to requirements of this Act (unless exclusions apply).
Tasmania		
Aboriginal Relics Act 1975	Protects and provides management guidelines for Aboriginal "relics", "protected objects" and "protected sites". Outlines that it is an offence for any person (including government agencies) to damage, destroy, conceal, deface or otherwise interfere with a relic, object or a protected site.	Currently, no aboriginal relics/objects/sites have been identified along the pipeline route, however; if any of the above are discovered the requirements of the Act are to be implemented.
Emergency Management Act 2006	This Act provides for the protection of life, property and the environment in a declared State emergency by outlining prevention, preparedness, response and recovery procedures. Administered by the Tasmania State Emergency Service.	TGP operations are to adhere to requirements of this Act.
Environmental Management and Pollution Control Act 1994	Key environmental management legislation in Tasmania. Provides a framework for prevention, reduction and remediation of environmental harm from pollution and waste via the regulator - the Environment Protection Agency. Associated Environment Protection Policies guide specific areas of environmental management (see below).	All Environmental Management activities are to adhere to this Act. Incident reporting is required under this Act.
Historic Cultural Heritage Act 1995	Protects listed heritage places, making it an offence to carry out works on a listed heritage place without approval of the Tasmanian Heritage Council (or the local council, if the Heritage Council has delegated its powers).	Currently, no cultural heritage places have been identified along the pipeline route, however; if places are discovered

Legislation	Summary of Relevance	Application to TGP Personnel
		the requirements of the Act are to be implemented.
Nature Conservation Act 2002	This Act makes provisions with respect to the conservation and protection of the fauna, flora and geological diversity of the State, to provide for the declaration of national parks and other reserved land and for related purposes.	TGP operations are to adhere to requirements of this Act.
National Parks and Reserves Management Act 2002	This Act provides for the management of national parks and other reserved land. The act repeals the National Parks and Wildlife Act 1970 and related Acts and for related purposes	TGP operations are to adhere to requirements of this Act.
Petroleum (Submerged Lands) Act 1982	This Act makes provisions with respect to certain offshore petroleum activities adjacent to the coast of the State of Tasmania and to provide for related matters (refer below regulations).	TGP operations are to adhere to requirements of this Act.
Petroleum (Submerged Lands) (Management of Environment) Regulations 2012	Provide administrative guidelines for environment management of petroleum activities. Specifically, the regulations outline the conducting in a manner that is consistent with the principals of ecologically sustainable development, requirements of the Environment Plans, revisions, incident reporting requirements and outlines records to be kept.	The EP must adhere to EP requirements under the regulations. Incident reporting is required under these regulations.
Marine-related Incidents (MARPOL Implementation) Act 2020	Protects Tasmanian waters from discharges of oil from ships and other matters that occur within Tasmania's jurisdiction. It also gives effect in Tasmania to the international MARPOL convention on marine pollution.	TGP operations are to adhere to requirements of this Act.
State Policy on Water Quality Management (1997)	The State Policy on Water Quality Management (1997), also known as the Water Quality Policy, provides a framework for the development of ambient water quality objectives and the management and regulation of point and diffuse sources of emissions to surface waters (including coastal waters) and groundwater.	TGP operations are to adhere to requirements of this Act.
Threatened Species Protection Act 1995	Aims to protect, manage and promote conservation of threatened plants and animals in Tasmania. Sets out special protection measures for native animals and plants that are considered to be 'threatened'.	When encountering threatened plants or animals, personnel must adhere to the requirements of this Act.
Whales Protection Act 1988	Protection of whales in Tasmanian waters. Outlines offences if persons harm, take or remove a whale.	If any whales are encountered, personnel are to adhere to requirements of this Act.

Appendix C PIMS Environmental Policy Statement

PALISADE

PQMS-ESG-PH-002 | Revision 5 | January 2023

Palisade Integrated Management Services Pty Ltd

Environmental Policy

Palisade Integrated Management Services is committed to excellence in environmental management.

This will be achieved by:

- Recognising that environmental management is a corporate priority that should be integrated into all business processes from the purchase of goods to the provision of asset management services
- Conducting all activities in a manner consistent with the principles of sustainable management and caring for the environment
- Developing an environmentally aware culture by demonstrating management commitment, continuously improving management systems and providing the time and resources to educate and train employees and contractors
- Implementing management strategies to meet current and anticipated environmental performance standards and communicating these to all service providers and stakeholders
- Consulting the local community on its concerns, aspirations and values and ensuring that local heritage will be respected, and historic places and artifacts preserved
- Identifying and minimising risks by continuously assessing, controlling and monitoring environmental aspects and impacts
- Actively seeking ways to minimize the impact of our assets on the environment by reducing usage of resources wherever possible; and
- Complying with all relevant legislation, regulations, codes of practice and standards
- Supporting Palisade Investment Partners decarbonisation targets and ensuring each asset meets these targets

We will measure our success by achieving our goal of zero reportable environmental incidents each year and reducing or maintaining our overall level of resource consumption.

Darren Sexton CEO

Palisade Integrated Management Services

Palisade Integrated Management Services | Environmental Policy 2

Appendix D TGP ZPI – Protected Matters MNES Report

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 04-Sep-2024

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	6
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	13
Listed Threatened Species:	151
Listed Migratory Species:	77

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	101
Commonwealth Heritage Places:	4
Listed Marine Species:	121
Whales and Other Cetaceans:	29
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	1
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	315
Regional Forest Agreements:	2
Nationally Important Wetlands:	30
EPBC Act Referrals:	168
Key Ecological Features (Marine):	1
Biologically Important Areas:	23
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands) [Resource Information]

Ramsar Site Name	Proximity
Corner inlet	Within Ramsar site
East coast cape barren island lagoons	Within 10km of Ramsar site
Flood plain lower ringarooma river	Within Ramsar site
Gippsland lakes	Within Ramsar site
Little waterhouse lake	Within Ramsar site
Logan lagoon	Within 10km of Ramsar site

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text
Alpine Sphagnum Bogs and Associated Fens	Endangered	Community known to occur within area
Assemblages of species associated with open-coast salt-wedge estuaries of western and central Victoria ecological community	Endangered	Community likely to occur within area
Giant Kelp Marine Forests of South East Australia	Endangered	Community likely to occur within area
Gippsland Red Gum (Eucalyptus tereticornis subsp. mediana) Grassy	Critically Endangered	Community likely to occur within area

Community Name	Threatened Category	Presence Text
Woodland and Associated Native Grassland		
Littoral Rainforest and Coastal Vine Thickets of Eastern Australia	Critically Endangered	Community likely to occur within area
Lowland Native Grasslands of Tasmania	Critically Endangered	Community likely to occur within area
Natural Damp Grassland of the Victorian Coastal Plains	Critically Endangered	Community likely to occur within area
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	Critically Endangered	Community may occur within area
Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains	Critically Endangered	Community likely to occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area
Tasmanian Forests and Woodlands dominated by black gum or Brookers gum (Eucalyptus ovata / E. brookeriana)	Critically Endangered	Community likely to occur within area
Tasmanian white gum (Eucalyptus viminalis) wet forest	Critically Endangered	Community likely to occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community may occur within area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Anthochaera phrygia		
Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area
Aquila audax fleayi		
Tasmanian Wedge-tailed Eagle, Wedge-tailed Eagle (Tasmanian) [64435]	Endangered	Breeding likely to occur within area
Ardenna grisea		
Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat known to occur within area
Ceyx azureus diemenensis Tasmanian Azure Kingfisher [25977]	Endangered	Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Fregetta grallaria grallaria White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Breeding known to occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat likely to occur within area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat known to occur within area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Pardalotus quadragintus Forty-spotted Pardalote [418]	Endangered	Foraging, feeding or related behaviour known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area
Pterodroma leucoptera leucoptera Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Pycnoptilus floccosus Pilotbird [525]	Vulnerable	Species or species habitat known to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat known to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat known to occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area
Thalassarche bulleri platei Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Thinornis cucullatus cucullatus Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Tyto novaehollandiae castanops (Tasmanian population)		
Masked Owl (Tasmanian) [67051]	Vulnerable	Breeding known to occur within area
Xenus cinereus		
Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area
CRUSTACEAN		
Astacopsis gouldi		
Giant Freshwater Crayfish, Tasmanian Giant Freshwater Lobster [64415]	Vulnerable	Species or species habitat known to occur within area
Engaeus granulatus		
Central North Burrowing Crayfish [78959]	Endangered	Species or species habitat known to occur within area
Engaeus martigener		
Furneaux Burrowing Crayfish [67220]	Endangered	Species or species habitat known to occur within area
Engaeus orramakunna		
Mount Arthur Burrowing Crayfish [66778]	Vulnerable	Species or species habitat known to occur within area
Engaeus spinicaudatus		
Scottsdale Burrowing Crayfish [66780]	Endangered	Species or species habitat known to occur within area
FISH		
Galaxias sp. nov. 'Morwell'		
Morwell Galaxias [90730]	Critically Endangered	Species or species habitat known to occur within area
Galaxiella pusilla		
Eastern Dwarf Galaxias, Dwarf Galaxias [56790]	Endangered	Species or species habitat known to occur within area
Hoplostethus atlanticus		
Orange Roughy, Deep-sea Perch, Red Roughy [68455]	Conservation Dependent	Species or species habitat likely to occur within area
Prototroctes maraena		
Australian Grayling [26179]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Rexea solandri (eastern Australian population)		
Eastern Gemfish [76339]	Conservation Dependent	Species or species habitat likely to occur within area
Seriolella brama		
Blue Warehou [69374]	Conservation Dependent	Species or species habitat known to occur within area
Thymichthys politus		
Red Handfish [83756]	Critically Endangered	Species or species habitat may occur within area
FROG		
Heleioporus australiacus		
Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat likely to occur within area
Litoria aurea		
Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat known to occur within area
Litoria raniformis		
Southern Bell Frog,, Growling Grass Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat known to occur within area
Uperoleia martini		
Martin's Toadlet [1873]	Endangered	Species or species habitat known to occur within area
INSECT		
Antipodia chaostola leucophaea		
Tasmanian Chaostola Skipper, Heath-sand Skipper [77672]	Endangered	Species or species habitat known to occur within area
MAMMAL		
Antechinus minimus maritimus		
Swamp Antechinus (mainland) [83086]	Vulnerable	Species or species habitat known to occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area
Dasyurus maculatus maculatus (Tasmanian population) Spotted-tail Quoll, Spot-tailed Quoll, Tiger Quoll (Tasmanian population) [75183]	Vulnerable	Species or species habitat known to occur within area
Dasyurus viverrinus Eastern Quoll, Luaner [333]	Endangered	Species or species habitat known to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area
Isoodon obesulus obesulus Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (south-eastern) [68050]	Endangered	Species or species habitat known to occur within area
Mastacomys fuscus mordicus Broad-toothed Rat (mainland), Tooarrana [87617]	Endangered	Species or species habitat may occur within area
Perameles gunnii gunnii Eastern Barred Bandicoot (Tasmania) [66651]	Vulnerable	Species or species habitat known to occur within area
Petauroides volans Greater Glider (southern and central) [254]	Endangered	Species or species habitat known to occur within area
Petaurus australis australis Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Potorous tridactylus trisulcatus Long-nosed Potoroo (southern mainland) [86367]	Vulnerable	Species or species habitat known to occur within area
Pseudomys fumeus Smoky Mouse, Konoom [88]	Endangered	Species or species habitat may occur within area
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat known to occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sarcophilus harrisii Tasmanian Devil [299]	Endangered	Species or species habitat likely to occur within area
PLANT		
Acacia caerulescens Limestone Blue Wattle, Buchan Blue, Buchan Blue Wattle [21883]	Vulnerable	Species or species habitat known to occur within area
Amphibromus fluitans River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat known to occur within area
Astrotricha sp. Wingan Inlet (J.A.Jeanes 2268) Wingan Star-hair [85675]	Endangered	Species or species habitat may occur within area
Barbarea australis Native Wintercress, Riverbed Wintercress [12540]	Endangered	Species or species habitat likely to occur within area
Caladenia caudata Tailed Spider-orchid [17067]	Vulnerable	Species or species habitat known to occur within area
Caladenia orientalis Eastern Spider Orchid [83410]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Caladenia pallida Rosy Spider Orchid, Pale Spider-orchid, Summer Spider-orchid [9604]	Critically Endangered	Species or species habitat likely to occur within area
Caladenia tessellata Thick-lipped Spider-orchid, Daddy Long-legs [2119]	Vulnerable	Species or species habitat known to occur within area
Caladenia tonellii Robust Fingers [64861]	Critically Endangered	Species or species habitat known to occur within area
Cassinia rugata Wrinkled Cassinia, Wrinkled Dollybush [21885]	Vulnerable	Species or species habitat known to occur within area
Commersonia prostrata Dwarf Kerrawang [87152]	Endangered	Species or species habitat known to occur within area
Conospermum hookeri Variable Smoke-bush [68161]	Vulnerable	Species or species habitat likely to occur within area
Dianella amoena Matted Flax-lily [64886]	Endangered	Species or species habitat known to occur within area
Dodonaea procumbens Trailing Hop-bush [12149]	Vulnerable	Species or species habitat known to occur within area
Epacris graniticola Mt Cameron Heath, Granite Heath [82822]	Critically Endangered	Species or species habitat known to occur within area
Epacris virgata Pretty Heath, Dan Hill Heath [20375]	Endangered	Species or species habitat known to occur within area
Eucalyptus strzeleckii Strzelecki Gum [55400]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Glycine latrobeana Clover Glycine, Purple Clover [13910]	Vulnerable	Species or species habitat known to occur within area
Lepidium hyssopifolium Basalt Pepper-cress, Peppercress, Rubble Pepper-cress, Pepperweed [16542]	Endangered	Species or species habitat likely to occur within area
Leucochrysum albicans subsp. tricolor Hoary Sunray, Grassland Paper-daisy [89104]	Endangered	Species or species habitat may occur within area
Picris evae Hawkweed [10839]	Vulnerable	Species or species habitat may occur within area
Pomaderris pilifera subsp. talpicutica Moleskin Dogwood [84295]	Vulnerable	Species or species habitat known to occur within area
Pomaderris vacciniifolia Round-leaf Pomaderris [4256]	Critically Endangered	Species or species habitat may occur within area
Prasophyllum apoxychilum Tapered Leek-orchid [64947]	Endangered	Species or species habitat known to occur within area
Prasophyllum correctum Gaping Leek-orchid [64533]	Endangered	Species or species habitat likely to occur within area
Prasophyllum frenchii Maroon Leek-orchid, Slaty Leek-orchid, Stout Leek-orchid, French's Leek-orchid, Swamp Leek-orchid [9704]	Endangered	Species or species habitat known to occur within area
Prasophyllum limnetes Marsh Leek-orchid [82678]	Critically Endangered	Species or species habitat known to occur within area
Prasophyllum pulchellum Pretty Leek-orchid [64953]	Critically Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Prasophyllum robustum Robust Leek-orchid [12499]	Critically Endangered	Species or species habitat may occur within area
Prasophyllum secutum Northern Leek-orchid [64954]	Endangered	Species or species habitat likely to occur within area
Prasophyllum spicatum Dense Leek-orchid [55146]	Vulnerable	Species or species habitat known to occur within area
Prostanthera galbraithiae Wellington Mintbush [64959]	Vulnerable	Species or species habitat known to occur within area
Pseudocephalozia paludicola Alpine Leafy Liverwort [66441]	Vulnerable	Species or species habitat may occur within area
Pterostylis chlorogramma Green-striped Greenhood [56510]	Vulnerable	Species or species habitat known to occur within area
Pterostylis cucullata Leafy Greenhood [15459]	Vulnerable	Species or species habitat known to occur within area
Pterostylis tenuissima Swamp Greenhood, Dainty Swamp Orchid [13139]	Vulnerable	Species or species habitat known to occur within area
Pterostylis ziegeleri Grassland Greenhood, Cape Portland Greenhood [64971]	Vulnerable	Species or species habitat known to occur within area
Senecio psilocarpus Swamp Fireweed, Smooth-fruited Groundsel [64976]	Vulnerable	Species or species habitat known to occur within area
Spyridium obcordatum Creeping Dusty Miller [17447]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Tetratheca gunnii Shy Pinkbells, Shy Susan [14415]	Critically Endangered	Species or species habitat known to occur within area
Thelymitra epipactoides Metallic Sun-orchid [11896]	Endangered	Species or species habitat known to occur within area
Thelymitra jonesii Sky-blue Sun-orchid [76352]	Endangered	Species or species habitat known to occur within area
Thelymitra matthewsii Spiral Sun-orchid [4168]	Vulnerable	Species or species habitat may occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area
Xanthorrhoea arenaria Sand Grasstree [21603]	Vulnerable	Species or species habitat likely to occur within area
Xanthorrhoea bracteata Shiny Grasstree [7950]	Endangered	Species or species habitat known to occur within area
Xerochrysum palustre Swamp Everlasting, Swamp Paper Daisy [76215]	Vulnerable	Species or species habitat known to occur within area
REPTILE		
Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Lissolepis coventryi		
Swamp Skink, Eastern Mourning Skink [84053]	Endangered	Species or species habitat known to occur within area
SHARK		
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Breeding known to occur within area
Centrophorus harrissoni		
Harrisson's Dogfish, Endeavour Dogfish, Dumb Gulper Shark, Harrison's Deepsea Dogfish [68444]	Conservation Dependent	Species or species habitat likely to occur within area
Centrophorus uyato		
Little Gulper Shark [68446]	Conservation Dependent	Species or species habitat likely to occur within area
Galeorhinus galeus		
School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat likely to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes		
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna grisea		
Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna tenuirostris Short-tailed Shearwater [82652]		Breeding known to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Sternula albifrons Little Tern [82849]		Breeding known to occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Migratory Marine Species		
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Breeding known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat likely to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat likely to occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Migratory Terrestrial Species		
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Breeding known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		

