CARNARVON HIBISCUS PTY LTD

VIC/RL17
WEST SEAHORSE-3/WARDIE-1 WELLS
NON-PRODUCTION OPERATIONS
ENVIRONMENT PLAN (EP)

DOC NO: CHPL-WSH3-HSEQ-PLN-001

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4	19/12/2022	ADDRESS NOPSEMA RFFWI AND RE-ISSUE FOR ASSESSMENT	B. GIRDWOOD	K. ROBINSON	K. ROBINSON
3	30/08/2022	RENEWED COMMUNITY CONSULTATION	B. GIRDWOOD	M. PATON	M. PATON
2	30/06/2022	ADDITION OF WARDIE-1 WELLHEAD	B. GIRDWOOD	M.PATON	M.PATON
1	25/11/2019	ADDRESS NOPSEMA COMMENTS AND RE-ISSUE FOR ASSESSMENT	G. PINZONE	M. PATON	M. PATON
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Submitted by Carnarvon Hibiscus Pty Ltd as the titleholder and operator of the VIC/RL17 Production Licence.

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ABBREVIATIONS

Abbreviation	Definition
3D Oil	3D Oil Limited
ABS	Australian Bureau of Statistics
AEP	Australian Energy Producers (formerly APPEA)
AFMA	Australian Fisheries Management Authority
AFZ	Australian Fishing Zone
AHD	Australian Height Datum
AHO	Australian Hydrographic Office
ALARP	As Low As Reasonably Practicable
AMSA	Australian Maritime Safety Authority
AMP	Australian Marine Parks
API	American Petroleum Institute
APPEA	Australian Petroleum Production & Exploration Association
ASBTIA	Australian Southern Bluefin Tuna Industry Association
ATBA	Area to be Avoided
BIAs	Biologically Important Areas
BoM	Bureau of Meteorology
BPEM	Best Practice Environmental Management
CAMBA	Agreement between the Government and Australia and the Government of the People's Republic of China for the Protection of Migratory Birds and their Environment 1986
CER	Irish Commission for Energy Regulation
CFA	Commonwealth Fisheries Association
CHPL	Carnarvon Hibiscus Pty Limited
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora 1973
CMP	Crisis Management Plan
CMT	Crisis Management Team
CoEP	Code of Environmental Practice
CTS	Commonwealth Trawl Sector
DAWE	Department of Agriculture, Water and the Environment
DCCEEW	Department of Climate Change, Energy, the Environment & Water
DJPR	Department of Jobs, Precincts & Regions
DoD	Department of Defence
DIRD	Department of Infrastructure and Regional Development
EAC	East Australian Current
EARPL	Esso Australia Resources Pty Ltd

Abbreviation	Definition
ESD	Ecologically Sustainable Development
EIA	Environmental Impact Assessment
EMBA	Environment that May be Affected
EMT	Emergency Management Team
EMW	Equivalent Mud Weight
EP	Environment Plan
E&P Forum	Oil Industry International Exploration and Production Forum
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
EPO	Environmental Performance Outcomes
EPS	Environmental Performance Standards
ERA	Environmental Risk Assessment
FFG	Flora and Fauna Guarantee
FIT	Formation Integrity Test
HAZID	Hazard Identification
HPB	Hibiscus Petroleum Berhad
HSE	Health Safety and Environment
HSSE	Health, Safety, Security, Environment and Quality Management
HSEMS	Health, Safety and Environment Management System
IAP2	International Association for Public Participation
IOGP	International Association of Oil & Gas Producers
IPIECA	International Petroleum Industry Environmental Conservation Association
IMS	Integrated Management system
IMT	Incident Management Team
IRT	Incident Response Team
JAMBA	Agreement between the Government and Australia and the Government of Japan for the Protection of Migratory Birds and Birds in Danger of Extinction and their Environment 1974
JSEA	Job Safety and Environment Analysis
JSEA	Job Safety and Environment Analysis
KEF	Key Ecological Features
MAE	Major Accident Events
MD	Measured depth
MEE	Major Environment Events
mMDRT	Metres Measured Depth Below Rotary Table
MNES	Matters of National Environmental Significance
MNP	Ninety Mile Beach Marine National Park
MOC	Management of Change
MODU	Mobile Offshore Drilling Unit

Abbreviation	Definition
MSL	Mean Sea Level
MSS	Management System Standards
MSV	Maritime Safety Victoria
MyOSH	Incident Management System
NNTT	National Native Title Tribunal
NOPSEMA	National Offshore Petroleum Safety Environmental Management Authority
NOPTA	National Offshore Petroleum Titles Authority
OPEP	Oil Pollution Emergency Plan
OPGGS(E)	Commonwealth Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023
OPGGS Act	Offshore Petroleum and Greenhouse Gas Storage Act 2006 (Cth)
OSMP	Oil Spill Monitoring Plan
OSRA	Oil Spill Response Atlas
P&A	Plug and Abandon
PA	Permanent Abandonment/Permanently Abandon
PMST	Protected Matters Search Tool
PPE	Personal Protective Equipment
PSZ	Petroleum Safety Zone
PVT	Pressure, volume and temperature
RAMSAR	Convention on Wetlands of International Importance especially as Waterfowl Habitat 1971
ROKAMBA	Republic of Korea Migratory Birds Agreement 2006
ROS	Regional Outfall Sewer
ROV	Remotely Operated Vehicle
SESS	Southern and Eastern Scalefish and Shark
SETFIA	South-East Trawl Fishing Industry Association
SIV	Seafood Industry Victoria
SG	Specific Gravity
SHS	Scalefish Hook Sector
SSIA	Southern Shark Industry Alliance
SSFA	Sustainable Shark Fishing Association
SPFIA	Small Pelagic Fishery Industry Association
TA	Temporary Abandonment/Temporarily Abandon
TACC	Total Allowable Commercial Catch
TECs	Threatened Ecological Communities
TOC	Top of Cement
TVD	True Vertical Depth
UNEP IE	United Nations Environment Programme Industry and Environment

Abbreviation	Definition
VADA	Victorian Abalone Divers Association
VFA	Victorian Fisheries Authority
VRLA	Victorian Rock Lobster Association
VSFA	Victorian Scallop Fisherman's Association
WEMS	Well Engineering Minimum Standards
WOMP	Well Operations Management Plan
WSH-3	West Seahorse-3

UNITS OF MEASURMENT

Abbreviation	Measurement
'	Foot/Feet
"	Inch(es)
°C	Degrees Celsius
bbl	Barrel
dB	Decibel(s)
g	Gram/s
ha	Hectare/s
hr	Hour/s
kJ	Kilojoule(s)
km	Kilometre
km/hr	Kilometres per hour
kPa	Kilopascal(s)
L	Litre(s)
m	Metre(s)
m^2	Square metres
m^3	Cubic metres
mL	Millilitre(s)
MM	Million
MMbbl	Million barrels
MMscf	Million Standard Cubic Feet
nm	Nautical Mile(s)
scf	Standard Cubic Foot/Feet
t	Tonne(s)
µg	Microgram(s)

1 INTRODUCTION

1.1 BACKGROUND

The West Seahorse-3 (WSH-3) and Wardie-1 wells were originally drilled by 3D Oil Limited (3D Oil) in early 2008 in the then Exploration Permit Vic/P57. The wells are in Commonwealth waters in eastern Bass Strait approximately 13 km off the Gippsland coast (Figure 1.1).

The objectives of the WSH-3 well were to appraise and develop the hydrocarbon bearing target sandstones of the Latrobe Group in the West Seahorse field, originally discovered by drilling the West Seahorse-1 well in 1981. The deviated well intersected the primary sandstone at 1,561 metres below the rotary table (mRT) close to the prognosed depth and confirmed the presence of an oil column down to 1,570 mRT in a high-quality reservoir. Oil is also interpreted within an overlying interbedded interval of sandstones, coals and siltstones from 1,552 mRT to 1,561 mRT. Deeper targets were intersected deep to prognosis and below the oil-water contacts.

Following completion of the well, WSH-3 was successfully temporarily abandoned (suspended) as a potential future development well for the field in early May 2008 in accordance with international standards for well integrity (NORSOK, 2013).

Wardie-1 was a deviated exploration well drilled immediately following WSH-3 from an adjacent slot and the wells are approximately 2.8 m apart. The main objectives were the Eocene sandstones intersected in the West Seahorse oil field. Results indicated that the Wardie structure, although valid and oil-bearing, were smaller than mapped pre-drilling and the potential recoverable oil volume was not considered significant enough to justify suspension of the well. Wardie-1 was successfully plugged and abandoned in May 2008 in accordance with international standards for well integrity (NORSOK, 2013).

After successfully cutting and removing the 13 3/8” casing and wellhead three attempts were made to cut the 30” conductor but despite positive indications of a cut the conductor could not be pulled free. Subsequently the 30” landing string was backed out at the Quik-Jay connector and released casing pulled to surface and laid out. The 30” conductor remains in-situ approximately 2 m above the seabed. At that time the operator (3D Oil) indicated its intention to the Department of Primary Industries to remove the Wardie-1 conductor during subsequently proposed field development operations on WSH-3, and cited that given its location, Wardie-1 was incorporated into the associated Safety Zone for WSH-3.

Carnarvon Hibiscus Pty Ltd (CHPL) acquired the tenement in December 2012 and since there have been no further works on WSH-3 or Wardie-1. The West Seahorse-3 well remains temporarily abandoned with the wellhead in place and the Wardie-1 conductor remains approximately 2.8 m from WSH-3 and 2 m above the seabed.

Retention Lease VIC/RL17 was granted in November 2021 over the former production license area VIC/L31. It is now intended that the West Seahorse-3 well will be permanently decommissioned, with operations intended to take place early 2025. Removal of the Wardie-1 conductor stub will be undertaken at the same time. All operations will be undertaken from a suitable Vessel which is yet to be contracted.

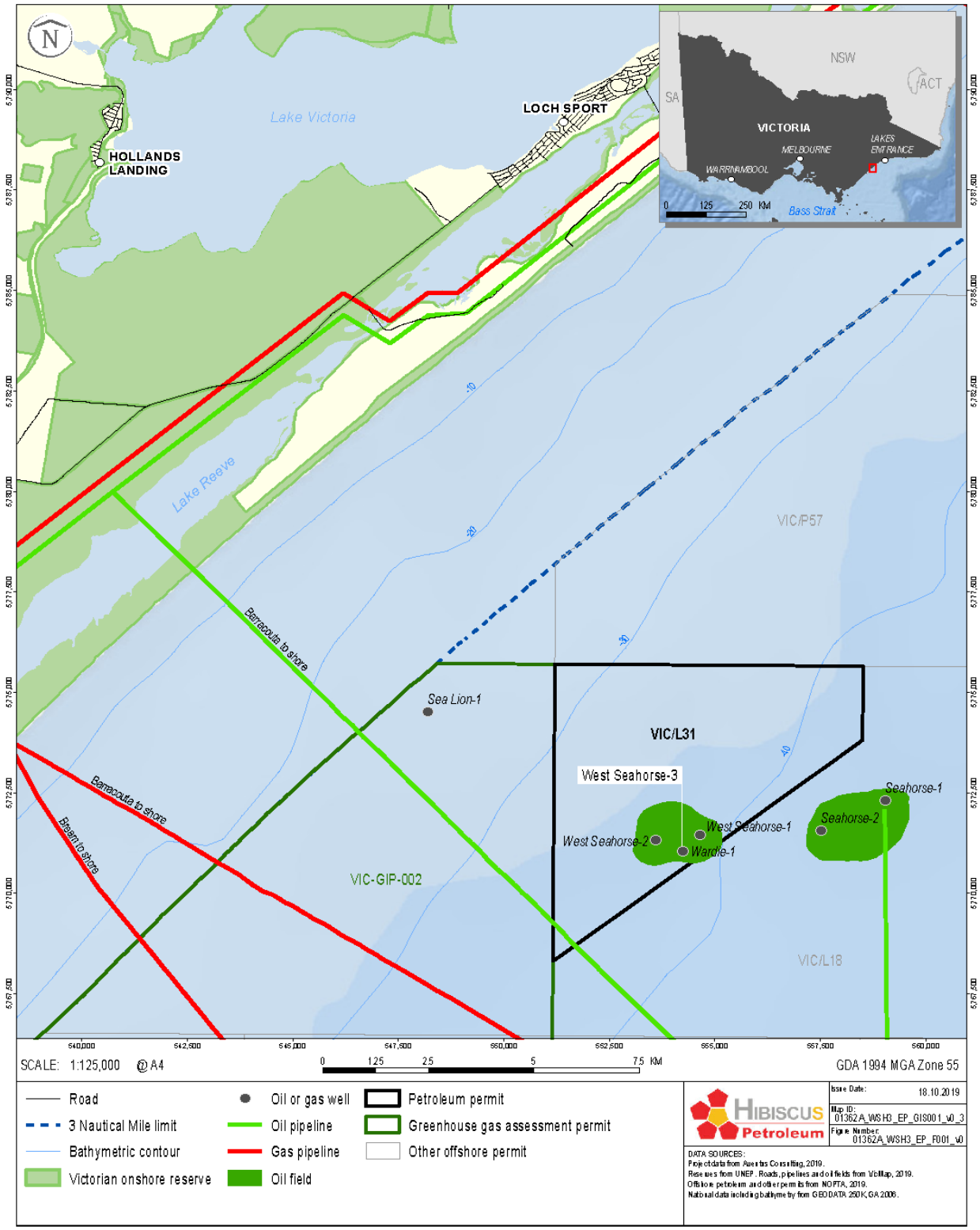

Figure 1.1. Location of VIC/L31 (now VIC/RL17) and the WSH-3 and Wardie-1 wells

1.2 THE TITLEHOLDER

Hibiscus Petroleum Berhad (HPB) is Malaysia's first listed independent oil and gas exploration and production company. Its key activities are focused on monetising producing oilfields and growing their portfolio of development and production assets. HPB is headquartered in Kuala Lumpur, and shares are listed on the Main Market of Bursa Malaysia Securities Berhad (Bursa Securities).

CHPL, a wholly owned subsidiary of HPB, acquired the VIC/P57 permit in December 2012 and successfully applied for a Production Licence (VIC/L31) over a portion of the block holding the West Seahorse Field, which was granted by the National Offshore Petroleum Titles Authority (NOPTA) in December 2013. At this time, 3D Oil was the joint titleholder with CHPL until September 2014 when CHPL purchased 3D Oil's share in the permit.

Subsequently CHPL successfully applied for a Retention Lease (VIC/RL17) which was granted in November 2021. Hibiscus Petroleum through its subsidiary CHPL, currently holds 100 percent of the VIC/RL17 Retention Lease and is the titleholder and Operator.

In accordance with Regulations 23(1)(2) of the Environmental Regulations, details of the titleholder and liaison person for this EP are listed below. In accordance with Regulation 23(3) of the Environmental Regulations Carnarvon Hibiscus will notify NOPSEMA of any change in the titleholder, a change in the nominated liaison, or changes to their contact details as soon as practicable after such a change takes place.

The titleholder for this activity is:

Carnarvon Hibiscus Pty Ltd
ACN: 157 689 426
2nd Floor, Syed Kechik Foundation Building, Jalan Kapas,
Bangsar, 59100 Kuala Lumpur, Malaysia
Phone: +603 2028 1025
Email: ken@hibiscuspetroleum.com

The nominated liaison person for this EP is:

Kevin Robinson
VP Project Assurance, Carnarvon Hibiscus Pty Ltd
2nd Floor, Syed Kechik Foundation Building, Jalan Kapas,
Bangsar, 59100 Kuala Lumpur, Malaysia
Phone: +603 2028 1025
Mobile: +6012 325 1839 or +1 808 219 6277
Email: kevin.robinson@hibiscuspetroleum.com

1.3 PURPOSE

The primary purpose of this Environment Plan (EP) is to provide an environmental impact assessment (EIA) and environmental risk assessment (ERA) of the WSH-3 wellhead during its non-production phase and secure environmental approval under the Commonwealth Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (herein referred to as the OPGGS(E)). This revision is to include proposed decommissioning activities for WSH-3 and removal of the Wardie-1 conductor which remains approximately 2.8m from WSH-3, 2m above the seabed and within the associated Safety Zone for WSH-3.

1.4 SCOPE OF THIS PLAN

The activity (as defined in Section 2.1) is conducted in accordance with all applicable legislation and regulations, and specifically to meet the requirements of the *Offshore Petroleum and Greenhouse Gas Storage Act* 2006 (Cth) (OPGGS Act) and its associated Regulations.

This EP is prepared in accordance with Division 2 of the OPGGS(E). It is submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment and acceptance under Division 4 of the OPGGS(E).

In brief, this EP includes a description of:

- The nature of the activity;
- Stakeholder consultation activities;
- The environment affected by the activity;
- Environmental impacts and risks (including emergency incidents);
- Mitigation and management measures;
- Environmental performance outcomes, standards and measurement criteria;
- How impacts and risks will be reduced to be As Low As Reasonably Practicable (ALARP) and 'acceptable' levels;
- The implementation strategy to ensure that the environmental impacts and risks are managed in a systematic manner; and
- Reporting arrangements.

1.5 INTERFACES WITH OTHER DOCUMENTS

As a non-operational asset, the key interface with this EP is the WSH-3 Well Operations Management Plan (WOMP) (WSH-CHP-10-RG-RP-0002, Rev 4, Nov 2023). Reference is also made to the West Seahorse Decommissioning Campaign (VIC/RL17) Oil Pollution Emergency Plan (Gippsland Basin) (WSH-CHP-60-RG-RA-0002, Rev 0, 17 Nov 2023).

1.6 ENVIRONMENT PLAN SUMMARY

Table 1.1 provides a summary of this EP as required by Regulation 35(7) of the OPGGS(E).

Table 1.1. EP Summary of material requirements

EP Summary Requirement	EP Section
The location of the activity	Section 2.2
A description of the receiving environment	Section 5
A description of the activity	Section 2
Details of the environmental impacts and risks	Section 7
The control measures for the activity	Chapter 7
The arrangements for ongoing monitoring of the titleholder's environmental performance	Section 8
Response arrangements in the oil pollution emergency plan (OPEP)	Refer to OP
Consultation already undertaken and plans for ongoing consultation	Section 4
Details of the titleholder's nominated liaison person for the activity	Section 1.2

2 ACTIVITY DESCRIPTION

This chapter provides a description of the activity in accordance with the requirements of Regulation 21(1) of the OPGGS(E).

2.1 THE ACTIVITY

In accordance with Regulation 5 of the OPGGS(E), this EP applies to a defined 'petroleum activity.' Based on the WOMP and for the purposes of this EP, the petroleum activity is defined as:

'Non-production operations phase Decommissioning of TA (suspended) wellhead on the seabed'.

Given the Wardie-1 well was fully plugged and abandoned, and the conductor has been cut (at least in part) there are no petroleum activities associated with the well other than retrieval of the conductor pipe in conjunction with decommissioning activities on WSH-3.

2.2 ACTIVITY LOCATION

The WSH-3 wellhead is located in eastern Bass Strait approximately 13 km off the Gippsland coast in a water depth of 39.5 m (see Figure 1.1). The well coordinates are:

Latitude: 38° 12' 24.9422" S (5,771,044.135 N)
Longitude: 147° 37' 09.8649" E (554,229.358 E).

The Wardie-1 conductor lies 2.8m from WSH-3, the well coordinates are:

Latitude: 38° 12' 24.881" S (5,771,046.028 N)
Longitude: 147° 37' 09.793" E (554,227.625 E).

Table 2.1 lists the well's position in the context of other notable locations in the region.

Table 2.1. Distance from WSH-3 / Wardie-1 to key regional features

Feature	Distance and direction from WSH-3 to the nearest point of the feature
Nearest landfall	13 km northwest
Towns	
Loch Sport	16 km northwest
Paradise Beach	17.5 km west
Golden Beach	19 km west
Honeysuckles	39 km southwest
Seaspray	42 km southwest
Longford	47 km west-northwest
Lakes Entrance	49 km northeast
Sale	50 km northwest

Feature	Distance and direction from WSH-3 to the nearest point of the feature
Petroleum infrastructure	
Seahorse subsea wells (nearest) (oil)	3 km east
Seahorse to Barracouta A pipeline (oil)	4 km east
Barracouta to shore pipeline: Vic/PL1 & Vic/PL4(V) (oil & condensate)	6 km southwest
Bream to shore pipeline: Vic/PL32 & Vic/PL32(V)	10 km southwest
Tarwhine to Barracouta A pipeline (oil)	10 km south-southeast
Barracouta platform (oil & gas)	11 km south-southeast
Tarwhine subsea well (oil)	20 km south-southwest
Bream A platform (oil and gas)	35 km south-southeast
Dolphin to shore pipeline (oil)	37 km southwest
Dolphin monopod (oil)	37 km south-southwest
Tasmanian gas pipeline	40 km west-southwest
Non-petroleum infrastructure	
Regional Outfall Sewer (ROS) (Delray Beach)	23 km west-southwest
Saline Wastewater Outfall Pipeline (SWOP) (McGaurans Beach)	55 km southwest
Basslink electricity interconnector cable	60 km southeast
Australian Marine Parks	
Beagle	109 km south-southwest
Victorian marine parks	
Ninety Mile Beach Marine National Park	42 km southwest

2.3 THE ACTIVITY AREA

The WSH-3 activity area during decommissioning operations is defined as:

> *All areas within the WSH-3 Petroleum Safety Zone (PSZ), which covers a 300 m-radius area around the WSH-3 wellhead.*

This 300-m radius around the well equates to an area of 28.3 ha (0.283 km^2). The Wardie-1 conductor lies within the WSH-3 Petroleum Safety Zone. As they are both abandoned there are no credible hydrocarbon spill scenarios from the wells and the extent of the PSZ can be reasonably used to define the activity area during decommissioning operations.

During the proposed Vessel-based decommissioning activities there is a very low chance of a minor hydrocarbon (Marine Diesel Oil) spill in the event of collision with another vessel. Although a spill would be restricted to less than 150m^3, previous Oil Spill Trajectory Modelling (OSTM) was undertaken for a 200m^3 MDO vessel spill incident at the West Seahorse location during operations. This modelling has been utilised for this activity as the increased volume would have a greater impact than any potential 'actual' spill. The modelling further represents a conservative approach given that mitigating strategies (such as tank lightening) would further limit the spill volume.

A spill of this volume is defined as a Level 2 Spill under the National Plan for Maritime Environmental Emergencies (NATPLAN). Modelling (as shown in Section 5) shows localised impact only, with some potential shore contact. The Environment Impact from this Level 2 oil spill is minor isolated local impacts with natural recovery expected within days. Management of such a spill is to be conducted under the VIC/RL17 Oil Pollution Emergency Plan (OPEP) for West Seahorse Decommissioning, and the vessel SOPEP. Further consideration of the Environment that May be Affected (EMBA) is addressed in Sections 5 and 7.

2.4 OPERATIONAL DETAILS

2.4.1 WSH-3

The casing design for WSH-3 is described below. Following completion of its appraisal activities, WSH-3 was successfully plugged and TA in early May 2008. The TA cement plug design features four plugs as illustrated in Figure 2.1. The WSH-3 wellhead will remain TA and in place until such time as it is permanently abandoned.

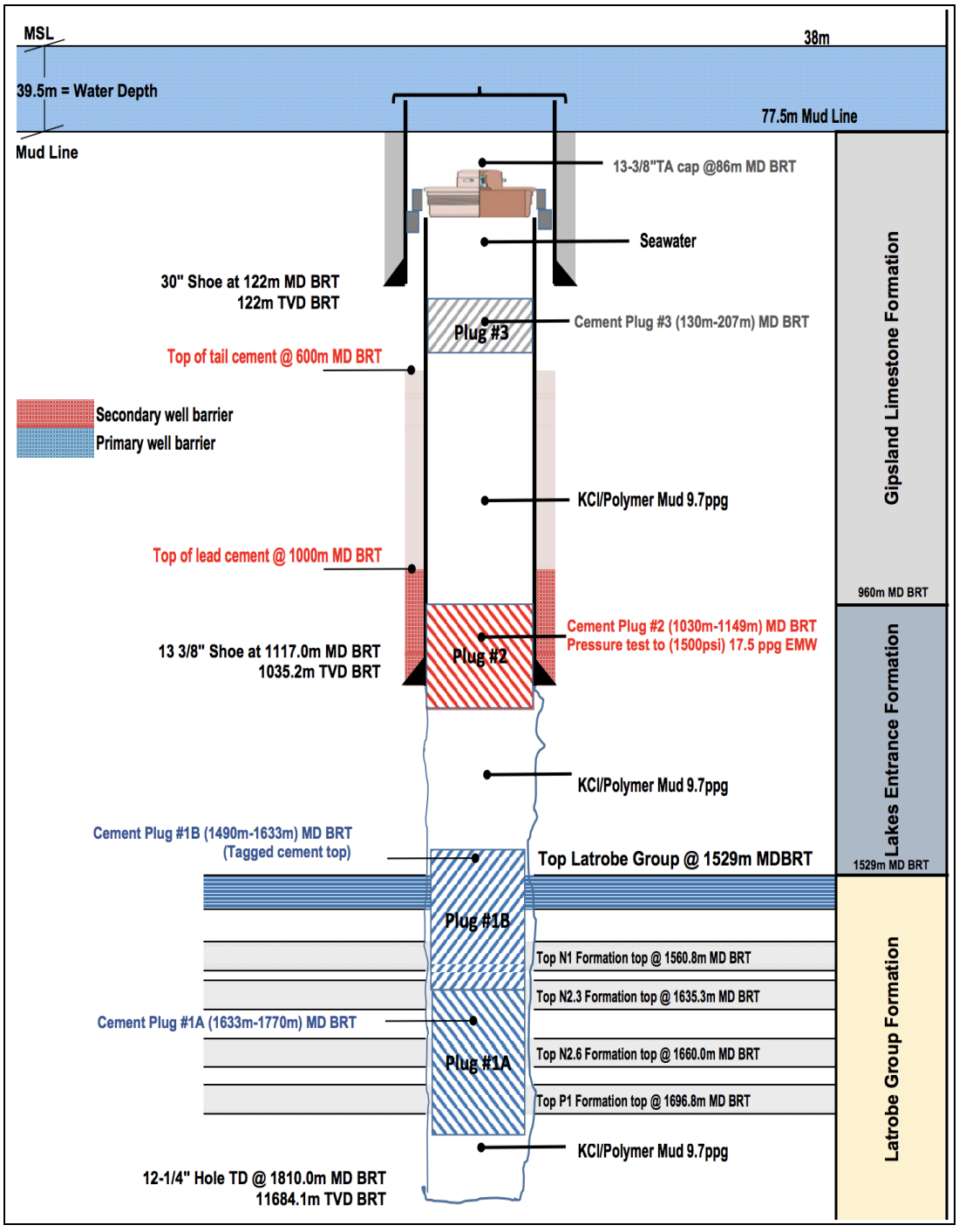

Figure 2.1. WSH-3 TA plugs

2.4.2 WARDIE-1

The casing design for Wardie-1 is described below. Following completion of its appraisal activities, Wardie-1 was plugged and abandoned in May 2008. The permanent abandonment cement plug design features four plugs. The conductor has been partially cut and remains in-situ. The completion of the abandonment of the Wardie-1 well will be conducted concurrent future operations on WSH-3.

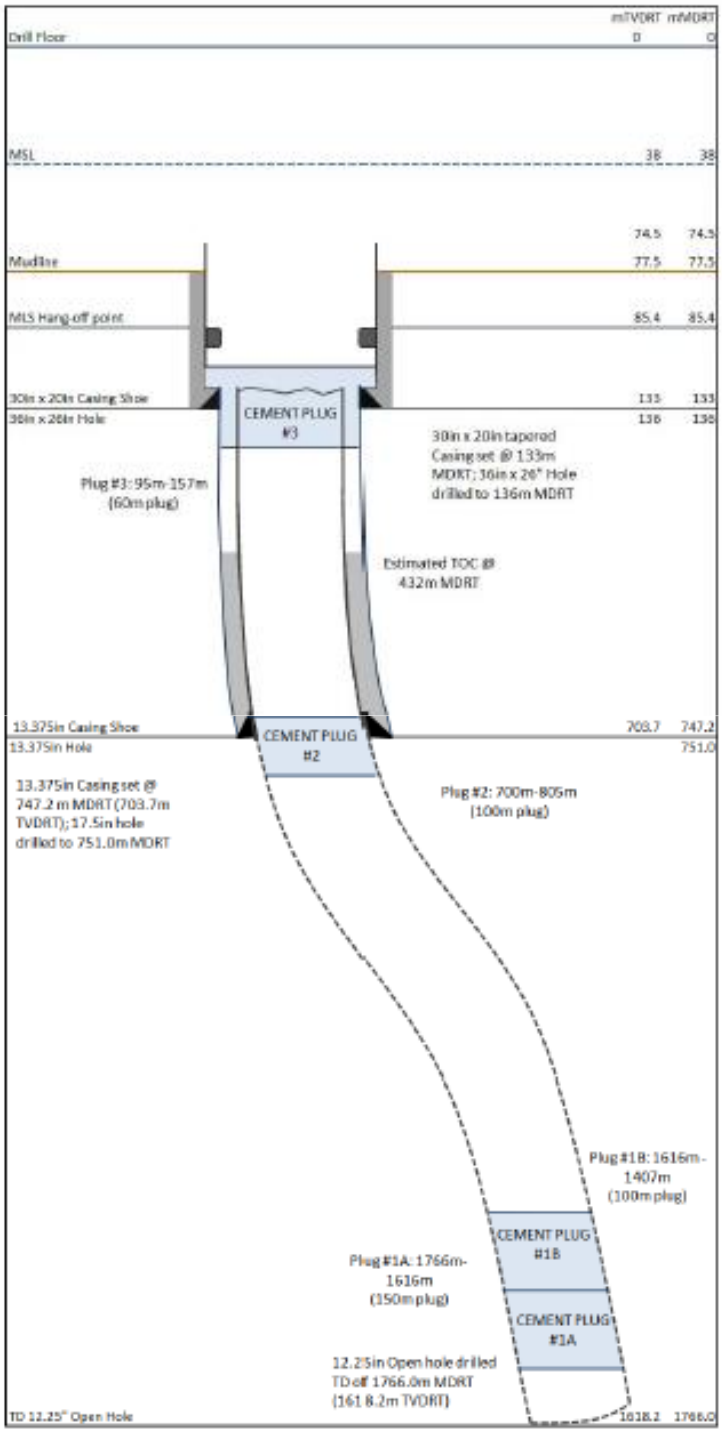

Figure 2.2. Wardie 1 Final Well Schematic

2.5 WELL DESIGN

The WSH-3 TA well was TA in accordance with D-010 Well Integrity in Drilling and Well Operations (NORSOK, 2013) and HPB Standards for Well Integrity (AUS-HPB-60-MN-1004).

The Wardie-1 well was permanently abandoned (PA) in accordance with D-010 Well Integrity in Drilling and Well Operations (NORSOK, 2013) and HPB Standards for Well Integrity (AUS-HPB-60-MN-1004).

This section describes in detail the construction of the TA WSH-3 well. As Wardie-1 has been permanently abandoned and there are no longer any petroleum activities associated with the well, no further well design details other than the final well schematic (as per above) have been provided.

2.5.1 CASING DESIGN

The casing design for WSH-3 is described below:

- 762 mm (30”) x 508 mm (20”) structural casing/conductor was set from about 2 m above the seabed to 44.5 m below the seabed. The joint crossing the seabed is 37.5 mm (1½”) wall thickness.
- 340 mm (13⅜”) surface casing was set in the Lakes Entrance formation at 1,034 metres True Vertical Depth (mTVD). This casing string was designed to withstand installation loads and a limited kick from the next section total depth.

The casing designs incorporated design safety factors in excess of the current HPB Well Engineering Minimum Standards (WEMS).

2.5.2 PORE PRESSURE & FORMATION STRENGTH

All formations drilled in the WSH field are normally pressured. The maximum recorded pore pressure during the drilling of WSH-3 was 1.01 SG (8.4 ppg). A formation integrity test was performed after setting 340 mm surface casing (13⅜”) at 1,117 metres Measured Depth below Rotary Table (mMDRT). After cleaning the rat hole to 1,123 m, 3 meters of new formation was drilled in 311 mm (12¼”) hole and the Formation Integrity Test (FIT) performed to equivalent mud weight of 13.65 ppg (1.64 SG) with no leak off recorded.

The well’s kick tolerance in 311 mm (12¼”) was then calculated as 136.9 bbl, exceeding the WEMS values of:

- Hole size > 311 mm requires a minimum kick tolerance of 7.95 m^3 (50 bbls); and
- Hole size ≤ 311 mm requires a kick tolerance of 3.97 m^3 (25 bbls).

Table 2.2 summarises the casing designs selected for the WSH-3 well.

Table 2.2. WSH-3 casing data

Type	Size	Weight (ppf)	Grade	Thread	Depth (mMDRT)
Conductor	30”	309.7 (top joint 1.5”wall remainder 1" wall)	X-52	D60/MT	110.6
Surface casing	13.375”	68	N-80	BTC	1117

2.5.3 CASING CEMENT DESIGN

The WSH-3 casing cement design is as follows:

- 762 mm (30") structural conductor casing on the WSH-3 well was cemented to surface with 1.91 SG (15.90 ppg) class G cement using a 200% excess on gauge hole. Fluorescence dye was used to improve visibility for ROV monitoring of returns to the seabed. The 762 mm conductor shoe was set at 122.0 mMDRT (casing tally) and cemented as per the cementing program.
- 340 mm (13⅜") surface casing was cemented with a 1.5 SG (12.5 ppg) lead slurry and a 1.89 sg (15.8 ppg) tail slurry of class G cement. The tail slurry volume was specified to extend 117 m above the casing shoe. A 10% excess over gauge hole was specified. Cement placement was verified using final circulating pressure calculations. The casing shoe was set at 1,117 mMDRT.

2.5.4 TEMPORARY ABANDONMENT PLUG CEMENT DESIGN

The WSH-3 TA plugs used Class G cement (standard for offshore wells), with the design summarised in
Table 2.3. The cementing design complies with the WEMS (WSH-ADD-60-EN-CL-9001) except for the cement excess quantities. Figure 2.1 presents a schematic of the TA plug design of the well.

Table 2.3. WSH-3 cementing data

Plug	Well interval (mMDRT)	Plug thickness	Notes
1A	1,633 m - 1,770 m	137 m	
1B	1,490 m - 1,633 m	143 m	This was tagged with the cementing string at 1,490 mMDRT and weight tested to 8 klbs after the cement had hardened.
2	1,030 m - 1,149 m	119 m	Set across the 340 mm casing shoe. Successfully pressure tested to 1,500 psi.
3	130 m - 207 m	77 m	

2.5.5 TEMPORARY ABANDONMENT CAP

A TA cap was installed on top of the 762 mm (30") Quick-Jay box connector in the wellhead system. The TA cap protrudes 2 m above the seabed and measures approximately 1.1 m in diameter (Figure 2.2).

The TA cap is constructed of steel and sits on top of the subsea wellhead and is designed to protect the wellhead from corrosion, marine growth and damage from third-party activities, such as trawl fishing.

Since the TA cap was installed in 2008, there have been no reports of intentional or unintentional interference with the structure.

Corrosion inhibitor was injected under the TA cap to protect the wellhead seal surfaces to allow for future well intervention.

As the Wardie -1 well was permanently abandoned and the 340 mm (13⅜") casing and wellhead removed no abandonment cap has been installed as there is no need to protect the conductor from corrosion, marine growth and damage from third-party activities, such as trawl fishing.

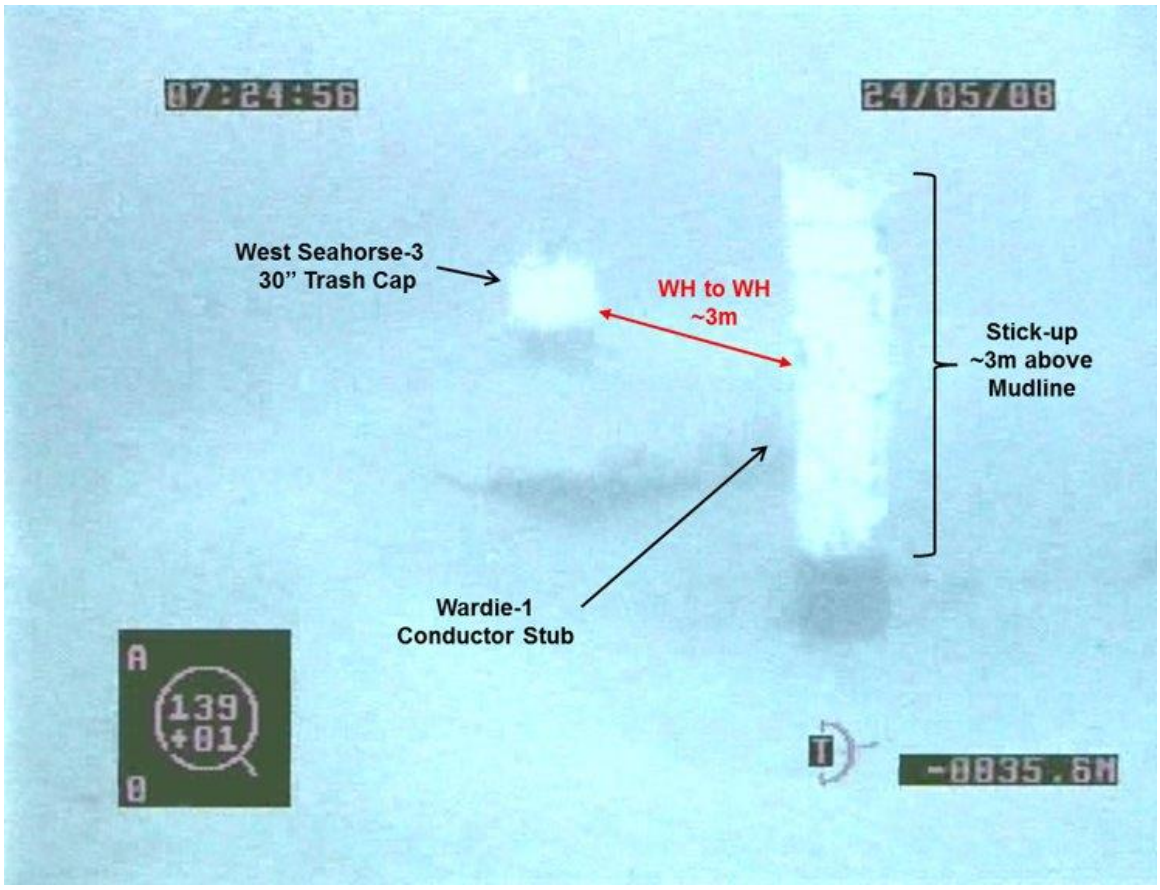

Figure 2.2. Still image from ROV footage of the WSH-3 TA cap and Wardie-1 Conductor in 2008

2.6 WELL DESIGN AND SUPPORT ACTIVITIES

A risk review conducted as part of the WOMP concluded that the risk of hydrocarbon fluids release from the TA WSH-3 is no different to a permanently abandoned well. Therefore, it was concluded that risks to well integrity and to the receiving environment from leaking hydrocarbons is ALARP. Wardie-1 is a permanently abandoned well and as such the risks to well integrity and to the receiving environment from leaking hydrocarbons is ALARP.

In the case of the West Seahorse temporarily abandoned well, there are no maintainable items of equipment. The installed cement plugs were verified initially, with no further requirements for monitoring. During the current WOMP Revision (Rev 4) consideration is given to decommissioning of the well. As per the initial risk assessment the risk of hydrocarbon fluid release from the well during any such inspection was again considered as no different to a permanently abandoned well.

For this reason, VIC/RL17 Oil Pollution Emergency Plan (OPEP) for West Seahorse Decommissioning does not consider hydrocarbon releases from the wells. The OPE and this EP does however assess the risks, impacts, and control measures of activities associated with the proposed vessel-based decommissioning activities and the physical presence of the WSH-3 wellhead and the Wardie-1 conductor on the seabed.

2.7 FUTURE ACTIVITIES

Plans to commercialise the WSH-3 discovery have changed and CHPL now intends to fully decommission the WSH-3 well, which involves removing the wellhead and severing the conductor below the sea floor via a vessel-based campaign.

The requirement to remove all structures that are not used in connection with operations under Section 572 of the OPGGS Act, means the following scenario will be progressed:

- CHPL will remove the trash cap and wellhead prior to relinquishing the licence. The cement plugs are compliant with permanent abandonment of the well and therefore only the wellhead and conductor to be removed from the seabed to complete the abandonment process. This would likely be done with an abrasive cutting system which has been previously used in Australia. Wellhead cutting equipment is deployed from a dynamically positioned vessel with ROV observation. The conductor and wellhead are severed around 2 metres below the mudline and recovered to the deck of the vessel and scrapped.

This intention has triggered the preparation and submission of this decommissioning EP to NOPSEMA for acceptance prior to any activities taking place.

Given the scenarios outlined above, the removal of the Wardie-1 conductor to complete the permanent abandonment of the well will occur concurrently with decommissioning activities for WSH-3. The separation and removal of the conductor would most likely utilise an abrasive blasting cutting system as outlined above and is included in this revised EP for proposed activity.

2.8 INSPECTIONS

Revision 3 of the WSH-3 WOMP (Feb 2022) proposed a period of non-activity whilst continuing to explore opportunities to complete the well as a producer, and consideration was given to conducting an ROV inspection of the wellhead and adjacent conductor stub. With the decision now made to fully decommission the well an inspection will be undertaken as part of the decommissioning operations. The possibility of marine growth or fouling of the wellhead by marine debris could impact re-entry of the well and as such a visual inspection of the wellhead is warranted.

CHPL proposes that a ROV inspection of the West Seahorse-3 Wellhead and the surrounding seabed will be undertaken as the first stage of operations. This will include observation of the Wardie-1 conductor and will be a simple ‘flyover’ visual inspection.

2.8.1 Survey Techniques

An ROV will be deployed to locate and inspect the wellhead and conductor and will be mobilised as part of the equipment spread on board the demobilisation vessel.

Given the shallow depth it is anticipated that the wellhead and conductor will be able to be located using a Multibeam Echo Sounder which enables collection of bathymetry data and correlation of depth information. This type of survey uses a sonar system to transmit short pulses of sound energy, analysing the return signal from the seafloor or other objects.

Once located a General Video Inspection will be conducted using the ROV to record imagery of the WSH-3 wellhead, the Wardie-1 conductor, and the surrounds.

The ROV survey is a 'flyover' survey should not make any impact or interfere with the WSH-3 wellhead or Wardie-1 conductor, but in any case, the chance of any damage to either well is negligible. During the seabed surveillance survey, the ROV operates close to the seabed, and may temporarily come into direct contact with the seabed. The ROV's thrusters may also result in the suspension of seabed material. This will affect a very small area and the impact has been considered as insignificant in comparison to the seabed displacement that will be experienced during removal of the surface conductors of the wells.

2.8.2 Vessel Operations

The duration of the decommissioning operations is expected to be 4 to 7 days including transit to and from the work area. A utility vessel such as the Skandi Darwin (or similar) will be utilised for the activity. Such vessels are expected to be approximately 90m in length and host a maximum POB of 60 persons. The vessel will be fuelled by marine diesel fuel and no refuelling is planned in the operational area; all fuelling will be conducted at the point of mobilisation. The maximum fuel tank capacity is approximately 1000m^3. The amount of fuel carried on board can be limited to suit the proposed activity and further restrict the potential impact of any unlikely spill. Other mitigating strategies, such as tank sharing, can also be used to limit the volume of any potential spill.

The short duration of the activity means a specific weather window can be chosen to enhance the safety of the vessel. This includes periods of high visibility and calm sea conditions. The engagement of professional and competent crew can further reduce the requirement for excess fuel on board to combat any contingencies, minimise risk of any collisions, and ensure any activities under the vessel SOPEP and fully understood and able to be actioned.

The vessel transiting to and from the operational area falls under the Commonwealth Navigation Act 2012 and is subject to existing Australian Maritime Law.

3 LEGISLATION AND GUIDELINES

In accordance with OPSSG(E) Regulation 21(4), this chapter describes the legislative requirements that apply to the activities described in this EP.

Table 3.1 presents a summary of the key Commonwealth legislation and regulations relevant to the environmental management of the activity.

3.1 LEGISLATIVE FRAMEWORK

The principal offshore legislation for production activities beyond three nautical miles to the outer extent of the Australian Exclusive Economic Zone at 200 nautical miles is the Commonwealth Offshore Petroleum and Greenhouse Gas Storage (OPGGS) Act 2006. The OPGGS Act is administered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

3.2 RELEVANT LEGISLATION

Key Commonwealth legislation that is applicable to the activity is summarised in Table 3.1.

The Australian Petroleum Production and Exploration Association (APPEA) Code of Environmental Practice 2008 provides guidance on a set of recommended minimum standards for petroleum industry activities offshore. These standards are aimed at minimising adverse impact on the environment, and ensuring public health and safety by using the best practical technologies available.

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The Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC 2000) are also relevant to the activity and provide water quality guidelines proposed to protect and manage the environmental values supported by the water resources.

3.3 FEDERAL COURT DECISIONS

On 21 September 2022, the Federal Court of Australia ruled in the *Tipakalippa vs NOPSEMA (No. 2) [2022] FCA 1121* case to set aside NOPSEMAs decision to accept an EP (the Santos Barossa Development Drilling and Completions EP) on the basis NOPSEMA could not be reasonably satisfied that the EP met the criteria specified in the OPGGS (Environment) Regulations. This ruling specifically related to the undertaking of relevant person consultation, as required by Regulation 11A of the OPGGS (Environment) Regulations. A subsequent appeal to this decision, *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193,* was dismissed by the Federal Court on the 2 December 2022. From this date, the appeal decision represents the law regarding requirements for consultation in accordance with the OPGGS (Environment) Regulations. Following the Federal Court decisions, NOPSEMA has developed a guideline for industry *Consultation in the course of preparing an environment plan* (NOPSEMA, 2022). This guideline and the appeal decision have informed the preparation of this EP.

Table 3.1. Summary of key Commonwealth environmental legislation relevant to the activity

Legislation/Regulation	Scope	Related International Conventions	Administering Authority
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) (& Regulations 2000)	Protects matters of national environmental significance (MNES), provides for Commonwealth environmental assessment and approval processes and provides an integrated system for biodiversity conservation and management of protected areas. The nine MNES are: 1. World heritage properties; 2. National heritage places; 3. Wetlands of international importance (Ramsar wetlands); 4. Nationally threatened species and ecological communities; 5. Migratory species; 6. Commonwealth marine environment; 7. The Great Barrier Reef Marine Park; 8. Nuclear actions (including uranium mining); and 9. A water resource, in relation to coal seam gas development and large coal mining development. **Relevance to this activity:** This EP includes a description and assessment of MNES that may be impacted by the activity.	• Convention on Biological Diversity and Agenda 21 1992. • Convention on International Trade in Endangered Species of Wild Fauna and Flora 1973 (CITES). • Agreement between the Government and Australia and the Government of Japan for the Protection of Migratory Birds and Birds in Danger of Extinction and their Environment 1974 (JAMBA). • Agreement between the Government and Australia and the Government of the People's Republic of China for the Protection of Migratory Birds and their Environment 1986 (CAMBA). • Republic of Korea Migratory Birds Agreement 2006 (ROKAMBA). • Convention on Wetlands of International Importance especially as Waterfowl Habitat 1971 (RAMSAR). • International Convention for the Regulation of Whaling 1946. • Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) 1979. • Convention concerning the Protection of the World Cultural and National Heritage 1972.	Department of Agriculture, Water and the Environment (DAWE) (NOPSEMA in the case of this activity)

Legislation/Regulation	Scope	Related International Conventions	Administering Authority
OPGGS Act 2006 and OPGGS (Environment) Regulations 2023	The Act addresses all licensing and HSE issues for offshore petroleum activities extending beyond the 3 nm limit. The Regulations (Part 2) specify that an EP must be prepared for any petroleum activity and that activities are undertaken in an ecologically sustainable manner. Section 616 of the Act allows for the gazettal of a PSZ. **Relevance to this activity:** The preparation and acceptance of this EP satisfies the key requirements of this legislation. A PSZ is gazetted for WSH-3 and Wardie-1 under the Act (noting that the gazettal was done under the then *Petroleum (Submerged Lands) Act* 1967, which was repealed by the OPPGS Act).	Not applicable.	NOPSEMA
Native Title Act 1993	Allows for recognition of native title through a claims and mediation process and also sets up regimes for obtaining interests in lands or waters where native title may exist	Not applicable.	Attorney-Generals Department

3.4 GOVERNMENT GUIDELINES

This EP has been developed in accordance with the NOPSEMA Guidance Note for Environment Plan Content Requirements (N04750-GN1344, A339814, September 2020). This document provides guidance to the petroleum industry on NOPSEMA's interpretation of the OPGGS(E) to assist Titleholders in preparing EPs.

Other relevant government guidelines that have been taken into consideration during the preparation of this EP include:

EP

- Environment Plan decision making (NOPSEMA Guideline N04750-GL1721, A524696, December 2022).
- Decision-making guideline – Criterion – 10A(g) – Consultation requirements (NOPSEMA Guideline N-04750- GL1721, A524696, December 2022).

EPBC Act Matters

- EPBC Act Policy Statement 1.1 – Significant Impact Guidelines – Matters of National Environmental Significance (DoE, 2013).

3.5 SOUTH-EAST REGIONAL MARINE PLAN

Australia's offshore waters have been divided into six marine regions to facilitate their management by the Australian Government under the EPBC Act. The operational area intersects the South-east Commonwealth Marine Region (SEMR), which extends from the south coast of New South Wales to Kangaroo Island in South Australia and around Tasmania.

The South-east Regional Marine Plan has been developed by the Australian Government in consultation with South-east State Governments, industry representatives, Indigenous groups, marine communities, and others with an interest in the marine environment. It illustrates how individual management actions by governments, industry and community members can be brought together. The Plan describes the significant progress and outlines actions to improve oceans management in the Region and achieve ecologically sustainable development. This integrated ocean management encourages management decisions based on cooperation and consideration of all ocean uses and users in the Region.

CHPL has reviewed the plan and considered its content in the development of this EP, particularly in the identification of and communication with relevant persons.

3.6 INTERNATIONAL INDUSTRY ENVIRONMENTAL CODES OF PRACTICE AND GUIDELINES

Several international codes of practice and guidelines are relevant to environmental management of the activity. Those of most relevance are described in this section. The Commonwealth legislation described in Table 3.1 lists the conventions and agreements that are enacted by, or whose principles are embodied in, that legislation.

While none of the codes of practice or guidelines described in this section have legislative force in Australia, they are considered to represent best practice environmental management (BPEM).

3.6.1 UNEP IE: ENVIRONMENTAL MANAGEMENT IN OIL AND GAS EXPLORATION AND PRODUCTION

In 1997, the United Nations Environment Programme Industry and Environment (UNEP IE) and the Oil Industry International Exploration and Production Forum (E&P Forum) developed an overview of issues and management approaches for environmental management in oil and gas exploration and production.

With regard to offshore petroleum, it contains a brief and broad list of environmental protection measures, mostly relating to the assessment of impacts (which is met through the preparation of this EP).

3.6.2 WORLD BANK GROUP EHS GUIDELINES

The *Environmental, Health and Safety Guidelines for Offshore Oil and Gas Development* (World Bank Group, 2015) is a technical reference document with general and industry-specific examples of good international industry practice. These guidelines are applied when one or more members of the World Bank Group are involved in a project, and are used only for guidance here.

The document contains measures considered to be achievable in new facilities, using existing technology, at reasonable costs. The guidelines are designed to be tailored to the applicable hazards and risks established for a given project.

3.6.3 IOGP: BEST PRACTICE GUIDELINES

The International Association of Oil & Gas Producers (IOGP) has a membership including companies that produce more than 40% of the world's oil and gas. The IOGP provides a forum where members identify and share knowledge and good practices to achieve improvements in health, safety, environment, security and social responsibility. The IOGP's aim is to work on behalf of oil and gas exploration and production companies to promote safe, responsible and sustainable operations. The IOGP's work is embodied in publications that are made freely available on its website (www.iogp.org).

At November 2023, IOGP's members comprise over 90 members, comprising oil and gas exploration and production companies, associations and contractors. Although CHPL is not an IOGP member, relevant guidelines have been referenced in this EP as relevant.

3.6.4 IPIECA: BEST PRACTICE GUIDELINES

IPIECA is the International Petroleum Industry Environmental Conservation Association, established in 1974 (since 2002, IPIECA stopped using the full title). At November 2023, IPIECA's members comprise 78 members, comprising oil and gas exploration and production companies, associations and contractors.

IPIECA's vision is for an oil and gas industry whose operations and products meet society's environmental and social performance expectations, with a focus on the key areas of climate and energy, environment, social and reporting. It develops, shares and promotes good practices and knowledge to help the industry improve its environmental and social performance. IPIECA's work is embodied in publications that are made freely available on its website (www.ipieca.org).

Although CHPL is not an IPIECA member, relevant guidelines have been referenced in this EP as relevant.

CHPL has applied IPIECA's recent *Mapping the Oil and Gas Industry to the Sustainable Development Goals: An Atlas* (July 2017) to its WSH-3 activity. Goal 14 (Conserve and sustainably use the oceans, seas and marine resources for sustainable development) is the most relevant to the offshore activity, and has been met by incorporating EIA and ERA into this EP.

3.7 AUSTRALIAN INDUSTRY ENVIRONMENTAL CODES OF PRACTICE AND GUIDELINES

There are few Australian industry codes of practice or guidelines regarding environmental management for offshore petroleum operations. Those that do apply to this activity are briefly discussed in this section.

None of these codes of practice or guidelines have legislative force in Australia but are considered to represent BPEM. Aspects of each code or guideline relevant to the impacts and risks presented by the activity are described in the 'demonstration of acceptability' throughout Section 7.

3.7.1 NATIONAL STRATEGY FOR ECOLOGICALLY SUSTAINABLE DEVELOPMENT

The National Strategy for Ecologically Sustainable Development (ESDC, 1992) defines the goal of Ecologically Sustainable Development (ESD) as "development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends."

Section 3A of the EPBC Act defines the principles of ESD as:

- Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations;
- 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;
- The principle of inter-generational equity – that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations;
- The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making; and
- Improved valuation, pricing and incentive mechanisms should be promoted.

The ESD concept has been taken into consideration in the development of the environmental performance standards outlined in Chapter 7 of this EP.

3.7.2 AEP: CODE OF ENVIRONMENTAL PRACTICE

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

The APPEA CoEP covers general environmental objectives for the industry, including planning and design, assessment of environmental risks, emergency response planning, training and inductions, auditing and consultation, and communication. For the offshore sector specifically, it covers issues relating to geophysical surveys, drilling and development and production. The APPEA CoEP has been used as a reference for the EIA and ERA (Section 7 of this EP) to ensure that all necessary environmental issues and controls for petroleum production have been incorporated into the management of this activity.

4 RELEVANT PERSON CONSULTATION

CHPL recognises and respects the important role and the impact on relevant persons, including first nations people, that may occur because of the proposed activities, and has opened the channels of communication with stakeholders (as defined in Section 4.2) to provide an opportunity for open and honest communication that promotes integration of stakeholder values into its decision-making process. CHPL are committed to ensuring that relevant persons are identified and given sufficient information and reasonable time for consultation to allow them to make an informed assessment of the possible consequences of the proposed petroleum or greenhouse gas activity on them.

This provides the means for CHPL to identify individuals and groups as well as their needs, ideas, values, and issues of concern regarding the environmental and/or social impacts of the activity. The process allows CHPL to ascertain, understand and address the environmental impacts and risks that might arise from the proposed activity, and to receive information that the company might not otherwise receive. The company can use this information to enhance understanding of the environment, people, communities, heritage values, and social and cultural features that may be affected by the proposed activities.

In response to matters raised by relevant persons CHPL can consider and enact appropriate measures in the management of risks and impacts as part of the ongoing EP development. CHPL is committed to open, ongoing, and effective engagement with the communities in which it operates and providing information that is clear, relevant, and easily understandable.

This section of the EP defines the:

- Objectives of relevant person consultation and engagement;
- Applicable regulatory, consultation and engagement requirements and standards, including definition of relevant persons to be consulted;
- How relevant persons were identified and engaged;
- Relevant persons identified and verification process used;
- Communication and consultation methods utilised;
- How the consultation process was planned and tailored to the nature and scope of this EP;
- Summary of consultation to date; and
- Summary of how feedback has been considered, addressed and communicated.

The process of consultation and engagement with relevant persons remains ongoing and will continue until all field activities are completed.

4.1 RELEVANT PERSON CONSULTATION OBJECTIVES

CHPL's relevant person engagement strategy for this activity provides a structured approach to engagement activities in line with current best practice.

The key objectives of this engagement are to:

- Ensure every effort is made to identify relevant persons;
- Provide a verification process to ensure that all representatives of relevant persons truly represent the views of their communities and provide reliable feedback to their constituents;
- Ensure all relevant persons that may be affected are consulted on matters that may impact them;
- Provide stakeholders with access to clear and concise information and a point of contact for the project;
- Provide an opportunity for a two-way information exchange and meaningful stakeholder consultation;

- Provide ongoing updates and information to all relevant persons aS the project develops; and
- Meet the stakeholder consultation requirements for EPs (see Section 4.2).

4.2 REGULATORY REQUIREMENTS

Stakeholder consultation is required under the OPGGS(E), as summarised in this section.

Section 280 (*Interference with other rights*) of the OPGGS Act states that a person carrying out activities in an offshore area should not interfere with other users of the offshore area to a greater extent than is necessary for the reasonable exercise of the rights and performance of the duties of the first person. In order to determine what activities are being carried out, and whether exploration or production activities may interfere with existing users, consultation is required.

In relation to the content of an EP, more specific requirements are defined in the OPGGS(E) Regulation 25. This regulation requires that a Titleholder consult with 'relevant persons' in the preparation of an EP. A 'relevant person' is defined in Regulation 11A as:

1. 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;
2. Each Department or agency of a State or the Northern Territory to which the activities to be carried out under the EP, or the revision of the EP, may be relevant;
3. The Department of the responsible State Minister, or the responsible Northern Territory Minister;
4. A person or organisation whose functions, interests or activities may be affected by the activities to be carried out under the EP, or the revision of the EP; and
5. Any other person or organisation that the titleholder considers relevant.

Effective consultation should enable relevant authorities, persons and organisations whose functions, interests or activities may be affected to put forward their views and contribute to CHPL's understanding of the environment in which the activity will be undertaken and any associated impacts or risks. Further guidance regarding the definition of functions, interests or activities is provided in NOPSEMA's Consultation in the course of preparing and environment plan guideline (N04750-GL2086, A900179, May 2023). The phrase "functions, interests or activities" in regulation 11A(1)(d) should be broadly construed as this approach best promotes the objects of the Regulations, including that offshore petroleum and greenhouse gas activities are carried out in a manner consistent with the principles of ESD. The phrase is a composite one, each part of which has work to do in identifying relevant persons:

- Functions – refers to "a power or a duty to do something".
- Activities – to be read broadly and is broader than the definition of 'activity' in regulation 4 of the Environment Regulations and is likely directed to what the relevant person is already doing.
- Interests – to be construed as conforming with the accepted concept of "interest" in other areas of public administrative law, includes "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".

Regulation 22(15) of the OPGGS(E) also defines a requirement for consultation in relation to the Implementation Strategy defined in the EP. In addition, Regulation 24(b) of the OPGGS(E) requires that the EP contain a summary and full text of this consultation.

4.3 RELEVANT PERSONS IDENTIFICATION

4.3.1 METHODS OF IDENTIFICATION

CHPL has used multiple methods to determine the relevant persons for this activity and grouped them as below.

Relevant Persons previously identified:

- Review of existing stakeholder database.
- Project team knowledge from past projects undertaken in the region.
- Existing networks.
- Review of Summary EPs published by NOPSEMA for activities in the Gippsland region.
- Review of National and Local Registers, including native title registers and native title claims.

Seeking out new relevant persons:

- Local knowledge of existing relationships to identify marine users and interest groups in area.
- Consider recommendations from local persons.
- Review of NOPSEMA guideline Consultation with Commonwealth agencies with responsibilities in the marine area (N-04750-GL1887 A706689, Jan 2023).
- Internet searches including social media platforms in the EMBA.
- Advertisments in local newspapers within EMBA.
- Advice from First Nations Groups.
- Notice on Hibiscus Petroleum Website of intended operations.
- Notice on LinkedIn.
- Advice from previously identified stakeholders.

Self identification:

- Local newspaper advertisements.
- Notice on Hibiscus Petroleum Website of intended operations.
- Requests for previously identified persons to share information with contacts within their organisations or community area.

In the process if relevant person identification consideration was given to the nature and scale of the proposed activities, i.e. one wellhead and one conductor stub removal from a single location over a period of 5 to 7 days, utilising a single vessel that routinely conducts activities in the area. The limited impact on the environment in turn limits persons that may be affected.

The findings of the identification process yielded multiple potential relevant persons, each of which was evaluated using relevant persons criteria- and determined that all identified parties would be considered as relevant persons within the scope of this EP.

4.3.2 RELEVANT PERSONS IDENTIFIED

Listed in Table 4.1 are the relevant persons with whom CHPL has identified as relevant persons and consulted with for this activity. The stakeholders are grouped into the five categories of relevant persons as outlined by the OPGGS(E) (as listed in Section 4.2).

Table 4.1. Stakeholders identified for this activity

Category 1 – Department or agency of the Commonwealth to which the activities to be carried out under the EP may be relevant	
Relevant Person	**Relevance**
Australian Fisheries Management Authority (AFMA)	Responsible for management of Commonwealth commercial fisheries, operating areas overlap with local fisheries.
Australian Hydrographic Office (AHO)	National Responsible for publication of nautical charts and other information for safety of ships navigating in Australian waters (including Notices to Mariners).
Australian Maritime Safety Authority (AMSA)	Australia's national agency responsible for maritime safety, protection of the marine environment, and maritime aviation search and rescue.
Department of Agriculture, Fisheries and Forestry (DAFF)	Primary policy responsibility for promoting biological, economic, and social sustainability of Australian fisheries.
Department of Defence	Utilises several maritime exercise areas in Australian waters and manages the risk of unexploded ordinance in areas of offshore activities.
Department of Climate Change, Energy, Environment and Water (DCCEEW)	Administers the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), the Underwater Cultural Heritage Act 2018 and the Environment Protection (Sea Dumping) Act 1981.
Director of National Parks	Government corporation responsible for the administration, management, and control of Australian Marine Parks.
National offshore Petroleum Titles Administrator (NOPTA)	Responsible for the day-to-day administration of petroleum & greenhouse gas titles in Commonwealth waters in Australia, advises on and administers the OPGGS Act.

Category 2 – Each Department or agency of a State to which the activities to be carried out under the EP may be relevant	
Relevant Person	**Relevance**
Department of Energy, Environment and Climate Action (DEECA) – formerly Department of Jobs, Precincts & Regions (DJPR)	Administers legislation related to Agriculture and biosecurity. Key support agency for wildlife affected by marine pollution.
Maritime Victoria – DEECA – formerly Department of Agriculture, Water and Environment (DAWE)	Responsible for biosecurity in Victorian ports.
Environment Protection Authority Victoria	Jurisdiction over environmental matters in Victoria, relevant for oil spill response where they may advise on waste management and response scenario.
Transport Safety Victoria – Maritime Safety	Responsible for oil spill response, working closely with vessel operators and waterway and port managers to provide expert knowledge, education and advice.
Parks Victoria	Manage significant stretches of land along Gipplsand coastline and some maritime infrastructure.
Victorian Fisheries Authority (VFA)	Responsibility to improve Victorian fisheries, respond to any emergency or undertake compliance and enforcement activities. Control agency for shark hazards in Victorian waters and is a support agency for emergencies in the aquatic environment.
Category 3 – The Department of the responsible State Minister	
Relevant Person	**Relevance**
DEECA - Earth Resources Regulation (ERR)	Victoria's Regulator of exploration, mining, quarrying, petroleum, recreational prospecting and other earth resources activities. Assesses and authorises earth resource projects and enforces laws to ensure those projects are conducted such that the community and environment are safeguarded

Category 4 – A person or organisation whose functions, interests or activities may be affected by the activities to be carried out under the EP	
Relevant Person	**Functions, interests and activities**
Adjacent Petroleum Titleholders	
3D Oil Limited (VIC/P57)	Oil and Gas company with licenses offshore in the Gippsland Basin
CarbonNet (DEECA)	Responsible for the CarbonNet Project, establishing a Carbon Capture and Storage (CCS) network in the Gippsland Basin
ExxonMobil (Esso Australia Resources Pty Ltd)	Oil and Gas company with licenses offshore in the Gippsland Basin
Fisheries	
Commonwealth Fisheries Association (CFA)	Independent association contributing to the formulation of effective and responsible fisheries policies.
Australian Southern Bluefin Tuna Industry Association (ASBTIA)	Representing the Southern Bluefin Tuna Industry working to maintain a high level of quality and training.
Bass Strait Central Zone Scallop Fishery	Responsible for efficient management and sustainable use of commonwealth fish resources.
Eastern Zone Abalone Industry Association	Wild catch abalone industry sector that operates in the Mallacoota regions of Victoria
Seafood Industry Victoria (SIV)	Non-government organisation. SIV is the representative peak body for the Victorian seafood industry, from professional fishers through to wholesale, processors and retail.
South-East Trawl Fishing Industry Association (SETFIA)	Incorporated association representing commercial fishers in Commonwealth South East Trawl Sector; Scalefish Hook Sector; Shark Hook, Shark Gillnet Sectors; small pelagic fishery.
Southern Shark Industry Alliance (SSIA)	Incorporated association with members from the Southern and Eastern Scalefish Hook Sector; Shark Hook, Shark Gillnet Sectors; small pelagic fishery.
Sustainable Shark Fishing Association (SSFA)	Represents fishers in the Southern and Eastern Scalefish and Shark Fishery, Gillnet Hook and Trap fisheries.
Tuna Australia	Represents statutory fishing right owners, holders, fish processors and sellers, and associate members of the Eastern and Western tuna and billfish fisheries of Australia.
Victorian Abalone Divers Association (VADA)	Commercial Abalone Divers representative body.

Relevant Person	Functions, interests and activities
Victoria Recreational Fishing (VRFish)	Represents recreational fishing in Victoria.
Victorian Scallop Fisherman's Association (VSFA)	Commercial scallop fishing representative body.
First Nations Peoples	
Gunaikurnai Land and Waters Aboriginal Corporation	Registered Aboriginal Corporation that represents the Gunaikurnai people, the Traditional Owners of our Country, as determined by the Victorian Aboriginal Heritage Council under the Aboriginal Heritage Act 2006.
Koorie Heritage Trust	To promote, support and celebrate the continuing journey of the Aboriginal people of Southeastern Australia.
Aboriginal and Torres Strait Islands - DCCEEW	Protecting important Indigenous areas and objects under threat, if it appears that state or territory laws have not provided effective protection.
Australian Heritage Council - DCCEEW	A body of Heritage Experts acting as the principal advisor to the government on heritage matters.
Category 5 – Any other person or organisation that the Titleholder considers relevant	
Relevant Person	**Functions, interests and activities**
Atoll Offshore	Commercial business based in Lakes Entrance providing support vessels for offshore works.
Australian Oceanographic Services	Commercial business providing access to underwater research vehicles, technology, and equipment.
Australian Wildcatch Fishing	Operates multiple fishing vessels in Gippsland and supports a variety of other vessels in areas of fishing gear, crew placement, quota and license management, and administration.
Bass Strait Game Fishing Club	Local game fishing club based from the Hastings boat ramp.44
Bass Strait Bait and Tackle Lakes Entrance	Local business supporting the recreational fishing industry.
Boating Industry of Victoria	Peak body representing the recreational and light commercial marine industry.
Committee for Gippsland	Independent group established to represent all sectors of business, industry and community views to collaboration on regional priorities to benefit Gippsland communities

Relevant Person	Functions, interests and activities
Corner Inlet Fisheries Habitat Association	Commercial fishers' association to facilitate and encourage better habitat protection and stewardship of the local marine resource.
East Gippsland Shire Council	Local council/authority responsible for the provision of services to local rate payers.
Farout Charters	Local fishing charter business operating from Lakes Entrance.
Game Fishing Association of Victoria	Governing body for game fishing in Victoria.
Gippsland Lakes Fishing Club	Local recreational fishing club based in Lakes Entrance.
Lake Tyers Beach Angling Club	Local recreational fishing club based in Lake Tyers.
Lake Entrance Fishermen's Co-operative	Fishing cooperative representing the interests of Lakes Entrance based commercial fishing vessels.
Lakes Entrance Visitor Information Centre	Information centre providing local information for visitors to the area.
Life Saving Victoria	NFP organisation working to prevent aquatic related death and injury in all Victorian communities.
Maritime Industry Australia Ltd	Organisation established to be the voice and advocate of the Australian maritime industry.
Mitchelson Fisheries Pty ltd	Commercial fishing company based in Lakes Entrance.
Mornington Peninsula Shire	Local council/authority responsible for the provision of services to local rate payers.
Panama II fishing vessel	Commercial octopus fishing vessel operating from Lakes Entrance.
Piscari Industries Pty Ltd	Commercial fishing company based in Lakes Entrance.
Port of Hastings	Responsible for managing the operations of the Port of Hastings.
South Gippsland Game Fishing Club	Family oriented fishing club based in Leongatha Victoria.
South Gippsland Shire Council	Local council/authority responsible for the provision of services to local rate payers.
Victoria Game Fishing Club	Governing body for Game Fishing in Victoria.
Victoria Regional Channels Authority	Victorian State government agency/authority managing commercial navigation in the port waters of Geelong and Hastings.

Relevant Person	Functions, interests and activities
Wellington Shire Council	Local council/authority responsible for the provision of services to local rate payers.
Yachting Victoria	Provides sailing advice for Southeastern Australia.
Woodside Beach SLSC	Local surf life saving club based at Woodside Beach.
Australian Wildlife Conservancy	Independent, non-profit organisation, working to conserve threatened wildlife and ecosystems.
Bush Heritage	Non-profit organisation with headquarters in Melbourne and operating throughout Australia.
Community Over Mining	Non-government organisation covering many topics in Gippsland and around Australia including pollution to air, land and water.
Extinction Rebellion Australia	eNGO focused on persuading governments to act on climate and ecological matters.
Friends of the Earth Australia	eNGO working to protect and/or educate about the natural environment.
Greenpeace	eNGO campaigning for a green and peaceful future.
The Nature Conservancy	Environmental conservation charity whose mission is to conserve the lands and waters on which all life depends.
The Wilderness Society	eNGO working to protect and restore wilderness and natural processes across Australia.
Trust for Nature	eNGO working to permanently protect habitat on private land to give native plants and animals safe places to live.
Wildlife Victoria	Community organisation providing Wildlife Emergency Response.
World Wide Fund for Nature	eNGO that works in the field of wilderness preservation and the reduction of human impact on the environment.

Table 4.2. Information category to determine information provided to stakeholder.

Category	Description	Information type	Follow up
1	Organisations or individuals whose functions, interests or activities may be impacted by the activity. Representative body for fishers who provide information to their members.	Information sheet and/or provision of information as per organisation's consultation guidance. Provision of further information where required. Meeting or phone call where required.	In the event there is no response to initial email, follow up may be required because the activity may impact on the stakeholder's functions, interests or activities.
2	Organisations or individuals whose functions, interests or activities will not be impacted by the activity but are kept up to date with CHPL's activity as a courtesy.		In the event there is no response to initial email, follow up is not required because the activity will not impact on the functions, interests or activities of this stakeholder.

4.4 ENGAGEMENT APPROACH AND METHODOLOGY

The stakeholder engagement method and approach employed for the WSH-3/Wardie-1 activity is described in this section.

4.4.1 ENGAGEMENT APPROACH

The approach to stakeholder consultation has considered the International Association for Public Participation (IAP2) spectrum, deemed to be best practice for stakeholder engagement. In order of increasing level of public impact, the elements of the spectrum and their goals are as follows:

- Inform – to provide the public with balanced and objective information to assist them in understanding the problems, alternatives and/or solutions.
- Consult – to obtain public feedback on analysis, alternatives and/or decisions.
- Involve – to work directly with stakeholders throughout the process to ensure that public concerns and aspirations are consistently understood and considered.
- Collaborate – to partner with the public in each aspect of the decisions, including the development of alternatives and the identification of the preferred solution.
- Empower – to place final decision-making in the hands of the stakeholders.

Given scope, nature and duration of the decommissioning activity, the fact that the WSH-3 well and the TA cap, and Wardie-1 conductor have been in place for nearly 16 years without any incident and that only vessel-based activities are associated with the activity, stakeholder consultation has been largely limited to 'inform' only, with 'consult' undertaken with selected stakeholders based on the information category they were assigned (as per Table 4.2) and their response to primary information provided. To date, the 'involve' and 'collaborate' steps have not been required.

Under the regulatory regime for the approval of EPs, the decision maker is the regulator. This being the case, the final step in the IAP2 spectrum, 'Empower', has not been adopted.

4.4.2 ENGAGEMENT METHODOLOGY

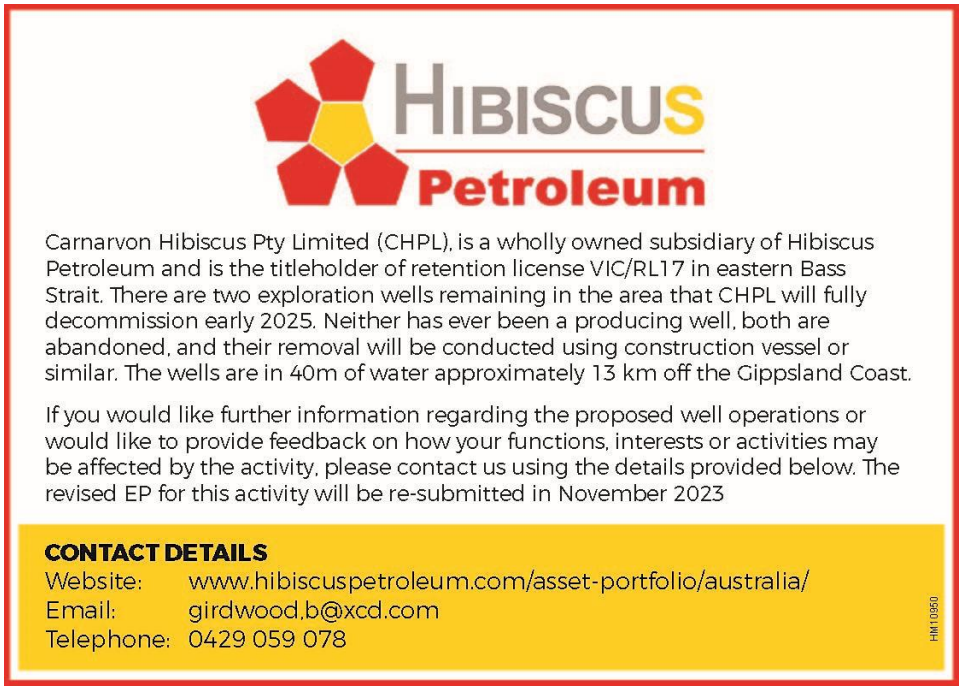
Following the initial stakeholder consultation conducted in 2019, a secondary consultation was initiated in July 2022 to advise of the revision to the EP to include the Wardie-1 conductor. Following the appeal decision *Santos NA Barossa Pty Ltd v Tipakalippa (2022) FCAFC 193* additional stakeholders were identified and contacted via telephone and email in December 2022.

With the decision now made to decommission the WSH-3 well this revised EP (Rev 5) has been prepared and a new relevant person consultation process initiated in September 2023. The primary tool and method that was used for relevant person engagement was the preparation and distribution of a project information sheet and invitation to comment to the stakeholders identified in Table 4.1. The information flyer was generated and issued via email using Microsoft Outlook, this program allowing CHPL to track who opens the flyer and thus gauge interest in the activity even in the absence of responses.

The information flyer (**Appendix 1**) introduces CHPL, provides the location and a brief history on the wells, details the titleholder and the proposed decommissioning activity. It outlines environmental considerations and regulatory approvals, and the relevant person consultation process. It also notes that the relevant person can request that any information provided be not published in the revised EP. It provides details about the activity, its potential impacts, mitigation measures and contact details if further information is required or further discussions in relation to the activity.

Initial emails to all relevant persons were sent between 11 and 16 September 2023, and follow up emails and phone calls made during October. CHPL considered the initial consultation period (12 weeks ahead of revised EP submission to NOPSEMA) provided an adequate timeframe in which stakeholders could assess potential impacts of the activity on their functions, activities or interests and provide feedback to CHPL.

The secondary method to identify relevant persons was via local advertisments as per below:



The advertisements were run a repeated number of times in newspapers in the local area as detailed in the following table:

Table 4.3 Summary of Newspaper Advertising

Newspaper	Dates advert run
Lakes Post	18 and 25 October 2023
Snowy River Mail	18 and 25 October 2023
Bairnsdale Advertiser	18 and 25 October 2023
Gippsland Times	17 and 24 October 2023
South Gippsland Sentinel Times	17 October and 7 November 2023

Further, a link titled "West Seahorse Environment Plan Revision (pdf)" is posted on the Hibiscus Petroleum Berhad website, at the address below, which provides a direct link to the information flyer/invitation to comment.

https://www.hibiscuspetroleum.com/asset-portfolio/australia/

The following was also posted on LinkedIn:

Australian Operations Update

Our wholly-owned subsidiary, Carnarvon Hibiscus Pty Ltd (CHPL), intends to fully decommission the West Seahorse 3 well and remove the Wardie-1 conductor from within VIC/RL17.

A vessel-based campaign will be conducted to remove the wellhead and conductor stubs, and operations are targeted for the summer months of 2024/25 when the sea state is generally at its calmest.

This requires CHPL to revise the Environment plan to cover the permanent abandonment works, and as such we are seeking input from any relevant persons who may be affected by the activity and have an interest in learning more and making comment.

The information flyer can be viewed below and includes contact details should you wish to get in touch.