Scientific Name	Threatened Category	Presence Text
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting known to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Species or species habitat known to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting known to occur within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Defence	
Defence - AFFSE - SCOTTSDALE [60028]	TAS
Defence - AFFSE - SCOTTSDALE [60029]	TAS
Defence - AFFSE - SCOTTSDALE [60032]	TAS
Defence - AFFSE - SCOTTSDALE [60030]	TAS
Defence - AFFSE - SCOTTSDALE [60031]	TAS
Defence - DEVONPORT TRAINING DEPOT [60009]	TAS
Defence - DEVONPORT TRAINING DEPOT [60010]	TAS
Defence - DEVONPORT TRAINING DEPOT [60011]	TAS
Defence - DEVONPORT TRAINING DEPOT [60008]	TAS
Defence - DUTSON BOMBING RANGE [20046]	VIC
Defence - DUTSON BOMBING RANGE [20047]	VIC

Commonwealth Land Name	State
Defence - DUTSON BOMBING RANGE [20044]	VIC
Defence - DUTSON BOMBING RANGE [20042]	VIC
Defence - DUTSON BOMBING RANGE [20040]	VIC
Defence - DUTSON BOMBING RANGE [20049]	VIC
Defence - DUTSON BOMBING RANGE [20029]	VIC
Defence - DUTSON BOMBING RANGE [20030]	VIC
Defence - DUTSON BOMBING RANGE [20038]	VIC
Defence - DUTSON BOMBING RANGE [20058]	VIC
Defence - DUTSON BOMBING RANGE [20034]	VIC
Defence - DUTSON BOMBING RANGE [20033]	VIC
Defence - DUTSON BOMBING RANGE [20032]	VIC
Defence - DUTSON BOMBING RANGE [20031]	VIC
Defence - DUTSON BOMBING RANGE [20037]	VIC
Defence - DUTSON BOMBING RANGE [20036]	VIC
Defence - DUTSON BOMBING RANGE [20035]	VIC
Defence - DUTSON BOMBING RANGE [20059]	VIC
Defence - DUTSON BOMBING RANGE [20041]	VIC
Defence - DUTSON BOMBING RANGE [20060]	VIC
Defence - DUTSON BOMBING RANGE [20061]	VIC
Defence - DUTSON BOMBING RANGE [20053]	VIC
Defence - DUTSON BOMBING RANGE [20052]	VIC
Defence - DUTSON BOMBING RANGE [20051]	VIC
Defence - DUTSON BOMBING RANGE [20050]	VIC
Defence - DUTSON BOMBING RANGE [20056]	VIC
Defence - DUTSON BOMBING RANGE [20057]	VIC
Defence - DUTSON BOMBING RANGE [20054]	VIC
Defence - DUTSON BOMBING RANGE [20043]	VIC

Commonwealth Land Name	State
Defence - DUTSON BOMBING RANGE [20048]	VIC
Defence - DUTSON BOMBING RANGE [20055]	VIC
Defence - DUTSON BOMBING RANGE [20039]	VIC
Defence - DUTSON BOMBING RANGE [20062]	VIC
Defence - DUTSON BOMBING RANGE [20045]	VIC
Defence - EAST SALE - SURVEILLANCE RADAR [21445]	VIC
Defence - RAAF EAST SALE [20011]	VIC
Defence - RAAF EAST SALE [20010]	VIC
Defence - RAAF EAST SALE [20003]	VIC
Defence - RAAF EAST SALE [20009]	VIC
Defence - RAAF EAST SALE [20002]	VIC
Defence - RAAF EAST SALE [20005]	VIC
Defence - RAAF EAST SALE [20004]	VIC
Defence - RAAF EAST SALE [20006]	VIC
Defence - RAAF EAST SALE [20001]	VIC
Defence - RAAF EAST SALE [20008]	VIC
Defence - RAAF EAST SALE [20007]	VIC
Defence - STONYHEAD TRAINING AREA [60025]	TAS
Defence - STONYHEAD TRAINING AREA [60026]	TAS
Unknown	
Commonwealth Land - [60179]	TAS
Commonwealth Land - [21491]	VIC
Commonwealth Land - [21490]	VIC
Commonwealth Land - [60205]	TAS
Commonwealth Land - [60206]	TAS
Commonwealth Land - [60091]	TAS
Commonwealth Land - [60099]	TAS

Commonwealth Land Name	State
Commonwealth Land - [60098]	TAS
Commonwealth Land - [60066]	TAS
Commonwealth Land - [60180]	TAS
Commonwealth Land - [60080]	TAS
Commonwealth Land - [60081]	TAS
Commonwealth Land - [60082]	TAS
Commonwealth Land - [60067]	TAS
Commonwealth Land - [60177]	TAS
Commonwealth Land - [60181]	TAS
Commonwealth Land - [60079]	TAS
Commonwealth Land - [60209]	TAS
Commonwealth Land - [60065]	TAS
Commonwealth Land - [60178]	TAS
Commonwealth Land - [60074]	TAS
Commonwealth Land - [60173]	TAS
Commonwealth Land - [60104]	TAS
Commonwealth Land - [60078]	TAS
Commonwealth Land - [60076]	TAS
Commonwealth Land - [60075]	TAS
Commonwealth Land - [60103]	TAS
Commonwealth Land - [60102]	TAS
Commonwealth Land - [21489]	VIC
Commonwealth Land - [60204]	TAS
Commonwealth Land - [60216]	TAS
Commonwealth Land - [60034]	TAS
Commonwealth Land - [60192]	TAS
Commonwealth Land - [60195]	TAS

Commonwealth Land Name	State
Commonwealth Land - [60093]	TAS
Commonwealth Land - [60092]	TAS
Commonwealth Land - [60097]	TAS
Commonwealth Land - [60211]	TAS
Commonwealth Land - [60105]	TAS
Commonwealth Land - [60064]	TAS
Commonwealth Land - [60189]	TAS
Commonwealth Land - [21488]	VIC
Commonwealth Land - [60227]	TAS
Commonwealth Land - [60077]	TAS

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Historic		
Goose Island Lighthouse	TAS	Listed place
Mersey Bluff Lighthouse	TAS	Listed place
Traralgon Post Office	VIC	Listed place
Wilsons Promontory Lighthouse	VIC	Listed place