#BassStraitDecom #CarnarvonHibiscusDecom #WestSeahorse

4.4.3 RESULTS OF RELEVANT PERSON ENGAGEMENT

A detailed summary of the consultations with relevant persons is included in the following section.

To date there have been no objections, claims or issues raised by any of the relevant persons contacted directly.

To date there have bene no responses received to any of the newspaper advertisements run in the local newspapers.

To date there have been no responses received from the information flyer being posted on the Hibiscus Petroleum Berhad website, or to the post on LinkedIN.

4.4.4 CONSULTATION WITH FISHERIES ASSOCIATIONS

CHPL has consulted with all relevant fishing industry groups who have interests over or adjacent to the activity area with particular focus (including phone calls) on fisheries with recent catch effort in the area. Where fisheries have no recent catch effort in the area, distribution of the project information flyer has been considered appropriate.

4.4.5 ONGOING CONSULTATION

While the pre-EP submission has ended, CHPL will continue to monitor National and State registers, community developments, legislative changes, and the general public domain to identify any relevant persons or impacted parties and consult with relevant persons regarding the activity should any further be identified or come forward and express interest in doing so.

4.5 SUMMARY OF RELEVANT PERSON CONSULTATION

A summary of stakeholder consultation undertaken, together with CHPL's responses and assessment of merit is included in Table 4.3. In summary, there has been no objections, claims or objections to the proposed activity. As such, there is no compendium of original communications associated with this EP.

Table 4.4 Summary of WSH-3 relevant person consultation

Category 1 – Department or agency of the Commonwealth to which the activities to be carried out under the EP may be relevant				
Relevant Person	**Method and Date of Consultation**	**Concerns, impacts or claims raised by relevant person**	**CHPL Response**	**CHPL's assessment of merit to claims or objections**
Australian Fisheries Management Authority (AFMA) – contact 1	11-Sep-23 : email Information Flyer	10-Oct-23 : Apologised for delayed response, no specific comments and encouraged to reach out to fishing operators in the area – Bass Strait CZ Scallop Fishery, CFA, SIV, SETFIA, SSIA	Noted	No follow up required, suggested groups already contacted.
Australian Fisheries Management Authority (AFMA) – contact 2/3	11-Sep-23 : email Information Flyer 25-Oct-23 : resent Information Flyer email	No response Delivery and Read receipts confirmed and no response to flyer	Follow up email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity, also note response above.

Relevant Person	Method and Date of Consultation	Concerns, impacts or claims raised by relevant person	CHPL Response	CHPL's assessment of merit to claims or objections
Australian Hydrographic Office (AHO)	11-Sep-23 : email Information Flyer	12-Sep-23 : Acknowledged receipt, confirmed data received will be registered, assessed, prioritised and validated in preparation for updating our Navigational Charting products.		No follow up required – the well and the PSZ are already marked on navigation charts and information will be updated when operations commence.
Australian Maritime Safety Authority (AMSA)	11-Sep-23 : email Information Flyer 20-Oct-23 : follow up phone call 24-Oct-23 ; re-issue email	No response Confirmed receipt of original email, suggested resending. Replied with directions to notify various bodies 4 weeks prior to operations	Noted	No follow up required until further activity in area undertaken - shipping traffic is described in Section 5.6.8.
DAFF – National Maritime Centre	11-Sep-23 : email Information Flyer	11-Sep-23 : Auto email response confirming receipt, please do not respond, provided two additional contact addresses	Noted	No follow up required
DAFF – Conveyance Maritime, Marine Pests, Vessels and others	11-Sep-23 : email Information Flyer 25-Oct-23 : resent Information Flyer email	No response Auto reply and read receipt confirmed 25-Oct-23 and no response	Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.

Relevant Person	Method and Date of Consultation	Concerns, impacts or claims raised by relevant person	CHPL Response	CHPL's assessment of merit to claims or objections
Department of Defence	11-Sep-23 : email Information Flyer	12-Sep-23 : email stating error in address, corrected details provided, forwarded internally, response promised 9-Oct-23 : response confirming activity is within restricted airspace and advice that Unexploded ordinance (UXO) may be present on sea floor, and absolving DoD of any liabilities	None required Noted	No follow up required – the well has no impact on DoD activities. Restricted airspace noted Risk of UXO on seabed has been eliminated during original well operations and seabed surveys undertaken at that time.
DCCEEW – Marine Parks, Sea Dumping, Water	11-Sep-23 : email Information Flyer sent to all 25-Oct-23 : follow up email sent to all	11-Sep-23 : confirm receipt, will respond ASAP 25-Oct-23 : Delivery receipt confirmed for all, no response	Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Director of National Parks	2-Nov-23 : email Information Flyer	2-Nov-23 : Delivery receipt confirmed – no response	Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.

Category 2 – Each Department or agency of a State to which the activities to be carried out under the EP may be relevant

Relevant Person	Method and Date of Consultation	Concerns, impacts or claims raised by relevant person	CHPL Response	CHPL's assessment of merit to claims or objections
DEECA	25-Oct-23 : email Information Flyer	26-Oct-23 : receipt confirmed, notice that enquiry has been referred to a more specialised person within the department No further response.	Noted	No follow up is required - CHPL has contacted other persons within DEECA as per below.
DEECA – Marine Species	26-Oct-23: Information flyer forwarded by email from DAFF	26-Oct-23 : email received – questions relating to vessel to be used in relation to biofouling, request for conversation .	30-Oct-23 : phone call to discuss vessel related questions and confirm vessel would be chartered locally (not imported) and operate from Barry Beach	No follow up is required – respondent questions answered in phone conversation
Maritime Victoria – DEECA	11-Sep-23 : email Information Flyer 25-Oct-23 : resent Information Flyer email	Error in email address Delivery and Read receipts confirmed and no response to flyer.	Follow up email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
EPA Victoria	15-Sep-23 : email Information Flyer	15-Sep-23 : receipt confirmed and that correspondence forwarded to South Metro team.	Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.

Relevant Person	Method and Date of Consultation	Concerns, impacts or claims raised by relevant person	CHPL Response	CHPL's assessment of merit to claims or objections
Transport Safety Victoria – Maritime Safety	11-Sep-23 : email Information Flyer 25-Oct-23 : phone call 25-Oct-23 : follow up email Information flyer	11-Sep-23 : auto receipt response Confirmed changes in emails, new dept Safe Transport Vic 25-Oct-23 : Delivery receipts confirmed 26-Oct-23 : Read receipt confirmed	Notied	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity
Parks Victoria	15-Sep-23 : email Information Flyer	15-Sep-23 : receipt confirmed and that correspondence forwarded internally	Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Victorian Fisheries Authority (VFA)	19-Sep-23 : email Information Flyer 31-Oct-23 : follow up email information flyer	No response 2-Nov-23 : receipt confirmed, will consider and advise 2-Nov-23 : Response – VFA has no comments, please seek comment from SIV, VRFish, Abalone Council, Rock Lobster Advisory group 8-Nov-23 : question if intention is to sever both wells at or below seabed	Follow up email Bodies already in consultation, forwarded flyer to Rock Lobster Group 8-Nov-23 : Confirmed intention to sever at or just below seabed	No follow up required No follow up required, concern addressed

Category 3 – The Department of the responsible State Minister				
Relevant Person	**Method and Date of Consultation**	**Concerns, impacts or claims raised by relevant person**	**CHPL Response**	**CHPL's assessment of merit to claims or objections**
DEECA - Earth Resources Regulation (ERR)	11-Sep-23 : email Information Flyer 25-Oct-23 : follow up email Information flyer	No response 25-Oct-23 : Delivery receipt 26-Oct-23 : Read receipt 2-Nov-23 : acknowledged receipt and confirmed Vic regulator for petroleum activities in Vic waters has no comments Recommendation to contact Planning and approvals as per below	Follow up email Noted Noted See below	No follow up is required - this relevant person has no concerns with the activity
DEECA – Planning and Approvals, Gippsland Region	2-Nov-23 : email information flyer	3-Nov-23 : Acknowledged receipt and that WSH-3 lies outside Victorian waters, however requested a copy of the revised EP to confirm Vic coast impacts are addressed	3-Nov-23 : confirm EP will be placed on NOPSEMA website for review, and promised to email a copy separately	No follow up required, concern addressed CHPL to follow up to inform when EP and OPEP are available for review, and to send separate copy directly.

Category 4 – A person or organisation whose functions, interests or activities may be affected by the activities to be carried out under the EP				
Adjacent Petroleum Titleholders				
Relevant Person	**Method and Date of Consultation**	**Concerns, impacts or claims raised by relevant person**	**CHPL Response**	**CHPL's assessment of merit to claims or objections**
3D Oil Limited (VIC/P57)	11-Sep-23 : email Information Flyer 25-Oct-23 : follow up email Information flyer	No response 25-Oct-23 : Delivery receipt 26-Oct-23 : Read receipt - No response	Follow up email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
CarbonNet (DEECA)	11-Sep-23 : email Information Flyer	11-Oct-23 : Confirmed receipt, outlined CarbonNet Project Plans, identified interest in risk assessment of activities in adjacent tenements, and the timing in relation to potential concurrent works and their impact. Requested a copy of revised EP.	31-Oct-23 : phone discussion to explore risks with concurrent operations, potential for shared resources, agreed to remain in ongoing communication and confirmed will review EP once published for public comment.	No immediate follow up required, concerns addressed. CHPL to remain in communication as project plans develop.
ExxonMobil (Esso Australia Resources Pty Ltd)	11-Sep-23 : email Information Flyer 25-Oct-23 : follow up email Information flyer	No response 25-Oct-23 : Read receipt received - No response	Follow up email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.

Fisheries

Relevant Person	Method and Date of Consultation	Concerns, impacts or claims raised by relevant person	CHPL Response	CHPL's assessment of merit to claims or objections
Commonwealth Fisheries Association (CFA)	11-Sep-23 : email Information Flyer 25-Oct-23 : follow up email Information flyer	No response 25-Oct-23 : Delivery receipt - No response	Follow up email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Australian Southern Bluefin Tuna Industry Association (ASBTIA) – contact 1,2	11-Sep-23 : email Information Flyer 25-Oct-23 : follow up email Information flyer	No response 26-Oct-23 : Delivery receipt - No response	Follow up email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Australian Southern Bluefin Tuna Industry Association (ASBTIA) – contact 3	11-Sep-23 : email Information Flyer 31-Oct-23 : resend email to new address and enquiry via website	12-Sep-23 : error message 31-Oct-23 : Delivery receipt from website - No response	Phoned and left messages to contact 26, 30, 31-Oct-23 Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Bass Strait Central Zone Scallop Fishery	11-Sep-23 : email Information Flyer 25-Oct-23 : follow up email Information flyer	No response 25-Oct-23 : Delivery receipt - No response	Follow up email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Eastern Zone Abalone Industry Association	11-Sep-23 : email Information Flyer 25-Oct-23 : follow up email Information flyer	No response 25-Oct-23 : Delivery receipt - No response	Follow up email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.

Relevant Person	Method and Date of Consultation	Concerns, impacts or claims raised by relevant person	CHPL Response	CHPL's assessment of merit to claims or objections
Seafood Industry Victoria (SIV)	11-Sep-23 : email sent 31-Oct-23 : resent email	28-Sep-23 : email received 31-Oct-23 : email to CHPL 30-Jan-24 : email to CHPL 31-Jan 24 : email to CHPL 1-Feb-24 : email to CHPL	30, 31-Oct-23 : phone call 31-Oct-23 : resent email 31-Jan-24 : phone 1-Feb-24 : email sent	Relevant person requests details in all communication to remain confidential.
South-East Trawl Fishing Industry Association (SETFIA)	11-Sep-23 : email Information Flyer 25-Oct-23 : follow up email Information flyer	No response 25-Oct-23 : Delivery receipt 26-Oct-23 : Read receipt – no response	Follow up email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Southern Shark Industry Alliance (SSIA)	11-Sep-23 : email Information Flyer 12-Oct-23 : follow up email Information flyer	Response from AFMA with different email address 25-Oct-23 : Delivery and read receipt - No response	Follow up email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Sustainable Shark Fishing Association (SSFA)	11-Sep-23 : email Information Flyer 25-Oct-23 : follow up email Information flyer	No response 26-Oct-23 : Delivery receipt - No response	Follow up email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Tuna Australia	11-Sep-23 : email Information Flyer 25-Oct-23 : follow up email Information flyer	No response 25-Oct-23 : Delivery receipt - No response	Follow up email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.

Relevant Person	Method and Date of Consultation	Concerns, impacts or claims raised by relevant person	CHPL Response	CHPL's assessment of merit to claims or objections
Victorian Abalone Divers Association (VADA)	11-Sep-23 : email Information Flyer 25-Oct-23 : follow up email Information flyer 25-Oct-23 : resent to new address	No response 25-Oct-23 : Delivery failed No response	Follow up email Phone call to check address Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Victoria Recreational Fishing (VRFish)	11-Sep-23 : email Information Flyer 25-Oct-23 : follow up email Information flyer	No response No response	Follow up email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Victorian Scallop Fisherman's Association (VSFA)	11-Sep-23 : email Information Flyer 25-Oct-23 : follow up email Information flyer	No response 25-Oct-23 : Delivery receipt - No response	Follow up email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
First Nations Persons				
Gunaikurnai Land and Waters Aboriginal Corporation	19-Sep-23 : email Information Flyer 25-Oct-23 : follow up email Information flyer 27-October-23 : phone call 27-Oct-23 : resent information flyer 13-Nov-23 : Phone call	No response No response Closed for NAIDOC week 27-Oct-23 : delivery / read receipt Stated waiting on internal responses but did not believe they will have any objections	Follow up email Phone call Follow up email Follow up phone calls	No follow up required - Area of operations lies outside the Gunaikurnai Settlement Area meaning GLAWAC has no Native Title rights over the operations area. Stated the people retain a strong interest and will continue to advocate for the health of land and sea country. Raised expectation that all genuine efforts are

	15/19/21-Jan-24 : phone calls 22-Jan-24	Promised to pass message to CEO to return call. CEO returned call, brief discussion relating to project and response. 22-Jan-24 : Email response	Engaged in discussion and review of email	made to manage and protect cultural heritage and Country, and that they look forward to staying up to date as the project progresses.
Relevant Person	**Method and Date of Consultation**	**Concerns, impacts or claims raised by relevant person**	**CHPL Response**	**CHPL's assessment of merit to claims or objections**
Koorie Heritage Trust	19-Sep-23 : email Information Flyer 25-Oct-23 : follow up email Information flyer 26-Oct-23 : Phone call 27-Oct-23 : follow up email Information flyer	No response 25-Oct-23 : No response 26 Oct - Phone call - email not received – requested resend – promised to respond if warranted 27-Oct-23 : delivery receipt - No response	Follow up email Follow up Phone call Resend email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Aboriginal and Torres Strait Islands - DCCEEW	19-Sep-23 : email Information Flyer 25-Oct-23 : follow up email Information flyer 27-Oct-23 : resend email	No response 25-Oct-23 : problem with delivery 27-Oct-23 : delivery receipt - No response	Follow up email Resend email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Australian Heritage Council - DCCEEW	25-Oct-23 : follow up email Information flyer	27-Oct-23 : Delivery receipt - No response	Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.

Category 5 – Any other person or organisation that the Titleholder considers relevant				
Relevant Person	**Method and Date of Consultation**	**Concerns, impacts or claims raised by relevant person**	**CHPL Response**	**CHPL's assessment of merit to claims or objections**
Atoll Offshore	16-Sep-23 : phoned and left message to contact 31-Oct-23 : phoned and left message to contact	No response No response	Follow up call Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Australian Oceanographic Services	15-Sep-23 : sent enquiry via website to obtain contact details 15-Oct-23 : sent enquiry via website to obtain contact details	No response. No response.	Follow up enquiry Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Australian Wildcatch Fishing	16-Sep-23 : email Information Flyer 31-Oct-23 : phone call	No response. 31-Oct-23 : advised CEO will be asked to respond, but noted that normally grouped with SETFIA in any communications	Follow up phone call Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Bass Strait Game Fishing Club	16-Sep-23 : email Information Flyer 31-Oct-23 : phone call	No response. 31-Oct-23 : confirmed receipt and no intention to respond	Follow up phone call Noted	No follow up is required - stakeholder has no concerns with the activity.
Bass Strait Bait and Tackle Lakes Entrance	16-Sep-23 : telephone call	Owner advised not directly affected but would support infrastructure remaining in place.	Noted	No follow up is required - stakeholder has no concerns with the activity.

Relevant Person	Method and Date of Consultation	Concerns, impacts or claims raised by relevant person	CHPL Response	CHPL's assessment of merit to claims or objections
Boating Industry of Victoria	16-Sep-23 : email Information Flyer 31-Oct-23 : phone call	No response. 31-Oct-23 : confirmed receipt of email and no impact on BIAVic and no intent for further comments	Follow up phone call Noted	No follow up is required stakeholder has no concerns with the activity.
Committee for Gippsland	16-Sep-23 : email Information Flyer 31-Oct-23 : phone call – left message to contact	No response. No response.	Follow up phone call	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Corner Inlet Fisheries Habitat Association	15-Sep-23 : message sent via website to make contact 31-Oct-23 : phone call – left message to contact	No response. No response.	Follow up phone call	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
East Gippsland Shire Council	16-Sep-23 : email Information Flyer 31-Oct-23 : resend email Information flyer	16-Sep-23 : Auto email response, aim to respond within 10 days. 31-Oct-23 : Auto email response, aim to respond within 10 days.	Follow up email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Farout Charters	16-Sep-23 : email Information Flyer	17-Sep-23 : Advised via email currently working in area, understands PSZ impact, no further issues	Noted	No follow up is required - this stakeholder has no concerns with the activity.
Game Fishing Association of Victoria	16-Sep-23 : email Information Flyer 18-Sep-23 : phone call	18-Sep-23 : promised to distribute to others in the area	Follow up phone call	No follow up is required - CHPL interprets this to mean that

	31-Oct-23 : phone call 31-10-23 : resent email to new address	31-10-23 : advised new mail address 31-10-23 : Delivery and read receipts, no reponse		this stakeholder has no concerns with the activity.
Relevant Person	**Method and Date of Consultation**	**Concerns, impacts or claims raised by relevant person**	**CHPL Response**	**CHPL's assessment of merit to claims or objections**
Gippsland Lakes Fishing Club	16-Sep-23 : email Information Flyer 31-Oct-23 : phone call 31-Oct-23 : resend email	No response. 31-Oct-23 : asked to resend email, promised to distribute to all members. 31-10-23 : email to confirm receipt and redistribution to all members	Follow up phone call Resend email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Lake Tyers Beach Angling Club	18-Sep-23 : phone call – left message to Contact 31-Oct-23 : phone call – left message to Contact	No response. No response.	Follow up phone call Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Lake Entrance Fishermen's Co-operative	16-Sep-23 : email Information Flyer 31-Oct-23 : resend email	No response. No response.	Resend email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Lakes Entrance Visitor Information Centre	16-Sep-23 : email Information Flyer 31-Oct-23 : resend email	No response. No response.	Resend email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Life Saving Victoria	16-Sep-23 : email Information Flyer 31-Oct-23 : resend email	No response. 31-10-23 : delivery confirmed, forwarded to member clubs.	Resend email Noted	No follow up is required – monitor email for further coms with member clubs.

Relevant Person	Method and Date of Consultation	Concerns, impacts or claims raised by relevant person	CHPL Response	CHPL's assessment of merit to claims or objections
Maritime Industry Australia Ltd	16-Sep-23 : email Information Flyer	20 Sep-23 : confirmed receipt and will redistribute to all members 25-Sep-23 : email confirming redistribution	Noted Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Mitchelson Fisheries Pty ltd	16-Sep-23 : email Information Flyer 31-Oct-23 : resend email	No response. No response.	Resend email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Mornington Peninsula Shire	16-Sep-23 : email Information Flyer	16-Sep-23 : auto email response – your email will be forwarded to the relevant department for response	Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Panama II fishing vessel	16-Sep-23 : phone call to obtain contact details	16-Sep-23 : advised as members of Lakes Entrance Fisherman's Co-op and will respond via them	Noted	No follow up is required.
Piscari Industries Pty Ltd	24-Sep-23 : phone call	Owner advised they are outside of EMBA and will not be impacted	Noted	No follow up is required - this stakeholder has no concerns with the activity.
Port of Hastings	16-Sep-23 : email Information Flyer 31-Oct-23 : resend email	No response. No response.	Resend email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
South Gippsland Game Fishing Club	16-Sep-23 : email Information Flyer	Email to confirm receipt and they are part of GFA Victoria, and stance is to leave infrastructure in place.	Note	No follow up is required - stakeholder has no concerns with the activity.

Relevant Person	Method and Date of Consultation	Concerns, impacts or claims raised by relevant person	CHPL Response	CHPL's assessment of merit to claims or objections
South Gippsland Shire Council	16-Sep-23 : email Information Flyer	19-Sep-23 : email to confirm receipt and distribution to relevant staff within organisation	Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Victoria Game Fishing Club	16-Sep-23 : email Information Flyer 31-Oct-23 : resend email	No response. No response.	Resend email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Victoria Regional Channels Authority	16-Sep-23 : email Information Flyer 31-Oct-23 : resend email	No response. No response.	Resend email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Wellington Shire Council	16-Sep-23 : email Information Flyer 31-Oct-23 : resend email	16-Sep-23 : Auto response – email will be handled in accordance with Customer Service Commitment 19-Sep-23 : email acknowledging receipt and no intent to provide further comment.	Noted Noted	No follow up is required - stakeholder has no concerns with the activity.
Yachting Victoria	16-Sep-23 : email Information Flyer 31-Oct-23 : resend email	No response. No response.	Resend email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Woodside Beach SLSC	2-Nov-23 : email forwarded from Life Saving Victoria	14-Nov-23 : email asking about potential risks to Woodside Beach and mitigations.	Reply to email	No immediate follow up is required - CHPL will monitor future communication and update as operations proceed.

	14-Nov-23 : email to advise potential risks around MDO spill.	14-Nov-23 : thanked for response, will discuss internally and respond further.	Noted	
Relevant Person	**Method and Date of Consultation**	**Concerns, impacts or claims raised by relevant person**	**CHPL Response**	**CHPL's assessment of merit to claims or objections**
Australian Wildlife Conservancy	19-Sep-23 : email Information Flyer	20-Sep-23 : confirmed email receipt, but does not believe AWC would be considered a relevant stakeholder.	Noted	No follow up is required - stakeholder is not a relevant person for this activity.
Bush Heritage	16-Sep-23 : email Information Flyer 31-Oct-23 : phone call	No response. 31-Oct-23 : confirmed email receipt, unlikely to impact any of their areas, will pass on to relevant persons for further comment.	Follow up phone call	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Community Over Mining	15-Sep-23 : message via website requesting contact details 31-Oct-23 : repeated request via website for contact details	No response. No response.	Repeat request. Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Extinction Rebellion	19-Sep-23 : email Information Flyer 25-Oct-23 : repeat email	No response. Delivery receipt - No response.	Follow up email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Friends of the Earth Australia	19-Sep-23 : email Information Flyer 25-Oct-23 : repeat email	No response. Delivery receipt - No response.	Follow up email Noted	No follow up is required - CHPL interprets this to mean no concerns with the activity.

Relevant Person	Method and Date of Consultation	Concerns, impacts or claims raised by relevant person	CHPL Response	CHPL's assessment of merit to claims or objections
Greenpeace	19-Sep-23 : email Information Flyer 25-Oct-23 : repeat email	19-Sep-23 : Auto response – received enquiry and will respond ASAP– No further response. 25-Oct-23 : Auto response – received enquiry and will respond ASAP – No further response.	Follow up email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
The Nature Conservancy	19-Sep-23 : email Information Flyer 25-Oct-23 : repeat email	No response. Delivery receipt - No response.	Follow up email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
The Wilderness Society	19-Sep-23 : email Information Flyer 25-Oct-23 : repeat email	No response. Delivery receipt - No response.	Follow up email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Trust for Nature	19-Sep-23 : email Information Flyer 25-Oct-23 : repeat email	No response. Delivery receipt - No response.	Follow up email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
Wildlife Victoria	19-Sep-23 : email Information Flyer 25-Oct-23 : repeat email	No response. Delivery receipt - No response.	Follow up email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.
World Wide fund for Nature	19-Sep-23 : email Information Flyer 25-Oct-23 : repeat email	No response. Delivery receipt - No response.	Follow up email Noted	No follow up is required - CHPL interprets this to mean that this stakeholder has no concerns with the activity.

5 DESCRIPTION OF THE EXISTING ENVIRONMENT

In accordance with OPGGS(E) Regulation 21(2), the EMBA for this activity is described in this chapter, together with its values and sensitivities.

As described in Section 2.3, a traditional EMBA for well based activities (normally based on major oil spill trajectory modelling) is not relevant to this activity because there is no risk of an oil release from the wells (due to the four cement plugs in each well). This results in a lack of credible well based oil spill scenario with which to establish a traditional EMBA.

Credible spill scenarios which may be experienced during the WSH-3 decommissioning activities are shown in Table 5.1 below.

Table 5.1. Potential Oil Spill Scenarios

Scenario	Incident	Source/Location	Oil Type	Volume Released	Spill Duration	Release Depth (m)	Level
1	Vessel Tank Leak	West Seahorse	MDO	200	6hours	0	2
2	Vessel Deck Drain Spill	West Seahorse	Lubricating & Hydraulic Oils	<1m^3	1hour	0	1
3	ROV Hydraulic Line Failure	West Seahorse	Hydraulic Oils	~250litres	1hr	24	1

As such, the EMBA for this activity has been defined as the area encompassing the PSZ during decommissioning activities, and that for a low probability Level 2 oil spill resulting from a vessel tank rupture, potentially from a vessel collision during the proposed survey activity.

Spill modelling was conducted for a vessel-based oil spill during planning stages for the Sea Lion and West Seahorse Drilling program and is included in the EP for that campaign (SLN-CHP-10-RG-PR-0003 Sea Lion and West Seahorse Drilling Campaign Environmental Plan (VIC/P57 & VIC/L31)). Assessment of the modelling considered validity of that modelling for the current campaign, and given the volume modelled (200 m^3 over 6 hours) is likely to be significantly greater than potential volumes during decommissioning activities due to mitigating strategies (i.e. tank lightening, tank transfers, volume limitation, etc) the modelling is considered valid for the proposed decommissioning activities.

5.1 OIL CHARACTERISTICS & FATE/WEATHERING DATA

5.1.1 Hydrocarbon Characteristics

Summarized below are the hydrocarbons expected to be present on- board the CHPL decom-related activities. The information is sourced from the Material Safety Data Sheets. The following information is provided:

- **Table 5-2** provides the physical characteristics of hydrocarbons present during CHP drilling activities; and
- **Table 5-3** provides hydrocarbon weathering characteristics and the expected influence on oil spill response options.

In the event of an actual spill, the fate and weathering behaviour will be confirmed via field observations in accordance with the OSMP and OSTM.

Table 5.2. Summary of Hydrocarbon Types and Physical Properties

Hydrocarbon	Boiling Point Characteristics (°C)				Density (kg/m³)	Viscosity	Oil Group	Pour Point (°C)	Comment
	Volatile (%)	Semi-Volatile (%)	Low Volatile (%)	Residual (%)					
	<180	180-265	265-380	>380					
Marine Diesel	6.0	34.6	54.4	5.0	829.1@ 25°C	4.0cP@ 25°C	III	-6	Flash Point ~60°C
Hydraulic Oils (Tellus)	-	-	-	-	0.875@ 15°C	32000cSt	III	-30	Initial Boiling Point ~280°C
Lubricating Oils	-	-	-	-	0.86-0.88	Variable 30 to 240cSt	III	Low	Flash Point >100°C Emulsifies
Persistence	*Non-Persistent*			*Persistent*					

Table 5.3. Oil Behaviour and Characteristics

Property	Description of Hydrocarbon Behavior at Sea
Marine Diesel (Used for fuel in rig equipment, vessels and crane operations)	
Composition	Diesel is a mixture of volatile and persistent hydrocarbons with a low percentage of volatile hydrocarbons and a greater proportion having a moderate to low volatility. Combustible liquid.
Emulsification	Physical agitation by using propeller wash may assist in the evaporation and break up of spilled marine diesel however the potential exists to emulsify the hydrocarbon which can lead to decreased degradation rates. This response strategy is not recommended for MDO spills.
Weathering at Sea	Marine Diesel, although classified as persistent, will undergo rapid spreading and evaporative loss in high energy marine waters and slicks will quickly disperse/break up. *Containment and recovery operations for marine diesel in open waters are expected to be limited in effectiveness as the material spreads rapidly into thin layers which are not in recoverable thicknesses. Due to the rapid evaporation and dispersion of marine diesel, spilled material is preferentially monitored and allowed to naturally weather if no protection priorities are at risk.* During evaporative weathering, low molecular weight aliphatic and aromatic hydrocarbons are lost from the oil, leaving higher concentrations of less volatile, higher molecular weight hydrocarbons. The heavier components have a strong tendency to entrain in the upper water column as oil droplets in the presence of wind/waves but can re-float to the surface if energies abate (APASA, 2014). Under a 15°C water temperature, 15knot MDO scenario it would be expected that after 1 day evaporation accounts for approximately 10% of the spill, 20% of the spill volume has been dispersed in the water column and 70% remains on the surface. After 5days surface oil is eliminated, 62% has been dispersed within the water column and 38% has evaporated (APASA, 2014).
Aromatic Hydrocarbon Content	Diesel is a light persistent petroleum distillate (predominantly C_{12}-C_{14} hydrocarbon compounds) and has low concentrations of aromatic (soluble toxic) compounds (<3 mol%) (NOAA, 2013) with the majority of aromatics lying in the boiling point range <264°C (hence volatile and readily weathered).
Shoreline Behavior	MDO is not sticky or viscous compared with black oils (i.e. some crude oils and HFO) it tends to penetrate porous sediments (sands) quickly, but also tends to be washed off quickly by waves and tidal flushing. MDO is readily and completely degraded by naturally occurring microbes within 1-2months (NOAA, 2013b).

Hydraulic Oils	
Composition	Hydraulic oils are typically highly refined light to medium mineral oils, liquid under most environmental conditions and will spread on the sea surface. Spill, due to small volumes which could be spilled are expected to result in rapid disassociation.
Emulsification	Poorly soluble in water
Weathering at Sea	Oils are a mixture of non-volatile components with limited evaporation potential.
Aromatic Hydrocarbon Content	Highly refined mineral oil. Low toxicity.
Shoreline Behavior	*Not Applicable to activity*
Lubricating Oils	
Composition	Variable.
Emulsification	Oils may emulsify at sea leading to increased slick volumes.
Weathering at Sea	These oils have a moderate spreading and evaporation rate. Persistent at sea.
Aromatic Hydrocarbon Content	Lubricating oils typically have low aromatic content[10]
Shoreline Behavior	*Not Applicable to activity*

5.1.2 Definition of Zone of Potential Impact (ZPI)/Zone of Potential Contact (ZPC)

The following criteria have been used to determine hydrocarbon concentration thresholds whereby environmental impacts from hydrocarbon spills may be expected.

Surface Oiling

The following surface thresholds have been defined for the purpose of impact and contact:

- **Environmental/Ecological Impact Threshold**: 10µm (g/m2). *This threshold relates to the threshold thickness of oil that could be harmful to intersecting wildlife* (APASA, 2013);
- **Environmental Contact Threshold**: 0.5µm (g/m2). This threshold relates to the minimum visual threshold observable which may invoke a community reaction. It is noted that clean-up and containment operations are not effective at these surface thresholds.

Dissolved Aromatics

Based upon a review of global data for species impacts (115 fish, 129 crustaceans, 34 invertebrate species including sensitive lifecycle stages) associated with dissolved phase hydrocarbons (aromatics), French-McCay (2002, 2003) has established the following LC50 (96hr) values as reflected in **Table 5-4**. A minimum exposure threshold of 6ppb over 96-hours or equivalent has been used to assess in-water low exposure zones in water temperatures of 25oC. Average 96hr LC50 of 50ppb and 400ppb, assessed at water temperature of 25oC, are typically used to define an acute threshold to 5% (moderate exposure) and 50% (high exposure) of biota respectively.

Table 5.4. Threshold Impact Levels for Dissolved Aromatic Hydrocarbons

Trigger Value for dissolved aromatic concentration for LC_{50} (96hrs) (ppb)	Equivalent dosage of dissolved aromatics over 96hrs (ppb.hrs)	Range of sensitive species potentially impacted from acute exposure	Level of Exposure
6	576	Very Sensitive Species (99^{th} percentile)	Low
50	4,800	Average Sensitive Species (95^{th} percentile)	Moderate
400	38,400	Tolerant Sensitive Species (50^{th} percentile)	High

Additionally, for some hydrocarbons (i.e. MDO) the aromatic content is low and those components are very volatile. Generally, for components <180oC most aromatic components evaporate within a few hours and for components in the boiling range 180-260oC evaporation/ dissolution will occur in one day (APASA, 2014). Accordingly, modelling results identifies that for these types of hydrocarbons (i.e. MDO) aromatics do not persist in the marine environment for the necessary exposure period (96hrs) to trigger the lowest thresholds.

Dispersed (Entrained) Hydrocarbons

Dispersed phase hydrocarbon has utilised the following instantaneous thresholds derived from OSPAR Predicted No Effects Concentration (PNEC) for dispersed oil for chronic hydrocarbon exposure and converted to appropriate acute exposure levels:

- LC50 (99% species protection): 700µg/l (ppb) (low);
- LC50 (95% species protection): 7,050ppb (medium); and
- LC50 (50% species protection): 80,400ppb (high).

OSPAR (2012) has published accepted PNEC for 'dispersed oil' of 70.5ppb (95% species protection) and 804ppb (50% species protection) in Produced Formation Water representative of entrained oils which have been 'water-washed' (i.e. oils which have had significant portions of soluble toxics removed through evaporation/dispersion. These PNEC levels represent acceptable long term chronic exposure levels from continuous point source discharges in the North Sea, one of the most concentrated areas in the world for oil and gas production and have been based upon biomarker testing specifically looking at DNA damage and oxidative stress (Smit et al, 2009) for a variety of oils.

Table 5.5 provides threshold values13 for entrained hydrocarbons over 48hrs.

Table 5.5. Threshold Impact Levels for Dispersed (Entrained) Hydrocarbons

Trigger Value for entrained oil concentrations LC_{50} (48hrs) (ppb)	Equivalent dosage of dissolved aromatics over 96hrs (ppb.hrs)	Range of sensitive species potentially impacted from acute exposure	Level of Exposure
700	33,600	Very Sensitive Species (99^{th} percentile)	Low
7,050	338,400	Average Sensitive Species (95^{th} percentile)	Moderate
80,400	3,895,200	Tolerant Sensitive Species (50^{th} percentile)	High

Shoreline Accumulation Thresholds of Hydrocarbon

French-McCay (2009) in a review of literature associated with oiling of inter-tidal habitats (wetland, rocky shore, gravel and sand beach, and mudflat) identified the following threshold observations for shoreline impacts:

- Marsh/Mangroves species: Oil thicknesses of more than 1mm (1000g/m2) during the growing season is expected to impact these species; and
- Inter-tidal Invertebrates: Oil thicknesses of 0.1mm (100g/m2) for benthic epi-faunal invertebrates on hard substrates (rocky, artificial/man-made, etc.) and sediments (mud, silt, sand or gravel).

These threshold levels have been nominated as trigger levels for possible impacts to these species.

5.1.3 Oil Spill Trajectory Modelling (OSTM) Results)

Modelling (APASA, 2014) has been undertaken for the following maximum credible oil spill scenarios associated with CHPLs decommissioning campaign to establish the maximum ZPI without oil spill response intervention:

- **Marine Diesel** Spill: WSH Location: 200m3 over 6 hours.

Smaller volumes spills have not been undertaken as they are small in volume and consist of hydrocarbons which readily disperse and evaporate and will have a lesser footprint than those modelled.

Figure 5-1 provides a summary diagram of both the indicative oil spill response 'operational' and 'monitoring' zones for the WSH Decommissioning MDO scenario.

"Operational areas" are defined as areas which trigger 'impact' levels and where active spill response activities are viable.

"Monitoring areas" are those areas which lie in the 'contact' area (i.e. visible sheens) which may require operational and scientific monitoring activities dependent on the spill event.

It should be noted that the ZPI reflected in these plots is a compilation of 200 individual trajectory simulations, each commencing at a different time and under randomised wind and current conditions. The plot does not represent the ZPI from a single worst-case oil spill event.

Figure 5.1. WSH Decommissioning MDO Spill Scenario (Indicative Operational (ZPI) and Monitoring (ZPC) Areas)

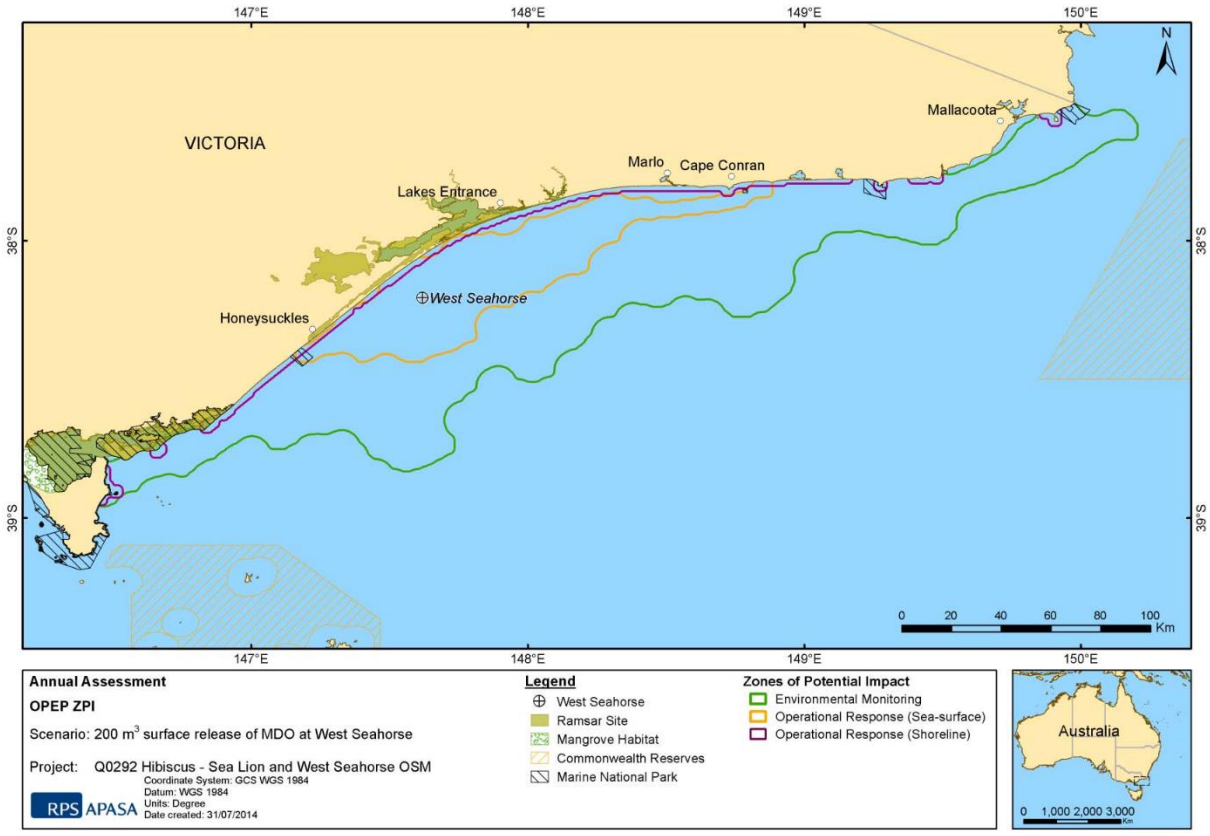


Table 5-6 provides a summary of the sensitive receptors within the response zone and the following:

- Probability of, and shortest time to contact, for impact levels of surface oil (10µm) and visible oil (0.5µm);
- Probability of, and shortest time to contact for shoreline residues >100g/m^2.