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Ardenna tenuirostris as Puffinus tenuirostris Short-tailed Shearwater [82652]		Breeding known to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Breeding likely to occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting known to occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area overfly marine area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area overfly marine area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat known to occur within area overfly marine area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding known to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea antipodensis gibsoni as Diomedea gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Eudyptula minor Little Penguin [1085]		Breeding known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Gallinago megala Swinhoe's Snipe [864]		Species or species habitat known to occur within area overfly marine area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Breeding known to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area
Larus dominicanus Kelp Gull [809]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Larus pacificus Pacific Gull [811]		Breeding known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Breeding known to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area overfly marine area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area
Myiagra cyanoleuca Satin Flycatcher [612]		Breeding known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting known to occur within area overfly marine area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding known to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Pelagodroma marina White-faced Storm-Petrel [1016]		Breeding known to occur within area
Pelecanoides urinatrix Common Diving-Petrel [1018]		Breeding known to occur within area
Phalacrocorax fuscescens Black-faced Cormorant [59660]		Breeding known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area overfly marine area
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area overfly marine area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area overfly marine area
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area
Sterna striata White-fronted Tern [799]		Breeding known to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Breeding known to occur within area
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding known to occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche bulleri platei as Thalassarche sp. nov.		
Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area
Thalassarche carteri		
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta		
Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma		
Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche eremita		
Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area
Thalassarche impavida		
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris		
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini		
Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi		
White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Thalasseus bergii as Sterna bergii		
Greater Crested Tern [83000]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Thinornis cucullatus as Thinornis rubricollis		
Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area
Thinornis cucullatus cucullatus as Thinornis rubricollis rubricollis		
Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Tringa brevipes as Heteroscelus brevipes		
Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola		
Wood Sandpiper [829]		Roosting known to occur within area overfly marine area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area
Tringa stagnatilis		
Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area
Xenus cinereus		
Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area overfly marine area
Fish		
Heraldia nocturna		
Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area
Hippocampus abdominalis		
Big-belly Seahorse, Eastern Potbelly Seahorse, New Zealand Potbelly Seahorse [66233]		Species or species habitat may occur within area
Hippocampus breviceps		
Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Hippocampus minotaur		
Bullneck Seahorse [66705]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Histiogamphelus briggsii Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242]		Species or species habitat may occur within area
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
Hypselognathus rostratus Knifesnout Pipefish, Knife-snouted Pipefish [66245]		Species or species habitat may occur within area
Kaupus costatus Deepbody Pipefish, Deep-bodied Pipefish [66246]		Species or species habitat may occur within area
Kimblaeus bassensis Trawl Pipefish, Bass Strait Pipefish [66247]		Species or species habitat may occur within area
Leptoichthys fistularius Brushtail Pipefish [66248]		Species or species habitat may occur within area
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Mitotichthys semistriatus Halfbanded Pipefish [66261]		Species or species habitat may occur within area
Mitotichthys tuckeri Tucker's Pipefish [66262]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus robustus Robust Pipehorse, Robust Spiny Pipehorse [66274]		Species or species habitat may occur within area
Solegnathus spinosissimus Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Stipecampus cristatus Ringback Pipefish, Ring-backed Pipefish [66278]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
Mammal		
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area
Arctocephalus pusillus Australian Fur-seal, Australo-African Fur-seal [21]		Breeding known to occur within area
Reptile		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Balaenoptera edeni](#) Bryde's Whale [35]		Species or species habitat may occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Berardius arnuxii](#) Arnoux's Beaked Whale [70]		Species or species habitat may occur within area
[Caperea marginata](#) Pygmy Right Whale [39]		Foraging, feeding or related behaviour likely to occur within area
[Delphinus delphis](#) Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
[Eubalaena australis](#) Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area
[Globicephala macrorhynchus](#) Short-finned Pilot Whale [62]		Species or species habitat may occur within area
[Globicephala melas](#) Long-finned Pilot Whale [59282]		Species or species habitat may occur within area
[Grampus griseus](#) Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat likely to occur within area
Lissodelphis peronii Southern Right Whale Dolphin [44]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area
Mesoplodon bowdoini Andrew's Beaked Whale [73]		Species or species habitat may occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Mesoplodon hectori Hector's Beaked Whale [76]		Species or species habitat may occur within area
Mesoplodon layardii Strap-toothed Beaked Whale, Strap-toothed Whale, Layard's Beaked Whale [25556]		Species or species habitat may occur within area
Mesoplodon mirus True's Beaked Whale [54]		Species or species habitat may occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Beagle	Multiple Use Zone (IUCN VI)

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Agnes Falls S.R.	Natural Features Reserve	VIC
Anderson Islands	Conservation Area	TAS
Andersons Creek	Regional Reserve	TAS
Andrew Bay - Grebe Bay G.L.R.	Natural Features Reserve	VIC
Anser Island	Reference Area	VIC
Arthur Bay	Conservation Area	TAS
Avon-Perry River Delta G.L.R	Natural Features Reserve	VIC
Avon River SS.R.	Natural Features Reserve	VIC

Protected Area Name	Reserve Type	State
Backwater Morass G.L.R.	Natural Features Reserve	VIC
Badger Head	Conservation Covenant	TAS
Badger Island	Indigenous Protected Area	TAS
Bairnsdale F.R.	Nature Conservation Reserve	VIC
Bancroft Bay - Kalimna G.L.R.	Natural Features Reserve	VIC
Bass Pyramid	Nature Reserve	TAS
Battery Island	Conservation Area	TAS
Baxter Island G.L.R.	Natural Features Reserve	VIC
Baynes Island	Nature Reserve	TAS
Bellingham	Conservation Covenant	TAS
Bellingham Vineyard #1	Conservation Covenant	TAS
Bellingham Vineyard #2	Conservation Covenant	TAS
Bengworden N.C.R.	Natural Features Reserve	VIC
Big Green Island	Nature Reserve	TAS
Big Silver	Conservation Covenant	TAS
Binginwarri H15 B.R	Natural Features Reserve	VIC
Binginwarri H18 B.R	Natural Features Reserve	VIC
Binginwarri H19 B.R	Natural Features Reserve	VIC
Binginwarri H43 B.R	Natural Features Reserve	VIC
Blairgowrie Falls	Conservation Covenant	TAS
Blond Bay G.L.R.	Natural Features Reserve	VIC
Blond Bay W.R.	Natural Features Reserve	VIC

Protected Area Name	Reserve Type	State
Blyth Point	Conservation Area	TAS
Boat Harbour Road Killiecrankie	Conservation Covenant	TAS
Boobyalla	Conservation Area	TAS
Boobyalla Park	Conservation Covenant	TAS
Boxen Island	Conservation Area	TAS
Briddale	Conservation Covenant	TAS
Brid River	Conservation Area	TAS
Briggs	Regional Reserve	TAS
Brougham Sugarloaf	Conservation Area	TAS
Bruthen Creek SS.R.	Natural Features Reserve	VIC
Bruthen F.R	Nature Conservation Reserve	VIC
Budgeree B.R.	Natural Features Reserve	VIC
Bun Beetons Point	Conservation Area	TAS
Callignee B.R	Natural Features Reserve	VIC
Callignee W.R	Nature Conservation Reserve	VIC
Cameron	Regional Reserve	TAS
Cape Portland	Conservation Area	TAS
Carisbrooke	Conservation Covenant	TAS
Carrajung H23 B.R	Natural Features Reserve	VIC
Carrajung H34 B.R	Natural Features Reserve	VIC
Chalky Island	Conservation Area	TAS
Chappell Islands	Nature Reserve	TAS
Clovelly	Conservation Covenant	TAS
Clydebank Frontage G.L.R.	Natural Features Reserve	VIC

Protected Area Name	Reserve Type	State
Clydebank Morass W.R.	Natural Features Reserve	VIC
Cone Islet	Conservation Area	TAS
Cooks Gully F.R	Nature Conservation Reserve	VIC
Corner Inlet	Marine National Park	VIC
Corner Inlet Marine and Coastal Park	National Parks Act Schedule 4 park or reserve	VIC
Craggy Island	Conservation Area	TAS
Curtis Island	Nature Reserve	TAS
Dans Hill	Conservation Area	TAS
Darling Range	Conservation Area	TAS
Darriman H29 B.R	Natural Features Reserve	VIC
Darriman H33 B.R	Natural Features Reserve	VIC
Den Ranges	Regional Reserve	TAS
Devils Tower	Nature Reserve	TAS
Devon B.R.	Natural Features Reserve	VIC
Don Heads	Conservation Area	TAS
Double Sandy Point	Conservation Area	TAS
Doughboy Island	Conservation Area	TAS
Dowd Morass W.R.	Natural Features Reserve	VIC
Dunbarton	Conservation Covenant	TAS
Eagle Point G.L.R.	Natural Features Reserve	VIC
East Kangaroo Island	Nature Reserve	TAS
East Moncoeur Island	Conservation Area	TAS
Egg Beach	Conservation Area	TAS

Protected Area Name	Reserve Type	State
Emita	Nature Recreation Area	TAS
Emu Ground	Regional Reserve	TAS
Entrance Point	Reference Area	VIC
Esmerelda Enterprises	Conservation Covenant	TAS
Fannys Bay	Conservation Area	TAS
Five Mile Bluff	Conservation Area	TAS
Flannagan Island G.L.R.	Natural Features Reserve	VIC
Foochow	Conservation Area	TAS
Forester Rd North Scottsdale #1	Conservation Covenant	TAS
Forester Rd North Scottsdale #2	Conservation Covenant	TAS
Foster Islands	Nature Reserve	TAS
Fotheringate Bay	Conservation Area	TAS
Fraser Island G.L.R.	Natural Features Reserve	VIC
Fresh-water Swamp, Woodside Beach W.R	Natural Features Reserve	VIC
Gees Marsh Rd Bellingham	Conservation Covenant	TAS
George Town	Conservation Area	TAS
Giffard (Rifle Range) F.R.	Nature Conservation Reserve	VIC
Giffard H30 B.R	Natural Features Reserve	VIC
Giffard H31 B.R	Natural Features Reserve	VIC
Gippsland Lakes Coastal Park	Conservation Park	VIC
Goose Island	Conservation Area	TAS
Gormandale F.R	Nature Conservation Reserve	VIC
Granite Point	Conservation Area	TAS
Great Dog Island	Indigenous Protected Area	TAS

Protected Area Name	Reserve Type	State
Greens Beach	Conservation Area	TAS
Greens Beach Rd Greens Beach	Conservation Covenant	TAS
Greig Creek SS.R.	Natural Features Reserve	VIC
Gunyah Rainforest S.R.	Natural Features Reserve	VIC
Hawley	Nature Reserve	TAS
Heart Morass W.R	Natural Features Reserve	VIC
Herb Guyatt F.R.	Nature Conservation Reserve	VIC
Hogan Group	Conservation Area	TAS
Holey Plains	State Park	VIC
Hollands Landing G.L.R.	Natural Features Reserve	VIC
Holts Point	Conservation Area	TAS
Isabella Island	Nature Reserve	TAS
Jack River SS.R.	Natural Features Reserve	VIC
Jack Smith Lake W.R	Natural Features Reserve	VIC
Jacksons Cove	Conservation Area	TAS
Jones Bay G.L.R	Natural Features Reserve	VIC
Jones Bay W.R	Natural Features Reserve	VIC
Kangaroo Swamp N.C.R.	Natural Features Reserve	VIC
Kent Group	National Park	TAS
Killiecrankie	Nature Recreation Area	TAS
Kuhns Rd Memana	Conservation Covenant	TAS
Lackrana	Conservation Area	TAS
Lake Coleman W.R	Natural Features Reserve	VIC

Protected Area Name	Reserve Type	State
Lake Coleman West W.R	Natural Features Reserve	VIC
Lake Denison W.R	Natural Features Reserve	VIC
Lake Kakydra G.L.R	Natural Features Reserve	VIC
Lake Melanydra G.L.R.	Natural Features Reserve	VIC
Lefroy	Regional Reserve	TAS
Lillico Beach	Conservation Area	TAS
Little Boobyalla River	Conservation Area	TAS
Little Chalky Island	Conservation Area	TAS
Little Dog Island	Game Reserve	TAS
Little Forester River	Conservation Covenant	TAS
Little Island	Conservation Area	TAS
Little Silver	Conservation Covenant	TAS
Little Swan Island	Nature Reserve	TAS
Little Waterhouse Island	Nature Reserve	TAS
Longford N.F.R	Natural Features Reserve	VIC
Long Island	Conservation Area	TAS
Long Reach	Conservation Area	TAS
Low Head	Historic Site	TAS
Low Head	Conservation Area	TAS
Low Point	Conservation Area	TAS
Lughrata	Conservation Covenant	TAS
lungatalanana	Indigenous Protected Area	TAS
Macks Creek	Reference Area	VIC
Macleod Morass W.R.	Natural Features Reserve	VIC

Protected Area Name	Reserve Type	State
Mandel	Conservation Covenant	TAS
Marriott Reef	Conservation Area	TAS
Marshall Beach	Conservation Area	TAS
Martins Hill	Regional Reserve	TAS
Maslins Road Jetsonville	Conservation Covenant	TAS
Meerlieu I15 B.R.	Natural Features Reserve	VIC
Meerlieu I16 B.R	Natural Features Reserve	VIC
Merrimans Creek F.R.	Nature Conservation Reserve	VIC
Mersey Bluff	State Reserve	TAS
Metung B.R.	Natural Features Reserve	VIC
Middle Arm	Conservation Area	TAS
Middle Island	Conservation Area	TAS
Mile Island	Conservation Area	TAS
Mitchell and Wonnangatta Rivers	Heritage River	VIC
Mitchell River Silt Jetties G.L.R.	Natural Features Reserve	VIC
Mitchell River water reserve G.L.R.	Natural Features Reserve	VIC
Moormurng F.F.R.	Nature Conservation Reserve	VIC
Morley Swamp G.L.R.	Natural Features Reserve	VIC
Morwell	National Park	VIC
Mount Chappell Island	Indigenous Protected Area	TAS
Mount Direction	Historic Site	TAS
Mount Horror	Regional Reserve	TAS
Mount Tanner	Nature Recreation Area	TAS

Protected Area Name	Reserve Type	State
Mount Vereker Creek	Natural Catchment Area	VIC
Mulligans Hill	Conservation Covenant	TAS
Mulligans Hill	Conservation Area	TAS
Mullungdung	Reference Area	VIC
Mullungdung F.F.R	Nature Conservation Reserve	VIC
Musselroe Bay	Conservation Area	TAS
Narawntapu	National Park	TAS
Neds Reef	Conservation Area	TAS
Nicholson floodplain G.L.R	Natural Features Reserve	VIC
Night Island	Conservation Area	TAS
Ninety Mile Beach	Marine National Park	VIC
Ninth Island	Conservation Area	TAS
Nooramunga Marine & Coastal Park	National Parks Act Schedule 4 park or reserve	VIC
North East Islet	Nature Reserve	TAS
North East River	Game Reserve	TAS
North Scottsdale	Regional Reserve	TAS
Nungurner B.R.	Natural Features Reserve	VIC
Nyerimilang Park G.L.R.	Natural Features Reserve	VIC
Old Waterhouse Rd Scottsdale	Conservation Covenant	TAS
Oxberry Plains	Regional Reserve	TAS
Oyster Rocks	Conservation Area	TAS
Palana Beach	Nature Recreation Area	TAS
Panatana	Conservation Covenant	TAS
Pardoe Northdown	Conservation Area	TAS

Protected Area Name	Reserve Type	State
Pasco Group	Conservation Area	TAS
Patriarchs	Private Sanctuary	TAS
Patriarchs	Conservation Area	TAS
Peaked Hill	Regional Reserve	TAS
Pipers River Road	Conservation Covenant	TAS
Poddy Bay G.L.R	Natural Features Reserve	VIC
Point Fullarton G.L.R.	Natural Features Reserve	VIC
Port Sorell	Conservation Area	TAS
Prime Seal Island	Conservation Area	TAS
Providence Ponds F.F.R.	Nature Conservation Reserve	VIC
Pulp Mill - Four Mile Creek Wildlife Sanctuary	Conservation Covenant	TAS
Ram Island	Conservation Area	TAS
Raymond Island G.L.R.	Natural Features Reserve	VIC
Redbank SS.R.	Natural Features Reserve	VIC
Redbill Point	Conservation Area	TAS
Red Morass G.L.R.	Natural Features Reserve	VIC
Reedy Lagoon	Private Nature Reserve	TAS
Reef Island	Conservation Area	TAS
Rigby Island G.L.R.	Natural Features Reserve	VIC
Ringarooma Tier - Rushy Lagoon	Conservation Covenant	TAS
Rodondo Island	Nature Reserve	TAS
Rosedale B.R.	Natural Features Reserve	VIC
Roseneath Peninsula (1) G.L.R.	Natural Features Reserve	VIC

Protected Area Name	Reserve Type	State
Roseneath Peninsula (2) G.L.R.	Natural Features Reserve	VIC
Roydon Island	Conservation Area	TAS
Rubicon Sanctuary	Conservation Covenant	TAS
Sale Camping Reserve G.L.R.	Natural Features Reserve	VIC
Sale Common N.C.R.	Nature Conservation Reserve	VIC
Salt Lake - Backwater Morass G.L.R.	Natural Features Reserve	VIC
Seal Islands W.R.	Nature Conservation Reserve	VIC
Sellars Lagoon	Game Reserve	TAS
Sentinel Island	Conservation Area	TAS
Settlement Point	Conservation Area	TAS
Shag Lagoon	Conservation Area	TAS
Shiny Grasstrees	Conservation Covenant	TAS
Sidmouth	Conservation Area	TAS
Single Tree Plain	Conservation Area	TAS
Sister Islands	Conservation Area	TAS
Slaughterhouse Creek G.L.R	Natural Features Reserve	VIC
Southern Wilsons Promontory	Remote and Natural Area - Schedule 6, National Parks Act	VIC
South Pats River	Conservation Area	TAS
Spike Island	Conservation Area	TAS
Steel Bay - Newland Backwater G.L.R.	Natural Features Reserve	VIC
Stradbroke F.F.R.	Nature Conservation Reserve	VIC
Strzelecki	National Park	TAS
Sugarloaf Rock	Conservation Area	TAS

Protected Area Name	Reserve Type	State
Summer Camp	Conservation Area	TAS
Summerhill Drive Port Sorell	Conservation Covenant	TAS
Swan Reach Bay G.L.R.	Natural Features Reserve	VIC
Swell Point - Roseneath Point G.L.R.	Natural Features Reserve	VIC
Sydney Cove	Historic Site	TAS
Tamar	Conservation Area	TAS
Tambo Delta - Metung G.L.R.	Natural Features Reserve	VIC
Tarra-Bulga	National Park	VIC
Tarra River SS.R.	Natural Features Reserve	VIC
Tarra Tarra B.R	Natural Features Reserve	VIC
Tenth Island	Nature Reserve	TAS
The Billabong F.F.R.	Nature Conservation Reserve	VIC
The Dardenelles G.L.R	Natural Features Reserve	VIC
The Dock	Conservation Covenant	TAS
The Dutchman	Conservation Area	TAS
The Lakes	National Park	VIC
The Waterhole G.L.R	Natural Features Reserve	VIC
Thomson River SS.R.	Natural Features Reserve	VIC
Three Sisters-Goat Island	Nature Reserve	TAS
Tiffanys Park	Conservation Covenant	TAS
Tippogoree Hills	Conservation Area	TAS
Toms Cap S.R.	Natural Features Reserve	VIC
Toora H37 B.R	Natural Features Reserve	VIC

Protected Area Name	Reserve Type	State
Toora H41 B.R	Natural Features Reserve	VIC
Traralgon Creek (Yerang Park) F.R.	Nature Conservation Reserve	VIC
Traralgon South F.F.R.	Nature Conservation Reserve	VIC
Traralgon South F.R	Nature Conservation Reserve	VIC
Trousers Point Beach	Conservation Area	TAS
Tucker Swamp G.L.R	Natural Features Reserve	VIC
Umtali #1	Conservation Covenant	TAS
Umtali #2	Conservation Covenant	TAS
Unnamed (Badger Corner)	Conservation Area	TAS
Unnamed (Badger Head Road)	Conservation Area	TAS
Unnamed (Pipers Brook)	Conservation Area	TAS
Unnamed P0155	Private Nature Reserve	VIC
Unnamed P0190	Private Nature Reserve	VIC
Unnamed P0191	Private Nature Reserve	VIC
Unnamed P0207	Private Nature Reserve	VIC
Unnamed P0267	Private Nature Reserve	VIC
Vereker Creek	Reference Area	VIC
Victoria Lagoon G.L.R.	Natural Features Reserve	VIC
Warrigal Creek SS.R.	Natural Features Reserve	VIC
Waterhouse	Conservation Area	TAS
Waterhouse Island	Conservation Area	TAS
Wattle Point G.L.R.	Natural Features Reserve	VIC
Welshpool H16 B.R	Natural Features Reserve	VIC

Protected Area Name	Reserve Type	State
Welshpool H17 B.R	Natural Features Reserve	VIC
West Arm	Conservation Area	TAS
West Moncoeur Island	Nature Reserve	TAS
Willung B.R	Natural Features Reserve	VIC
Willung South B.R.	Natural Features Reserve	VIC
Wilsons Promontory	Wilderness Zone	VIC
Wilsons Promontory	National Park	VIC
Wilsons Promontory	Marine National Park	VIC
Wilsons Promontory Islands	Remote and Natural Area - Schedule 6, National Parks Act	VIC
Wilsons Promontory Marine Park	National Parks Act Schedule 4 park or reserve	VIC
Wilsons Promontory Marine Reserve	National Parks Act Schedule 4 park or reserve	VIC
Wingaroo	Nature Reserve	TAS
Won Wron F.R	Nature Conservation Reserve	VIC
Won Wron H21 B.R	Natural Features Reserve	VIC
Won Wron H22 B.R	Natural Features Reserve	VIC
Woodside F.R	Nature Conservation Reserve	VIC
Woodside H25 B.R	Natural Features Reserve	VIC
Woodside H26 B.R.	Natural Features Reserve	VIC
Woodside H27 B.R	Natural Features Reserve	VIC
Woodside H28 B.R	Natural Features Reserve	VIC

Protected Area Name	Reserve Type	State
Woranga B.R	Natural Features Reserve	VIC
Wright and Egg Islands	Conservation Area	TAS
Wright Rock	Nature Reserve	TAS
Wybalenna Island	Conservation Area	TAS
Yeerung B.R.	Natural Features Reserve	VIC
Yinnar B.R	Natural Features Reserve	VIC
Yorktown	Historic Site	TAS
Youngs Creek	Conservation Area	TAS

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State
Gippsland RFA	Victoria
Tasmania RFA	Tasmania

Nationally Important Wetlands [Resource Information]

Wetland Name	State
Billabong Flora and Fauna Reserve	VIC
Blackmans Lagoon	TAS
Bosses/Nebbor Swamp	VIC
Corner Inlet	VIC
Fergusons Lagoon	TAS
Hogans Lagoon	TAS
Jack Smith Lake State Game Reserve	VIC
Lake King Wetlands	VIC
Lake Victoria Wetlands	VIC
Lake Wellington Wetlands	VIC
Little Waterhouse Lake	TAS

Wetland Name	State
Macleod Morass	VIC
Russells Swamp	VIC
Sellars Lagoon	TAS
Stans Lagoon	TAS
Surveyors Creek	TAS
Tambo River (Lower Reaches) East Swamps	VIC
The Chimneys	TAS
Thompsons Lagoon	TAS
Tregaron Lagoons 1	TAS
Tregaron Lagoons 2	TAS
Unnamed wetland	TAS
Unnamed Wetland	TAS
Unnamed Wetland	TAS
Unnamed Wetland	TAS
Unnamed Wetland	TAS
Unnamed Wetland	TAS
Unnamed Wetland	TAS
Unnamed Wetland	TAS

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Bairnsdale Airport Upgrade	2024/09848		Referral Decision
Barnes Hill Nickel Laterite Project	2009/5121		Completed
Bell Bay Wind Farm	2024/09868		Assessment
Blue Marlin Offshore Wind Energy Project	2023/09532		Referral Decision
Boardwalk replacement and upgrades project	2023/09488		Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Gelliondale Wind Farm Project	2023/09577		Assessment
Gippsland Offshore Wind Farm Marine Survey Investigations	2023/09682		Completed
Gippsland Renewable Energy Zone Project	2022/09346		Assessment
Greater Gippsland Offshore Wind Project	2022/09379		Assessment
Greater Gippsland Offshore Wind Project Initial Marine Field Investigations	2022/09374		Completed
H2TAS (Hydrogen Tasmania) Renewable Hydrogen and Ammonia Facility	2022/09365		Completed
Hazelwood Mine Rehabilitation Project	2022/09239		Assessment
Marine Route Survey for Subsea Fibre Optic Data Cable System - Australia East	2024/09795		Completed
Motorcycle Training and Racing Track	2023/09448		Completed
North East Wind - construction and operation of wind turbines and associated infrastructure	2022/09388		Assessment
Preliminary Site Investigations for Great Eastern Offshore Wind Project	2024/09890		Referral Decision
Sassafras - Wesley Vale Irrigation Scheme Augmentation	2023/09666		Assessment
Seadragon Offshore Wind, Early Marine Surveys	2023/09670		Completed
Seadragon Offshore Wind Farm	2022/9163		Completed
Shearwater - Paynesville Residential Development	2023/09592		Assessment
South East Australia Carbon Capture and Storage Project, Commonwealth waters	2023/09732		Referral Decision
South East Australia Carbon Capture and Storage Project, Onshore and State waters	2023/09731		Referral Decision
Controlled action			