Table 5.6. Summary of Sensitive Receptors and time to Oil Spill Impact (APASA 2014).

Sensitive Receptor	WSH – MDO Spill						
	Visible (0.5µm)		Impact (10µm)		Shoreline Impact (>100g/m^2)		
	Time (Hours)	Probability (%)	Time (Hours)	Probability (%)	Time (Hours)	Probability (%)	Maximum Oil Volume (m^3)
Beagle CMR	NA	NA	NA	NA	NA	NA	NA
East Gippsland CMR	NA	NA	NA	NA	NA	NA	NA
Flinders Island (TAS)	NA	NA	NA	NA	NA	NA	NA
Kent Group NP (TAS)	NA	NA	NA	NA	NA	NA	NA
Hogan Island (TAS)	NA	NA	NA	NA	NA	NA	NA
Curtis Group (TAS)	NA	NA	NA	NA	NA	NA	NA
Seal Islands (VIC)	NA	NA	NA	NA	NA	NA	NA
Wilsons Prom NP (VIC)	55	<5	NA	NA	61	1	<0.1
Corner Inlet/Noormunga Estuary	55	<5	NA	NA	NA	NA	NA
Ninety Mile Beach MNP	40	<10	NA	NA	44	1	-
Merriman Creek Estuary	40	<5	NA	NA	44	1	-
Gippsland Lakes CP	12	<25	~24	<5	14	5	<0.1
Lakes Entrance (Entrance to Lakes NP)	24	<5	NA	NA	45	5	-
Lake Tyers Beach Estuary	48	<5	NA	NA	45	5	-
Snowy River Estuary	48	<5	NA	NA	45	5	-
Cape Conran CP	37	<5	~48	<5	45	5	<0.1
Beware Reef MS	37	<5	NA	NA	45	5	-
Croajingalong NP	65	<5	NA	NA	74	1	<0.1
Tamboon Inlet Estuary	65	<5	NA	NA	74	1	-
Point Hicks MNP	65	<5	NA	NA	74	1	-
The Skerries	NA	NA	NA	NA	NA	NA	NA
Wingan Inlet Estuary	NA	NA	NA	NA	NA	NA	NA
Beckta River Estuary	NA	NA	NA	NA	NA	NA	NA
Mallacoota Inlet Estuary	NA	NA	NA	NA	NA	NA	NA
Tullaberga Island	~120	<5	NA	NA	NA	NA	NA
Gabo Island	~120	<5	NA	NA	NA	NA	NA
Cape Howe MNP	NA	NA	NA	NA	NA	NA	NA

Nadgee Lake Estuary (NSW) (C)	NA	NA	NA	NA	NA	NA	NA
Wonbyn Lake Estuary (NSW)	NA	NA	NA	NA	NA	NA	NA
Saltwater Creek Estuary (NSW)	NA	NA	NA	NA	NA	NA	NA
Woodburn Creek Estuary (NSW)	NA	NA	NA	NA	NA	NA	NA
South Coast (NSW) (Includes all estuary systems to Tuross Heads)	NA	NA	NA	NA	NA	NA	NA
Bateman's Bay (NSW)	NA	NA	NA	NA	NA	NA	NA
Montague Island (NSW)	NA	NA	NA	NA	NA	NA	NA
Jervis Bay (NSW)	NA	NA	NA	NA	NA	NA	NA

5.2 ENVIRONMENT THAT MAY BE AFFECTED (EMBA)

To define the EMBA it is necessary to consider the spatial extent of all planned activities (impacts) and unplanned events (risks). The description of the environment is based on two spatial areas:

- **The activity area:** during decommissioning operations is defined as *"All areas within the WSH-3 Petroleum Safety Zone (PSZ), which covers a 300 m-radius area around the WSH-3 wellhead"*

- **The wider EMBA:** the environment that may be affected by a worst case hydrocarbon spill as defined using the stochastic fate and transport modelling in Section 5.1.

The EMBA can be summarised as the Gippsland Basin and the Gippsland Coast stretching from Wilsons Promontory in the West to Cape Howe in the East.

5.3 ENVIRONMENTAL SENSITIVITIES

Environmental sensitivities (including heritage and socio-economic values) within the predicted ZPI are described in this Environment Plan. Additionally, environmental sensitivities are identified on the Oil Spill Response Atlas (OSRA) for the Gippsland coastline.

General characteristics of the region are described below:

Gippsland Basin: The seabed in the region consists of sediment flats inter-dispersed with small patches of reef, bedrock and consolidated sediment. Sandy seabed is only occasionally broken by low ribbons of reef (previous shorelines during ice age) which support red seaweeds and encrusting animals that can survive the sandy environment.

Gippsland Coast**:** The shoreline of the Gippsland coast is bounded by a considerable variety of ecologies:

- *Ocean Shoreline*: The Bass Strait ocean shoreline from Wilsons Promontory in the West to Cape Howe in the east, including the offshore islands at the extremities of the region consists mainly of steep rock, sand beaches and rock outcrops. The shoreline is generally one of high sea activity due to the prevailing weather conditions. These areas have varying tidal differences from east to west.

- *Inland Water Shoreline***:** The shoreline of the inland waters in the region which includes Corner Inlet (significant tidal range), the Gippsland Lakes and Mallacoota Inlet (minimal tidal range) are

generally of differing ecological type to the ocean shoreline. The shoreline adjacent to these waters consists of sandy beach, salt march mangrove or mudflats. These shores are generally protected from all but the worst weather conditions and therefore have very low sea activity.

The coastline has a considerable number of inlets and river mouths which are generally open to the sea and subject to tidal flow. However, from time to time, one or more of these openings may be closed as a result of natural sand movement. These openings are generally cut through the beach and have beach and sandy shorelines for varying distances on the landward side of the entrance. The openings are subject to fair to strong tidal flow and the strength of the flow will vary from one opening to another as will the distance inland that the tidal flow is discernible.

5.4 REGIONAL CONTEXT

Australia's offshore waters have been divided into six marine regions to facilitate their management by the Australian Government under the EPBC Act. The operational area and the EMBA intersects the South-east Commonwealth Marine Region (SEMR), which extends from the south coast of New South Wales to kangaroo Island in South Australia and around Tasmania.

The SEMR is further regionalised by the Integrated Marine and Coastal Regionalisation of Australia (IMCRA) version 4.0, with the activity area located within the Southeast Shelf Transition provincial bioregion within the South-east marine region (DoE, 2015a). This region extends from east of Wilson's Promontory to north of Tathra (NSW) (Figure 5.2). This bioregion is defined based on its distinct and unique habitats and biological communities, structured by a combination of physical, chemical and biological processes. The coastline adjacent to the bioregion is exposed, with long sandy beaches broken by rocky headlands and numerous coastal lagoons.

5.4.1 CLIMATE

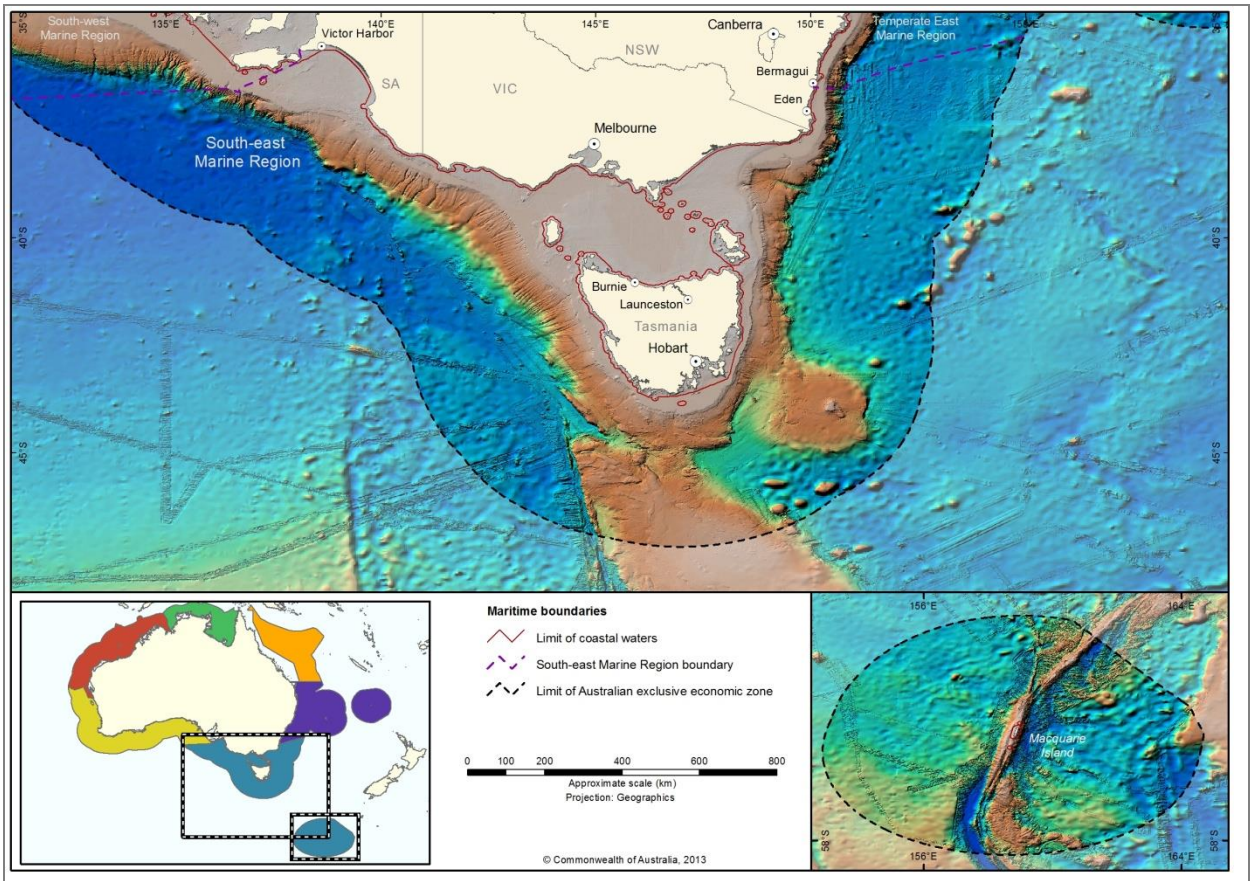
The region's climate can be defined as temperate, with moist winters and warm summers. It is influenced by rain bearing cold fronts that move from south-west to north-east across the region, producing strong winds from the west, north-west and south-west. In winter, when the subtropical ridge moves northwards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

Temperature and Rainfall

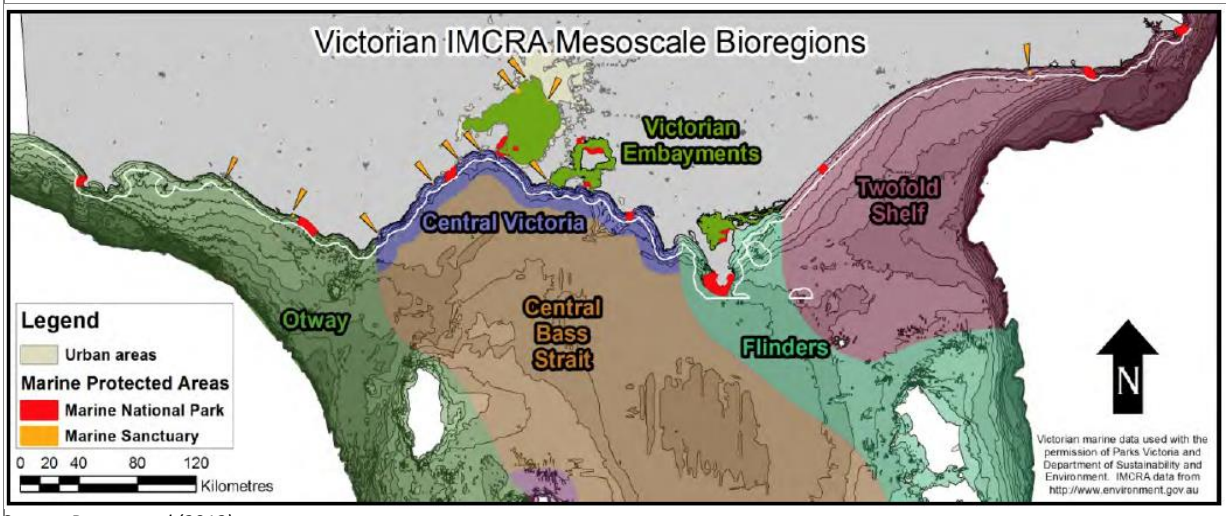
Average monthly air temperatures at Lakes Entrance (49 km northeast of the activity area, but the closest coastal town with a Bureau of Meteorology [BoM] weather station) range from 14.6°C in July to 23.8°C in February (1965 to 2006) (BoM, 2019). Mean annual rainfall is 713 mm with the rainfall fairly evenly distributed throughout the year, with a mean minimum of 41.5 mm in February and a maximum of 71 mm in November (BoM, 2019).

Winds

Wind speeds are in the range of 10 to 30 km per hour, with maximum gusts reaching 100 km per hour. The wind direction is predominately westerly during winter, westerly and easterly during spring and autumn (when wind speeds are highest) and easterly during summer. Strong south-easterly winds can be generated by low pressure systems known as 'east coast lows'. Although these occur relatively infrequently (once or twice per year), the longer fetch of these winds increases their potential for generating extreme wave conditions (BOM, 2017).



Source: DoE (2015).



Source: Barton et al (2012).

Figure 5.2. The Southeast Marine region (top) and the Twofold Shelf Victorian bioregion (bottom)

5.4.2 PHYSICAL ENVIRONMENT

Geomorphology

The activity area overlaps the seafloor 'slope' geomorphic unit as classified in the South-east Marine Region Profile (DoE, 2015a).

Seabed

Regional

The substrate across Bass Strait comprises a variety of sediment types related to tidal currents, with sediment grain size linked to wave energy. Sediments become progressively finer with increasing distance from the shore, consisting of fine, muddy sands in the mid-shelf regions (Harris and Heap, 2009; Wilson and Poore, 1987). Subtidal soft sediment is recent Holocene sand (<10, 000 years ago) consisting of a mixture of fine and medium sand with some silt, gravelly sand and shell, and with a low carbonate content of 14-19% (Barton *et al*., 2012). Harris and Heap (2009) also state that that the calcium carbonate content of the sands in the activity area is about 10-20%. The carbonate component consists of recognisable skeletal fragments of molluscs, bryozoans and foraminifera (Harris and Heap, 2009).

Local

A geotechnical and geophysical survey was conducted in 2007 prior to the drilling of WSH-3 and Wardie-1 and this data is used to characterise and describe the seabed around the well site. The seabed at WSH-3 and Wardie-1 is relatively flat and featureless on a sandy seabed with localised depressions in water depths of approximately 38 – 40 m (Fugro, 2007). At the time of the survey in 2007, there was no debris evident at the WSH-3 location. The upper most sediments, present from the seabed to approximately 2.5 m below the seabed, consist of Holocene sands and unconsolidated, fine to course, occasionally shelly sand with a variable carbonate content (~10-80%) (Holdgate *et al.*, 2003). This, along with the earlier description of regional seabed conditions, indicates that the prevalence of a sandy seabed extends well beyond the activity area.

5.4.3 OCEANOGRAPHY

Water Depth

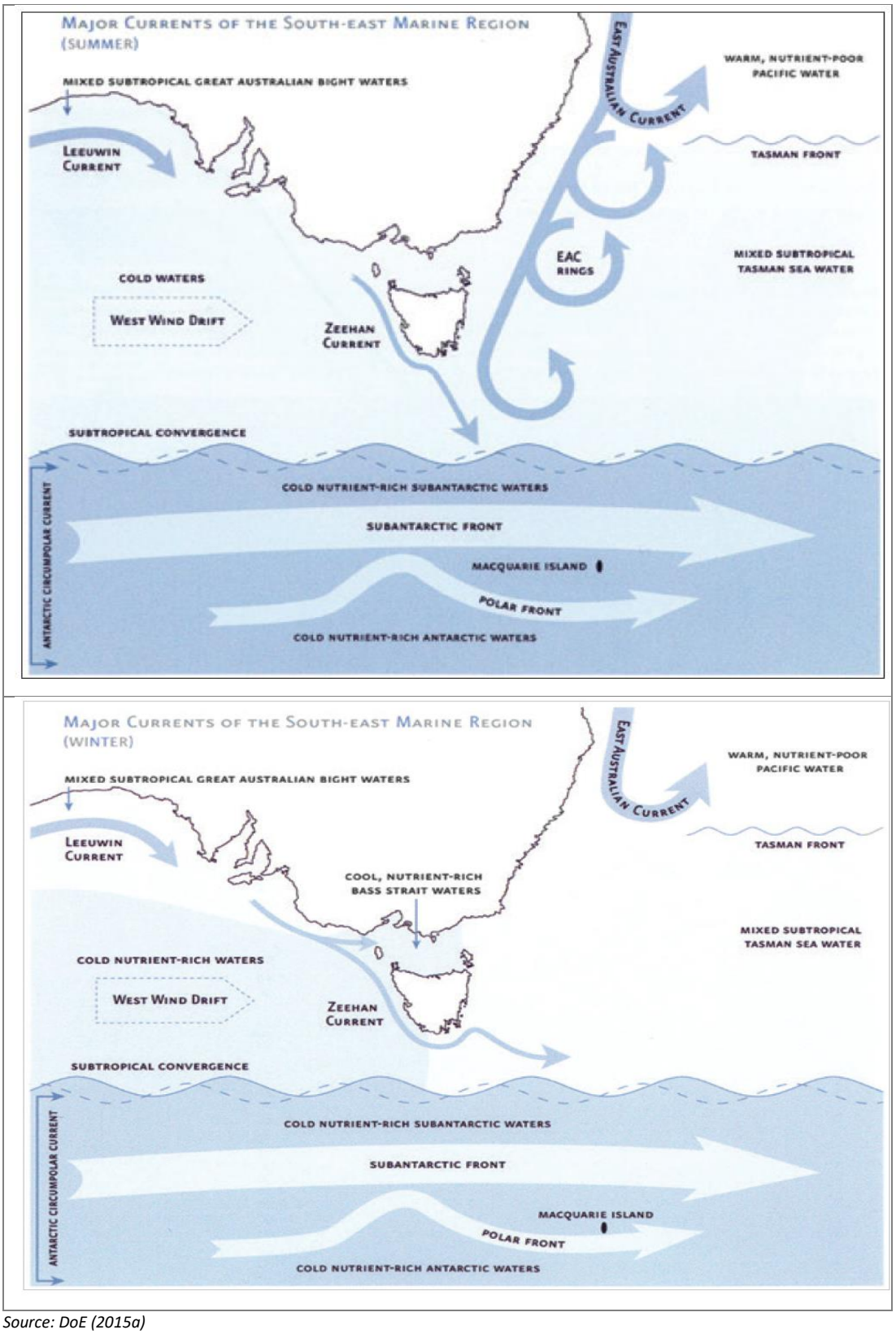
The WSH-3 wellhead is located in water depth of 39.5 m (see Figure 2.1).

Water Currents

The region is oceanographically complex, with sub-tropical influences from the north and sub-polar influences from the south combined with tides, winds and density driven flows (DoE, 2015a). There is a slow easterly flow of waters in Bass Strait and a large anti-clockwise circulation (DoE, 2015a). Three key water currents influence Bass Strait:

1. The Leeuwin Current;
2. The East Australian Current (EAC); and
3. The Bass Strait Cascade (DoE, 2015a).

Figure 5.3 represents the major ocean currents in south-eastern Australian waters during summer and winter.



Source: DoE (2015a)

Figure 5.3. Major ocean currents in south-eastern Australian waters during summer (top) and winter (bottom)

Sea Temperature

The shallowness of Bass Strait means that its waters more rapidly warm in summer and cool in winter than waters of nearby regions (DoE, 2015a). The sea surface temperatures in the area reflect the influence of warmer waters brought into Bass Strait by the EAC (IMCRA, 1998; Barton *et al*., 2012). Waters of eastern Bass Strait are generally well mixed, but surface warming sometimes causes weak stratification in calm summer conditions. The average annual sea surface temperature is 16°C.

Salinity

Salinity consistently ranges from 35-36 practical salinity units (psu) throughout the year (based on the World Ocean Atlas database).

Tides

Bass Strait is a relatively shallow area of the continental shelf, connecting the southeast Indian Ocean with the Tasman Sea. Bass Strait has a reputation for high winds and strong tidal currents (DoE, 2015a). Tidal currents run parallel to the coast and follow a semi-diurnal pattern (Barton *et al*., 2012), with some diurnal inequalities (Jones and Padman, 1983) and speeds generally ranging from 0.1 to 2.5 m/s (Fandry, 1983). However, Barton et al (2012) report that strong tidal currents (2 to 2.5 knots, or 1-1.3 m/s) are characteristic of the area. Tidal variation is 0.9 m for spring tides and 0.6 m for neap tides (Barton *et al*., 2012).

Waves

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

Water Quality

The Regional Outfall Sewer (ROS) has a discharge point at Delray Beach that extends into nearshore waters 23 km shoreward of the operational area. While no data is publicly available regarding the water quality of this release, it is expected to result in increased turbidity and nutrient levels (particularly nitrogen and phosphorous) within a mixing zone around the discharge point.

5.4.4 AMBIENT OCEAN SOUND

Wind is a major contributor to noise between 100 Hz and 30 kHz and can reach 85-95 dB re 1µPa2/Hz under extreme conditions (WDCS, 2004). Rain may produce short periods of high underwater sound with a flat frequency spectra to levels of 80 dB re 1µPa2/Hz and magnitude 4 earthquakes have been reported to have spectral levels reaching 119 dB re 1µPa2/Hz at frequency ranges of 5-15 Hz. It is noted that earthquakes of this magnitude are relatively frequent along Australia's continental shelf in the southern margin (i.e., tens of small earthquakes per year) (McCauley & Duncan, 2001).

5.5 CONSERVATION VALUES AND SENSITIVITIES

The conservation values and sensitivities in and around the activity area are described in this section, with Table 5.1 providing an outline of the conservation categories included.

Table 5.7. Conservation values in the activity area

Category	Conservation classification	Section
MNES under the EPBC Act	Commonwealth marine areas (principally Australian Marine Parks, AMP)	Section 5.5.1
	World Heritage-listed properties	Section 5.5.2
	National Heritage-listed places	Section 5.5.3
	Wetlands of international importance	Section 5.5.4
	Nationally threatened species and threatened ecological communities	Section 5.5.5, Section 5.7
	Migratory species	Section 5.7
	Commonwealth marine areas	Section 5.7
	Great Barrier Reef Marine Park	Not applicable
	Nuclear actions	Not applicable
	A water resource, in relation to coal seam gas development and large coal mining development	Not applicable
Other areas of national importance	Commonwealth heritage-listed places	Section 5.5.6
	Key Ecological Features (KEF)	Section 5.5.7
	Nationally important wetlands	Section 5.5.8
Victorian protected areas	Marine National Parks and Sanctuaries	Section 5.5.9

5.5.1 AUSTRALIAN MARINE PARKS

The activity area does not overlap any AMPs.

The nearest AMPs are the Beagle AMP and East Gippsland AMP, located 109 km southwest and 214 km east of the activity area, respectively (Figure 5.4).

5.5.2 WORLD HERITAGE-LISTED PROPERTIES

World Heritage-Listed properties are examples of sites that represent the best examples of the world's cultural and heritage values, of which Australia has 19 properties (DoEE, 2019a). In Australia, these properties are protected under Chapter 5, Part 15 of the EPBC Act.

No properties on the World Heritage List occur within the activity area. The nearest site is the Royal Exhibition Building and Carlton Gardens in Melbourne, an onshore property located 236 km to the northwest of the activity area.

5.5.3 NATIONAL HERITAGE-LISTED PLACES

The National Heritage List is Australia's list of natural, historic and Indigenous places of outstanding significance to the nation (DoEE, 2019b). These places are protected under Chapter 5, Part 15 of the EPBC Act.

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

5.5.4 WETLANDS OF INTERNATIONAL IMPORTANCE

Australia has 66 wetlands of international importance ('Ramsar wetlands') that cover more than 8.3 million hectares (as of September 2019) (DoEE, 2019c). Ramsar wetlands are those that are representative, rare or unique wetlands, or are important for conserving biological diversity, and are included on the List of Wetlands of International Importance developed under the Ramsar Convention. These wetlands are protected under Chapter 5, Part 15 of the EPBC Act.

There are no Ramsar wetlands in the activity area, but two lie within the EMBA. The nearest is the 'Gippsland Lakes' which is located onshore and 14.5 km from the activity area at its closest point and 'Corner Inlet' over 120km South-west of the activity area.

5.5.5 THREATENED ECOLOGICAL COMMUNITIES

Threatened Ecological Communities (TECs) provide wildlife corridors and/or habitat refuges for many plant and animal species, and listing a TEC provides a form of landscape or systems-level conservation (including threatened species).

The Protected Matters Search Tool (PMST) results indicate that there are no TECs within the activity area (DoEE, 2019d), but *Giant Kelp Marine Forests of South East Australia* lie within the EMBA, which is mapped as occurring at the mouth of the Snowy River 102 km to the north-east. Note that terrestrial areas that are not linked to the shoreline have been excluded as they are not relevant to consideration of potential affects from marine oil spills.

5.5.6 COMMONWEALTH HERITAGE-LISTED PLACES

Commonwealth Heritage-listed places are natural, indigenous and historic heritage places owned or controlled by the Commonwealth (DoEE, 2019e). In Australia, these properties are protected under Chapter 5, Part 15 of the EPBC Act.

No properties on the Commonwealth Heritage List occur within the EMBA. The nearest places are the Wilsons Promontory Lighthouse (146 km southwest of the activity area) and the Gabo Island Lighthouse (219 km northeast of the activity area).

5.5.7 KEY ECOLOGICAL FEATURES

Key Ecological Features (KEFs) are elements of the Commonwealth marine environment that, based on current scientific understanding, are considered to be of regional importance for either the region's biodiversity or ecosystem function and integrity. KEFs have no legal status in decision-making under the EPBC Act, but may be considered as part of the Commonwealth marine area (DoEE, 2019f).

The National Conservation Values Atlas indicates that the activity area does not intersect any KEFs. The closest KEF is the 'Upwelling East of Eden' with its western most edge located 35 km east of the activity area and 'Big horseshoe Canyon' which lies within the Upwelling.

5.5.8 NATIONALLY IMPORTANT WETLANDS

Nationally important wetlands are considered significant for a variety of reasons, including their importance for maintaining ecological and hydrological roles in wetland systems, providing important

habitat for animals at a vulnerable stage in their life cycle, supporting 1% or more of the national population of any native plant or animal taxa or for its outstanding historical or cultural significance (DoEE, 2019g).

There are no nationally important wetlands located within the activity area. The nearest is the 'Lake Wellington Wetlands', which occurs 5.4 km inland of the shoreline.

5.5.9 VICTORIAN MARINE PROTECTED AREAS

Victoria has 24 marine national parks and sanctuaries that are protected and managed under the *National Parks Act* 1982 (Vic) by Parks Victoria.

There are no marine protected areas located in the activity area, but the nearest (being the Ninety Mile Beach Marine National Park (MNP)), 42 km southwest of the activity area lies within the EMBA (see Figure 5.4).

5.6 COASTAL ENVIRONMENT

The coastline adjacent to the activity area comprises the Ninety Mile Beach, a 90-mile (145 km) long stretch of sandy beach on the seaward side of a narrow, tall, vegetated sand dune system. These sand dunes provide important habitat for hooded plovers and roosting sites for other shorebird species.

Sand is the dominant intertidal substrate of the coastline adjacent to the activity area, with intertidal shore platforms intermittently occurring.

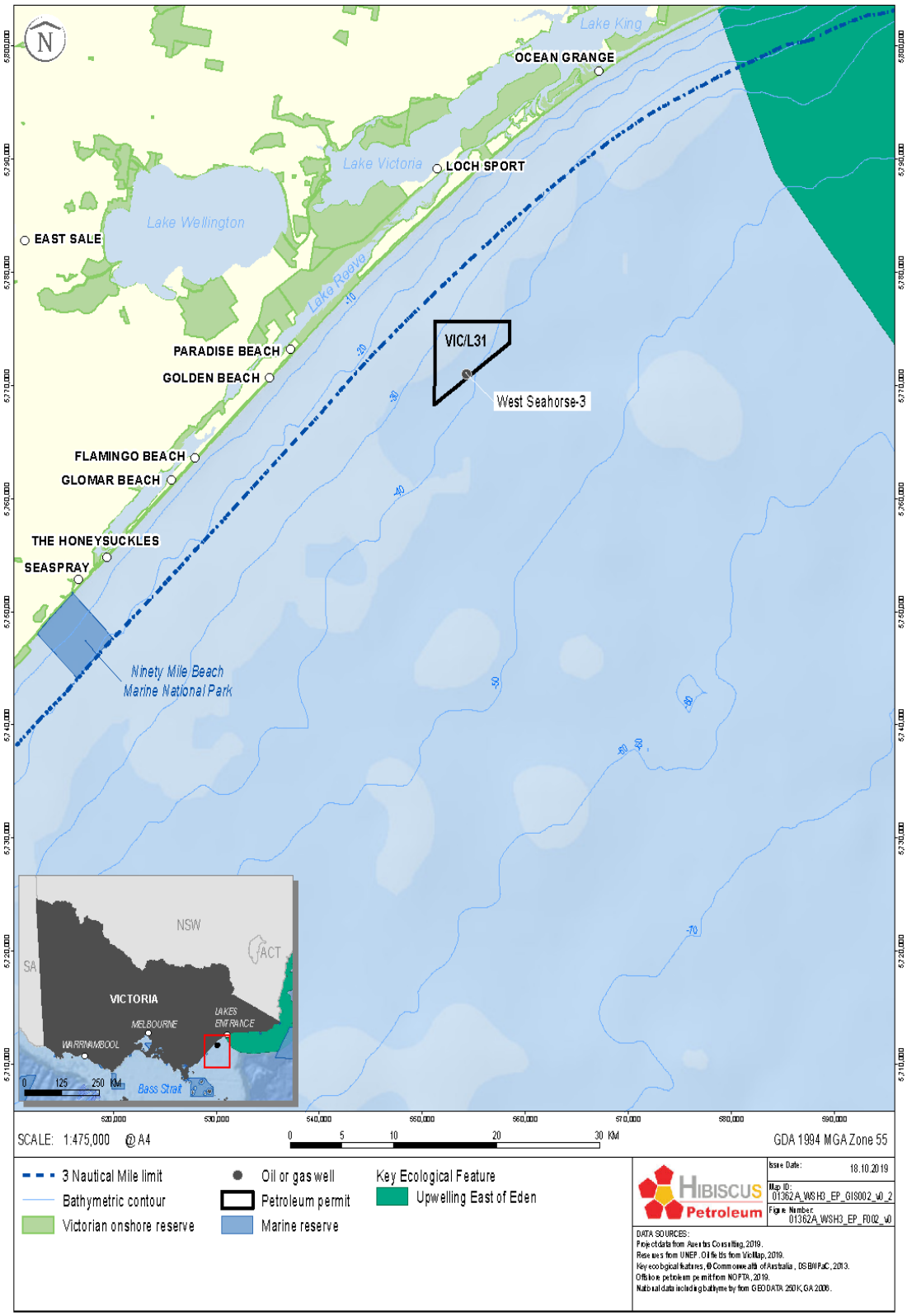


Figure 5.4. Protected areas and KEFs adjacent to the VIC/L31 permit

5.7 BIOLOGICAL ENVIRONMENT

Results of the PMST database search provides the key means by which species and their Biologically Important Areas (BIAs) are identified for the activity area and are discussed in this section (DoEE, 2019d).

5.7.1 BENTHIC ASSEMBLAGES

Bass Strait

The seascape of the region is composed of a series of massive sediment flats, interspersed with small patches of reef, bedrock and consolidated sediment (Wilson and Poore, 1987). OSRA mapping for the Ninety Mile Beach indicates that there is an absence of hard substrate or emergent reefs in the region. The sediment flats are generally devoid of emergent fauna but benthic invertebrates such as polychaetes, bivalves, molluscs, crustaceans and echinoderms are present and many species are widely distributed across Bass Strait (Poore *et al*., 1985; Wilson and Poore, 1987). There are also a number of burrowing species that inhabit the soft seabed, including tubeworms, nematodes, nemerteans and seapens (OMV, 2001).

Parry et al (1989) also found high diversity and patchiness of benthos sampled off Lakes Entrance, where a total of 353 species of infauna was recorded. Crustaceans (53%), polychaetes (32%) and molluscs (9%) dominated sample results.

Barton et al (2012) report that in the Ninety Mile Beach Marine National Park (42 km west-southwest of the activity area at its nearest point), reefs are dominated by invertebrates (70% coverage), including sponges, ascidians (sea squirts) and smaller bryozoans (resembling coral) and hydroids (colonies of tiny jellies attached to a feather-like base).

Activity Area

The sandy nature of the seabed around the wellheads is shown in Figure 2.2. It is therefore assumed that the activity area is consistent with the sandy sediment profile of the broader Gippsland continental shelf described above.

5.7.2 FLORA

Literature searches, combined with Oil Spill Response Atlas (OSRA) mapping, indicate that marine flora, such as seagrasses and kelp, are generally not abundant in the extensive areas of subtidal sand flats in the water depths of the activity area. This is likely to be due to the high-energy nature of the Gippsland coastline and the mobile nature of sands, which prevents many species being able to anchor themselves to the seabed. Barton et al (2012) report that in the Ninety Mile Beach MNP (28 km west-southwest of the activity area), reefs have sparse floral communities of small red algae. Given the park's proximity, this may be expected to be representative of flora present on rocky reefs near the activity area.

5.7.3 PLANKTON

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

Phytoplankton (photosynthetic microalgae) comprise 13 divisions of mainly microscopic algae, including diatoms, dinoflagellates, gold-brown flagellates, green flagellates and cyanobacteria and

prochlorophytes (McLeay et al., 2003). Phytoplankton drift with the currents, although some species have the ability to migrate short distances through the water column using ciliary hairs.

Zooplankton is the faunal component of plankton, comprising small crustaceans (such as krill) and fish larvae that feed on zooplankton. Zooplankton includes species that drift with the currents and also those that are motile. More than 170 species of zooplankton have been recorded in eastern and central Bass Strait, with copepods making up approximately half of the species encountered (Watson & Chaloupka, 1982).

The CarbonNet Pelican 3D marine seismic survey (which took place in early 2018 and is located 10 km south-west of WSH-3) undertook pre- and post-seismic survey plankton sampling. This found that the composition of zooplankton was a typical healthy example of those expected for temperate coastal waters. Copepods were found to be the dominant group, with varying proportions of appendicularians, cladocerans and doliolids. Numerous other groups occurred in small numbers, including siphonophores, fish larvae, fish eggs, polychaetes, ghost shrimps and cnidarians (jellies) (CarbonNet, 2019).

5.7.4 FISH

There are 35 fish species (29 of which are seahorses and pipefish) recorded in the EPBC Act PMST (DoEE, 2019d) as potentially occurring in the activity area.

Table 5.8. EPBC Act-listed fish that may occur in the activity area

Scientific name	Common name	EPBC Act status			BIA within the EMBA?	Recovery Plan in place?
		Listed threatened species	Listed migratory species	Listed marine species		
Freshwater						
Prototroctes maraena	Australian grayling	V	-	-	-	RP, AS
Oceanic						
Carcharodon carcharias	Great white shark	V	Yes	-	B	RP, AS
Lamna nasus	Porbeagle	-	Yes	-	-	-
Rhincodon typus	Whale shark	V	Yes	-	-	Expired
Seriolella brama	Blue Warehou	-	-	Yes	-	-
Thunnus maccoyii	Couthern Bluefin Tuna	-	-	Yes	-	-
Pipefish, seahorses and seadragons						
Heraldia nocturna	Upside-down pipefish	-	-	Yes	-	-
Hippocampus abdominalis	Big-belly seahorse	-	-	Yes	-	-

Scientific name	Common name	EPBC Act status			BIA within the EMBA?	Recovery Plan in place?
		Listed threatened species	Listed migratory species	Listed marine species		
Hippocampus breviceps	Short-head seahorse	-	-	Yes	-	-
Hippocampus minotaur	Bullneck seahorse	-	-	Yes	-	-
Histiogam-phelus briggsii	Crested pipefish	-	-	Yes	-	-
Histiogam-phelus cristatus	Rhino pipefish	-	-	Yes	-	-
Hypselognathus rostratus	Knifesnout pipefish	-	-	Yes	-	-
Kaupus costatus	Deepbody pipefish	-	-	Yes	-	-
Kimblaeus bassensis	Trawl pipefish	-	-	Yes	-	-
Leptoichthys fistularius	Brushtail pipefish	-	-	Yes	-	-
Lissocampus caudalis	Smooth pipefish					
Lissocampus runa	Javelin pipefish	-	-	Yes	-	-
Maroubra perserrata	Sawtooth pipefish	-	-	Yes	-	-
Mitotichthys semistriatus	Halfbanded pipefish	-	-	Yes	-	-
Mitotichthys tuckeri	Tucker's Pipefish	-	-	Yes	-	-
Notiocampus ruber	Red pipefish	-	-	Yes	-	-
Phycodurus eques	Leafy Seadragon	-	-	Yes	-	-
Phyllopteryx taeniolatus	Common seadragon	-	-	Yes	-	-
Pugnaso curtirostris	Pugnose pipefish	-	-	Yes	-	-
Solegnathus robustus	Robust pipehorse	-	-	Yes	-	-
Solegnathus spinosissimus	Spiny pipehorse	-	-	Yes	-	-

Scientific name	Common name	EPBC Act status			BIA within the EMBA?	Recovery Plan in place?
		Listed threatened species	Listed migratory species	Listed marine species		
Stigmatopora argus	Spotted pipefish	-	-	Yes	-	-
Stigmatopora nigra	Widebody pipefish	-	-	Yes	-	-
Stipecampus cristatus	Ringback pipefish	-	-	Yes	-	-
Syngnathoides biaculeatus	Double-end pipehorse	-	-	Yes	-	-
Urocampus carinirostris	Hairy pipefish	-	-	Yes	-	-
Vanacampus margaritifer	Mother-of-pearl pipefish	-	-	Yes	-	-
Vanacampus phillipi	Port Phillip pipefish	-	-	Yes	-	-
Vanacampus poecilolaemus	Longsnout pipefish	-	-	Yes	-	-

Definitions

Listed threatened species:	A native species listed in Section 178 of the *EPBC Act* as either extinct, extinct in the wild, critically endangered, endangered, and vulnerable or conservation dependent.
Listed migratory species:	A native species that from time to time is included in the appendices to the Bonn Convention and the annexes of JAMBA, CAMBA and ROKAMBA, as listed in Section 209 of the *EPBC Act.*
Listed marine species:	As listed in Section 248 of the *EPBC Act.*

Key

EPBC status (@ December 2023)	V	Vulnerable
	E	Endangered
	CE	Critically endangered
BIA	A	Aggregation
	D	Distribution (i.e., presence only)
	F	Foraging
	M	Migration
	B	Breeding
Recovery plans	CA	Conservation Advice

(under the EPBC Act 1999)	CMP	Conservation Management Plan
	RP	Recovery Plan
(under the FFG Act 1988)	AS	Action Statement

Australian grayling (*Prototroctes maraena*) (EPBC Act: Vulnerable, FFG Act: Threatened)

The Australian grayling is a dark brown to olive-green fish attaining 19 cm in length. The species typically inhabits the coastal streams of New South Wales, Victoria and Tasmania, migrating between streams and the ocean (Backhouse et al., 2008; DELWP, 2015). The species spends most of its life in freshwater (DELWP, 2015), and migrates to lower reaches of rivers to spawn typically in autumn (Museums Victoria, 2019).