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Alberton Wind Farm, Sth Gippsland, Vic	2017/7854	Controlled Action	Post-Approval
Bridport Main Road Upgrade	2012/6515	Controlled Action	Completed
Constructed wetland in Macleod Morass	2000/14	Controlled Action	Post-Approval
Construction of NW Homemaker Shopping Centre	2009/4835	Controlled Action	Post-Approval
Develop an Offshore Tidal Energy Facility	2008/4518	Controlled Action	Completed
Gippsland Lakes Mosquito Control Aerial /Hovercraft Spraying	2001/491	Controlled Action	Completed
Gippsland Regional Port Project	2020/8667	Controlled Action	Assessment Approach
Golden Beach Gas Project	2019/8513	Controlled Action	Post-Approval
Gunns Bleached Kraft Pulp Mill, Longreach (near Bell Bay)	2005/2262	Controlled Action	Completed
Gunns Bleached Kraft Pulp Mill at Long Reach (near Bell Bay) or near Hampshire	2004/1914	Controlled Action	Completed
Installation of replacement crude-condensate pipeline, Vic	2014/7202	Controlled Action	Post-Approval
Kraft Pulp Mill and ancillary chemical production and infrastructure	2007/3385	Controlled Action	Post-Approval
Latrobe River Bridge Replacement Project, Tyers Road, Vic	2017/8052	Controlled Action	Post-Approval
Low Head Wind Farm, TAS	2012/6450	Controlled Action	Post-Approval
Maintenance Dredging of Toora Boat Ramp Channel	2008/4376	Controlled Action	Completed
Multi-lot Industrial Subdivision and Associated Works, east of Leesons Road, we	2009/4808	Controlled Action	Post-Approval
Musselroe Wind Farm	2002/683	Controlled Action	Post-Approval
Princes Highway Duplication - Traralgon East to Fulham	2010/5640	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Riviera Harbours Development (Stages 8D and 3rd entrance channel)	2002/732	Controlled Action	Post-Approval
Rural residential subdivision into 13 new allotments	2008/4505	Controlled Action	Post-Approval
Star of the South Offshore Wind Farm Project	2020/8650	Controlled Action	Guidelines Issued
Tasmania Natural Gas Project - Stage 2	2001/211	Controlled Action	Post-Approval
Thomson River Mercury Recovery Project	2010/5734	Controlled Action	Completed
Water Pipeline	2010/5327	Controlled Action	Post-Approval
Wellington Waters Canal Estate	2001/332	Controlled Action	Completed
West Mine Development	2002/903	Controlled Action	Post-Approval
West Sale Airport Runway Extension, Vic	2017/8106	Controlled Action	Post-Approval
Windfarm	2003/1109	Controlled Action	Completed
Yallourn Combined Cycle Gas Trubine (CCGT) Power Station	2010/5516	Controlled Action	Completed
Yolla Gas Field (TRL1) Development	2001/321	Controlled Action	Post-Approval
Not controlled action			
2004/2005 drilling program for exploration and production (VIC 01-06, 09-11, 16, 18 & 19 and VIC/RL	2003/1282	Not Controlled Action	Completed
2D seismic Survey in VIC/P55, VIC/RL2 and VIC/P41	2004/1876	Not Controlled Action	Completed
55m lattice tower & infrastructure	2003/1159	Not Controlled Action	Completed
Acquistion of 2D seismic data in State Waters adjacent to Ninety Mile Beach-VIC/P39(V)	2004/1889	Not Controlled Action	Completed
Allmans Levee Track - Maintenance Work	2003/1053	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Angas and Galloway Exploration Wells VIC/P39(v)	2005/2330	Not Controlled Action	Completed
Avon River Railway Bridge and level crossing upgrade, Stratford, Vic	2018/8325	Not Controlled Action	Completed
Basker-Manta-Gummy Oil Development	2011/6052	Not Controlled Action	Completed
Basker-Manta Oil Field Development	2005/2026	Not Controlled Action	Completed
Bass Basin - Pee Jay-1 - Drilling Program	2007/3908	Not Controlled Action	Completed
Beaconsfield Gold Mine Tailings Storage Facility	2007/3303	Not Controlled Action	Completed
Beardie-1 Field wildcat oil well	2001/505	Not Controlled Action	Completed
Biodiversity Impacts Audit	2011/6191	Not Controlled Action	Completed
Boolarra Water Supply Augmentation	2010/5555	Not Controlled Action	Completed
Bridport Road Upgrade - Maslins to Nourses Road	2006/2553	Not Controlled Action	Completed
Communications tower extension	2003/1099	Not Controlled Action	Completed
Construction of 165 Megalitre Dam at "Boobyalla Park"	2004/1428	Not Controlled Action	Completed
Development of Kipper gas field within Vic/L3, Vic/L4 Vic/RL2	2005/2484	Not Controlled Action	Completed
Development of Turrum Oil Field and associated infrastructure	2003/1204	Not Controlled Action	Completed
Drilling and side track completion at Baleen gas production well in Production Licence area VIC/L21	2004/1535	Not Controlled Action	Completed
Drilling of 'Culverin' oil exploration well, permit VIC/P56	2005/2279	Not Controlled Action	Completed
Drilling of Scallop-1 Exploration Well	2003/917	Not Controlled Action	Completed
East Pilchard exploration well	2001/137	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
East Princess Highway Duplication	2010/5332	Not Controlled Action	Completed
Gippsland Basin Seismic Programme	2004/1866	Not Controlled Action	Completed
Gippsland Lakes Composting Toilet Program	2000/66	Not Controlled Action	Completed
Hayes Hill Ridge Wind Farm	2007/3437	Not Controlled Action	Completed
Hazelwood Westfield Mine Development	2000/49	Not Controlled Action	Completed
Hemingway1/Oil Exploration	2001/177	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed
Kipper Tuna Turrum Project Maintenance Dredging	2010/5430	Not Controlled Action	Completed
Line of Sight Clearing on the Eastern Corridor, Regional Fast Rail	2010/5481	Not Controlled Action	Completed
Longtom-3 Gas Appraisal Well, VIC/P54	2005/2494	Not Controlled Action	Completed
Longtom Gas Pipeline Development, VIC/P54	2006/3072	Not Controlled Action	Completed
Long Waterhole project, South Gippsland Highway	2001/277	Not Controlled Action	Completed
Lower Latrobe River Wetlands: Water Regulation Infrastructure Project, Victoria	2017/7999	Not Controlled Action	Completed
Loy Yang Battery Energy Storage System	2021/8989	Not Controlled Action	Completed
Macleod Morass Over-Abundant Vegetation Management	2012/6325	Not Controlled Action	Completed
Marlin-Snapper Gas Pipeline Project	2006/3197	Not Controlled Action	Completed
Melville 1 Oil Exploration Well	2001/167	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
North East Tasmanian Access Study Stage 2 - New Road Construction - Western Approach to Scottsdale	2003/1266	Not Controlled Action	Completed
Offshore Petroleum Exploration	2001/289	Not Controlled Action	Completed
Offshore Seismic Survey	2001/498	Not Controlled Action	Completed
Port Welshpool Harbour Dredging	2007/3521	Not Controlled Action	Completed
Proposed development of Dalkeith Heights	2007/3825	Not Controlled Action	Completed
Proposed Multi-lot Residential Subdivision, 75 Paynesville Road and 114 Newlands Drive, Paynesville,	2017/7896	Not Controlled Action	Completed
Pump station upgrades and rising main construction, Lakes Entrance, Victoria	2016/7646	Not Controlled Action	Completed
Rebuild of Existing Bleached Pulp Facilities at Maryvale Mill	2005/2234	Not Controlled Action	Completed
Regional Fast Rail Project - Latrobe Valley Country Works Package	2002/654	Not Controlled Action	Completed
Rising Main Upgrade Bridge Pumping Station to Wastewater Treatment Plant, Bairnsdale, VIC	2014/7312	Not Controlled Action	Completed
Sale Golf Club Redevelopment and Residential Development	2006/3162	Not Controlled Action	Completed
Scotia Mine/Alluvial tin and sapphire mine	2006/3061	Not Controlled Action	Completed
Subdivision for Residential development	2004/1823	Not Controlled Action	Completed
The 3000 Acres, clearing and development of native vegetation	2006/3199	Not Controlled Action	Completed
To undertake maintenance dredging of the Toora Boat Ramp Channel, VIC	2014/7225	Not Controlled Action	Completed
Turrum Phase 2 Development Project	2008/4191	Not Controlled Action	Completed
Vegetation Management, Macleod Morass Wildlife Reserve,	2014/7265	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Gippsland Lakes Ramsar Site, VIC			
West Triton Drilling Program - Gippsland Basin	2007/3915	Not Controlled Action	Completed
Windfarm	2003/1100	Not Controlled Action	Completed
Yallourn Coal Field Development	2001/297	Not Controlled Action	Completed
Yallourn Pipeline Project	2006/3004	Not Controlled Action	Completed
Not controlled action (particular manner)			
2D & 3D seismic survey T/39P	2005/2237	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Aquisition Survey	2008/4041	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey	2008/4066	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey	2008/4131	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey Permit Area VIC/P49	2006/2943	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey	2008/4528	Not Controlled Action (Particular Manner)	Post-Approval
Apache 3D seismic exploration survey	2006/3146	Not Controlled Action (Particular Manner)	Post-Approval
Barnes Hill and Mount Vulcan Exploration Drilling Program	2008/4353	Not Controlled Action (Particular Manner)	Post-Approval
Bass Basin 2D and 3D seismic surveys (T/38P & T/37P)	2007/3650	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Bream 3D seismic survey	2006/2556	Not Controlled Action (Particular Manner)	Post-Approval
Construct 500Ml in-stream dam, Boobyalla Park	2007/3927	Not Controlled Action (Particular Manner)	Post-Approval
Construction of wharf	2003/1050	Not Controlled Action (Particular Manner)	Post-Approval
Country Passenger Rail Service Project - railway upgrade	2002/723	Not Controlled Action (Particular Manner)	Post-Approval
Creation of conservation covenant and sale of land for future residential develo	2009/4936	Not Controlled Action (Particular Manner)	Post-Approval
Dalrymple 3D Seismic Survey	2010/5680	Not Controlled Action (Particular Manner)	Post-Approval
Gas Pipeline	2000/20	Not Controlled Action (Particular Manner)	Post-Approval
Gippsland 2D Marine Seismic Survey - VIC/P-63, VIC/P-64 and T/46P	2009/5241	Not Controlled Action (Particular Manner)	Post-Approval
Gippsland Rail Line Upgrade - Longwarry East to Traralgon	2019/8564	Not Controlled Action (Particular Manner)	Post-Approval
Golden Beach gas field development	2003/1031	Not Controlled Action (Particular Manner)	Post-Approval
Highway Realignment and Upgrade	2009/4959	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval
Inspection of project vessels for presence of invasive marine pests in Commonwealth waters off Victo	2012/6362	Not Controlled Action (Particular Manner)	Post-Approval
Lakes Entrance Sand Management Program Trial Dredging	2007/3694	Not Controlled Action (Particular Manner)	Completed
Lakes Entrance Sand Management Program Trial Dredging	2007/3852	Not Controlled Action (Particular Manner)	Post-Approval
Longtom-5 Offshore Production Drilling (Vic/L29), VIC	2012/6498	Not Controlled Action (Particular Manner)	Post-Approval
Longtom South -1 Exploration Drilling	2011/6217	Not Controlled Action (Particular Manner)	Post-Approval
Maintenance dredging of 150,000 cubic metres of sediment in Burnie Port and du	2004/1569	Not Controlled Action (Particular Manner)	Post-Approval
Maintenance Dredging of Oceanic Sand	2011/5932	Not Controlled Action (Particular Manner)	Post-Approval
Non-exclusive 3-D Marine Seismic Survey, Bass Strait	2002/775	Not Controlled Action (Particular Manner)	Post-Approval
Northern Fields 3D Seismic Survey	2001/140	Not Controlled Action (Particular Manner)	Post-Approval
Pelican 3D Marine Seismic Survey, Gippsland Basin, Vic	2017/8097	Not Controlled Action (Particular Manner)	Post-Approval
Regional Fibre Optic Project (RFOP)	2003/916	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Scottsdale Irrigation Scheme (SIS) - Tasmania	2017/7981	Not Controlled Action (Particular Manner)	Post-Approval
Seismic Exploration in Permit VIC/P41	2001/267	Not Controlled Action (Particular Manner)	Post-Approval
Seismic Survey	2001/206	Not Controlled Action (Particular Manner)	Post-Approval
Seismic survey, Gippsland Basin	2001/525	Not Controlled Action (Particular Manner)	Post-Approval
Shearwater 2D and 3D marine seismic survey	2005/2180	Not Controlled Action (Particular Manner)	Post-Approval
Soil and Organic Recycling Facility	2005/2216	Not Controlled Action (Particular Manner)	Post-Approval
Southern Flanks 2D Marine Seismic Survey	2010/5288	Not Controlled Action (Particular Manner)	Post-Approval
Southern Margins 3D Seismic Survey VIC/P55	2007/3780	Not Controlled Action (Particular Manner)	Post-Approval
Tap Oil Ltd Molson 2D Seismic Survey T47P	2008/3967	Not Controlled Action (Particular Manner)	Post-Approval
Tuskfish 3D Seismic Survey, Bass Strait	2002/864	Not Controlled Action (Particular Manner)	Post-Approval
upgrade & installation of facilities at West Sale Aerodrome	2011/5948	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
West Seahorse Oil Development Project, Commonwealth waters offshore Victoria	2013/6973	Not Controlled Action (Particular Manner)	Post-Approval
Winnaleah Irrigation Scheme Augmentation	2011/5798	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
All actions taken in response to the current severe bushfires in Victoria.	2009/4787	Referral Decision	Completed
Beardie-1 Field wildcat oil well	2001/469	Referral Decision	Completed
Darymple 3D Seismic Survey, Petroleum Exploration Permit T/41P	2010/5322	Referral Decision	Completed
Holloman 2010 Vic/P60 3D Seismic Acquisition Survey Program	2009/5251	Referral Decision	Completed
Longtom 5 Offshore Production Drilling (VIC/L29)	2012/6404	Referral Decision	Completed
Longtom-5 Offshore Production Drilling (Vic/L29)	2012/6413	Referral Decision	Completed
Mineral Exploration Ringarooma Bay	2012/6508	Referral Decision	Completed
Scotia Mine Rehabilitation Project, TAS	2012/6425	Referral Decision	Completed
Shark 3D Seismic Survey	2007/3294	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Upwelling East of Eden	South-east

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Seabirds		

Scientific Name	Behaviour	Presence
Ardenna tenuirostris Short-tailed Shearwater [82652]	Breeding	Known to occur
Ardenna tenuirostris Short-tailed Shearwater [82652]	Foraging	Known to occur
Diomedea exulans (sensu lato) Wandering Albatross [1073]	Foraging	Known to occur
Diomedea exulans antipodensis Antipodean Albatross [82269]	Foraging	Known to occur
Eudyptula minor Little Penguin [1085]	Breeding	Known to occur
Eudyptula minor Little Penguin [1085]	Foraging	Known to occur
Pelagodroma marina White-faced Storm-petrel [1016]	Breeding	Known to occur
Pelagodroma marina White-faced Storm-petrel [1016]	Foraging	Known to occur
Pelecanoides urinatrix Common Diving-petrel [1018]	Breeding	Known to occur
Pelecanoides urinatrix Common Diving-petrel [1018]	Foraging	Known to occur
Phalacrocorax fuscescens Black-faced Cormorant [59660]	Breeding	Known to occur
Phalacrocorax fuscescens Black-faced Cormorant [59660]	Foraging	Likely to occur
Phalacrocorax fuscescens Black-faced Cormorant [59660]	Foraging	Known to occur
Sterna striata White-fronted Tern [799]	Breeding	Known to occur

Scientific Name	Behaviour	Presence
Sterna striata White-fronted Tern [799]	Foraging	Known to occur
Thalassarche bulleri Bullers Albatross [64460]	Foraging	Known to occur
Thalassarche cauta cauta Shy Albatross [82345]	Foraging likely	Likely to occur
Thalassarche chlororhynchos bassi Indian Yellow-nosed Albatross [85249]	Foraging	Known to occur
Thalassarche melanophris Black-browed Albatross [66472]	Foraging	Known to occur
Thalassarche melanophris impavida Campbell Albatross [82449]	Foraging	Known to occur
Sharks		
Carcharodon carcharias White Shark [64470]	Breeding (nursery area)	Known to occur
Carcharodon carcharias White Shark [64470]	Foraging	Known to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Likely to be present

Bioregional Assessments		[Resource Information]
SubRegion	BioRegion	Website
Gippsland	Gippsland Basin	BA website

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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Appendix E TGPPL Consultation Information Package

TASMANIAN GAS PIPELINE CONSULTATION FACT SHEET

Tasmanian Gas Pipeline Pty Ltd (TGPPL) is the operator of the Tasmanian Gas Pipeline (TGP) and is required to have an Environment Plan that covers all their offshore petroleum activities. The current offshore operations Environment Plan for the TGP is being revised in accordance with Commonwealth and State legislation (see box below) that require a formal revision every 5 years, last revised in 2019.

Commonwealth waters	Victorian Waters	Tasmanian Waters
Pipeline Licence		
T/PL1-COMM VIC/PL30	VIC/PL30(V)	T/PL1-TAS
Regulator		
NOPSEMA	Department of Jobs, Precincts and Regions – Earth Resources	Department of State Growth – Marine Resources Tasmania
Act & Regulations		
Offshore Petroleum and Greenhouse Gas Storage Act & (Environment) Regulations	Offshore Petroleum and Greenhouse Gas Storage Act & Regulations	Petroleum (Submerged Lands) Act & (Management of the Environment) Regulations

All potential impacts and risks and associated prevention and mitigation control measures are being reviewed. A list of the environmental aspects of the activities relating to TGP operations is provided on the table on the next page. All impacts and risks have been assessed to be low. TGPPL identifies and manages all impacts and risks to an acceptable level and reduces them to As Low As Reasonably Practicable (ALARP). These is reviewed on a bi-annual basis or as needed.

Commissioned in 2002, the TGP is the only pipeline supplying natural gas to Tasmania. The pipeline extends from Longford in Victoria, across Bass Strait to Bell Bay in north-east Tasmania. The offshore section of the TGP is approximately 300 km in length with a maximum water depth along the route of 77 m. The seabed route is mostly flat and featureless and much of the pipeline is partially or fully buried. The pipeline traverses the Beagle Commonwealth Marine Reserve (refer to map on subsequent pages).

The steel pipeline is protected externally by an anti-corrosion coating and a concrete weight coating which also serves to stabilise the pipe and act as a barrier to third party impacts. Australian Maritime Safety Authority (AMSA) has applied a safety zone over the submerged section of the pipeline which prohibits anchoring within 500 m.

There are no permanent offshore facilities (e.g. platforms or mooring buoys) or equipment or machinery associated with the TGP.

There are no daily activities on the pipeline itself apart from continuous monitoring of pipeline flows and pressures by the Control Room in Melbourne. The monitoring system ensures that all relevant alarms and protective systems are in place so that pipeline integrity, and safety of personnel and the public, is not compromised and that security of supply is maintained. Remote shutdown, opening and closing of (onshore) pipeline valves and other ancillary functions are all conducted from the Control Room.

Surveys of the pipeline, to assess pipeline integrity and any maintenance requirements, are undertaken on a periodic basis and occur approximately every 2 to 5 years. These activities include:

- Periodic seabed surveys using remotely operated vehicles (ROVs), Side Scan Sonar (SSS) and Diver Inspections to detect existing or potential pipeline damage;
- Intelligent pigging to detect metal loss in the pipeline wall; and
- Maintenance activities conducted on an as-needs basis following surveys or identified issues, for example utility pigging, installation of grout bags or concrete mattresses and removal of objects dropped from passing ships.

Inspection and maintenance activities are undertaken with support from contracted vessels which operate to the latest international safety and environmental standards. Vessels are generally at sea for 1 to 4 weeks. No vessel refuelling is conducted at sea.

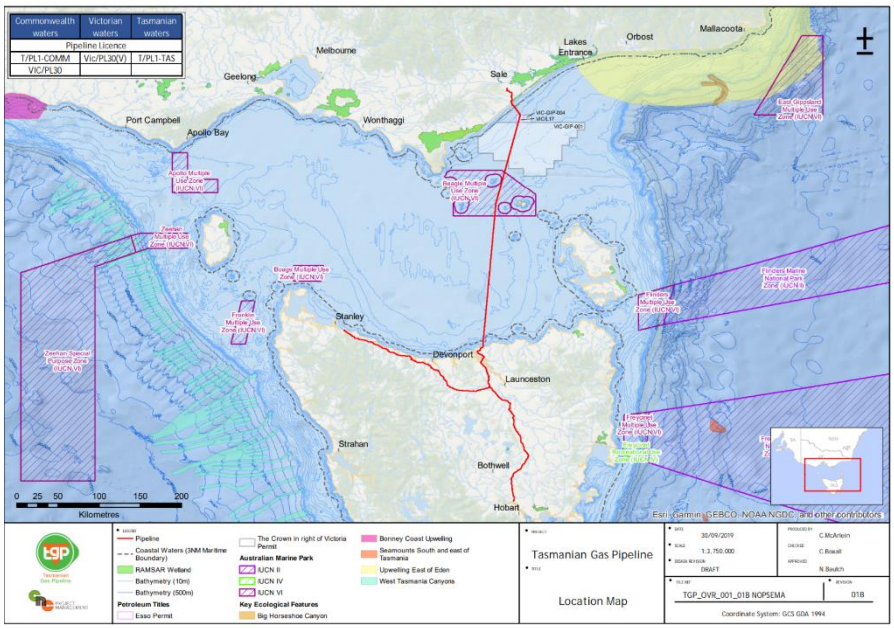
The Director of National Parks has confirmed that the pipeline licences (see box left) issued immediately before the Beagle Commonwealth Marine Reserve commenced are seabed usage rights under the EPBC Act and a permit is not required to undertake inspection and maintenance on the pipeline. In the Environment Plan TGPPL has considered the Beagle management plan objectives and values to ensure that its activities will not be inconsistent with the management plan.

TGPPL commits to keeping relevant stakeholders informed regarding the ongoing operations and is happy to engage in ongoing consultation. If you have any specific questions, request for additional information or feedback about any of these activities, please contact TGPPL at:

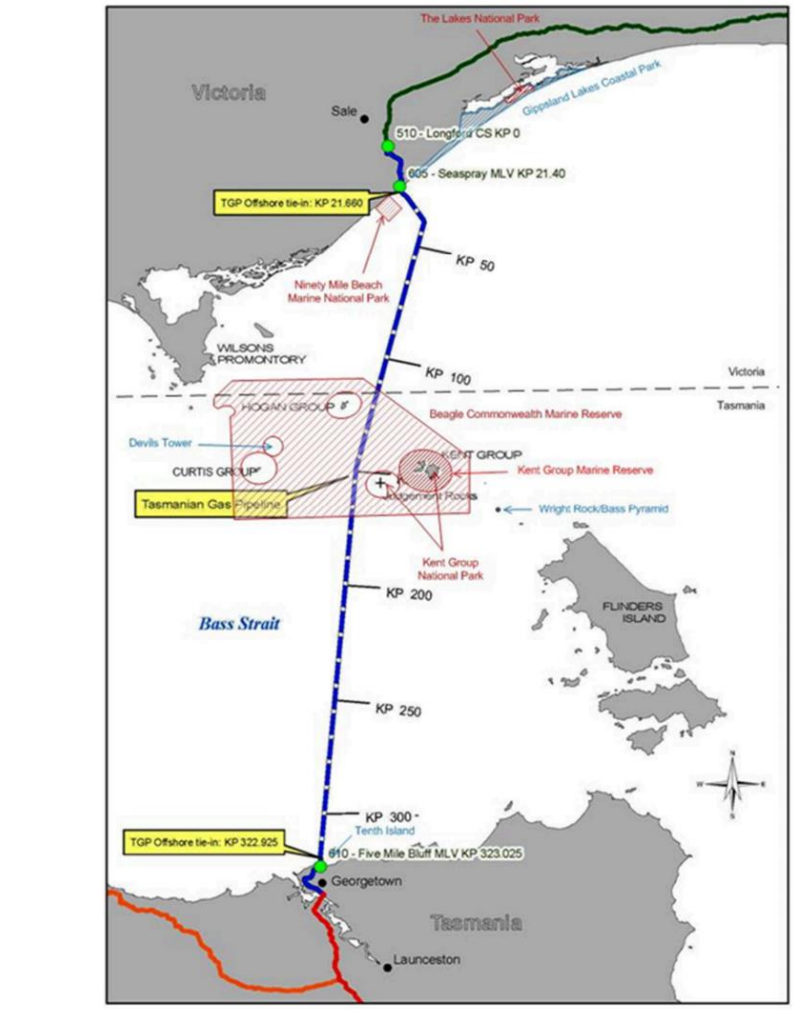
enquiries@tasmaniangaspipeline.com.au

Or call 1300 241 820

For any information you provide in your feedback, you may request that it not be published publicly. This information will be handled in accordance with the NOPSEMA guidelines by TGPPL to maintain your confidentiality and will not be published within the publicly available Environmental Plan documentation.