The Australian Grayling Action Statement (DELWP, 2015) lists several rivers as important locations for the species. None of these rivers are intersected by the activity area.

Great white shark (*Carcharodon carcharias*) (EPBC Act: Vulnerable, FFG Act: Threatened)

The great white shark is widely distributed and located throughout temperate and sub-tropical waters, with their known range in Australian waters including all coastal areas except the Northern Territory (DSEWPaC, 2013).

Observations of adult sharks are more frequent around fur seal and sea lion colonies, including Wilsons Promontory (approximately 150 km southwest of the activity area) and the Skerries (approximately 175 km northeast of the activity area) (DSE, 2003).

Juveniles are known to congregate in certain key areas including the Ninety Mile Beach area (including Corner Inlet and Lakes Entrance), where a BIA for breeding is overlapped by the activity area (Figure 5.4). A BIA (distribution only) for the great white shark covers the entire southeast marine region.

Given their transitory nature and the proximity of known congregation areas, great white sharks may occur within the activity area.

Whale shark (*Rhincodon typus*) (EPBC Act: Vulnerable, listed migratory, Flora and Fauna Guarantee (FFG) Act: Not listed)

The whale shark is the world's largest fish and one of only three filter-feeding shark species (TSSC, 2015a). They have a broad distribution in warm and tropical waters of the world, and in Australia are known only to occur on the west coast of Western Australia, with a feeding aggregation occurring off the Ningaloo Reef between March and July each year (TSSC, 2015a). The species is not known to migrate through Bass Strait, and it is highly unlikely to occur within the activity area.

Sygnathids (EPBC Act: Listed marine species, FFG Act: Not listed)

Twenty-seven (27) of the 31 marine ray-finned fish species identified in the EPBC Act PMST (87%) are sygnathiformes, which includes seahorses, seadragon, pipehorse and pipefish. The majority of these fish species are associated with seagrass meadows, macroalgal seabed habitats, rocky reefs and sponge gardens located in shallow, inshore waters (e.g., protected coastal bays, harbours and jetties) less than 50 m deep (Museums Victoria, 2019). Figure 2.2 indicates hard substrate is not present around the WSH-3 wellhead. The wellhead itself may provide a hard substrate for colonising species, in turn providing habitat for sygnathids.

5.7.5 CETACEANS

The PMST (DoEE, 2019d) indicates that eight whale species and five dolphin species may reside within or migrate through the activity area (Table 5.3).

Table 5.9. EPBC Act-listed cetaceans that may occur in the activity area

Scientific name	Common name	EPBC Act status			FFG Act status	BIA within the EMBA?	Recovery Plan in place?
		Listed threatened species	Listed migratory species	Listed marine species			
Whales							
Balaenoptera borealiss	Sei whale	V	Yes	Yes	T	F	RP, AS
Balaenoptera musculus	Blue whale (pygmy)	E	Yes	Yes	T	F	RP, AS
Balaenoptera physalus	Fin whale	V	Yes	Yes	T	D	RP, AS
Caperea marginata	Pygmy right whale	-	Yes	Yes	-	F	-
Eubalaena australis	Southern right whale	E	Yes	Yes	T	D	CMP, AS
Megaptera novaeangliae	Humpback whale	V	Yes	Yes	T	D	CA, AS
Physeter macrcephalus	Sperm Whale	-	Yes	Yes	-	D	-
Balaenoptera acutorostrata	Minke whale	-	-	Yes	-	-	-
Dolphins							
Lagenorhynchusobscurus	Dusky dolphin	-	Yes	Yes	-	D	-
Delphinus delphis	Common dolphin	-	-	Yes	-	-	-
Grampus griseus	Risso's dolphin	-	-	Yes	-	-	-
Tursiops truncates s. str.	Bottlenose dolphin	-	-	Yes	-	-	-
Orcinus orca	Killer Whale	-	Yes	Yes	-	D	-

*Refer to Table 5.2 for key and definitions.

A description of species below focuses on the threatened species listed in Table 5.8.

Pygmy blue whale (*Balaenoptera musculus*) (EPBC Act: Endangered, listed migratory, FFG Act: Threatened)

Blue whales are the largest living animals on earth, growing to a length of over 30 m, weighing up to 180 tonnes and living up to 90 years (DoE, 2015b). The DoE (2015b) recognises three overlapping populations, being:

- Antarctic blue whale population – all those Antarctic blue whales occupying or passing through Australian waters;
- Indo-Australian pygmy blue whale – all those pygmy blue whales occupying or passing through waters from Indonesia to western and southern Australia; and
- Tasman-Pacific pygmy blue whale – all those putative pygmy blue whales occupying or passing through waters in southeast Australia and the Pacific Ocean.

The Tasman-Pacific pygmy blue whale (*B. musculus. brevicauda*) is the sub-species that migrates through Bass Strait, found in waters north of 55°S (DoE, 2015b). Blue whales are a highly mobile species that feed on krill (euphausids*, Nyctiphane australis*).

A BIA for 'foraging' for the pygmy blue whale covers most of Bass Strait, including the activity area, with known foraging areas (abundant food source/annual high use area) occurring off the southwest Victorian coast (Figure 5.7). Pygmy blue whales may pass through the activity area.

Pygmy right whale (*Caperea marginata*) (EPBC Act: Listed migratory, FFG Act: Not listed)

Pygmy right whales are a little-studied baleen whale species found in temperate and sub-Antarctic waters in oceanic and inshore locations. There are few confirmed sightings of pygmy right whales at sea (Reilly *et al*., 2008), with few or no records from eastern Victoria and no population estimates available for Australian waters (DoEE, 2019i). The largest reported group sighted (100+) occurred near Portland in June 2007 (Gill *et al*., 2008).

Based upon the lack of sightings off eastern Victoria, the absence of a BIA in Australian waters and the nearshore location of the activity area, it is considered unlikely that this species occurs within the activity area.

Southern right whale (*Eubalaena australis*) (EPBC Act: Endangered, listed migratory, FFG Act: Threatened)

Southern right whales are medium to large black (or less commonly grey-brown) baleen whales (DSEWPC, 2012). They are recognisable by the lack of a dorsal fin, rotund body shape, and whitish callosities (patches of keratinised skin colonised by cyamids - small crustaceans) on the head. They reach a maximum length of approximately 17.5 m and a weight of around 80 tonnes, with mature females slightly larger than males (DSEWPC, 2012).

The southern right whale is typically distributed between 16°S and 65°S in the southern hemisphere and is present off the Australian coast between May and October (sometimes as early as April and as late as November) (DSEWPC, 2012). Southern right whales tend to be distinctly clumped in aggregation areas (DSEWPC, 2012). Aggregation areas are well known, with the largest located in Western Australia and South Australia. The closest known aggregation area to the activity area is located in the Warrnambool region, approximately 455 km to the west. The southern right whale has a defined migration BIA that occurs close to the shore along the entire Victorian coastline (Figure 5.7).

Humpback whale (*Megaptera novaeangliae*) (EPBC Act: Vulnerable, listed migratory, FFG Act: Threatened)

The humpback whale is a moderately large (15-18 m long) baleen whale that has a worldwide distribution but geographic segregation. Humpback whales are found in Australian offshore and Antarctic waters. They primarily feed on krill in Antarctic waters south of 55°S. The eastern Australian population of humpback whales is referred to as Group E1 by the International Whaling Commission, one of seven distinct breeding stocks in the southern hemisphere (TSSC, 2015b).

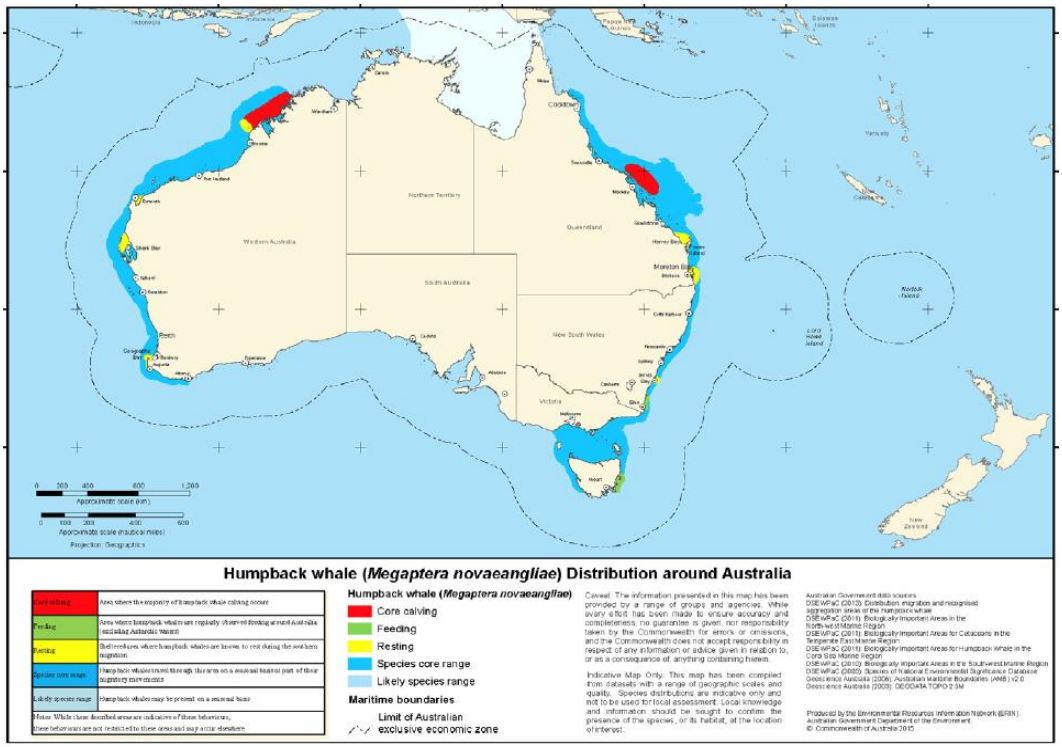
Bass Strait represents part of the core range of the E1 Group, but feeding, resting or calving is not known to occur in Bass Strait (TSSC, 2015b), though migration through Bass Strait may occur (Figure 5.5 and Figure 5.6). The nearest area that humpback whales are known to congregate (forage) is at the southern-most part of NSW (near the eastern border of Victoria), approximately 221 km northeast of the activity area. Twofold Bay (Eden) off the NSW south coast is the nearest known feeding area (a BIA) for humpback whales, located 240 km northeast of the activity area.

As the activity area represents a core range for humpback whales, there is a likelihood that they may be present, particularly during April, May, November and December, though this likelihood is considered low due to their preference for migrating along the edge of the continental shelf.

Minke whale (*Balaenoptera acutorostrata*) (EPBC Act: Listed marine)

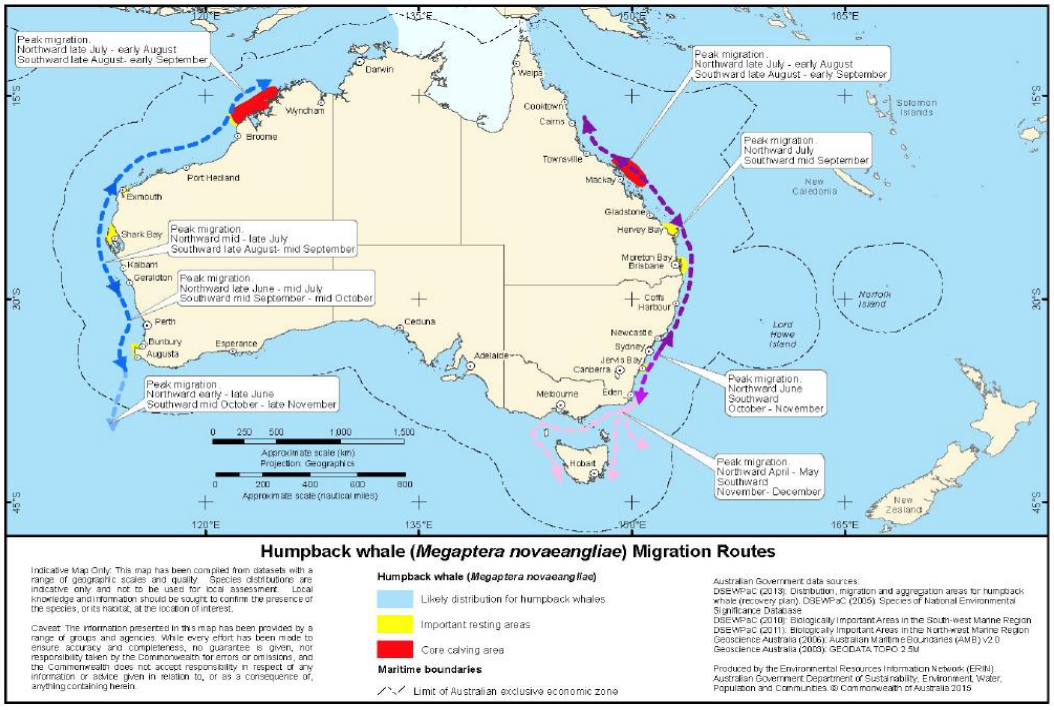
Minke whales are the second smallest baleen whale with males measuring an average of 6.8 m upon maturity. Minke whales are known to inhabit and migrate through Australian waters and are known to penetrate deeply into Antarctic waters (Horwood, 1987).

Antarctic Minke whales (those relevant to Australia) feed primarily on Antarctic krill and some species of fish. The activity area may overlap with the potential distribution of the minke whale, though due to their preference for Antarctic waters, they are unlikely to be present.



Source: TSSC (2015b).

Figure 5.5. Distribution of the humpback whale around Australia



Source: TSSC (2015b).

Figure 5.6. Migration routes of humpback whales around Australia

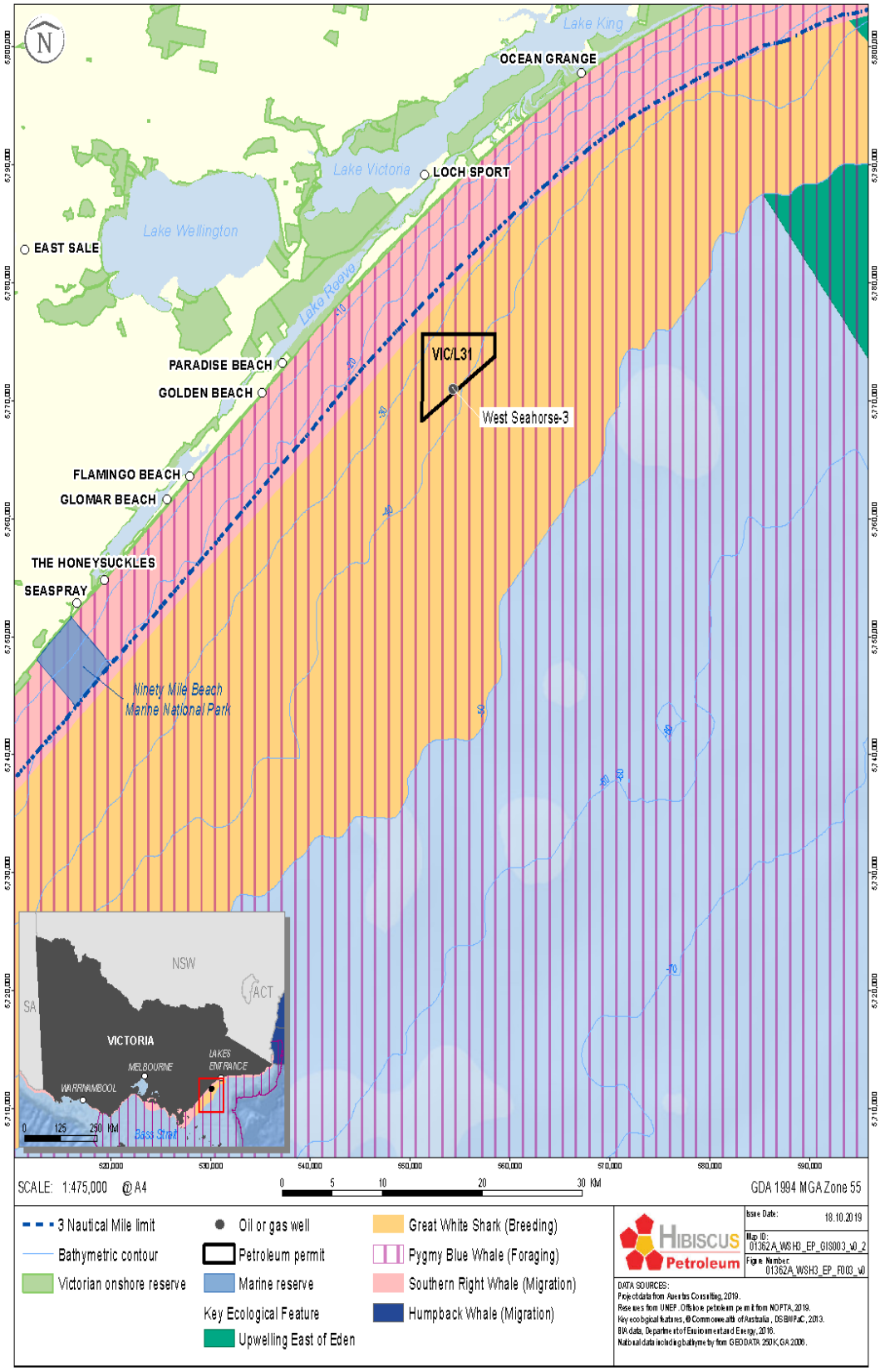


Figure 5.7. Cetacean and great white shark BIAs in and around the activity area

Dolphins (EPBC Act: Listed marine species)

None of the five species of dolphin listed in the PMST results are listed as threatened under the EPBC Act of FFG Act. Many dolphins are cosmopolitan species that are generally restricted to continental shelf environments. A brief description of these dolphin species is provided below.

- The **dusky dolphin** (*Lagenorhynchus obscures*) is primarily found from approximately 55°S to 26°S, though sometimes further north associated with cold currents. They are considered to be primarily an inshore species but can also be oceanic when cold currents are present (Gill *et al*., 2000; Ross, 2006). Only 13 reports of the dusky dolphin have been made in Australia since 1828, and key locations are yet to be identified (Bannister *et al*., 1996).
- The **common dolphin** (*Delphinus delphis*) is an abundant species, widely distributed from tropical to cool temperate waters, and generally further offshore than the bottlenose, although small groups may venture close to the coast and enter bays and inlets. They have been recorded in waters off all Australian states and territories. Stranding statistics indicate that common dolphins are active in Bass Strait at all times of the year, though less so in winter (DoEE, 2018h).
- The **bottlenose dolphin** (*Tursiops truncatus*) has a worldwide distribution from tropical to temperate waters. There are two forms of bottlenose dolphin, a nearshore form and an offshore form. The nearshore form occurs in southern Australia (DoEE, 2018h). Most populations are relatively discrete and reside in particular areas, such as individual resident populations in Port Phillip Bay (256 km west of the activity area) and Westernport Bay (195 km west of the activity area).
- **Risso's dolphin** (*Grampus griseus*) is a widely distributed species found in deep waters of the continental slope and outer shelf from the tropics to temperate regions. This species prefers warm temperate to tropical waters with depths greater than 1,000 m (Bannister et al., 1996). In Australia, the species has been recorded from all states except Tasmania and the Northern Territory. Fraser Island (off the southern Queensland coast) has the only suspected 'resident' population in Australia (Bannister et al., 1996).
- The **killer whale** (*Orcinus orca*) (the largest member of the dolphin family) is thought to be the most cosmopolitan of all cetaceans and appear to be more common in cold, deep waters, though they have often been observed along the continental slope and shelf particularly near seal colonies (Bannister *et al*., 1996). The only recognised key locality in Australia is Macquarie Island and Heard Island in the Southern Ocean (Bannister *et al*., 1996). It is possible that killer whales may occur in the activity area.

5.7.6 PINNIPEDS

There are two pinniped species recorded under the EPBC Act PMST as potentially occurring within the activity area (Table 5.4) (DoEE, 2019d). These species are not listed as threatened under the FFG Act.

Table 5.10. EPBC Act-listed pinnipeds that may occur in the activity area

Scientific name	Common name	EPBC Act status			FFG Act status	BIA within the EMBA?	Recovery Plan in place?
		Listed threatened species	Listed migratory species	Listed marine species			
Arctocephalus forsteri	New Zealand fur-seal	-	-	Yes	-	-	-
Arctocephalus pusillus	Australian fur-seal	-	-	Yes	-	-	-

New Zealand fur-seal (*Arctocephalus forsteri*) (EPBC Act: Listed marine, FFG Act: Not listed)

New Zealand fur-seals (also known as long-nosed fur-seals) are mostly found in central South Australian waters (Kangaroo Island to South Eyre Peninsula) with 77% of their population found here (Shaughnessy, 1999).

Haul-out sites in Bass Strait, as reported by Barton et al (2012) and OSRA mapping, are listed below (all of which occur outside the activity area):

- Beware Reef (111 km northeast of the activity area);
- Kanowna Island (155 km southwest of the activity area) - ~300 individuals;
- The Hogan Islands Group (125 km southwest of the activity area); and
- West Moncoeur Island (south of Wilson's Promontory, 149 km southwest of the activity area).

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

Australian fur-seal (*Arctocephalus pusillus*) (EPBC Act: Listed marine, FFG Act: Not listed)

The Australian fur-seal has a relatively restricted distribution around the islands of Bass Strait, parts of Tasmania and southern Victoria.

There are 10 established breeding colonies of the Australian fur-seal that are restricted to islands in the Bass Strait; six occurring off the coast of Victoria and four off the coast of Tasmania (DoEE, 2019). The largest of the established colonies occur at Lady Julia Percy Island (26% of the breeding population and 491 km west of the activity area) and at Seal Rocks in Victoria (25% of the breeding population and 223 km west-southwest of the activity area) (DoEE, 2019h). These areas are not located within the activity area.

5.7.7 REPTILES

Three species of marine turtle are listed under the EPBC Act as potentially occurring in the activity area, as listed in Table 5.5 (DoEE, 2019d). No BIAs for turtles occur within Bass Strait. Environment Australia (2003) reports that the turtles known to occur in Victorian waters are considered to be rare vagrants outside their usual range. No turtles are listed as threatened under the FFG Act 1988 (Vic), except for the leatherback turtle.

Table 5.11 EPBC Act-listed marine reptiles that may occur in the activity area

Scientific Name	Common Name	EPBC Act status			FFG Act status	BIA within the EMBA?	Recovery Plan in place?
		Listed threatened species	Listed migratory species	Listed marine species			
Caretta caretta	Loggerhead turtle	Endangered	Yes	Yes	-	-	Generic RP in place for all marine

Chelonia mydas	Green turtle	Vulnerable	Yes	Yes	-	-	turtle species, + AS for leather-back turtle
Dermochelys coriacea	Leatherback turtle	Endangered	Yes	Yes	T	-	

*Refer to Table 5.2 for key and definitions.

The loggerhead (*Caretta caretta*) and green (*Chelonia mydas*) turtle species noted in the PMST results are typically distributed in sub-tropical and tropical waters including eastern, northern and western Australia (DoEE, 2017). There are no known turtle nesting beaches for these species within Victoria and as such the activity area is unlikely to represent important habitat (DoEE, 2017).

The leatherback turtle (*Dermochelys coriacea*) is widely distributed throughout tropical, sub-tropical and temperate waters of Australia (DoEE, 2017). No major nesting has been recorded in Australia, with isolated nesting recorded in the Northern Territory, Queensland and northern NSW (DoEE, 2017). This species nests only in the tropics. The DoEE (2017) maps the leatherback turtles as having a known or likely range within Bass Strait, and a migration pathway in southern waters. The waters of the activity area do not represent critical habitat for the species, though it may occur in low numbers during migration.

5.7.8 AVIFAUNA

Thirty-three (33) bird species (seabirds and shorebirds) are listed under the EPBC Act as potentially occurring in the activity area (DoEE, 2019d) (Table 5.6). The majority of these are listed as migratory and marine species.

The focus of this section is true seabirds. Shorebird species are only relevant given that the EMBA intersects the shoreline, but only minor concentrations of MDO. Seabirds are those species of bird whose normal habitat and food source is derived from the sea, whether that be coastal or offshore, while shorebirds spend most of their time (nesting, feeding and breeding) on the shoreline.

Table 5.12 EPBC Act-listed true seabirds that may occur in the activity area

Scientific Name	Common Name	EPBC Act status			FFG Act status	BIA within the Activity Area?	Recovery Plan in place?
		Listed threatened species	Listed migratory species	Listed marine species			
True seabirds (25 species)							
Albatross							
Diomedea antipodensis	Antipodean albatross	V	Yes	Yes	-	Foraging	Generic RP in place for all albatross in Australia, + AS for all albatross
Diomedea gibsoni	Gibson's albatross	V	Yes	Yes	-	Foraging	
Diomedea epomophora (sensu stricto)	Southern royal albatross	V	Yes	Yes	T	Foraging	

Scientific Name	Common Name	EPBC Act status			FFG Act status	BIA within the Activity Area?	Recovery Plan in place?
		Listed threatened species	Listed migratory species	Listed marine species			
Diomedea exulans (sensu lato)	Wandering albatross	V	Yes	Yes	T	Foraging	
Diomedea sanfordi	Northern royal albatross	E	Yes	Yes	-	Foraging	
Phoebetria fusca	Sooty albatross	V	Yes	Yes	T	-	
Thalassarche bulleri	Buller's albatross	V	Yes	Yes	T	-	
Thalassarche bulleri platei	Northern Buller's albatross	V	-	-	-	-	
Thalassarche cauta	Shy albatross	V	Yes	Yes	T	Foraging	
Thalassarche cauta steadi	White-capped albatross	V	Yes	Yes	-	Foraging	
Thalassarche chrysostoma	Grey-headed albatross	E	Yes	Yes	T	-	
Thalassarche impavida	Campbell albatross	V	Yes	Yes	-	Foraging	
Thalassarche melanophris	Black-browed albatross	V	Yes	Yes	-	-	
Thalassarche salvini	Salvin's albatross	V	Yes	Yes	-	Foraging	
Thalassarche sp. nov.	Pacific albatross	V	Yes	Yes	-	-	
Petrels							
Fregetta grallaria grallaria	White-bellied storm-petrel	V	-	-	-	-	-
Halobaena caerulea	Blue petrel	V	-	Yes	-	-	-
Macronectes giganteus	Southern giant petrel	E	Yes	Yes	T	-	Generic RP and AS for giant petrels
Macronectes halli	Northern giant petrel	V	Yes	Yes	T	-	

Scientific Name	Common Name	EPBC Act status			FFG Act status	BIA within the Activity Area?	Recovery Plan in place?
		Listed threatened species	Listed migratory species	Listed marine species			
Pterodroma leucoptera leucoptera	Gould's petrel	E	-	-	-	-	RP
Other seabirds							
Ardenna carneipes	Flesh-footed shearwater	-	Yes	Yes	-	-	-
Catharacta skua	Great skua	-	-	Yes	-	-	-
Pachyptila turtur subantarctica	Fairy prion (southern)	V	-	-	-	-	CA
Pandion haliaetus	Osprey	-	Yes	Yes	-	-	-
Puffinus griseus	Sooty shearwater	-	Yes	Yes	-	-	-
True shorebirds (8 species)							
Actitis hypoleucos	Common sandpiper	-	Yes	Yes	-	-	-
Calidris acuminata	Sharp-tailed sandpiper	-	Yes	Yes	-	-	-
Calidris canutus	Red knot	E	Yes	Yes	-	-	
Calidris ferruginea	Curlew sandpiper	CE	Yes	Yes	T	-	-
Calidris melanotos	Pectoral sandpiper	-	Yes	Yes	-	-	-
Numenius madagascariensis	Eastern curlew	CE	Yes	Yes	T	-	CA
Sterna (Sternula) nereis nereis	Australian fairy tern	V	-	-	T	-	CA
Thinornis rubricollis rubricollis	Hooded plover (eastern)	V	Yes	Yes	T	-	AS

*Refer to Table 5.2 for key and definitions.

Exclusively Seabirds

Albatross (EPBC Act: Endangered & vulnerable, listed migratory, FFG Act: many listed as threatened)

Albatrosses (and giant-petrels) are among the most dispersive and oceanic of all birds, spending more than 95% of their time foraging at sea in search of prey and usually only returning to land (remote islands) to breed. Only five species of albatross and the southern and northern giant petrel are known to breed within Australia. Breeding within Australian territory occurs on the isolated islands of Antarctica (Giganteus Island, Hawker Island and Frazier islands) and the Southern Ocean (Heard Island, McDonald Island, Macquarie Island, Bishop and Clerk Islands), as well as islands off the south coast of Tasmania and Albatross Island off the north-west coast of Tasmania in Bass Strait (DSEWPC, 2011). These locations are each hundreds of kilometres away from the activity area.

The PMST results (DoEE, 2019d) indicates that species foraging, feeding or related behaviours exist within the activity area for nine of the albatross species which are noted in Table 5.6, with foraging taking place throughout all of Bass Strait. Given these species' ability to cover vast ocean distances while foraging, it is possible they may overfly and forage in the vicinity of the activity area.

Petrels (EPBC Act: Vulnerable and endangered, some listed migratory)

The five petrel species listed in Table 5.6 as potentially flying over the activity area are widely distributed throughout the southern hemisphere. They nest on isolated islands and breed on sub-Antarctic and Antarctic islands. The northern giant-petrel and southern giant-petrel share the same breeding areas listed for the albatross (DSEWPaC, 2011). Outside the breeding season (October to February), petrels disperse widely and move north into sub-tropical waters (DSEWPaC, 2011). Most petrel species feed on krill, squid, fish, other small seabirds and marine mammals (DSEWPaC, 2011). No breeding colonies or nesting areas for the listed petrel species are located in or near the activity area.

The National Conservation Values Atlas (DoEE, 2019j) indicates that there are no BIAs for the listed petrel species in or around Bass Strait, with the nearest being that of a foraging BIA for the southern giant petrel (*Macronectes giganteus*), which occurs off the southern NSW coast (outside the activity area).

Other seabirds

Other seabirds listed in the PMST that may occur within the activity area are described here.

- The shearwater species (flesh-footed and sooty) are trans-equatorial migrants widely distributed across the Pacific and Atlantic oceans and is known to inhabit the waters of Australia where they feed on fish. Both species have breeding populations on Lord Howe Island (off NSW). The flesh-footed shearwater breeds in burrows on sloping ground in coastal forest, scrubland, shrubland or grassland. Thirty-nine (39) of the 41 islands on which this species breeds lie off the coast of southern Western Australia. It is possible these species may overfly the activity area.
- The **great skua** (*Catharacta skua*) is a large migratory seabird distributed throughout all southern Australian waters (though not listed as migratory under the EPBC Act). This species breeds in summer on nested elevated grasslands or sheltered rocky areas on sub-Antarctic islands, with most adult birds leaving their colonies in winter. Great skuas feed on other seabirds, fish, molluscs and crustaceans, and may be present in the activity area and EMBA (though scarce) during winter (Flegg, 2002).
- The **southern fairy prion** (*Pachyptila turtur subantarctica*) is mainly found offshore. The species diet is comprised mostly of crustaceans (especially krill), but occasionally includes some fish and

squid. It feeds mainly by surface-seizing and dipping, but can also catch prey by surface-plunging or pattering (DoEE, 2019h). In Australia, it is known to breed only on Macquarie, Bishop and Clerk islands (over 2,000 km southeast of the activity area) (DoEE, 2019h).

- The **osprey** (*Pandion haliaetus*) is a common, medium-sized raptor that is present around the entire Australian coastline, with the breeding range restricted to the north coast of Australia (including many offshore islands) and an isolated breeding population in South Australia (DoEE, 2019h). Breeding occurs from April to February. Ospreys occur mostly in coastal areas but occasionally travel inland along waterways, where they feed on fish, molluscs, crustaceans, reptiles, birds and mammals. Due to their broad habitat, osprey may be present in the activity area.

Shorebirds and Coastal Species

The avifauna species listed under 'True Shorebirds' in Table 5.6 typically utilise coastal habitats for feeding, nesting, roosting and, where appropriate, migration. Given that the activity area occurs approximately 13 km offshore and represents habitat not typically utilised by the listed species, shorebirds and coastal species are not described further in this EP.

5.7.9 MARINE PESTS

Invasive Marine Species (IMS) are defined as non-native marine plants or animals that harm Australia's marine environment, social amenity or industries that use the marine environment, or have the potential to do so if they were to be introduced, established (that is, forming self-sustaining populations) or spread in Australia's marine environment (DAWR, 2018).

In the South-east Marine Region, 115 marine pest species have been introduced and an additional 84 have been identified as possible introductions, or 'cryptogenic' species (NOO, 2002). Several introduced species have become pests either by displacing native species, dominating habitats or causing algal blooms.

Marine pests known to occur in South Gippsland, according to ParksVic (2015) include:

- Pacific oyster (*Crassostrea gigas*) – small number of this oyster species are reported to occur in Western Port Bay and at Tidal River in the Wilsons Promontory National Park.
- Northern pacific seastar (*Asterias amurensis*) – prefer soft sediment habitat, but also use artificial structures and rocky reefs, living in water depths usually less than 25 m (but up to 200 m water depths). It is thought to have been introduced in 1995 through ballast water from Japan.
- New Zealand screw shell (*Maoricolpus roseus*) – lies on or partially buried in sand, mud or gravel in waters up to 130 m deep. It can densely blanket the sea floor with live and dead shells and compete with native scallops and other shellfish for food. This species is present in eastern Bass Strait, forming extensive and dense beds on sandy seabeds (Patil *et al*., 2004). It is known to occur in the Point Hicks Marine National Park.
- European shore crab (*Carcinus maenas*) – prefers intertidal areas, bays, estuaries, mudflats and subtidal seagrass beds, but occurs in waters up to 60 m deep. It is presumed to occur on the intertidal reefs of all the marine national parks in Gippsland, except the Ninety Mile Beach MNP (which has no intertidal reef).

5.8 CULTURAL HERITAGE VALUES

Cultural heritage can be broadly defined as the legacy of physical science artefacts and intangible attributes of a group or society that are inherited from past generations, maintained in the present and bestowed for the benefit of future generations. Cultural heritage includes tangible culture (such

as buildings, monuments, landscapes, books, works of art, and artefacts), intangible culture (such as folklore, traditions, language, and knowledge) and natural heritage (including culturally significant landscapes).

This section describes the cultural heritage values of the activity area, which is broadly categorised as Aboriginal and non-Aboriginal (maritime archaeology).

5.8.1 ABORIGINAL HERITAGE

Aboriginal people have occupied Gippsland for at least 18,000 years and probably for over 40,000 years (OMV, 2003). The coastline adjacent to the activity area is occupied by the *Gunaikurnai* language group, which comprises five distinct clans; the Brataualung, the Brayalaulung, the Tatungalung, the Brabalung and the Krautungalung (Basslink, 2001). Estimates of the number of clanspeople in the *Gunaikurnai* are between 3,000 and 5,000 prior to European contact (Basslink, 2001).

The Gippsland coastline is of significant Aboriginal cultural heritage significance. Coastal fishing is an important part of Aboriginal culture, with fishing methods including hand gathering, lines, rods and reels, nets, traps and spears (DoE, 2015a). The Victorian Aboriginal Heritage Register contains details of Aboriginal cultural heritage places and objects areas along the coastline; however this is not publicly accessible as it contains culturally sensitive information.

There are no indigenous places listed on the Commonwealth Heritage List (DCCEEW, 2021) within the EMBA, those listed are terrestrial and withing a listed place and therefore not impacted by the activity. Other indigenous protected and recognised places are described below.

Indigenous Protected Areas

Indigenous Protected Areas (IPAs) are an essential component of Australia's National Reserve System, which is the network of formally recognised parks, reserves and protected areas across Australia, designed to protect the nation's biodiversity. Indigenous Protected Areas protect cultural heritage into the future, and provide employment, education and training opportunities for Indigenous people in remote areas. There are five IPAs that occur over 100 kilometres from the nearest DA, on and around Flinders Island to the southwest. They are all important rookeries for mutton birds and important cultural resources for Tasmanian Aboriginal people.

In April 2021, the Australian Government committed funding to the Sea Country IPA Program, under which grants will be provided to Indigenous organisations to expand existing IPAs and create new IPAs (DCCEEW, 2023). The program seeks to increase the area of sea within IPAs in Australia. Ten Sea Country IPA consultation projects were announced in May 2022, including the Nanjit to Mallacoota Sea Country IPA consultation project, which extends from Corner Inlet to the Victoria/New South Wales border (Figure 5.7).

The Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC) has signed an agreement with the Australian Government to start the process of establishing the Sea Country IPA and is currently undertaking engagement with families and clans who may have an interest in participating in the development of the IPA (GLaWAC, 2023). The proposed Sea Country IPA area is illustrated below and is located in coastal waters, including the Gippsland Lakes and estuaries around Mallacoota, not within the activity area but within the EMBA.