Location of Tasmanian Gas Pipeline



Legend

- Tasmanian Gas Pipeline (Offshore)
- Tasmanian Gas Pipeline
- Eastern Gas Pipeline
- Northern Pipeline Extension
- Southern Pipeline Extension

Potential Impacts, Risks and Control Measures

Provided in the table below are the key impacts / risks relating to the operation of the TGP to assist stakeholders in making an informed assessment on possible impacts to their activities, functions or interests in the area.

Aspect of Activities	Potential Consequence	Impact/Risk Reduction & Mitigation Measures
Physical interaction with other marine users	Disruption to other marine users such as commercial fishing and shipping	• Existing AMSA safety zone shown on navigational charts • Communicate commencement of vessel-based inspection and maintenance activity to relevant stakeholders via Notice to Mariners and via AMSA JRCC • No vessel activity of long-term duration at any one location
Seabed disturbance	Localised disturbance / damage to benthic habitats and communities	• No anchoring except in an emergency • Vessel cargo securing manual
	Disturbance / damage to cultural heritage sites	• Vessel crane handling and transfer procedures, maintenance of vessel lifting equipment • Vessel GIS contains locations of cultural heritage sites in vicinity of pipeline • Small area of benthic habitat disturbance, rapidly filled / recolonised
Vessel planned discharges to the sea - Sewage and food waste - Treated bilge and deck wash	Temporary and localised reduction in water quality	• Routine discharges and vessel waste treatment systems will meet MARPOL requirements • No discharge of oily water exceeding 15 ppm oil in water content • Food-scraps macerated prior to discharge • Planned chemical discharges assessed and approved prior to use
Vessel noise	Localised sound emissions	• Maintain caution and 'no approach' zones from cetaceans / seal colonies
	Temporary disturbance / displacement of sound sensitive fauna	• Soft start procedures for SSS surveys, if required.
Unplanned vessel interaction with marine fauna (vessel strike)	Injury / death of marine megafauna	• Vessels only travel at slow speeds along pipeline route • Maintain caution and 'no approach' zones from cetaceans / seal colonies
Unplanned introduction of invasive marine species (IMS) from vessel ballast water / biofouling	Displacement of native species and habitat domination	• Ballast Water Management Plan and Certificate, Ballast Water Record System • Vessel clearance obtained to enter Australian territory through DAWR prearrival reporting system (MARS) • Adherence to Australian Ballast Water Management Requirements • Biofouling Risk Assessment shows low risk of IMS introduction • Immersible equipment cleaning
Accidental release of hazardous substances and waste from vessel	Temporary and localised change in water quality	• Vessel compliant with MARPOL waste management requirements • Store hazardous liquids in designated areas with spill protection in place
	Injury / death of marine fauna	• Vessels comply with approved SMPEP, including maintaining spill kits, emergency response procedures and conducting spill response exercises
Accidental release of diesel fuel from vessel collision	Injury / death of marine fauna	• Communicate commencement of vessel-based inspection and maintenance activity to relevant stakeholders via Notice to Mariners and via AMSA JRCC
	Reduction in water quality	• Vessel crew and navigational equipment will meet legal requirements
	Pollution of shorelines such as sandy beaches	• Vessels comply with approved SMPEP (as above)
	Disruption to other marine users	• Implementation of onboard vessel SOPEP
Accidental release of natural gas from pipeline	Temporary and localised change in water quality	• Existing AMSA safety zone shown on navigational charts • NOPSEMA accepted pipeline safety case

Appendix F TGPPL Consultation Notes

Relevant Person(s) Consulation List 2024	Relevant Person Reference #	Reasoning for Relevance	Fortnight Follow-up via alternative communication	First Contacted	Number of Engagements	Relevant Person(s) Feedback Summary	Assessment Required	Ongoing Consultation
Department of Agriculture, Fisheries and Forestry	RP#001	Identified as a Commonwealth Department or Agency with NOPSEMA Guideline N-04750-GL1887 A705589. Review of the relevant agency under Environment Regulations section highlighted that either the planned or unplanned activities outlined in the EP met the criteria for relevance.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
Department of Agriculture, Fisheries and Forestry – Biosecurity (marine pests)	RP#002	Identified as a Commonwealth Department or Agency with NOPSEMA Guideline N-04750-GL1887 A705589. Review of the relevant agency under Environment Regulations section highlighted that either the planned or unplanned activities outlined in the EP met the criteria for relevance.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
Department of the Environment and Energy - Director of National Parks	RP#003	Identified as a Commonwealth Department or Agency with NOPSEMA Guideline N-04750-GL1887 A705589. Review of the relevant agency under Environment Regulations section highlighted that either the planned or unplanned activities outlined in the EP met the criteria for relevance.		Email with information package sent 2/9/2024 (Appendix E)	3	Informed of changes to the SE Commonwealth Marine Reserve Management Plan upcoming. Advised on EP identifying marine park values, impacts and risks and addressing these (including ecosystem values). Referenced NOPSEMA Guidance Note (GN1785) with Marine Parks Australia to be followed. Updated information on emergency response request for DNP to be contacted where spill occurs within or threatens a Marine Park.	N/A Action 1: Reviewed the information within the EP against the Guidance Note to ensure compliance. Action 2: Added the DNP contact information to the OPEP if the situation arises where the spill occurs within or is likely to impact the National Park (Beagle Marine Park).	Maintain in database and continue consultation. Consult when activities occur in Marine Park or as advised in Oil Spill Response.
Australian Maritime Safety Authority (AMSA)	RP#004	Identified as a Commonwealth Department or Agency with NOPSEMA Guideline N-04750-GL1887 A705589. Review of the relevant agency under Environment Regulations section highlighted that either the planned or unplanned activities outlined in the EP met the criteria for relevance.		Email with information package sent 2/9/2024 (Appendix E)	5	A map visually representing the offshore vessel traffic around the TGP Operations was provided for reference. An update to contact details given. Ongoing consultation with respect to activities being conducted was advised and vessel collision risk raised as main area of concern, referencing the COLREGs and requirements to mitigate risks.	N/A as vessel collision addressed already with the same reference to COLREGs. **Action 1**: Update contact information as provided (Completed), **Action 2:** Ongoing consultation recorded in EP (Completed)	Maintain in database and continue consultation. Working vessels and support vessels notify AMSA's Response Centre (ARC) through rccaus@amsa.gov.au (Phone: 1800 641 792 or +61 2 6230 6811) for promulgation of radio-navigation warnings 24-48 hours before operations commence. Australian Hydrographic Office (AHO) contacted through datacentre@hydro.gov.au no less than four working weeks before operations commence for the promulgation of related notices to mariners.
Australian Fisheries Management Authority (AFMA)	RP#005	Identified as a Commonwealth Department or Agency with NOPSEMA Guideline N-04750-GL1887 A705589. Review of the relevant agency under Environment Regulations section highlighted that either the planned or unplanned activities outlined in the EP met the criteria for relevance.		Email with information package sent 2/9/2024 (Appendix E)	2	Suggested additional relevant persons through AFMA consultation website. No problems or additional comments raised.	N/A, **Action:** Review list of contacts from AFMA website and confirm contacted relevant. (Completed, already engaged relevant stakeholders from list).	Maintain in database and continue consultation.
Department of Defence	RP#006	Identified as a Commonwealth Department or Agency with NOPSEMA Guideline N-04750-GL1887 A705589. Review of the relevant agency under Environment Regulations section highlighted that either the planned or unplanned activities outlined in the EP met the criteria for relevance.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
Department of Climate Change, Energy, the Environment and Water	RP#007	Identified as a Commonwealth Department or Agency with NOPSEMA Guideline N-04750-GL1887 A705589. Review of the relevant agency under Environment Regulations section highlighted that either the planned or unplanned activities outlined in the EP met the criteria for relevance.		Contacted on 16/08/2024 via General Enquiries phone number to obtain best contact information.	2	No response given.	N/A	Maintain in database and continue consultation.
Victorian Fisheries Authority	RP#009	Operating regulator for Victorian State waters Fisheries area within TGP OA and ZPI.		Contacted on 30/08/2024 via General Enquiries. Case CCC-1112432-D0B1H1 - Tasmanian Gas Pipeline project.	4	Suggested additional relevant persons.	N/A, **Action:** Contact additional relevant persons identified (Completed, response received from SIV contact, no response from VRFish)	Maintain in database and continue consultation.
Department of Environment, Land, Water and Planning (DELWP) (Victoria)	RP#011	State department relevant to the environment, regulation and Victorian State interests for land and sea areas in which TGP operates and conducts activities.		Email with information package sent 2/9/2024 (Appendix E)	4	Remove the delwp.vic.gov.au email from your list, as that's a now redundant email address and department. Contact is Earth Resources Regulator through DEECCA.	N/A, **Action**: Remove delwp email contact information and replace with up-to-date (Complete, removed DELWP contact, appropriate email and department already identified and contacted as part of consultation - no response received)	Remove from consultation list as redundant contact information. RP#026 was given as contact.
Department of Transport (DOT) (Victoria)	RP#012	State department relevant to the environment, regulation and Victorian State interests for land and sea areas in which TGP operates and conducts activities.		Email with information package sent 2/9/2024 (Appendix E)	2	Undeliverable - no response.	N/A	Remove from consultation list as redundant contact information. RP#014 replaced.

Environment Protection Authority (Victoria)	RP#013	State department relevant to the environment, regulation and Victorian State interests for land and sea areas in which TGP operates and conducts activities.		Email with information package sent 2/9/2024 (Appendix E)	3	As it is just an update to a plan and there are no new works proposed, did not wish to review.	N/A	Maintain in database and continue consultation.
Safe Transport Victoria – On the Water	RP#014	State department relevant to the environment, regulation and Victorian State interests for land and sea areas in which TGP operates and conducts activities.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
Parks Victoria	RP#015	State department relevant to the environment, regulation and Victorian State interests for land and sea areas in which TGP operates and conducts activities. Manages State Parks and environmental, ecological and other concerns releavnt to environment management.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
Ports Victoria	RP#016	Operating within Victorian State waters and engaged when operating vessels within Victorian State Waters and Ports.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
Heritage Victoria	RP#017	State department relevant to the management and reporting of heritage sites in Victoria and state waters.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
Department of Natural Resources and Environment Tasmania - Environment, Heritage and Land Division	RP#018	State department relevant to the management and reporting of environment, land and heritage sites in Tasmania and its state waters.		Email with information package sent 2/9/2024 (Appendix E)	5	No issues or points of feedback have arose.	N/A, **Action:** Change primary contact email for stakeholder (complete)	Maintain in database and continue consultation.
Department of Natural Resources and Environment Tasmania - Parks & Wildlife Services	RP#019	State department relevant to the environment, regulation and Tasmanian State interests for land and sea areas in which TGP operates and conducts activities. Manages State Parks and environmental, ecological and other concerns releavnt to environment management.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
Department of Natural Resources and Environment Tasmania -Biosecurity Tasmania	RP#020	State department relevant to the environment, regulation and Tasmanian State interests biosecurity in State waters in which TGP operates and conducts activities.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
Department of Natural Resources and Environment Tasmania -Marine Resources	RP#021	State department relevant to the environment, regulation and Tasmanian State interests Marine resources in State waters in which TGP operates and conducts activities.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
Department of Natural Resources and Environment Tasmania -Marine Aquaculture	RP#022	State department relevant to the environment, regulation and Tasmanian State interests Marine Aquaculture in State waters in which TGP operates and conducts activities.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
Environment Protection Authority (Tasmania)	RP#023	State department relevant to the environment, regulation and Tasmanian State interests for land and sea areas in which TGP operates and conducts activities.		Email with information package sent 2/9/2024 (Appendix E)	3	No comment on EP renewal.	N/A	Maintain in database and continue consultation.
Marine and Safety Tasmania	RP#024	State department relevant to the safety, regulation on State Waters with interests in areas in which TGP operates and conducts activities.		Email with information package sent 2/9/2024 (Appendix E)	3	No comments or feedback.	N/A	Maintain in database and continue consultation.
TasPorts	RP#025	Operating within Tasmanian State waters and engaged when TGPPL operating vessels within State Waters and Ports.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
Department of Energy, Environment and Climate Action (Victoria) - Earth Resources Regulator (Petroleum email)	RP#026	Department of reponsible State Minister for Victoria. Required relevant person as per EPBC Act.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
Department of State Growth – Mineral Resources Tasmania (MRT)	RP#027	Department of reponsible State Minister for Tasmania. Required relevant person as per EPBC Act.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
Wellington Shire Council (Victoria)	RP#028	Local council within ZPI and Operational area of Victorian State waters.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
George Town Council (Tasmania)	RP#029	Local council within ZPI and Operational area of Tasmanian State waters.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
Lakes Entrance Fishermen's Cooperative Limited (LEFCOL)	RP#030	The Co-operative has established itself as one of the most important voices in the Australian Fishing Industry and the largest (fleet and throughput) fishing co-operatives in Australia. AFMA industry assosiated contacts.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.

South East Trawl Fishing Industry Association (SETFIA)	RP#031	Relevant Fishery Assosiation within the Operations Area and ZPI. Their vision is to o promote and protect the interests of members in all forms particularly within the Commonwealth Trawl Sector and shared fisheries." The Association's goals are to work with fishers, the fishery manager AFMA, other government departments and assessment scientists to set accurate total allowable catches (TACs), invest cost-recovered levies well, and ensure access to fishing grounds.		Email with information package sent 2/9/2024 (Appendix E)	1	Referred to individual within organisation.	N/A. **Action:** contact relevant person within SETFIA	Maintain in database and continue consultation.
Person within South East Trawl Fishing Industry Association (SETFIA)	RP#032	Identified by other relevant persons as a Relevant Person, and also part of Fishery Assosiation within the Operations Area and ZPI.		Email with information package sent 2/9/2024 (Appendix E)	3	No comment on EP renewal.	N/A	Maintain in database and continue consultation.
Name withheld	RP#033	Organisation representing the Eastern Tuna and Billfish Fishery mapped within the Operations and ZPI area.		Email with information package sent 2/9/2024 (Appendix E)	6	Reviewed and decided activities were low risk to the tuna fishing industry. Wanted to emphasise importance and value of SBT and ETBF species in the region, and BIA's in the Bass Strait, and how these have strong potential to interact with any energy exploitation-related activities. Welcomes further dialogue to deconflict any issues before they arise. Also suggested another relevant stakeholder (Australian Bluefin Tuna Industry Association).	No further assessment required, concerns raised already discussed in EP when discussing the potential risks and control measures for protection of marine flora and fauna, marine environment and protection of other marine users (Section 6.1, 6.2, and 6.3 respectively). **Action 1:** continuous dialogue with RP#033, particularly notification of activities where there is potential concurrent survey/maintenance work and fishing activities where vessels are likely to have close contact (referenced as Advance notice through the "48 hour look ahead" process implemented by some contracted oil and gas marine assets is acceptable and appreciated.) **Action 2:** Also consult with Australian Southern Bluefin Tuna Industry Association (complete already identified as relevant person/group)	Maintain in database and continue consultation. Notify at least 48 hours prior to activity where concurrent survey/maintenance work and fishin activity may occur.
Australian Southern Bluefin Tuna Industry Association (ASBTIA)	RP#034	Eastern Tuna and Billfish Fishery mapped within the Operations and ZPI area.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
Seafood Industry Victoria	RP#035	As the leading voice on Victoria's seafood industry and responds on the industry's behalf communicating and ensuring the flow of information between the industry, fisheries stakeholder groups and communities. Fisheries groups within the OA and ZPI when vessels conducting activities.		Email with information package sent 2/9/2024 (Appendix E)	7	Supported consultation with members, no feedback or responses given.	N/A	Maintain in database and continue consultation.
South East Management Advisory Committee (SEMAC)	RP#036	Southern and Eastern Scalefish and Shark Fishery (SESSF) is a multi-sector, multi-species fishery that covers almost half of the Australian Fishing Zone. Considered to have potential intersection with OA and ZPI for activities conducted within the EP.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
Scallop Management Advisory Committee	RP#037	Bass Strait Central Zone Scallop Fishery within the Operating area and ZPI.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
Victorian Scallop Fishermans Association	RP#038	Located within the ZPI and OA as opertaing in the Bass Strait Central Zone Scallop Fishery, the assosiation represents Victorian Scallop Fishermen and their Families. Based in Lakes Entrance Victoria, there is potential intersection of OA and ZPI when conducting activities.		Email with information package sent 2/9/2024 (Appendix E)	1	Undeliverable - no response.	N/A	Unable to obtain alternative contact information, remove from database.
Scallop Fishermen's Association of Tasmania	RP#039	Bass Strait Central Zone Scallop Fishery within the Operating area and ZPI, there is potential intersection of OA and ZPI when conducting activities.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
Seafood Industry Tasmania	RP#040	The peak body representing the people of the seafood industry. People on boats. People producing fish. People catching fish. People farming fish. We support people who live in regional communities. There is potential intersection of OA and ZPI when conducting activities with the groups represented by the organisation.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
Commonwealth Fisheries Association	RP#041	Commonwealth Fisheries Assosiation is a body representing groups within fisheries in Commonwealth areas where TGP Operates and ZPI.		Email with information package sent 2/9/2024 (Appendix E)	2	Undeliverable - no response.	N/A	Unable to obtain alternative contact information, remove from database.
Southern Shark Industry Alliance	RP#042	Fishery area located within the Operations and ZPI for TGP, there is potential intersection of OA and ZPI when conducting activities.		Contacted on 20/08/2024 via General Enquiry on Website. Transcript summary below: Description of TGP EP work and request for relevant person(s) contact information.	1	Responded to in RP#032	Responded to in RP#032	Maintain in database and continue consultation.

Southern Rocklobster Limited	RP#043	Fishery area located within the Operations and ZPI for TGP, there is potential intersection of OA and ZPI when conducting activities.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
Tasmanian Rock Lobster Fishermans Association	RP#044	Fishery area located within the Operations and ZPI for TGP, there is potential intersection of OA and ZPI when conducting activities.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
Abalone Council Australia	RP#045	Fishery area located within the Operations and ZPI for TGP, there is potential intersection of OA and ZPI when conducting activities.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
Victorian Abalone Council	RP#046	Fishery area located within the Operations and ZPI for TGP, there is potential intersection of OA and ZPI when conducting activities.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
Tasmanian Abalone Council	RP#047	Fishery area located within the Operations and ZPI for TGP, there is potential intersection of OA and ZPI when conducting activities.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
Gippsland Ports	RP#048	Port within the Victorian State Waters near TGP operations.		Contacted on 20/08/2024 via General	1	Contact provided for within	**Action:** contacted relavant person	Maintain in database and continue
				Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
		Self identified from when the enquiry email was responded to and shared internally within the organisation.		N/A - cc'd on information package email.	3	TGPPL does not impact Gippsland Ports Waters. Nominated another relevant person.	N/A. **Action:** already contacted the nominated relevant person.	Maintain in database and continue consultation.
Seafood Industry Australia	RP#049	The major body for seafood industry was considered relevant due to interest in fisheries and impact to seafood within the commonwealth and state waters where TGP Operates.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
Esso Australia Resources Pty Ltd	RP#050	Operate within ZPI, whilst considered low likelihood, there is potential intersection of OA and ZPI when conducting activities.		Email with information package sent 2/9/2024 (Appendix E)	2	No response given.	N/A	Maintain in database and continue consultation.
Cooper Energy - General enquiries	RP#051	Operate within ZPI, whilst considered low		Contacted on 4/09/2024 via General	1	No response given.	N/A	Maintain in database and continue
APA Group - BassLink	RP#052	Operate within ZPI, whilst considered low likelihood, there is potential intersection of OA and ZPI when conducting activities.		Email with information package sent 2/9/2024 (Appendix E)	4	No comment at this time.	N/A	Maintain in database and continue consultation.
Indigo Cable	RP#053	Cable interects with the TGP, whilst considered low likelihood, there is potential intersection of OA and ZPI when conducting activities.		Email with information package sent 2/9/2024 (Appendix E)	3	No response given.	N/A	Maintain in database and continue consultation.
Gunai-Kurnai Land Council	RP#054	This RAP is recognised by the Federal Court and the State of Victoria as the Traditional Owners of a large area of Gippsland spanning from Warragul in the west to the Snowy River in the east, and from the Great Divide in the north to the coast in the south, approx. 10% of the state. The council represents the Traditional Owners of our Country, as determined by the Victorian Aboriginal Heritage Council under the Aboriginal Heritage Act, 2006.This area is within the OA and/or ZPI of TGP Operations.	Y	Email with information package sent 2/9/2024 (Appendix E)	3	No response given.	N/A	Maintain in database and continue consultation.
Mirimbiak Nations Aboriginal	RP#055	Previously identified as relevant group,	Y		1	Unable to get working contact	N/A	Obtain alternative contact information.
Aboriginal Land Council of Tasmania	RP#056	The statutory body established under Tasmanian law to own and manage land on behalf of Tasmania's Aboriginal Community. Considered a group that may represent indigenous groups located within the OA	Y	Email with information package sent 2/9/2024 (Appendix E)	3	No response given.	N/A	Obtain alternative contact information (email undeliverable but phone number was okay). Maintain in database and continue consultation.
Tasmanian Aboriginal Heritage Council	RP#057	The statutory Aboriginal Heritage Council was established in 2017 under the Aboriginal Heritage Act 1975. We are an independent body who advise the Tasmanian Government, land managers and owners on the protection and management of Aboriginal cultural heritage in Tasmania. Considered relevant due to their role advising govenrment on protection of indigenous matters within Tasmania where TGP Operates.	Y	Email with information package sent 2/9/2024 (Appendix E)	4	No response given.	N/A	Maintain in database and continue consultation.
Cape Barren Island Aboriginal Association Inc. (CBIAA)	RP#058	Island in the North West of Tasmania, not directly within the scope of the OA of the pipeline, however due to proximity to the ZPI, considered there may be cultural significant for the land, sea or sky in the area.	Y	Email with information package sent 2/9/2024 (Appendix E)	4	No response given.	N/A	Maintain in database and continue consultation.
Flinders Island Aboriginal Association Inc. (FIAAI)	RP#059	Island in the North West of Tasmania, not directly within the scope of the OA of the pipeline, however due to proximity to the ZPI, considered there may be cultural significant for the land, sea or sky in the area.	Y	Email with information package sent 2/9/2024 (Appendix E)	4	No response given.	N/A	Maintain in database and continue consultation.

Tasmanian Regional Aboriginal Communities Alliance	RP#060	The Tasmanian Regional Aboriginal Communities Alliance (TRACA) was developed to provide a mechanism to engage and advise Government at all levels in regard to affairs affecting Aboriginal Tasmanians.	Y	Email with information package sent 2/9/2024 (Appendix E)	3	No response given.	N/A	Maintain in database and continue consultation.
Melythina tiakana warrana (Heart of Country) Aboriginal Corporation		Melythina tiakana warrana members are direct descendants of the Aboriginal Ancestors from the Country of tebrakuna , known as the region of northeast Tasmania. Melythina tiakana warrana will preserve custodianship and pass on the cultural traditions, practices & knowledge's of our Ancestors, and conduct our business with cultural integrity. melythina tiakana warrana will operate on the premise of acknowledging that our Land is sacred, our Culture is precious, and we are a unique People. Considered to possibly have areas that may be within the ZPI of the TGP Operations.	Y	Email with information package sent 2/9/2024 (Appendix E)	5	No response given.	N/A	Maintain in database and continue consultation.
Six Rivers Aboriginal Corporation	RP#062	Helps care and run programs for Tiagarra in Devonport and Panatana Milathina natural heritage site in North West Tasmania. The Six Rivers Aboriginal Corporation is an established organisation committed to supporting and empowering our community. With a strong focus on community education and continuing our culture, the corporation is focused on instilling in our our youth a positive sense of culture and identity.	Y	Email with information package sent 2/9/2024 (Appendix E)	3	No response given.	N/A	Maintain in database and continue consultation.
Tasmanian Aboriginal Centre	RP#063	Considered a relevant person that supports indigenous values and conservation within Tasmania that may have interest in the cultural impacts of operations and ZPI from TGP.	Y	Email with information package sent 2/9/2024 (Appendix E)	4	No response given.	N/A	Maintain in database and continue consultation.
VRFish	RP#064	Nominated / referred by Scott Lawrance of VFA (on 5/9/24)		Email with information package sent 6/9/2024 (Transcript on following sheet)	2	No response given.	N/A	Maintain in database and continue consultation.