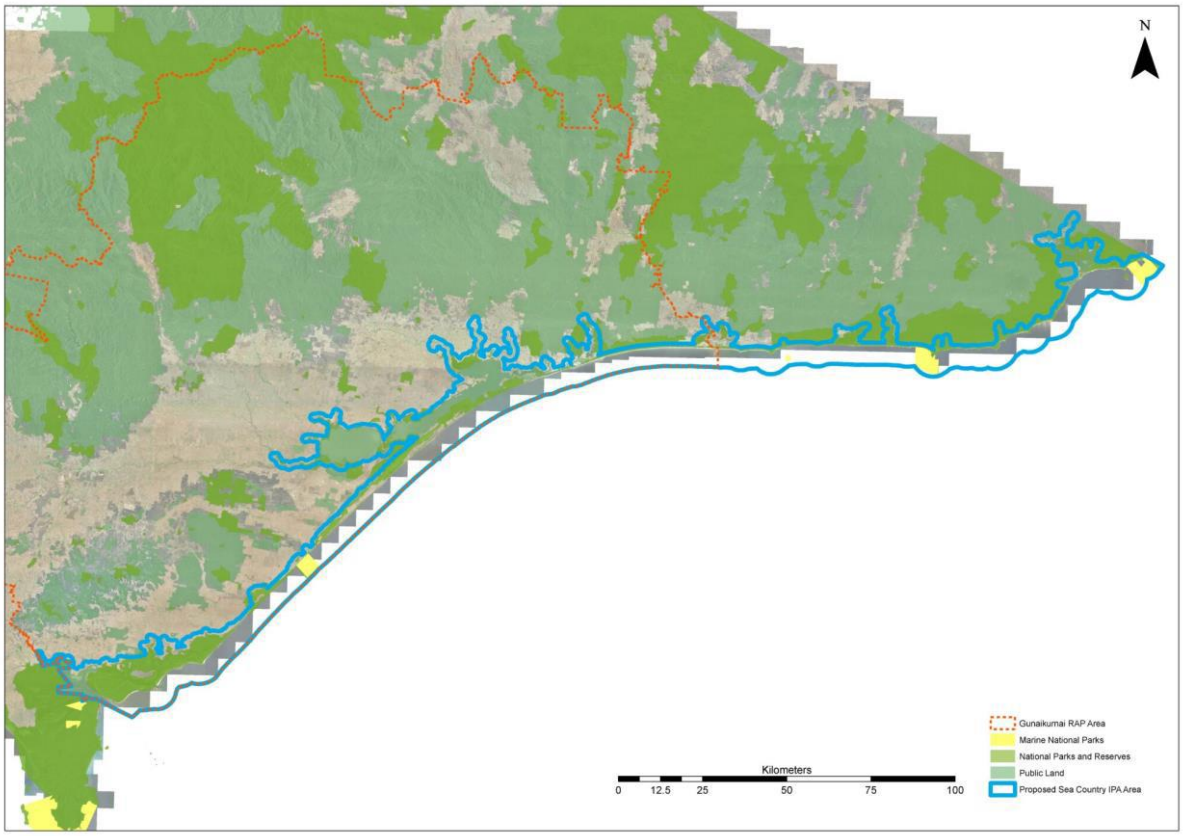


Figure 5.7. Proposed Nanjit to Mallacoota Sea Country IPA

5.8.2 MARITIME ARCHAEOLOGICAL HERITAGE

Shipwrecks (together with their associated relics) over 75 years old are protected within Commonwealth waters under the *Underwater Cultural Heritage Act* 2018 and in Victorian waters under the *Victorian Heritage Act 1995* (Vic).

There are no shipwrecks mapped as occurring in the activity area (DoEE, 2019k).

5.9 SOCIO-ECONOMIC ENVIRONMENT

This section describes the social and economic environment of the activity area. Given the exclusively offshore nature of the activity area and the lack of an oil spill EMBA, the onshore socio-economic environment is only briefly described.

5.9.1 COASTAL SETTLEMENTS

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

The Australian Bureau of Statistics (ABS) indicates that the populations of Golden Beach and Paradise Beach are 293 and 160, respectively. In Golden Beach, 68% of the 461 private dwellings are unoccupied, while 72% of the 308 private dwellings in Paradise Beach are unoccupied.

These towns have very small resident populations, with housing catering primarily to the holiday market, with shacks used by holidaymakers, along with the many vacant blocks used for camping. Camping among the sand dunes is also available along this section of coastline.

5.9.2 NATIVE TITLE

Non-exclusive native title rights and interests that exist over land and water in the EMBA include:

- Rights of access.
- Rights to use and enjoy the land.
- Rights to take resources from the land for non-commercial purposes.
- Rights to protect and maintain sites of importance within the determination area.
- Rights to engage in certain activities on the land (including camping, cultural activities, rituals, ceremonies, meetings, gatherings, and teaching about the sites of significance within the determination area).

These rights do not confer exclusive rights of possession, use and enjoyment of the land or waters. Native title does not exist in minerals, petroleum or groundwater.

A search of the National Native Title Tribunal (NNTT) database identifies that there is Native Title Determination registered over much of the coastline adjacent to the activity area, as well as over the jurisdiction of state waters, this being for the Gunaikurnai People (VCD2010/001). The native title determination area covers approximately 45,000 hectares and extends from west Gippsland near Warragul, east to the Snowy River, and north to the Great Dividing Range, (Figure 5.8). It also includes 200 metres of offshore sea territory between Lakes Entrance and Marlo.

The Gunaikurnai people have occupied, used and managed the coastal land and sea environment along the coastline adjacent to the DA for many thousands of years. These include areas that were dry land before the current sea level stabilised about 5,000 years ago. During the last Ice Age approximately 25,000 years ago, coastlines were on average 125m lower than the present day (Umwelt, 2022). The Gunaikurnai peoples cultural and spiritual connection with these landscapes continues, even where evidence of previous occupation now lies beneath the ocean (GLaWAC, 2015).

In the past, coastal wetlands were highly productive areas for hunter-gatherer people, having a variety of habitats and species, so the majority of archaeological sites in Victoria are found within 1 km of the coast (LCC, 1993). Along the Gippsland coast, stone artefacts that have been found were mostly made from silcrete and quartz from the hinterland. Middens on offshore islands indicate that in the past, Aboriginal people from the area now known as Wilsons Promontory were likely to have visited (Jones & Allen, 1979).

The Gunaikurnai people see no distinction between the land and the sea – it is all part of Country (GLaWAC, 2023). ‘Sea Country’ can include parts of open ocean, beaches, land and freshwater on the coast. It encompasses all living things, beliefs, values, creation spirits and cultural obligations connected to an area (The University of Adelaide, 2023). Water is of particular cultural significance to First Nations people as an integral part of songs, ceremonies, hunting and collecting, and other activities that bind people to their country and each other, including fishing (Smyth, Egan, & Kennett, 2018). Coastal environments are an integrated cultural landscape/seascape that is conceptually very different from the broader Australian view of land and sea. Protecting this cultural heritage is a major concern for First Nation people (National Oceans Office, 2022).

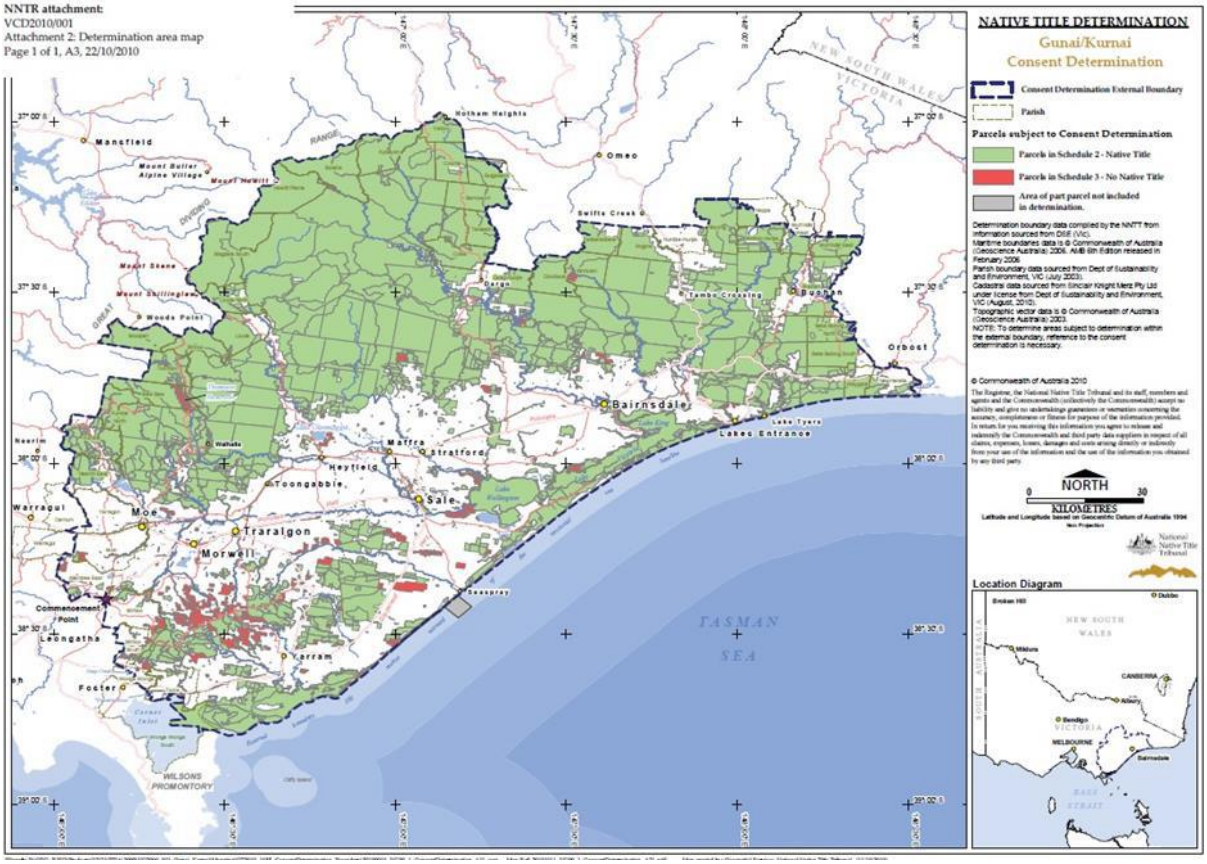


Figure 5.7. Gunaikurnai Native Title Determination Area (VCD2010/01)

5.9.3 COMMERCIAL FISHING

Several Commonwealth and Victorian commercial fisheries are licensed to operate in and around the activity area. These are described in the following sections.

5.9.4 COMMONWEALTH MANAGED FISHERIES

Commonwealth fisheries are managed by the AFMA under the *Fisheries Management Act 1991* (Cth). Their jurisdiction covers the area of ocean from 3 nm from the coast out to the 200 nm limit (the extent of the Australian Fishing Zone, AFZ). Commonwealth commercial fisheries with jurisdictions to fish the activity area are the:

- Bass Strait Central Zone Scallop Fishery;
- Eastern Tune and Billfish Fishery;
- Eastern Skipjack Tuna Fishery;
- Southern Bluefin Tuna Fishery;
- Small Pelagic Fishery (eastern sub-area);
- Southern Squid Jig Fishery; and
- Southern and Eastern Scalefish and Shark (SESS), incorporating;
    - Gillnet and Shark Hook sector.
    - South East Trawl sector.
    - Scalefish Hook sector.

According to the WSH-3 PSZ issued by the Victorian Government on 19 June 2008, “all vessels other than vessels operated by authorised persons” are prohibited from entering the PSZ by law. As such, no commercial fishing should occur within the activity area. Nevertheless, Table 5.13 summarises the key facts and figures of Commonwealth-managed fisheries with jurisdiction to fish in the waters immediately adjacent the activity area.

Table 5.13. Commonwealth-managed fisheries with jurisdiction to fish around the activity area

Fishery	Target species	Geographic extent of fishery	Does fishing occur adjacent to the activity area?	Fishing season	Fishing methods, vessels and licences	Catch data and other information
Bass Strait Central Zone Scallop Fishery (Figure 5.8)	Commercial scallop (*Pecten fumatus*)	Central Bass Strait area that lies within 20 nm of the Victorian and Tasmanian coasts. Fishery does not operate in state waters. In 2022 fishing was permitted throughout thearea of the fishery, except in 4 scallop beds that were closed under the BSCZSF harvest strategy.	**Yes.** According to 2022 season data, the fishing effort was primarily concentrated in Eastern Bass Strait.	12th July to 31st December.	Towed scallop dredges that target dense aggregations ('beds') of scallops. 35 fishing permits are in place. 10 vessels were active in the fishery in 2022, the same number as active in 2021.	• 2022 – 495 tonnes worth $1.4 million. • 2021 – 2,344 tonnes worth $4.4 million. Scallop spawning occurs from winter to spring (June to November), with timing dependent on environmental conditions such as wind and water temperature.
Eastern Tuna and Billfish Fishery (Figure 5.9)	Albacore tuna (*Thunnus alulunga*), bigeye tuna (*T. obesus*), yellowfin tuna (*T. albacares*), broadbill swordfish (*Xiphias gladius*), striped marlin (*Tetrapturus audux*)	Fishery extends from Cape York in Queensland to the South Australian/Victorian border. Fishing occurs in both the AFZ and adjacent high seas.	**No.** The fishery overlaps the activity area but is in an area that is not fished.	1 January to 31 December .	Pelagic longline is the key fishing method, with small quantities taken using minor line methods (such as handline, troll, rod and reel). Active vessel numbers were 42 in 2022 (down from about 150 in 2002). No Victorian or Tasmanian ports are used to land catches.	• 2021 – 4,086 tonnes worth $35.6 million. • 2022 – 4,032 tonnes worth $34.7 million. Spawning occurs through most of the year in water temperatures greater than 26°C (Wild Fisheries Research Program, 2012).

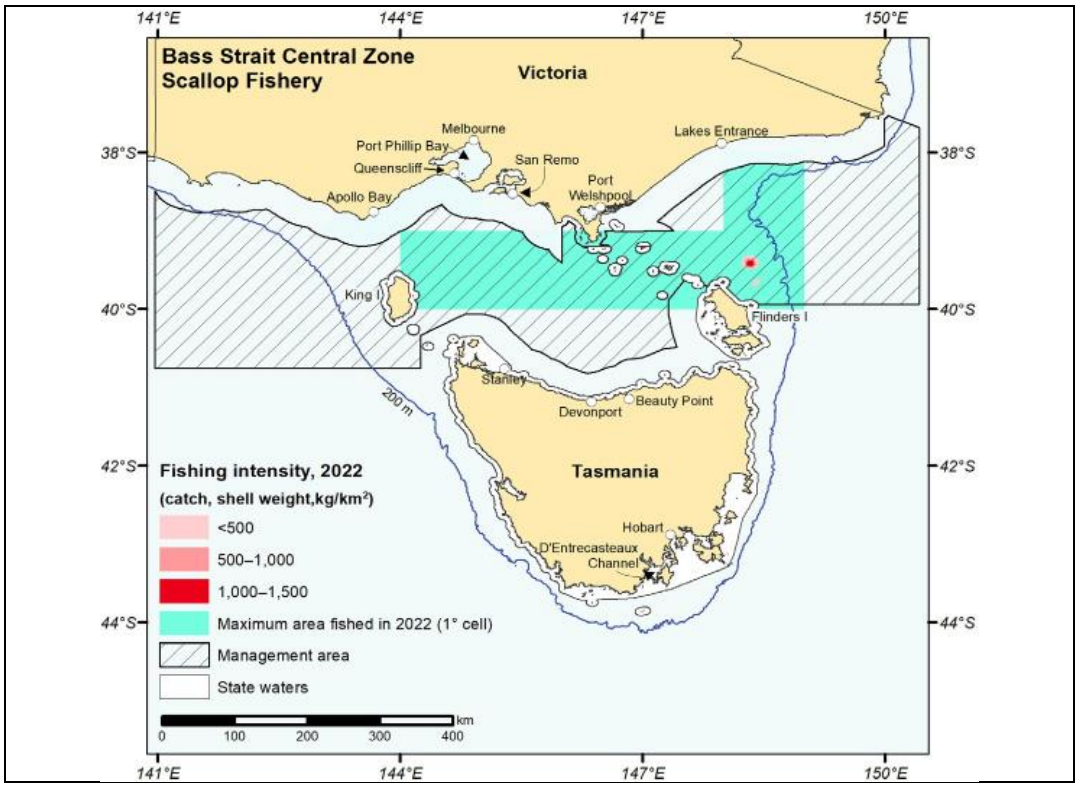
Fishery	Target species	Geographic extent of fishery	Does fishing occur adjacent to the activity area?	Fishing season	Fishing methods, vessels and licences	Catch data and other information
Eastern Skipjack Tuna Fishery	Skipjack tuna (*Katsuwonus pelamis*)	Extends from the border of Victoria and South Australia to Cape York, Queensland.	**No.** The fishery is not currently active, as such no fishing is currently being undertaken in this fishery.	Not currently active.	Purse seine fishing gear is used in this fishery. There are 19 permits in the eastern zone, though no vessels currently work the fishery. Port Lincoln was the main landing port until its tuna cannery closed down.	Not currently active.
Southern Bluefin Tuna (Figure 5.10)	Southern bluefin tuna (*Thunnus maccoyii*)	The fishery extends throughout all waters of the AFZ. AFMA manages Southern Bluefin Tuna stocks in Victorian state waters under agreements set up within the OCS (DEH, 2004). The nearest fishing effort is concentrated along the NSW south coast around the 200 m depth contour.	**No.** The fishery overlaps the activity area but is in an area that is not fished.	12-month season begins 1st December.	Purse seine catch in the Great Australian Bight for transfer to aquaculture farms off Port Lincoln in South Australia (five to eight vessels consistently fish this area). Port Lincoln is the primary landing port. On the east coast, pelagic longline fishing is the key fishing method. 2021 – 27 active vessels. 2022 – 30 active vessels.	No recent fishing effort in Bass Strait. The latest data for the east coast pelagic longline catches are: • 2021 – 5,646 tonnes worth $35.49 million. • 2022 – 5,972 tonnes worth $35.45 million.

Fishery	Target species	Geographic extent of fishery	Does fishing occur adjacent to the activity area?	Fishing season	Fishing methods, vessels and licences	Catch data and other information
Small Pelagic Fishery (eastern and western sub-area) (Figure 5.11)	Australian sardine (*Sardinops sagax*), jack mackerel (*Trachurus declivis*), blue mackerel (*Scomber australasicus*), redbait (*Emmelichthys nitidus*)	Operates in Commonwealth waters extending from southern Queensland around southern Western Australia.	**No.** The fishery overlaps the activity area but is in an area that is not fished.	12-month season begins 1st May.	Purse seine and mid-water trawl, with the latter being the main method. Thirty three (33) entities held quotas in 2022-23 using four active vessels. The main landing ports are in New South Wales.	A Total Allowable Commercial Catch (TACC) in recent years has not been reached. Catch values are confidential due to the small number of fishers. • 2021-22 – 19,623 tonnes. • 2022-23 – 21,080 tonnes. Catch values are confidential.
Southern Squid Jig Fishery (Figure 5.12)	Gould's squid (*Nototodarus gouldi*)	The fishery extends from the SA/WA border east to southern Queensland. AFMA does not control squid fishing in Victorian state waters.	**Yes.** From the 2022-2023 season data, fishing appears to occur adjacent to the activity area.	1 January to 31 December	Squid jigging is the fishing method used, mainly at night time and in water depths of 60 to 120 m. Lakes Entrance, Portland, Apollo Bay and Queenscliff are the primary landing ports in Victoria. 2021 – 8 active vessels. 2022 – 6 active vessels.	The species' short life span, fast growth and sensitivity to environmental conditions result in strongly fluctuating stock sizes. • 2021 – 982 tonnes worth $3.30 million. • 2022 – 394 tonnes worth $1.86 million.

Fishery	Target species	Geographic extent of fishery	Does fishing occur adjacent to the activity area?	Fishing season	Fishing methods, vessels and licences	Catch data and other information
Southern and Eastern Scalefish and Shark (SESS) Fishery						
Shark Gillnet and Shark Hook Sector (Figure 5.13 and 5.14)	School shark (*Galeorhinus galeus*). Gummy shark (*Mustelus antarcticus*) is the key target species, with bycatch of elephant fish (*Callorhinchus milii*), and sawshark (*Pristiophorus cirratus, P. nudipinnis*).	Waters from the NSW/Victorian border westward to the SA/WA border, including the waters around Tasmania, from the low water mark to the extent of the AFZ. Most fishing occurs in waters adjacent to the coastline in Bass Strait, with a low to medium fishing intensity over the activity area.	**Yes.** From the 2022-2023 season data, fishing appears to occur adjacent to the activity area.	12-month season, beginning 1st May to 30 April.	Demersal gillnet and a variety of line methods. 2022-23 – 73 permits and 87 active vessels.. Landing ports in Victoria are Lakes Entrance, San Remo and Port Welshpool.	• 2022-23 – 1,946 tonnes with value not available at time of reporting. • 2021-22 – 2,026 tonnes worth $21.1 million.

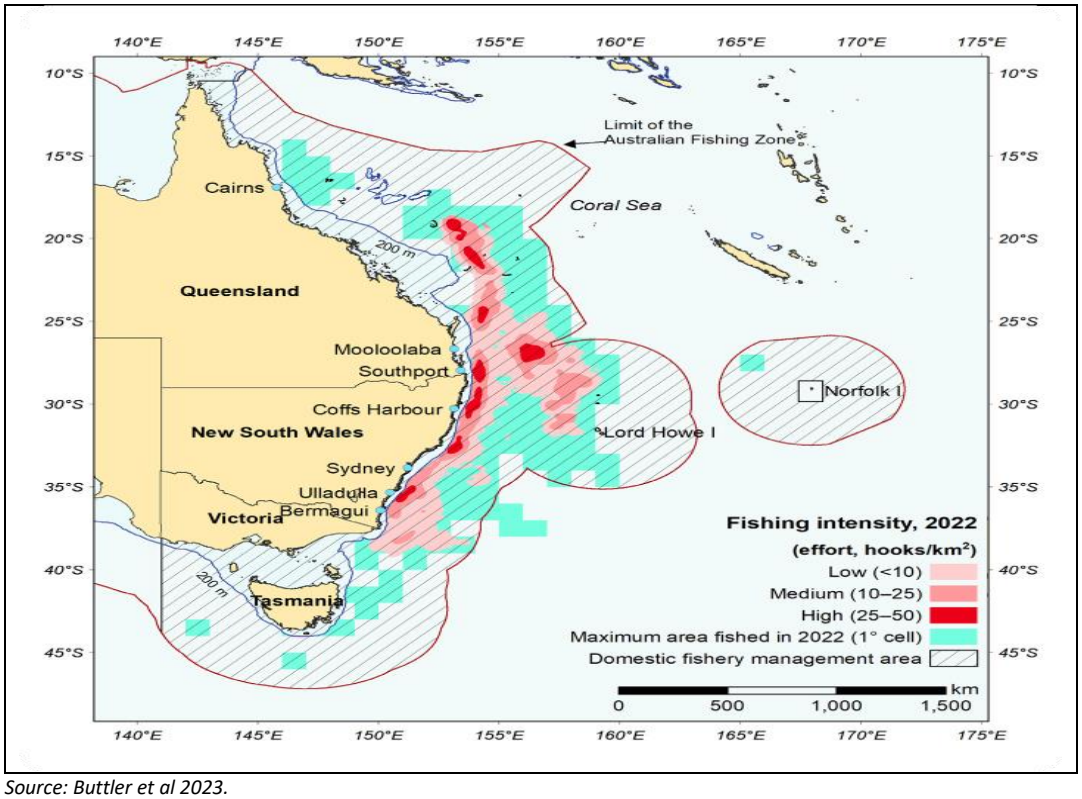
Fishery	Target species	Geographic extent of fishery	Does fishing occur adjacent to the activity area?	Fishing season	Fishing methods, vessels and licences	Catch data and other information
Commonwealth Trawl Sector (CTS) (Figure 5.15 and 5.17)	Key species landed are blue grenadier, eastern school whiting (*Sillago flindersi*), tiger flathead (*Neoplatycephalus richardsoni*), orange roughy – eastern zone, and pink ling.	Covers the area of the AFZ extending southward from Barrenjoey Point (north of Sydney) around the New South Wales, Victorian and Tasmanian coastlines to Cape Jervis in South Australia.	**Yes.** From the 2017-2018 season data, fishing appears to occur adjacent to the activity area.	12-month season begins 1st May. Highest catches from September to April.	Multi gear fishery, but predominantly demersal otter trawl and Danish-seine methods. Primary landing ports in NSW, and Lakes Entrance and Portland in Victoria. For 2022-23, there were 57 trawl fishing rights, 49 active vessels	• 2021-22 – 19,501 tonnes worth $80 million. • 2022-23 – 13,381 tonnes, value not available at time of report.
Scalefish Hook Sector (SHS) (Figure 5.16)	Key species landed are pink ling, blue eye trevalla, and ribaldo (*Mora moro*),	Includes all waters off South Australia, Victoria and Tasmania from 3 nm to the extent of the AFZ.	**No.** The location of the activity area is outside the area of recent fishing effort.	12-month season begins 1st May. Effort highest from January to July.	Multi gear fishery, using different gear types in different areas or depth ranges. Predominantly demersal longline fishing methods and demersal gillnets. For 2022-23, there were 37 fishing rights 12 active vessels. Primary landing ports in NSW, and Lakes Entrance and Portland in Victoria.	Catch data is combined with that for the CTS above.

Sources: Patterson et al (2019, 2018; 2017; 2016).



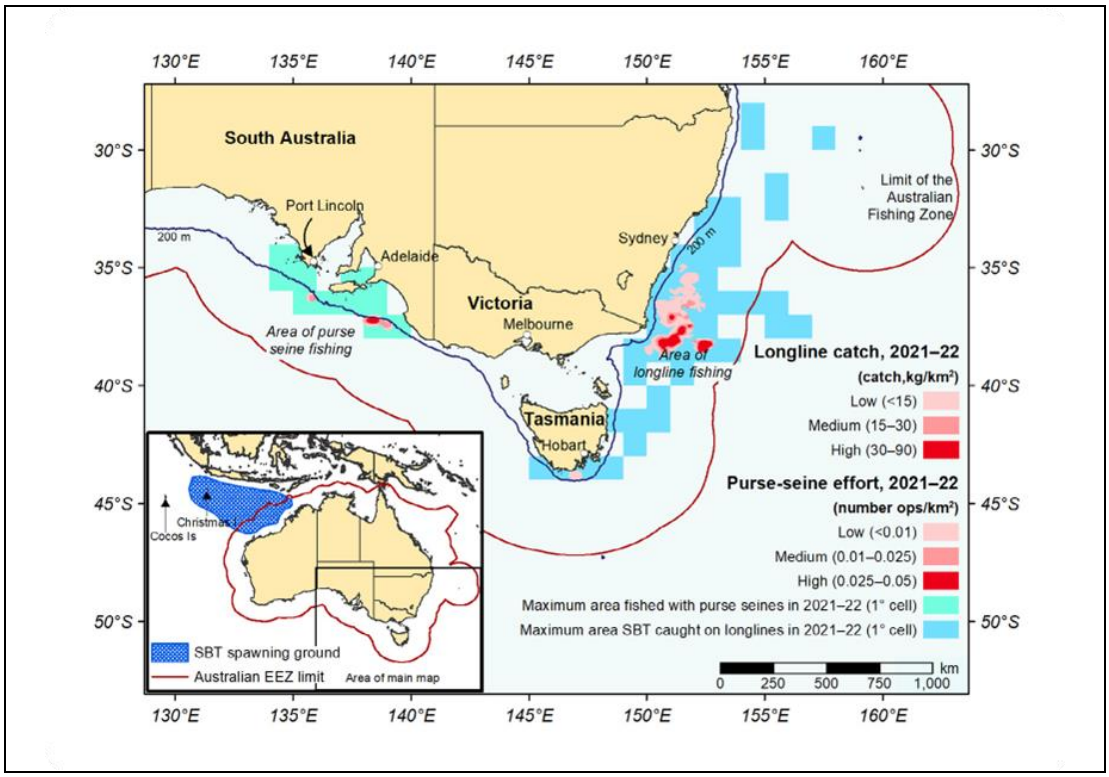
Source: Buttler et al 2023.

Figure 5.8. Jurisdiction and intensity of the Bass Strait Central Zone Scallop Fishery, 2022



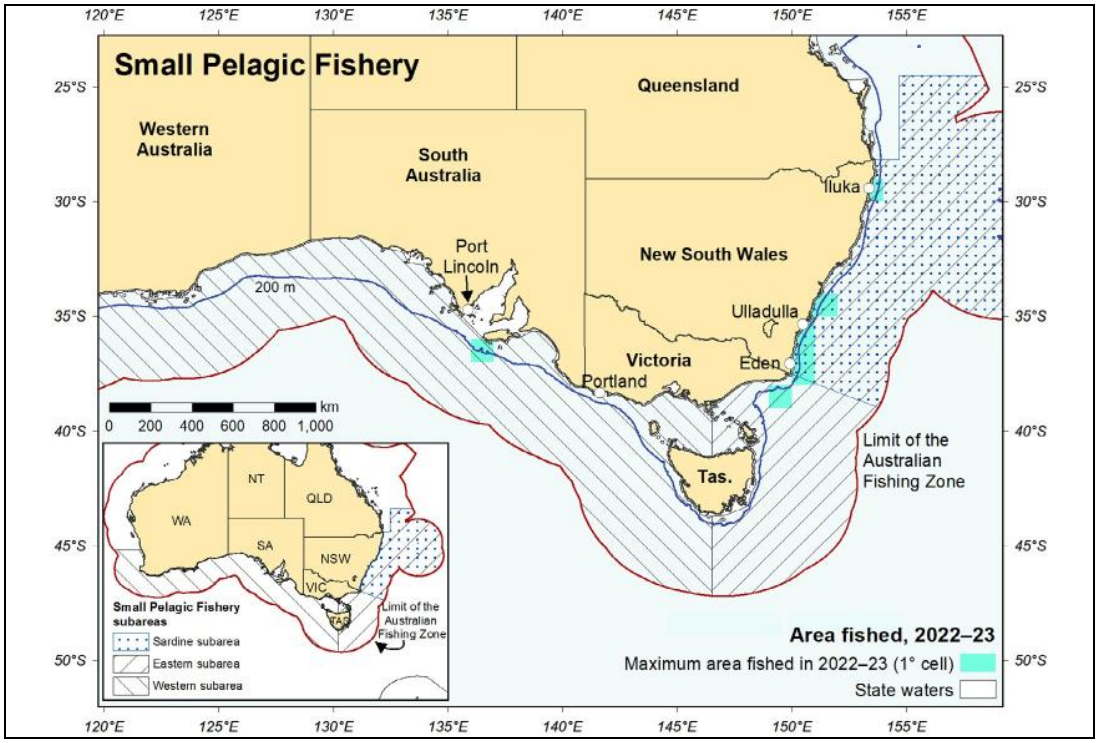
Source: Buttler et al 2023.

Figure 5.9. Jurisdiction and fishing intensity of the Eastern Tuna and Billfish Fishery, 2022



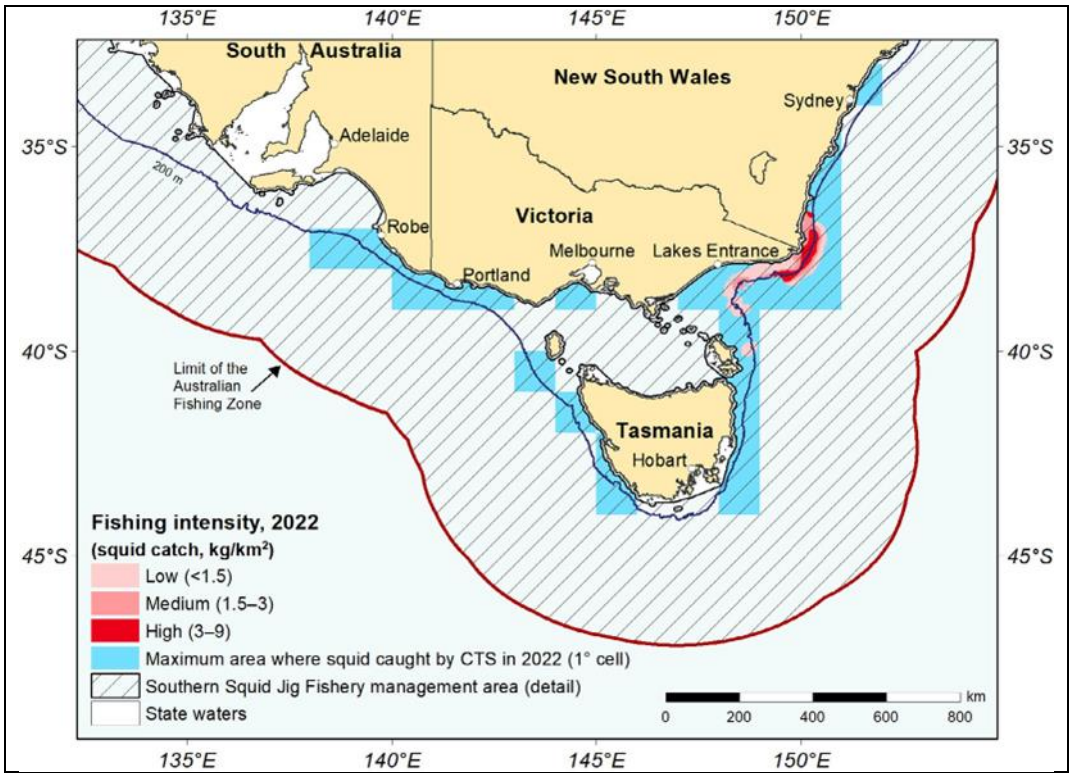
Source: Buttler et al 2023.

Figure 5.10. Jurisdiction and fishing intensity of the Southern Bluefin Tuna Fishery, 2021-22



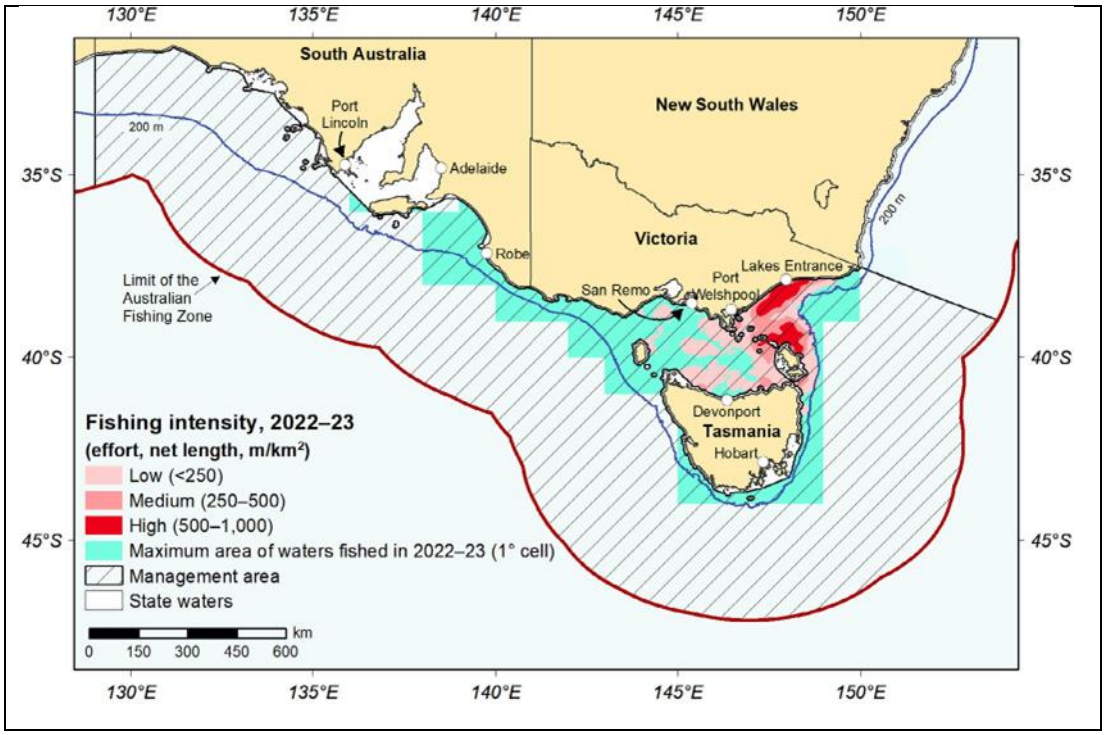
Source: Buttler et al 2023.

Figure 5.11. Jurisdiction and fishing intensity of the Small Pelagic Fishery, 2022-23



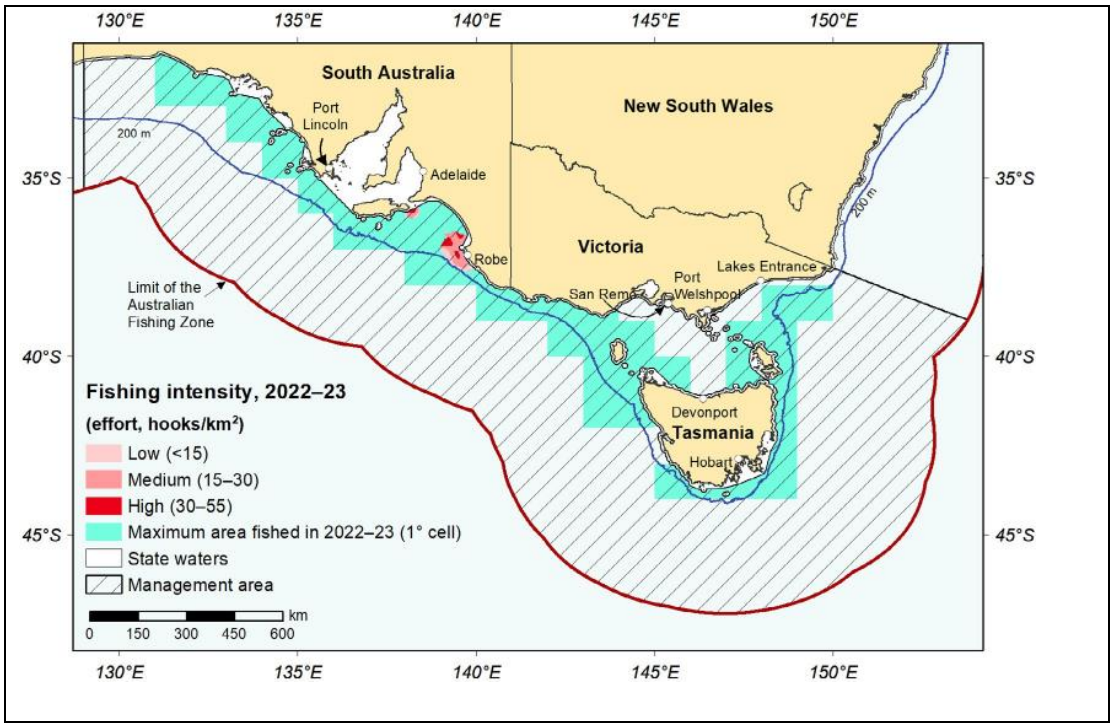
Source: Buttler et al 2023.

Figure 5.12. Jurisdiction and fishing intensity of the Southern Squid Jig Fishery, 2022



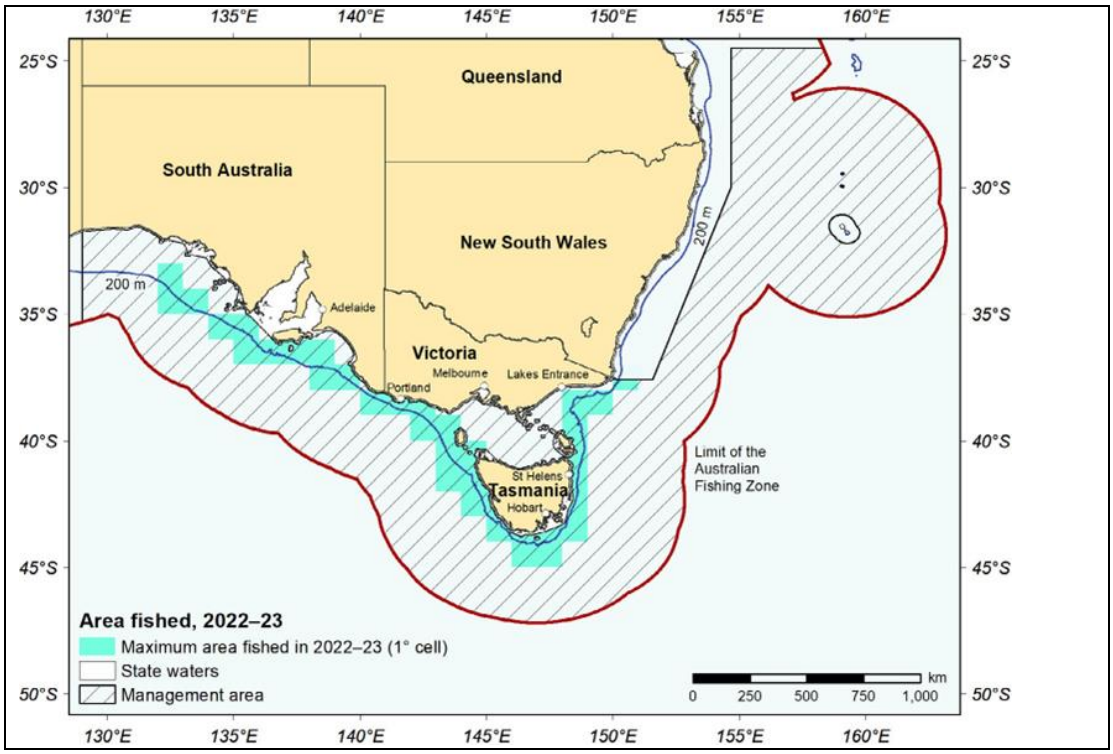
Source: Buttler et al 2023.

Figure 5.13. Jurisdiction and fishing intensity of the SESS Fishery (Shark gillnet sector), 2022-23



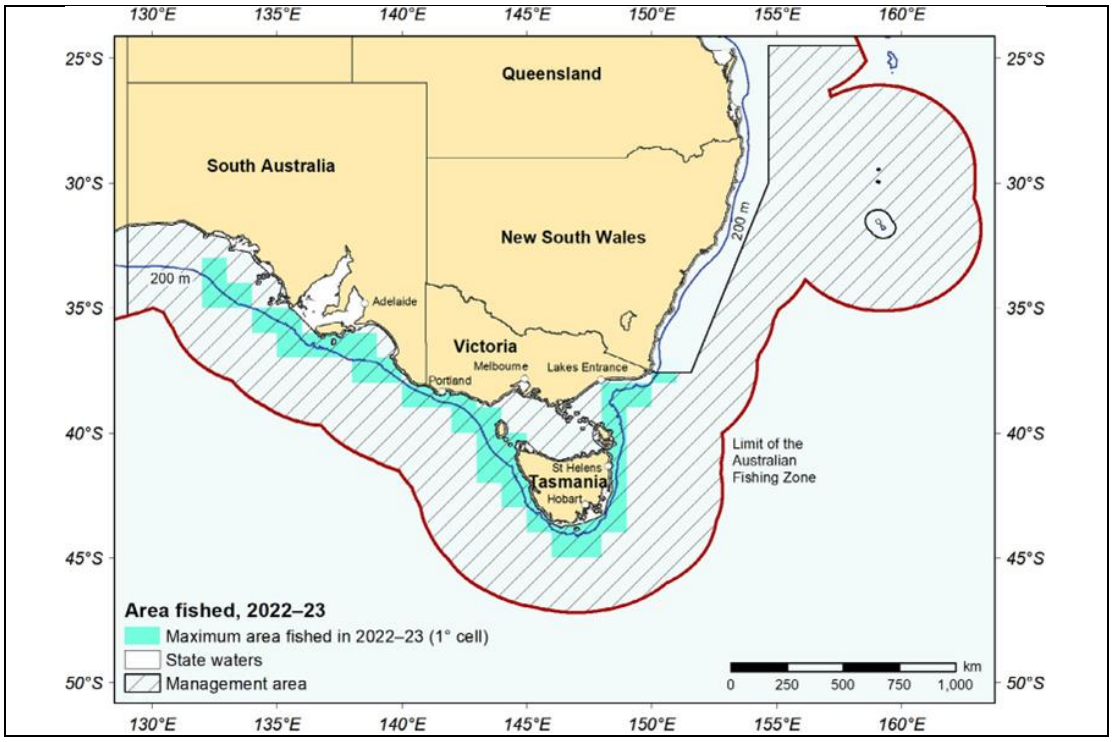
Source: Buttler et al 2023.

Figure 5.14. Jurisdiction and fishing intensity of the SESS Fishery (Shark Hook Sector), 2022-23



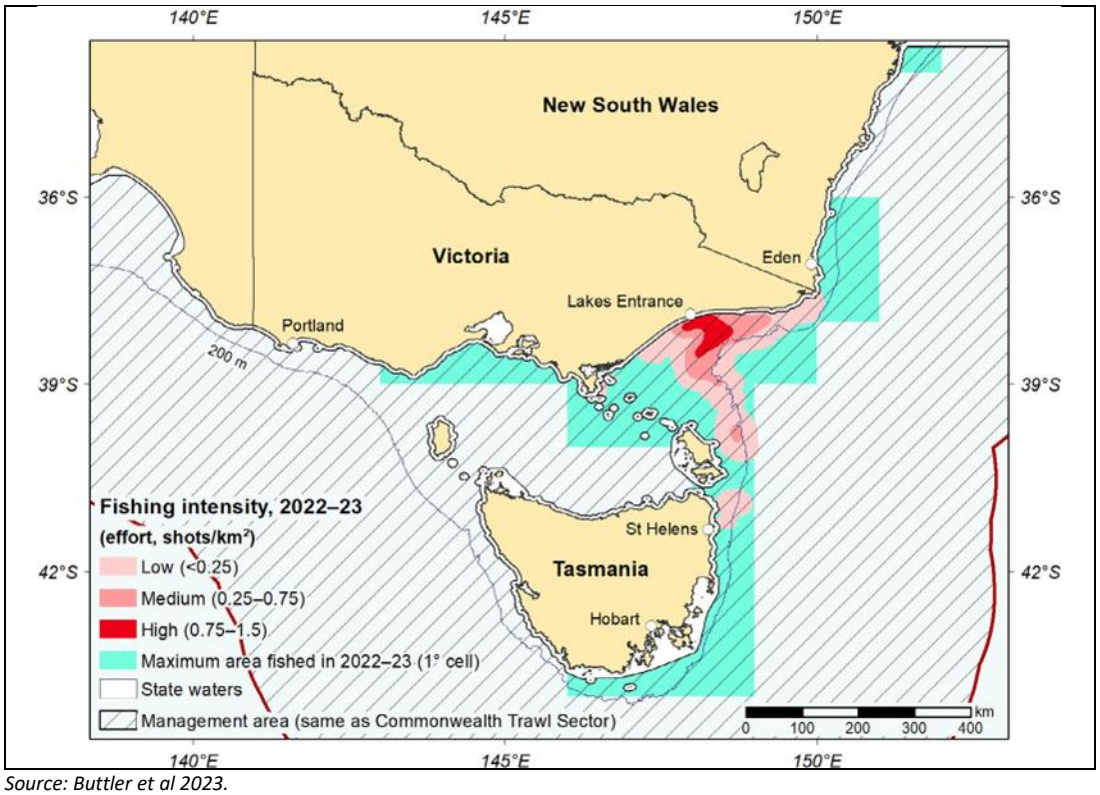
Source: Buttler et al 2023.

Figure 5.15. Jurisdiction and fishing intensity of the SESS Fishery (Otter Board Trawl), 2022-23



Source: Buttler et al 2023.

Figure 5.16. Area and fishing intensity of the SESS Fishery (Scalefish hook sector), 2022-23



Source: Buttler et al 2023.

Figure 5.17. Jurisdiction and fishing intensity of the SESS Fishery (Danish-seine operations), 2022-23 (data combined with the Commonwealth Trawl Sector)

Victorian-managed fisheries

The activity area intersects the VFA catch and effort grid cell E40.

Victorian-managed commercial fisheries with access licences that authorise harvest in the waters adjacent to the activity area include the following (noting that not all operate in the area):

- Ocean Scallop;
- Rock Lobster (Eastern zone);
- Ocean Access (general, all species);
- Ocean Purse Seine (noted by VFA as being the most active fishery in the region);
- Trawl (inshore);
- Abalone (central zone) (does not operate in the activity area);
- Wrasse (does not operate in the activity area); and
- Banded Morwong (by permit) (does not operate in the activity area).

As noted for the Commonwealth fisheries, the WSH-3 PSZ issued by the Victorian Government on 19 June 2008 prohibits “all vessels other than vessels operated by authorised persons” from entering the PSZ by law. As such, no commercial or recreational fishing should occur within the activity area. Nevertheless, Table 5.14 summarises the key facts and figures of the Victorian-managed fisheries with jurisdiction to fish in the waters immediately adjacent the activity area.

Table 5.14. Victorian-managed fisheries with jurisdiction to fish around the activity area

Fishery	Target species	Geographic extent of fishery	Does fishing occur adjacent to the activity area?	Fishing season	Fishing methods, vessels and licences	Catch data and other information
Bass Strait Scallop Fishery (Victorian zone) (Figure 5.1)	Commercial scallop (*Pecten fumatus*) Doughboy scallop.	Extends 20 nm from the high tide water mark of the entire Victorian coastline (excluding bays and inlets where commercial scallop fishing is prohibited).	**Yes.** The activity area overlaps the jurisdiction of the fishery, but the dredging technique used for this fishery precludes it operating close to WSH-3.	Determoned by AFMA but typically July to 31 December.	Towed scallop dredges (typically 4.5 m wide) that target dense aggregations ('beds') of scallop. A tooth-bar on the bottom of the mouth of the dredge lifts scallops from the seabed and into the dredge basket. Currently there are 444,500 commercial and 455,000 doughboy scallop quota statutory fishing rights, and 10 active boats.	There has been little to no catch around since the zero quota was lifted after the 2012/13 season (due to a lack of commercial scallop quantities). The Total Allowable Commercial Catch (TACC) has been set at 3962 tonnes for 2023. In 2022 the TACC was set at 3905 tonnes and actual catch was a total of 432 tonnes.
Rock Lobster Fishery (eastern zone; Lakes Entrance region) (Figure 5.20)	Southern rock lobster (*Jasus edwardsii*). Very small bycatch of species including southern rock cod (*Lotella* and	The eastern zone stretches from Apollo Bay in southwest Victoria to the Victorian/NSW border.	**Yes.** The activity area overlaps the fishery.	Closed season for: • Female: 1 June to 15 November • Male lobsters: 15 September	Fished from coastal rocky reefs in waters up to 150 m depth, with most of the catch coming from inshore waters less than 100 m deep. Baited pots are generally set and retrieved each	In the eastern zone, catches for the last three seasons were: • 2019/20 – 37 t. • 2018/19 – 45 t. • 2017/18 – 57 t valued at $4.67 million.

	Pseudophycis spp), hermit crab (family *Paguroidea*), leatherjacket (*Monacanthidae* spp) and octopus (*Octopus* spp).			to 15 November. Catches are generally highest from August to January.	day, marked with a surface buoy. The maximum number of licenses are 47 in the eastern zone. Main ports in the Eastern zone	
Abalone Fishery (central zone) (Figure 5.21)	Blacklip abalone (*Haliotis rubra*) is the primary target, with greenlip abalone (*H. laevigata*) taken as a bycatch.	The Victorian Central Abalone Zone is located between Lakes Entrance and the mouth of the Hopkins River. Most abalone live on rocky reefs from the shoreline to depths of 30 m. The WSH-3 well is located in water depth of 39.5m.	**Yes.** The location of the activity area is present in the jurisdiction of the fishery.	12-month season, beginning 1st of April.	Abalone diving activity occurs close to shoreline (generally no greater than 30 m) using hookah gear (breathing air supplied via hose connected to an air compressor on the vessel). Commercial divers do not use SCUBA gear. Divers use an iron bar to prise abalone from rocks. As of September 2023, there are 34 fishery access licences in the central zone.	In Victoria the production of abalone was: • 2020/21 – 601t, value $16.8 million. • 2021/22 – 636t, value $17.4 million. In the Central Zone catches were: • 2020/21 – 230t • 2021/22 – 241t For the central zone, the 2023/24 TACC is 213.1 tonnes (blacklip) and 3.4 tonnes (greenlip).
Wrasse Fishery (Lakes Entrance region)	Blue-throat wrasse (*Notolabrus tetricus*), saddled wrasse (*N. fucicola*), orange-spotted wrasse (*N. parilus*).	Entire Victorian coastline out to 20 nm (excluding marine reserves, bays and inlets). In recent years, catches have been highest off the	**Unknown** Licences were made transferrable from 1st April 2017, so fishing	Year-round.	Handline fishing (excluding longline), rock lobster pots (if in possession of a rock lobster access fishing licence).	Catches of wrasse in Victoria for the last five reported seasons were: • 2017/18 – 38 t valued at $771,0000. • 2018/19 – 33 t valued at $672,000. • 2019/20 – 25 t valued at $487,000.

		central coast (Port Phillip Heads, Western Port and Wilson's Promontory) and west coast (Portland).	effort could be activated in the area.		Preferred water depths for blue-throat wrasse is 20-40 m, while saddled wrasse prefer depths of 10-30 m. There are 22 fishery access licences.	• 2020/21 – 22t valued at $224,000 • 2021/22 – 21t, value not available
Multi-species Ocean Fishery						
Ocean Access (or Ocean General) Fishery	Gummy shark (*Mustelus antarcticus*), school shark (*Galeorhinus galeus*), Australian salmon (*Arripis trutta*), snapper (*Pagrus auratus*). Small bycatch of flathead (*Platycephalidae* spp).	Entire Victorian coastline, excluding marine reserves, bays and inlets.	**Yes.** The location of the activity area is present in the jurisdiction of the fishery.	Year-round. Most fishing undertaken off Lakes Entrance occurs between April and July.	Utilises mainly longlines (200 hook limit), but also haul seine nets (maximum length of 460 m) and mesh nets (maximum length of 2,500 m per licence). There are 171 fishery access licences. Fishing usually conducted as day trips from small vessels (<10 m in length).	There is insufficient catch data (catch data is combined with other fisheries and therefore unable to be distinguished on a standalone basis).
Ocean Purse Seine Fishery	Australian sardine (*Sardinops sagax*), Australian salmon (*Arripis trutta*) and sandy sprat (*Hyperlophus vittatus*) are the main species. Southern anchovy (*Engraulis australis*) caught in some years.	Entire Victorian coastline, excluding marine reserves, bays and inlets.	**Yes.** The location of the activity area is present in the jurisdiction of the fishery.	Year-round.	Purse seine, which is generally a highly selective method that targets one species at a time, thereby minimising bycatch. Purse seines do not touch the seabed. A lampara net may also be used.	Confidential data (due to operation of only one fisher).

					Only one licence is active in Victorian waters (based out of Lakes Entrance), with fishing focused close to shore and during the day. This licence is held by Mitchelson Fisheries Pty Ltd, a family business that catches primarily sardines, salmon, mackeral, sandy sprat, anchovy and white bait using the *Maasbanker* purse seine vessel.	
Inshore Trawl Fishery	Key species are eastern king prawn (*Penaeus plebejus*), school prawn (*Metapenaeus macleayi*) and shovelnose lobster/Balmain bug (*Ibacus peronii*). Minor bycatch of sand flathead (*Platcephalus bassensis*), school whiting (*Sillago bassensis*) and gummy shark (*Mustelusantarcticus*).	Entire Victorian coastline, excluding marine reserves, bays and inlets. Most operators are based at Lakes Entrance.	**Yes.** The location of the activity area is present in the jurisdiction of the fishery.	Year-round, although the majority of prawn fishing occurs in the warmer months up until Easter.	Otter-board trawls with no more than a maximum head-line length of 33 m, or single mesh nets are used. At June 2023, there were 54 fishery access licences holders, and 48 current licenses.	The last reported catch of eastern school prawn in 2015 was 75 t, the largest or the previous 10 years.

Banded Morwong Fishery	Banded morwong (*Cheilodactylus spectabilis*). Some fish are also landed as byproduct from the Ocean Access Fishery.	Extent is uncertain. The banded morwong is a temperate reef species. The absence of reef in the activity area suggests fishing may be limited or non-existent.	**Yes.** The location of the activity area is present in the jurisdiction of the fishery.	1 May to 31 January.	Uses large-mesh gillnets.	Total allowable catch (TAC) is 2920 fish Catches: 2020/21 – 1706 fish 2021/22 – 2000 fish 2022/23 – 1873 fish

Sources: VFA (2017; 2018, 2019).

Figure 5.18. Jurisdiction of the Bass Strait Scallop Fishery (Victorian Zone)

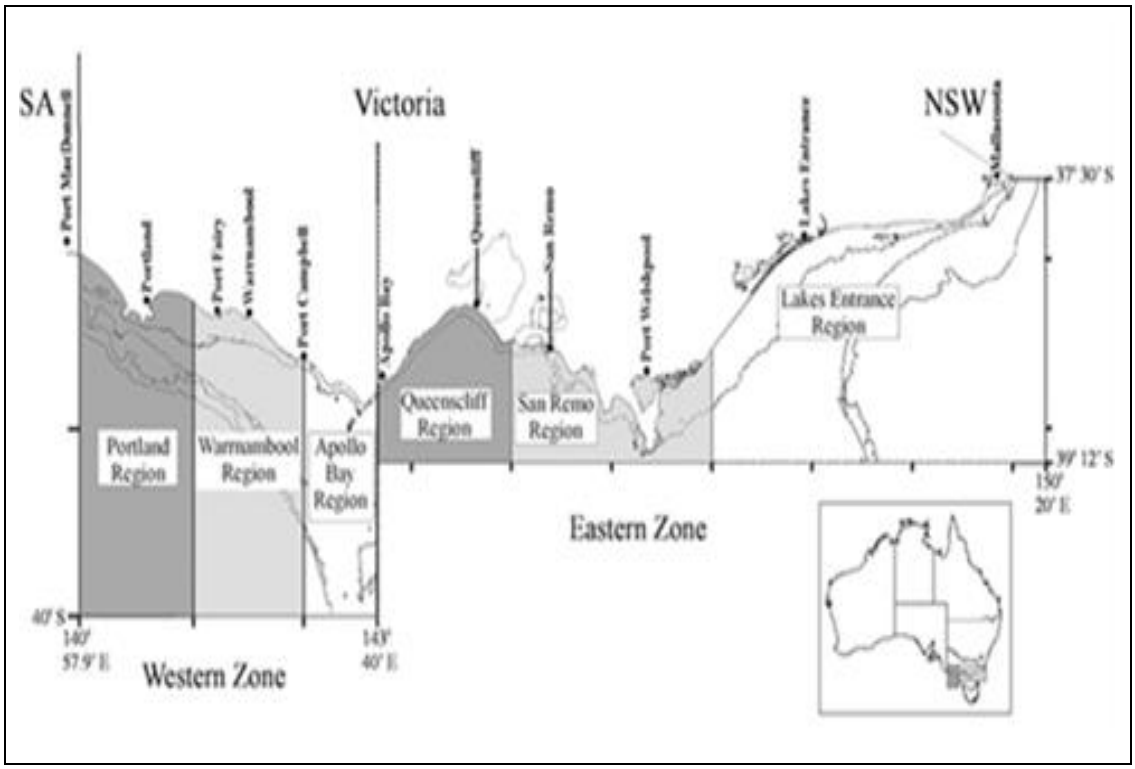


Figure 5.19. Jurisdiction of the Rock lobster fishery (eastern zone, Lakes Entrance region)

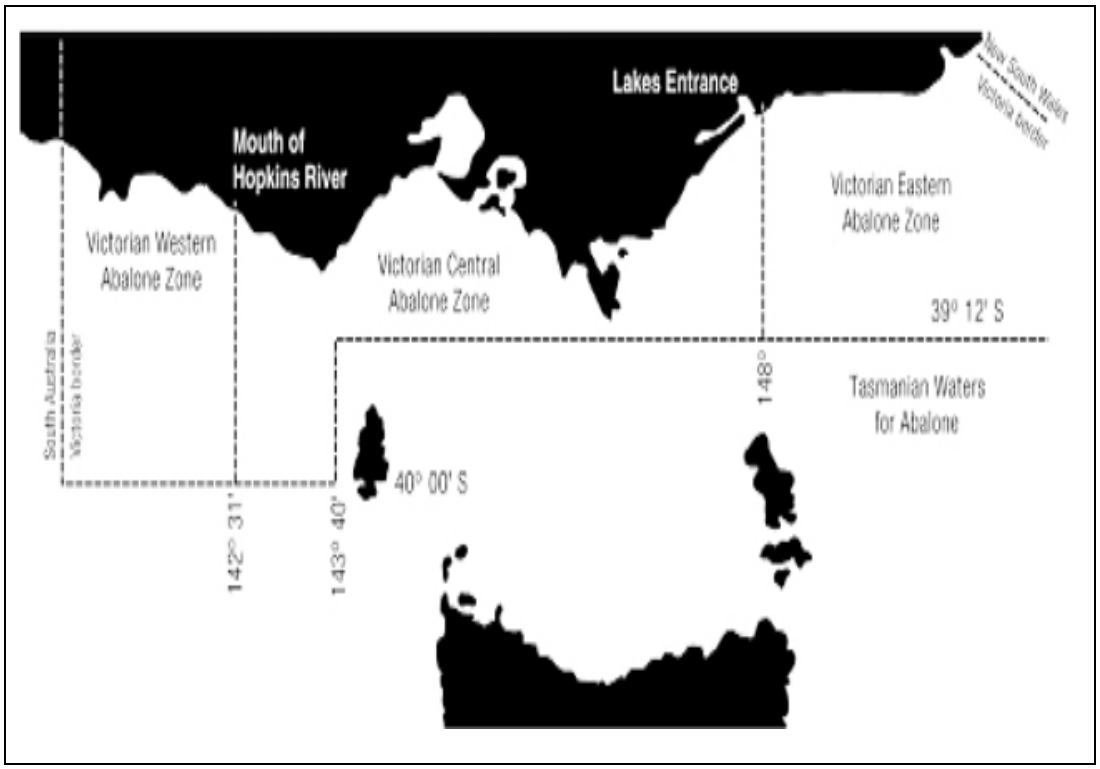


Figure 5.20. Jurisdiction of the Abalone fishery (central zone)

5.9.5 RECREATIONAL FISHING

Recreational fishing along the Gippsland coast typically targets snapper, King George whiting, flathead, bream, sharks, tuna, calamari, and Australian salmon.

Recreational fishing and boating is largely confined to the Gippsland Lakes and nearshore coastal waters. As Bass Strait is relatively shallow, the water currents through the Bass Strait can create unpredictable seas, reducing the numbers of recreational boats from venturing long distances into the Bass Strait from shore. VRFish has stated that small boats are likely to fish around the nearshore reef areas, while larger game fishing boats are likely to fish further out to sea and use nearby ports and boat ramps for launching.

There are no boat ramps adjacent to the activity area, though stakeholder consultation indicates that recreational fishers often carry small 'tinnies' (aluminium-hulled boats) over the sand dunes in order to access the beach, with the sand dune clearing for the ROS at Delray Beach providing one of the more suitable access points.

As noted, the WSH-3 PSZ prohibits unauthorised vessels from entering the safety zone by law and as such recreational fishing should not occur within the activity area (noting that recreational fishers are unlikely to be aware of the PSZ).

5.9.6 TOURISM

Marine-based tourism and recreation in the Bass Strait is primarily associated with recreational fishing and boating (see previous section).

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

5.9.7 PETROLEUM INFRASTRUCTURE, EXPLORATION AND PRODUCTION

In 2018, Victoria accounted for 17% of Australia's petroleum liquids production (APPEA, 2017). However, production has been trending down since it peaked in 2000. Victoria accounted for 10% of Australia's conventional gas production in 2018, most of which is from the Gippsland Basin (APPEA, 2019). Both oil and gas production from the Gippsland Basin are in decline.

The Gippsland Basin has 24 offshore production licenses, 5 exploration permits and 5 retention leases (NOPTA, 2019) and a total of 22 offshore petroleum production platforms have been installed in Bass Strait since first production was established in the 1960s (excluding subsea production wells) (Figure 5.22).

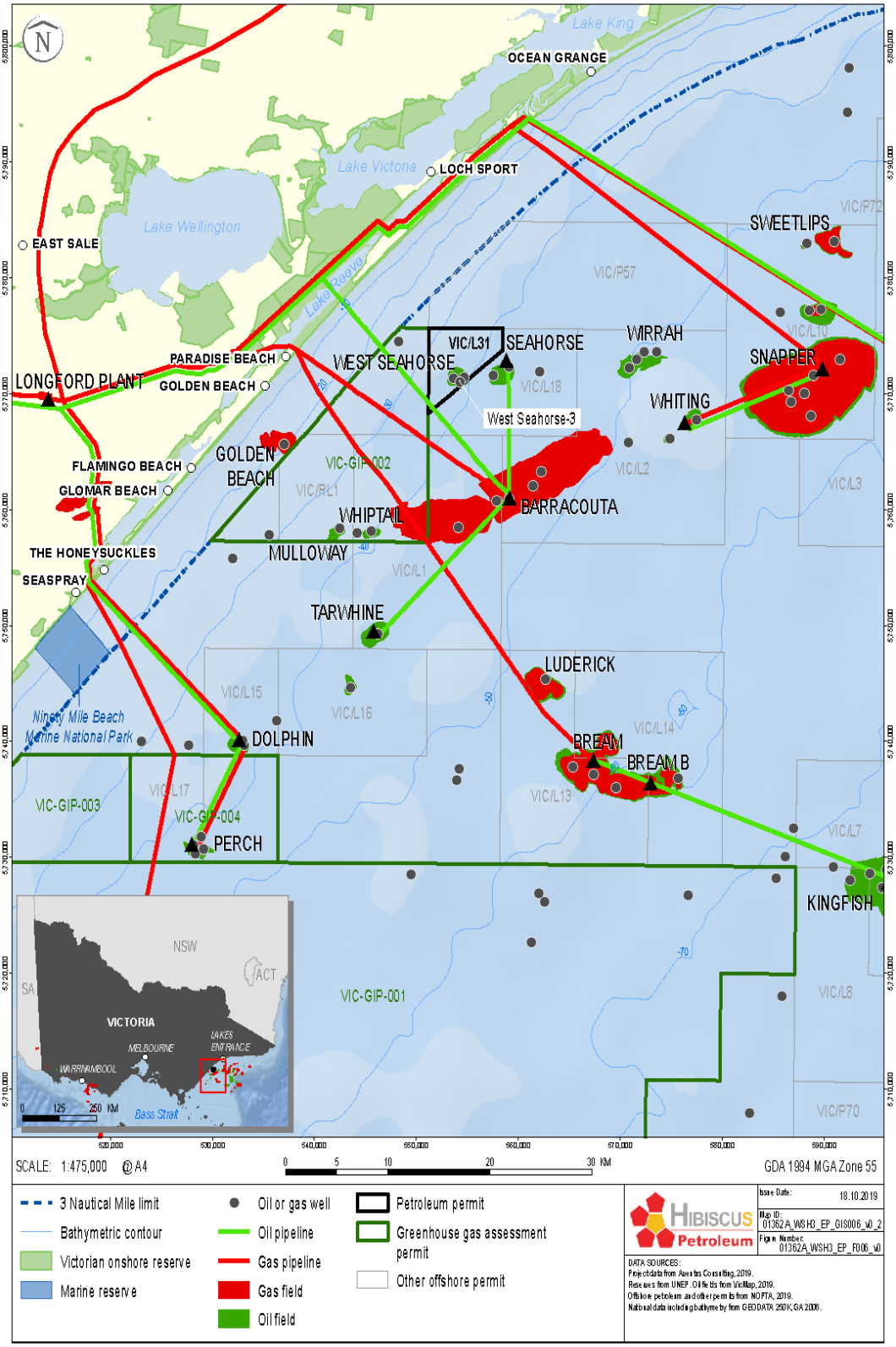


Figure 5.22. Petroleum infrastructure and development in the Gippsland offshore region

The TasGas pipeline, a pipeline that provides gas from Victoria to Tasmania, is located 26 km southwest of the activity area (it makes landfall just east of Seaspray, on the eastern edge of the Gippsland Lakes).

Petroleum production from the offshore Gippsland Basin is centred on production from the EARPL oil and gas fields, operator for the Gippsland Basin Joint Venture. EARPL produces oil and gas from 23 platforms and subsea developments, hundreds of wells and some 600 km of associated subsea pipelines, tied back to the Longford Gas Plant and Long Island Point. Production first commenced in 1969 from the Barracouta field. The latest fields to come into production were the Kipper-Tuna-Turrum oil and gas fields in 2013.

5.9.8 COMMERICAL SHIPPING

The South-east Marine Region (which includes Bass Strait) is one of the busiest shipping regions in Australia (DoE, 2015a). Shipping consists of international and coastal cargo trade, passenger services and cargo and vehicular ferry services across Bass Strait (DoE, 2015a). Lakes Entrance is an important fishing port for the region (DoE, 2015a).

The activity area is located entirely within the Bass Strait 'Area to be Avoided' (ATBA) (Figure 5.23). This area is a routing measure that ships in excess of 200 gross tonnes should avoid due to the high concentration of offshore petroleum infrastructure (oil and gas platforms and pipelines, as described in Section 5.6.6) that can provide a navigational hazard. The total area of the ATBA is 5,650 km^2. Operators of vessels greater than 200 gross tonnes must apply to NOPSEMA to enter and be present within the ATBA (NOPSEMA, 2016).

AMSA has indicated that high traffic volume shipping areas are located south of the activity area (see Figure 5.23). AMSA has provided historic AIS traffic plot based off data collected between January 2016 and January 2017 (excludes small domestic commercial vessels such as fishing trawlers and coastal craft).

It indicates very light shipping activity occurs through the activity area, with higher traffic volume shipping areas located to the south of the activity area and immediately south of the ATBA. AMSA advises that interactions between the source vessel and large commercial ships is expected to be minimal due to the ATBA.

To the immediate seaward side of the ATBA exist two traffic separation schemes, implemented by AMSA to enhance safety of navigation around the ATBA by separating shipping into one-direction lanes for vessels heading northeast and those heading southwest.

One separation area is located south of Wilson's Promontory, and the other south of the Kingfisher B platform (DIBP, 2017), 66 km southeast of the activity area.

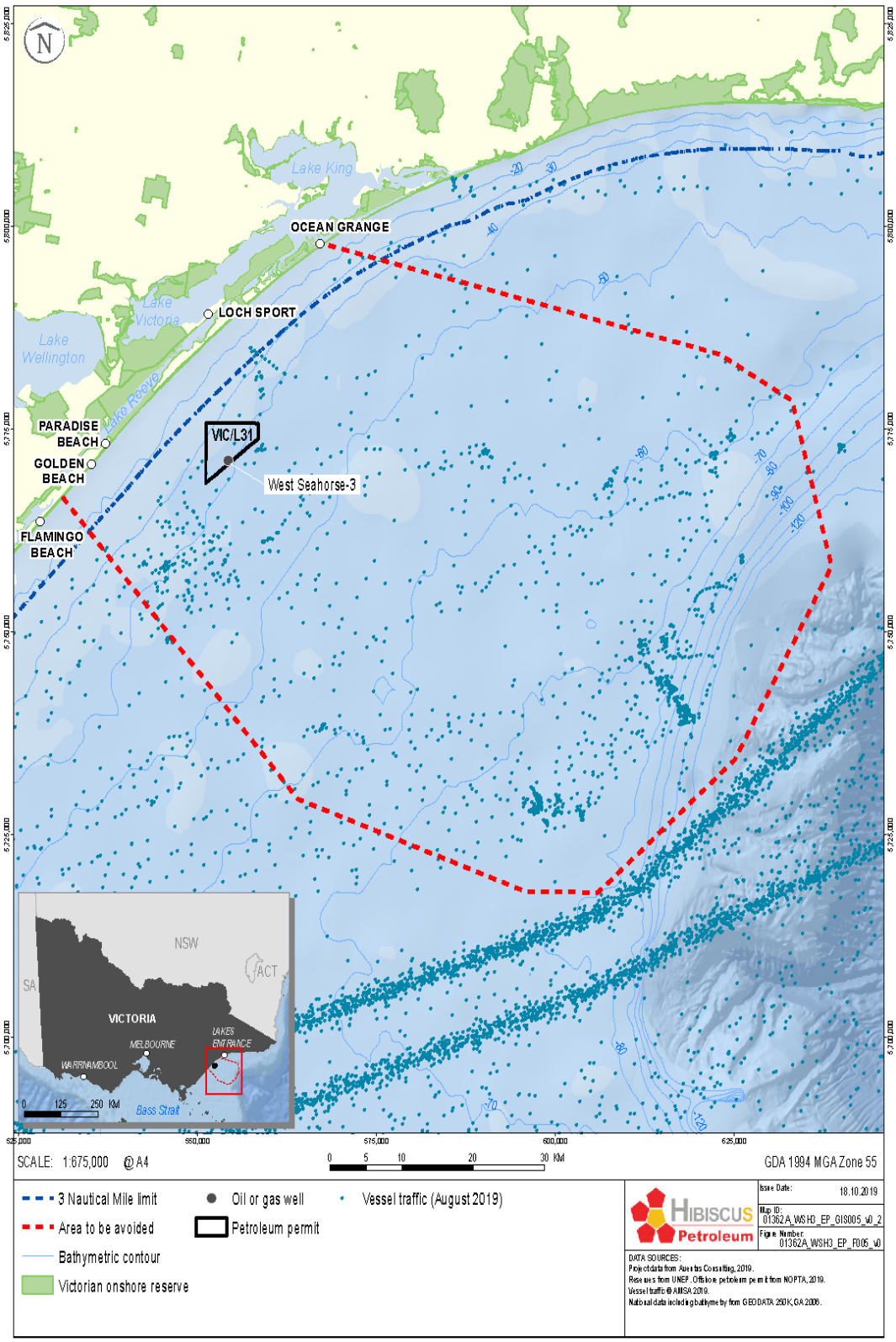
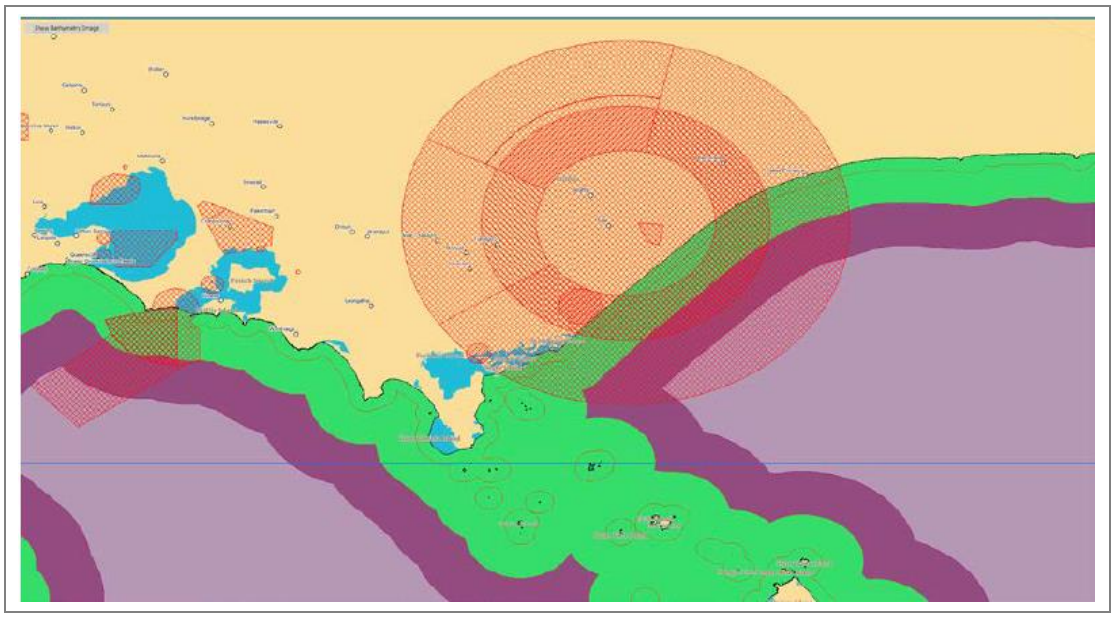


Figure 5.23. Commercial shipping traffic adjacent to the VIC/L31 permit

5.9.9 DEFENCE ACTIVITIES

Defence activities that may take place in the region include transit of naval vessels, training exercises, hydrographic survey, surveillance and enforcement, and search and rescue. There are no defence training areas within the EMBA (DoE, 2015a). The activity area is located beneath Defence Restricted Airspace R258D (Figure 5.24), with no records of unexploded ordinance in or around the activity area.

A geotechnical and geophysical survey was conducted in 2007 prior to the drilling of WSH-3 and Wardie-1 and the data used to characterise the seabed around the well site as relatively flat and featureless on a sandy seabed with localised depressions in water depths of approximately 38 – 40 m (Fugro, 2007). At the time of the survey in 2007, there was no debris or unexploded ordinates evident at the WSH-3 location.



Source: AMSIS (2017).

Figure 5.24. Restricted airspace over the activity area

6 IMPACT AND RISK ASSESSMENT METHODOLOGY

This chapter describes the environmental impact and risk assessment methodology employed in this EP in accordance with Regulation 21(5) of the OPGGS(E). CHPL, as a wholly owned subsidiary of HPB, uses the HPB HSEQ Procedure *Hazard Identification and Risk Management* (HPB-HSEQ-GEN-PCD01) for undertaking risk assessments; this methodology is explained in detail here.

HPB's risk management process aligns with the principles of ISO 31000:2009 *Risk Management – Principles and Guidelines*. This process is consistent with the steps outlined below and is illustrated visually in Figure 6.1. Each step in this risk assessment process is described in this chapter.

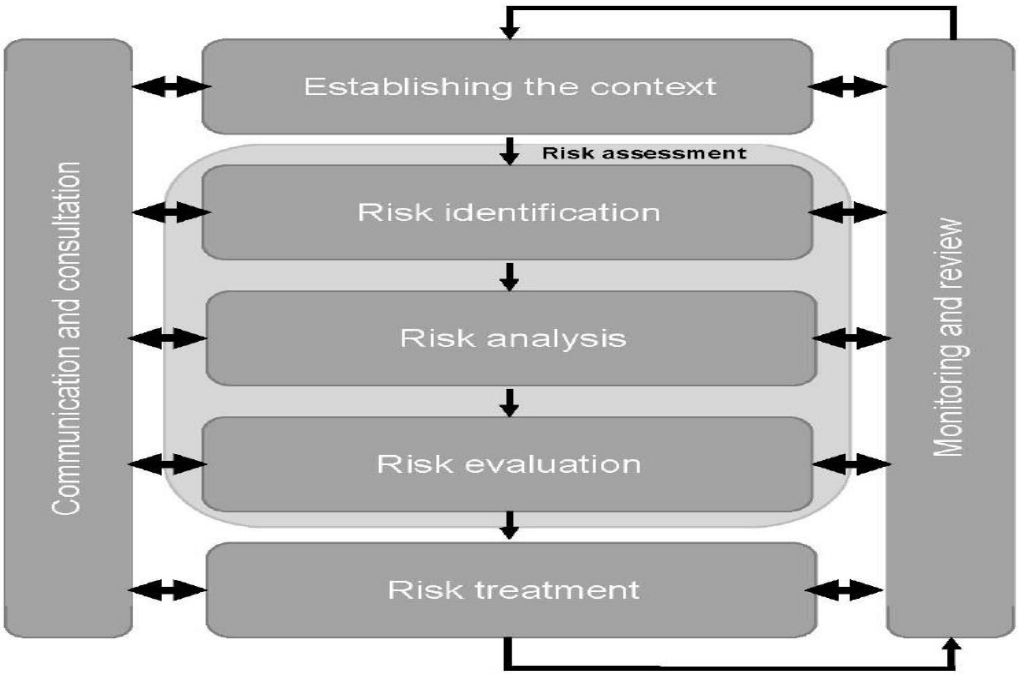


Figure 6.1. ISO 31000 Risk Management Process

6.1 COMMUNICATE AND CONSULT

In accordance with Regulation 22(15) of the OPGGS(E) and Regulations 24 and 25 of the OPGGS Regulations, CHPL has consulted with relevant persons (stakeholders) in the development of this EP to determine whether their functions, activities and interests are impacted by, or may impact on the decommissioning activities for the WSH-3 well or removal of the Wardie-1 conductor. The relevant persons consultation process is described in Chapter 4.

6.2 ESTABLISH THE CONTEXT

The first step in the risk assessment process is to establish the context. This involves:

- Understanding the regulatory framework in which the activity takes place (described in the 'Legislation and Guidelines' in Section 3);
- Defining the activities that will cause impacts and create risks (outlined in the 'Activity Description' in Section 2);
- Understanding the concerns of stakeholders and incorporating those concerns into the design of the activity where appropriate (outlined in Section 4, 'Stakeholder Consultation'); and

- Describing the environment in which the activity takes place (the 'Existing Environment' is described in Section 5).

Once the context has been established, the hazards of the activity can be identified, along with the impacts and risks of these hazards. This process is described in following sections.

6.3 IDENTIFY THE RISKS

The HBP HSEQ Procedure describes the following steps when identifying hazards:

- Identify the activities and the potential impacts associated with them;
- Identify the sensitive environmental resources at risk within and adjacent to the operational area;
- Identify the environmental consequences of each potential impact, corresponding to the maximum reasonable impact;
- Identify the likelihood (probability) of occurrence of each potential environmental impact (i.e., the probability of the event occurring);
- Identify applicable control measures; and
- Assign a level of risk to each potential environmental impact using a risk matrix.

In accordance with this framework, all risks must be reduced to a level that is considered to be ALARP (see Section 6.5.1).

Risk identification and assessment was undertaken to examine the environmental hazards and their associated impacts and risks arising from the WSH-3 activity, which are assessed throughout Section 7.

6.3.1 DEFINITIONS

For context, Table 6.1 provides the definitions of impacts and risk according to the OPGGS(E) and OPGGS Regulations and international risk management standards.

The OPGGS(E) Regulations 21(5)(6) require that the EP detail and evaluate the environmental impacts and risks for an activity, including control measures used to reduce the impacts and risks of the activity to ALARP and an acceptable level. This must include impacts and risks arising directly or indirectly from all activity operations (i.e., planned events) or potential emergency or incident conditions (i.e., incident events).

NOPSEMA distinguishes between environmental impacts and risks. Environmental impact is defined in Table 6.1.

Table 6.1. Definitions of impact and risk

Source	Impact	Risk
OPGGS(E)	Any change to the environment, whether adverse or beneficial, that wholly or partially results from an activity.	Not defined.
ISO AS/NZS31000: 2018 (Risk management – Principles and guidelines)	Not defined.	The effect of uncertainty on objectives.

ISO AS/NZS 14001: 2016 (Environmental management systems – Requirements with guidance for use)	Not defined.	The effect of uncertainty on objectives.
ISO AS/NZS 4360: 2004 (Risk management)	Not defined.	The chance of something happening that will have an impact on objectives.
HB203: 2012 (Managing environment-related risk)	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.	The effect of uncertainty on objectives. The level of risk can be expressed in terms of a combination of the consequences and the likelihoods of those consequences occurring.

For this activity, CHPL has determined that impacts and risks are defined as follows:

- Impacts result from planned events – there will be consequences (known or unknown) associated with the event occurring. Impacts are an inherent part of the activity. For example, there is displacement of third-party marine users due to the presence of the PSZ.
    - For impacts, only a consequence is assigned in this EP (likelihood is irrelevant given that the event does occur) (as defined in Table 6.2).
- Risks result from unplanned events – there may be consequences if an unplanned event occurs. Risks are not an inherent part of the activity. For example, if the PSZ is ignored/breached, fishing equipment used in trawling activities may be damaged by the wellhead, but this is not a certainty. The risk of this event is determined by multiplying the consequence of the impact by the likelihood of this event (Table 6.3) happening.
    - For risks, the consequence and likelihood are combined to determine the risk rating (Table 6.4).

6.4 ANALYSE THE RISKS

After the impacts and risks have been identified, environmental performance outcomes (EPO) (or objectives) are developed to provide a measurable level of performance for each environmental hazard to ensure that the environmental impacts and risks are managed to be ALARP and acceptable. EPO are assigned in Chapter 7 for the impacts and risks relevant to this activity.

6.5 EVALUATE THE RISKS

The purpose of impact and risk evaluation (herein referred to simply as risk assessment) is to assist in making decisions, based on the outcomes of analysis, about the sorts of controls required to reduce an impact or risk to ALARP. Planned and unplanned events are subject to risk assessment in the same manner.

CHPL's risk assessment process is described below and was followed in the risk identification and assessment session described in Section 6.3:

- Identify and describe the risks (see Chapter 7);

- Determine the maximum credible consequence (to the natural environment and community/social/cultural heritage) arising from the impact or risk without introducing additional controls. This determination is provided in the risk assessments in Chapter 7;
- Adopt controls for each impact or risk;
- Undertake an assessment of the consequence of the impact or risk, corresponding to the maximum credible impact across the consequence categories (see Table 6.2) considering the controls identified and their effectiveness;
- Identify the likelihood of occurrence of those consequences ('remote' through to 'very likely'), considering the controls identified and their effectiveness, as outlined in Table 6.3; and
- For risks, multiply the consequence and likelihood to determine the overall risk ranking, outlined in Table 6.4 (with Table 6.5 describing the risk bands).

Table 6.2. HPB definition of consequence

Risk Focus	Negligible	Minor	Moderate	Major	Severe	Catastrophic
Financial	Less than $1M	Loss from $1-$2M	Loss from $2 to $10M	Loss from $10M to $20M	Loss from $20M to $50M	Loss >$50M
Social	Minor, temporary impact to a community or areas/items of cultural significance	Minor, short-term (<5 years) impact to a community or areas/items of cultural significance	Moderate medium term (5 to 10 years) impact to a community or highly valued areas/assets/items of cultural significance	Major long-term (10 years) impact to a community or social infrastructure or highly valued areas/items of cultural significance	Serious, long-term (>10 years) impact to the community, social infrastructure or highly valued areas/items of significance	Permanent long-term impact to a community or social infrastructure or highly valued areas/items of international cultural significance
Reputat-ional	No impact	Short-term local concern	National bad mention short-term concern, scrutiny of asset	Significant impact, national media coverage, operations restricted or curtailed	Persistent national concern, operations severely restricted	International media coverage, Company at stake
Environ-mental	Slight and temporary <1 year – localised effect on ecosystem, species or habitat	Minor short-term (1 to 2 years) impacts but not affecting ecosystem or function	Moderate, medium term (2 to 5 years) impacts but not affecting ecosystem function	Major long term (5 to 10 years) impact on ecosystems, species or habitat	Serious long term (> 10 years) impact on highly valued ecosystems, species or habitat	Permanent impact on highly valued ecosystems or habitat

Risk Focus	Negligible	Minor	Moderate	Major	Severe	Catastrophic
Health and Safety	First aid treatment	Medical treatment	Alternative duties/restricted work	Lost time injury – partial disability	Single fatality – permanent disability	Multiple fatalities

Table 6.3. HPB definition of likelihood

Likelihood	Definition
Very likely	Expected to occur in most circumstances (multiple occurrences in a year)
Likely	Could occur in most circumstances (happens at least once a year)
Possible	Has occurred previously in HPB or on HPB site or project
Unlikely	Has occurred many times in industry but not within HPB
Highly unlikely	Has occurred once or twice in industry
Remote	Theoretically possible but not occurred yet in industry

Table 6.4. HPB risk assessment matrix

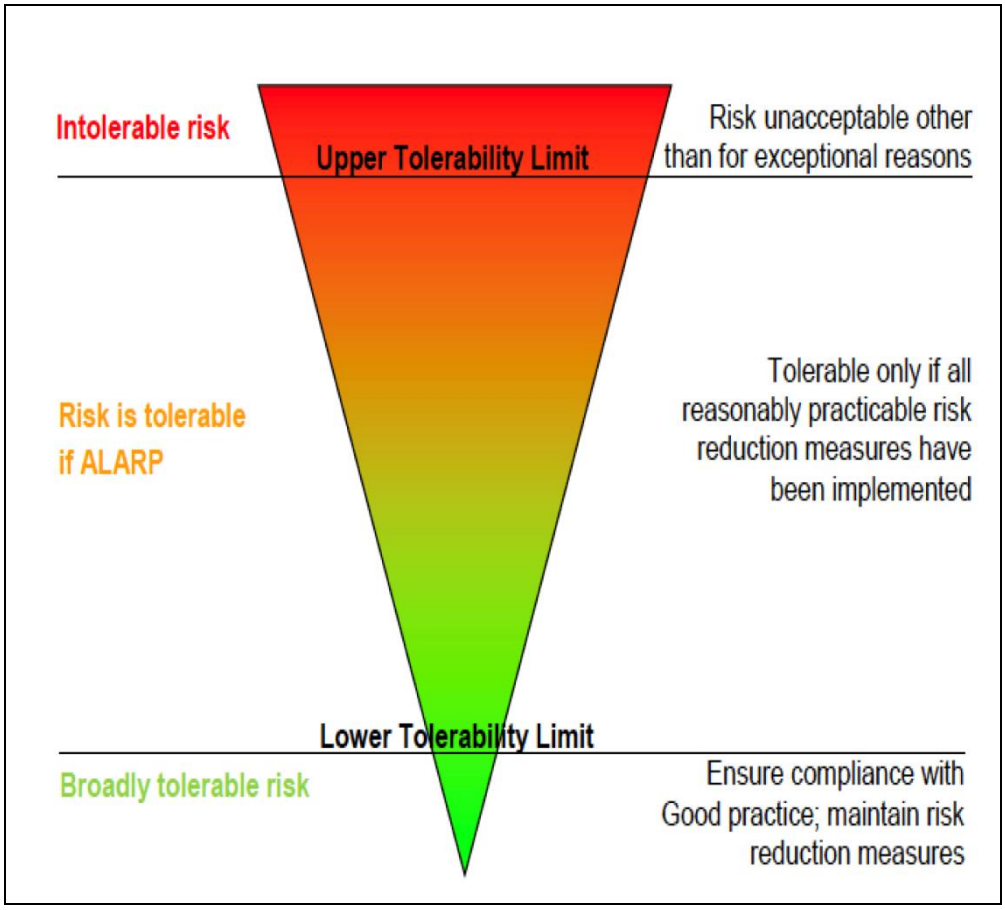
		Consequence					
		Negligible	**Minor**	**Moderate**	**Major**	**Severe**	**Catastrophic**
Likelihood	**Very likely**	Medium	High	Very high	Very high	Severe	Severe
	Likely	Medium	High	High	Very high	Very high	Severe
	Possible	Low	Medium	High	High	Very high	Very high
	Unlikely	Low	Medium	Medium	High	High	Very high
	Highly unlikely	Low	Low	Medium	Medium	High	High
	Remote	Low	Low	Low	Low	Medium	Medium

Table 6.5. HPB risk bands

SEVERE	Unacceptable risk. Immediate action required; operations to cease immediately until activity has been re-planned and risk has been reduced to ALARP and HPB has approved. Short-term reduction to reduce the risk level to be put in place immediately, individual removed from the exposure. Identify additional or alternative permanent risk reduction measure to be implemented as a matter of high priority.
VERY HIGH	Take action to reduce residual risk to lower level by a Risk Treatment Plan to be developed immediately and managed by HPB Senior Management.
HIGH	Risk reduction measures to be implemented as a matter of urgency. HPB Operations Management must approve activities in this band.
MEDIUM	Risk reduction measures to be included in this continuous improvement process. Site supervisors may approve activities in this band.
LOW	Broadly acceptable. Activity can proceed under normal site supervision with standard task risk assessment processes and site operating procedures.

6.5.1 DEMONSTRATION OF ALARP

The ALARP principle states that it must be possible to demonstrate that the cost involved in reducing the risk further would be grossly disproportionate to the benefit gained. The ALARP principle arises from the fact that infinite time, effort and money could be spent attempting to reduce an impact or risk to zero. This concept is shown diagrammatically in Figure 6.2.



Source: CER (2015).

Figure 6.2. The ALARP Principle

CHPL's approach to demonstrating ALARP includes:

- Systematically identify and assess all potential environmental impacts and risks associated with the activity;
- Where relevant, apply industry 'good practice' controls to manage impacts and risks;
- Assess the effectiveness of the controls in place and determine whether the controls are adequate according to the 'hierarchy of control' principle; and
- For higher order impacts and risks, implement further controls if feasible and reasonably practicable to do so.

NOPSEMA's *Environment Plan Decision Making Guideline* (N04750-GL1721, A524696, December 2022) states that in order to demonstrate ALARP, a titleholder must be able to implement all available control measures where the cost is not grossly disproportionate to the environmental benefit gained from implementing the control measure.

There is no universally accepted guidance to applying the ALARP principle to environmental assessments. For this EP, the guidance provided in NOPSEMA's *Environment Plan Decision Making Guideline* has been applied and augmented where deemed necessary.

The level of ALARP assessment is dependent upon the:

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

An iterative risk evaluation process is employed until such time as any further reduction in the residual risk ranking is not reasonably practicable to implement. At this point, the impact or risk is reduced to ALARP. The determination of ALARP is outlined in Table 6.6.

Table 6.6. Alignment of ALARP with impacts (using consequence ranking) and risks (using risk ranking)

Consequence ranking	Negligible	Minor	Moderate	Major	Severe/Catastrophic
ALARP level – planned event	Broadly acceptable		Tolerable if ALARP	Intolerable	
Residual impact category	Lower order			Higher order	
Risk ranking	Low	Medium	High	Very high	Severe
ALARP level - unplanned event	Broadly acceptable		Tolerable if ALARP	Intolerable	
Residual risk category	Lower order risks			Higher order risk	

Hierarchy of Controls

CHPL demonstrates ALARP, in part, by adopting the 'Hierarchy of Controls' philosophy (Figure 6.3). The Hierarchy of Controls is a system used across hazardous industries to minimise or eliminate exposure to hazards. The hierarchy of controls is, in order of effectiveness:

- Elimination;
- Substitution;
- Engineering controls;
- Administrative controls; and
- Personal protective equipment (PPE) – this has not been included here as it is specific to the assessment of safety risks rather than environmental management.

Although commonly used in the evaluation of occupational health and safety hazard control, the Hierarchy of Controls philosophy is also a useful framework to evaluate potential environmental controls to ensure reasonable and practicable solutions have not been overlooked.

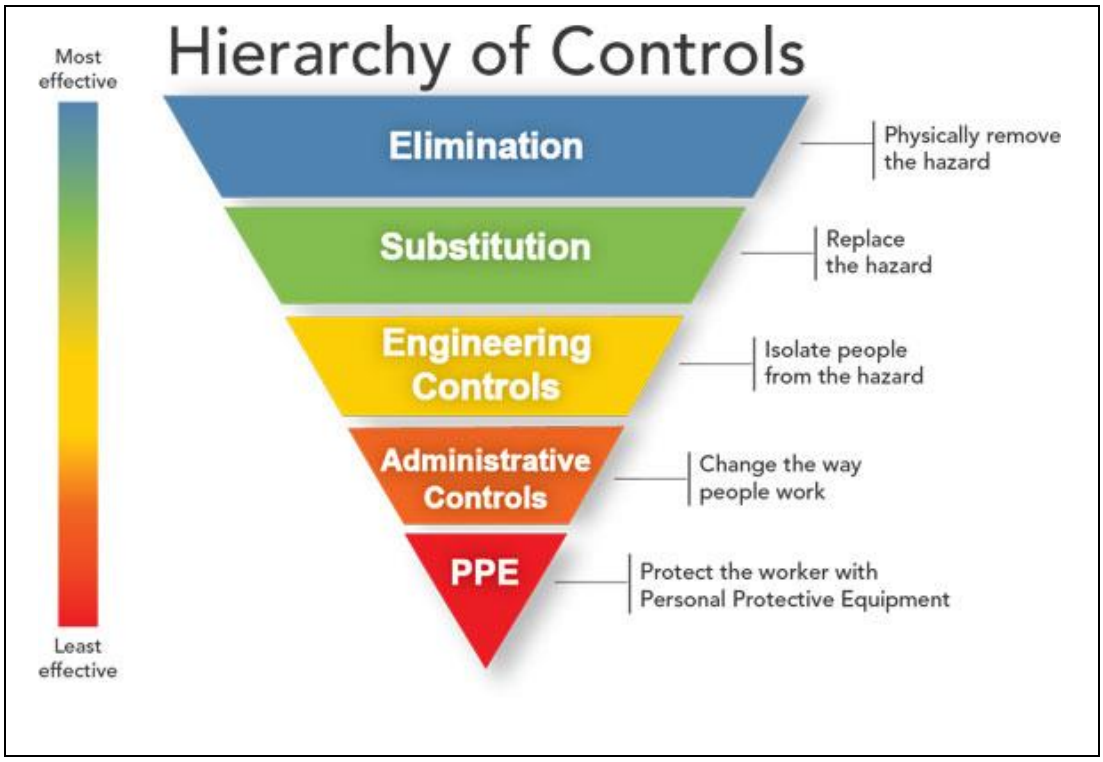


Figure 6.3. The Hierarchy of Controls

When deciding on whether to implement the proposed impact/risk reduction measure, CHPL considers the following issues:

- Does it provide a clear or measurable reduction in risk?
- Is it technically feasible and can it be implemented?
- Will it be supported and utilised by site personnel?
- Is it consistent with national or industry standards and practices?
- Does it introduce additional risk in other operational areas (e.g., will the implementation of an environmental risk reduction measure have an adverse impact on safety)?
- Will the change be effective, taking into account the:
    - Current level of risk (i.e., with the existing controls);
    - Amount of additional risk reduction that the control will deliver;
    - Level of confidence that the risk reduction impact will be achieved; and
    - Resources, schedule and cost required to implement the control.

Reducing impacts and risks to ALARP is an ongoing process and new risk reduction measures may be identified at any time, including during operations. CHPL actively encourages recording and review of observations through the HSE management system (HSEMS) in the incident management system (MyOSH). Incidents and lessons learned within HPB and from the wider industry are reviewed and utilised to identify hazards and controls.

6.5.2 RESIDUAL IMPACT AND RISK LEVELS

The following section details the guidance provided in NOPSEMA's *Environment Plan Decision Making Guideline*.

Lower-order Environmental Impacts and Risks

NOPSEMA defines lower-order environmental impacts and risks as those where the environment or receptor is not formally managed, less vulnerable, widely distributed, not protected and/or threatened and there is confidence in the effectiveness of adopted control measures.

Impacts and risks are considered to be lower-order and ALARP when, using the HPB risk matrix (see Table 6.4), the impact consequence is rated as 'negligible', 'minor' or 'moderate' or risks are rated as 'low', 'medium' or 'high' (see also Table 6.6). In these cases, applying 'good industry practice' (see Uncertainty of Impacts and Risks) is sufficient to manage the risk.

Higher-order Environmental Impacts and Risks

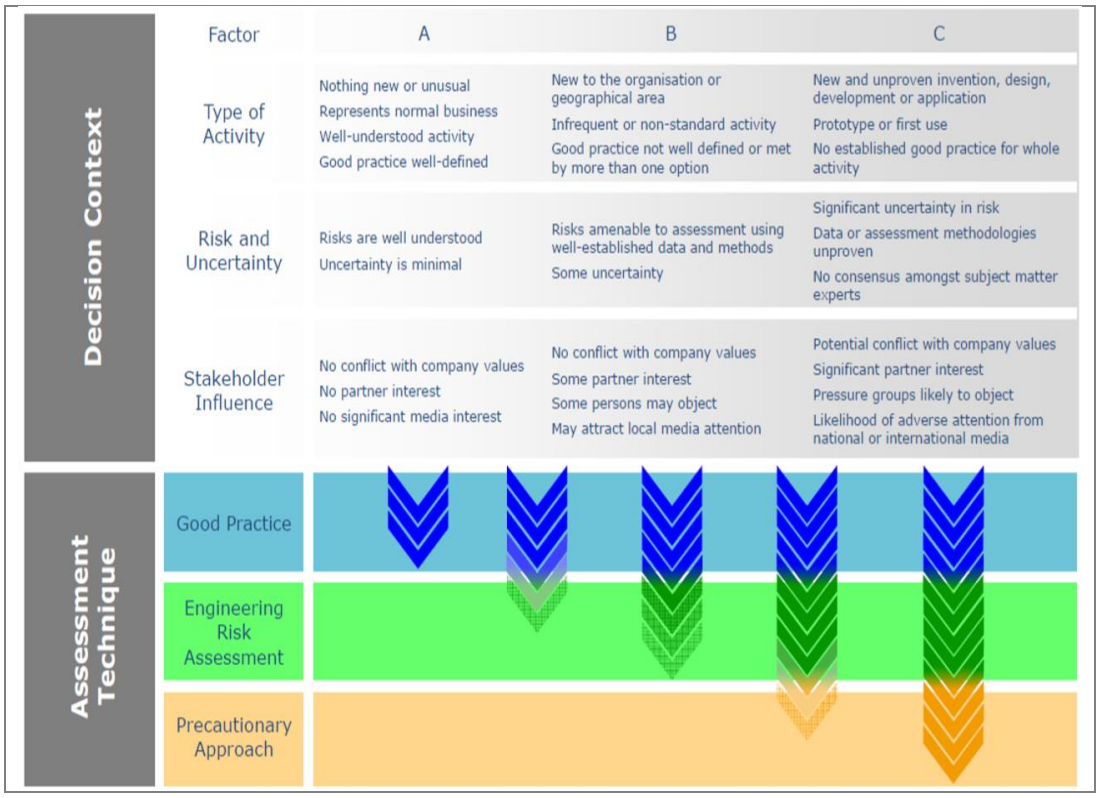
NOPSEMA defines higher-order environmental impacts and risks as those that are not lower order risks or impacts (i.e., where the environment or receptor is formally managed, vulnerable, restricted in distribution, protected or threatened and there is little confidence in the effectiveness of adopted control measures).

Impacts and risks are considered to be higher-order when, using the HPB risk matrix (see Table 6.4), the impact consequence is rated as 'major', 'severe' or 'catastrophic', or when the risk is rated as 'very high' or 'severe' (see also Table 6.3). In these cases, further controls must be considered.

6.5.3 UNCERTAINTY OF IMPACTS AND RISKS

Based upon the level of uncertainty associated with the impact or risk, the following framework, adapted by NOPSEMA (2015) from the *Guidance on Risk Related Decision Making* (Oil & Gas UK, 2014) (Figure 6.4) provides the decision-making framework to establish ALARP.

This framework provides appropriate tools, commensurate to the level of uncertainty or novelty associated with the impact or risk (referred to as the Decision Type A, B or C) and is detailed further in Table 6.7. The decision type is selected based on an informed decision around the uncertainty of the risk. Decision types and methodologies to establish ALARP are outlined in Figure 6.4.



Source: CER (2015).

Figure 6.4. Impact and risk 'uncertainty' decision-making framework

Table 6.7. Impact and risk 'uncertainty' decision types and tools

Decision type	Description	Decision-making tools
A	Activity Nothing new or unusual. Represents normal business. Well-understood activity. Good practice is well defined. Risk & uncertainty Risks are well understood. Uncertainty is minimal. Stakeholder influence No conflict with company values. No partner interest. No significant media interest.	Good industry practice Identifies the requirements of legislation, codes and standards that are to be complied with for the activity. Applies the 'Hierarchy of Controls' philosophy, which is a system used in the industry to identify effective controls to minimise or eliminate exposure to impacts or risks. Identifies further engineering control standards and guidelines that may be applied over and above that required to meet the legislation, codes and standards.
B	Activity New to the organisation or geographical area.	*In addition to decision type A:* Engineering risk-based tools Engineering risk-based tools to assess the results of probabilistic analyses

Decision type	Description	Decision-making tools
	Infrequent or non-standard activity. Good practice not well defined. <u>Risk & uncertainty</u> Risks amenable to assessment using well-established data and methods. Some uncertainty. <u>Stakeholder influence</u> No conflict with company values. Some partner interest. Some persons may object. May attract local media attention.	such as modelling, quantitative risk assessment and/or cost benefit analysis to support the selection of control measures identified during the risk assessment process.
C	<u>Activity</u> New and unproven invention, design, development or application. Prototype or first use. No established good practice for whole activity. <u>Risk & uncertainty</u> Significant uncertainty in risk. Data or assessment methodologies unproven. No consensus amongst subject matter experts. <u>Stakeholder influence</u> Potential conflict with company values. Significant partner interest. Pressure groups likely to object. Likely to attract adverse attention from national or international media.	*In addition to decision type A and B:* <u>Precautionary Principle</u> Application of the Precautionary Principle is to be applied when good industry practice and engineering risk-based tools fail to address uncertainties.

The decision-making tools outlined in Table 6.7 are explained further below.

Good Industry Practice

In the absence of an Australian definition, the OGUK (2014) and the Irish Commission for Energy Regulation (CER) (2015) define 'Good Practice' as:

> *'The recognised risk management practices and measures that are used by competent organisations to manage well-understood hazards arising from their activities'.*

NOPSEMA has not endorsed any 'approved codes of practice' or standards to give them a legal status in terms of good practice. Good practice is taken to refer to any well-defined and established standard

or codes of practice adopted by an industrial/occupational sector, including 'learnings' from incidents that may yet to be incorporated into standards.

Good practice can also be used as the generic term for those standards for controlling risk that have been judged and recognised as satisfying the law when applied to a particular relevant case in an appropriate manner. Sources of good practice, adapted from CER (2015) include:

- Commonwealth legislation and regulations (outlined in Section 3.2);
- Relevant government policies (outlined in Section 3.3);
- Relevant government guidance (outlined in Section 3.3);
- Relevant industry standards (outlined in Section 3.4 and Section 3.5); and
- Relevant international conventions (outlined in Section 3.4).

Good practice also requires that hazard management is considered in a hierarchy, with the concept being that it is inherently safer to eliminate a hazard than to reduce its frequency or manage its consequences (CER, 2015). This being the case, the 'Hierarchy of Controls' philosophy is applied to reduce the risks associated with hazards (described in Section 6.5.1).

Engineering Risk Assessment

All impacts and risks that require assessment beyond that of good practice (i.e., decision type A) are subject to an engineering risk assessment.

Engineering risk-based tools can include, but are not limited to, engineering analysis (e.g., structural, fatigue, mooring, process simulation) and consequence modelling (e.g., ship collision, dropped object) CER (2015). A cost-benefit analysis to support the selection of control measures identified during the risk assessment process may also be undertaken.

Precautionary Principle

All impacts and risks that do meet decision type A or type B and require assessment beyond that of good practice and engineering risk assessment are subject to the 'Precautionary Principle'. CER (2015) states that if the assessment, taking account of all available engineering and scientific evidence, is insufficient, inconclusive or uncertain, then the precautionary principle should be adopted in the hazard management process. While there is no globally recognised definition of the Precautionary Principle, it is generally accepted to mean:

> *Uncertain analysis is replaced by conservative assumptions which will increase the likelihood of a risk reduction measure being implemented.*

The degree to which this principle is adopted should be commensurate with the level of uncertainty in the assessment and the level of danger (hazard consequences) believed to be possible.

Under the precautionary principle, environmental considerations are expected to take precedence over economic considerations, meaning that an environmental control measure is more likely to be implemented. In this decision context, the decision could have significant economic consequences to an organisation.

6.5.4 DEMONSTRATION OF ACCEPTABILITY

Regulation 21(5)(c) of the OPGGS(E) require the EP to demonstrate that environmental impacts and risks are acceptable.

NOPSEMA's *Environment Plan Decision Making Guideline* states that stakeholder consultation plays a large part in establishing the context for defining an acceptable level of environmental impact or risk may be.

CHPL considers a range of factors to demonstrate the acceptability of the environmental impacts and risks associated with its activities. This evaluation works at several levels, as outlined in Table 6.8. The criteria for demonstrating acceptability were developed based on CHPL's interpretation of NOPSEMA's Guidance Note for *EP Content Requirements* (N04750-GN1344, Rev 0, February 2014 [noting that this has since been superseded]) and NOPSEMA's *Environment Plan Decision Making Guideline*.

Table 6.8. Acceptability criteria

Test	Question	Acceptability demonstration
Internal context		
Policy compliance	Is the proposed management of the hazard aligned with HPB's Environmental Policy?	The impact or risk must be compliant with the objectives of the company policies.
Management System Compliance	Is the proposed management of the hazard aligned with the HPB MSS?	Where specific HPB procedures, guidelines, expectations are in place for management of the impact or risk in question, acceptance is demonstrated.
External context		
Stakeholder engagement	Have stakeholders raised any concerns about activity impacts or risks? If so, are measures in place to manage those concerns?	Merits of claims or objections raised by stakeholders must have been adequately assessed and additional controls adopted where appropriate.
Legislation, industry standard and best practice		
Legislative context	Do the management controls meet the expectations of existing Commonwealth legislation?	The proposed management controls align with legislative requirements.
Industry practice	Do the management controls align with industry practice?	The proposed management controls align with relevant industry practices.
Environmental context	Are the management controls aligned with the nature of the receiving environment (e.g., do management controls align with threatened species recovery plans)?	The proposed management controls do not contravene management actions outlined in government plans and are commensurate with the nature and scale of the activity.
Ecologically sustainable development (ESD) Principles*	Are the management controls aligned with the principles of ESD?	The EIA presented throughout Chapter 7 is consistent with the principles of ESD.

* See Table 6.9 for further information.

6.5.5 PRINCIPLES OF ECOLOGICALLY SUSTAINABLE DEVELOPMENT

Based on Australia's National Strategy for Ecologically Sustainable Development (Council of Australian Governments, 1992), Section 3A of the EPBC Act defines ESD as:

> *Using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained and the total quality of life, now and in the future, can be increased.*

Table 6.9 outlines the principles of ESD as defined under the EPBC Act and describes how this EP aligns with these principles.

Table 6.9. Principles of Ecologically Sustainable Development

Principle		EP Demonstration
A	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.
B	If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.	Serious or irreversible environmental damage resulting from CHPL operations has been eliminated through the activity design (see Chapter 2). None of the residual impacts are rated higher than 'negligible' and none of the residual risks are rated higher than 'low.' Scientific certainty has been maximised by employing an activity area as a risk assessment boundary.
C	The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.	The EP assessment methodology ensures that risks from the activity are ALARP and acceptable.
D	The conservation of biodiversity and ecological integrity should be a fundamental consideration in decision making.	This principal is considered for each hazard in the adoption of environmental controls (i.e., EPO and EPS) that aim to minimise environmental harm. There is a strong focus in this EP on conserving biodiversity and ecological integrity by understanding the marine environment (Chapter 5) and implementing controls to minimise impacts and risks (Chapter 7).
E	Improved valuation, pricing and incentive mechanisms should be promoted.	This principle is not relevant to this activity.

6.6 TREAT THE RISKS

The impacts and risks associated with the activity are assessed in Section 7, together with their control measures (i.e., measures to prevent, minimise and mitigate impacts and risks).

6.7 MONITOR AND REVIEW

Monitoring and review activities are described in detail in the Implementation Strategy (Section 8).

7 ENVIRONMENTAL IMPACT AND RISK ASSESSMENT

This chapter presents the EIA and ERA for the environmental impacts and risks identified for the activity using the methodology described in Section 6 as required under Regulations 21(5) of the OPGGS(E).

This chapter also presents the environmental performance outcomes (EPO), environmental performance standards (EPS) and measurement criteria required to manage the identified impacts and risks.

The following definitions are used in this section, as defined in Regulation 5 of the OPPGS(E):

- EPO – a measurable level of performance required for the management of environmental aspects of an activity to ensure that environmental impacts and risks will be of an acceptable level (i.e., a statement of the environmental objective).
- EPS – a statement of the performance required of a control measure.
- Measurement criteria (not defined in the regulations) – defines the measure by which environmental performance will be measured to determine whether the EPO has been met.

As noted in Section 2.6, WSH-3 is plugged in accordance with international standards and the risk of hydrocarbon release to the surface is the same as a permanently abandoned well (i.e., it is not a credible risk). Wardie-1 is a permanently abandoned well.

It is now intended to decommission WSH-3 and remove the Wardie-1 conductor. Therefore, this EP will assess the impacts and risks of activities associated with a vessel-based decommissioning program. The EIA and ERA also assesses the following:

- Potential impact of underwater sound emissions on marine mammals. (Section 7.4)
- Potential seabed and bethnic habitat disturbance. (included in Section 7.2)
- Discharges to local area. (included in Section 7.1)

7.1 IMPACT: VESSEL BASED DECOMMISSIONING PROGRAM

7.1.1 HAZARD

Decommissioning of the West Seahorse-3 Wellhead and removal of the Wardie-1 conductor will be undertaken during the period of the WOMP Renewal (Revision 4). Positioning a vessel in the area and conducting decommissioning activities will create multiple hazards during the period of the survey. Transiting to and from the area is covered under AMSA and the vessel SOPEP.

7.1.2 KNOWN AND POTENTIAL ENVIRONMENTAL IMPACTS

The known and potential environmental impacts of a vessel based decommissioning program are:

- Spill of Marine Diesel Oil (MDO);
- Discharges to the local area;
- Seabed and benthic habitat disturbance; and
- Underwater sound emissions.

7.1.3 EVALUATION OF ENVIRONMENTAL IMPACTS

There is potential for a MDO spill in the event of vessel tank rupturing in the event of a collision, a mechanical failure, or a refuelling event. The maximum fuel on board can be limited at outset and other mitigating strategies (such as tank lightening, tank transfer, etc.) can be enacted to ensure the environmental impact is restricted to a Level 2 Oil spill (NATPLAN). Modelling as detailed in Section 5 shows localised impact only, minimal shore contact and only minor seabed contact. The Environment Impact from a Level 2 MDO spill as isolated local impacts with natural recovery expected within days, and for Wildlife local Fauna only. Management of such a spill is to be conducted under the West Seahorse Decommissioning Campaign (VIC/RL17) Oil Pollution Emergency Plan (Gippsland Basin) (WSH-CHP-60-RG-RA-0002, Rev 0, 17 Nov 2023).

Collisions with other vessels can be mitigated by hiring a competent captain and crews and notifying all vessels within the area of planned activities. The WSH-3 Petroleum Safety Zone (PSZ) further mitigates risks of collisions.

Mechanical failures will be mitigated by auditing vessel maintenance records and inspection of the vessel and its track record. No re-fuelling activities will be undertaken within the activity area, all such activities will be undertaken in port.

Vessel discharges can be eliminated given the proximity of the vessel to its shore base. All waste items will be removed from the vessel prior to departure from shore, and any new waste generated returned to shore.

Underwater sound emissions will be generated from the vessel and the activities. The potential impacts of the sound emissions include localised and temporary fauna behavioural disturbance. This can be minimised by limiting the time on location and ensuring the vessel specifications meet the National Marine Fisheries Service guidance for non-pulsed sound.

Seabed and bethnic habitat disturbance is considered similar to seabed disturbance as addressed in Section 7.2.

7.1.4 IMPACTS TO MNES

Vessel based Inspection will not have a ‘significant’ impact to any of the applicable MNES, as outlined in the box below.

AMPs	Nationally threatened species	Migratory species
Section 5.5.1	**Section 5.7**	**Section 5.7**
X	X	X
There are AMPs within the EMBA but impact from a Level 2 MDO spill is minimal.	Decommissioning activities will not result in any significant effects to populations of threatened or migratory fauna.	
‘Significant impact’ is defined in DoE (2013) as ‘an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value and quality of the environment, which is impacted, and upon the sensitivity, duration, magnitude and geographic extent of the impacts.’		

'Likely' is defined in DoE (2013) as 'it is not necessary for a significant impact to have a greater than 50% chance of it happening; it is sufficient if a significant impact on the environment is a real or not remote chance or possibility.'

7.1.5 IMPACTS TO OTHER AREAS OF CONSERVATION SIGNIFICANCE

Vessel based decommissioning will not have a 'significant' impact to any other areas of applicable conservation significance, as outlined in the box below.

KEF (Upwelling East of Eden)	State marine parks
Section 5.5.7	**Section 5.5.9**
X	X
These features occur within the activity area, but the impact is limited to that from a Level 2 MDO spill which has been shown to be negligible at their locations	

7.1.6 IMPACT ASSESSMENT

Table 7.1 presents the impact assessment for Vessel based decommissioning.

Table 7.1 Impact assessment for Vessel based decommissioning.

Summary			
Summary of impacts	Localised Spill of MDO (Level 2); Discharges to the local area; Seabed and benthic habitat disturbance; and Underwater sound emissions Displacement of seabed sediments.		
Extent of impact	Localised – MDO spill modelled as and EMBA as shown in Fig 5.1.		
Duration of impact	Short-term (spill dispersion modelled to <72 hrs).		
Level of certainty of impacts	HIGH – The Bass Strait Area to be Avoided was established in acknowledgement of the risk posed by merchant vessels and petroleum infrastructure and smaller vessels.		
Impact decision framework context	A – nothing new or unusual, represents business as usual, well understood activity, good practice is well defined.		
Risk rating (inherent)			
Risk focus	Consequence (financial)	Likelihood	Risk rating
Collision	Minor	Unlikely	Medium
Mechanical Failure	Minor	Unlikely	Medium
Refuelling	Minor	Unlikely	Medium
Environmental Controls and Performance Measurement			
EPO	EPS		Measurement criteria

Prevent third-party vessel entry to the area	The WSH-3 PSZ remains gazetted.	A copy of the WSH-3 PSZ is readily available.
	The location of the WSH-3 well is marked on navigation charts to assist other marine users in identifying the PSZ.	WSH-3 is marked on relevant Bass Strait navigational charts.
Limit possibility of spill from refuelling activity	Limit fuelling activities to portside only.	Fuel volume defined in survey program
Limit potential for collision or MDO spill	Ensure competencies of all crew; Conduct survey during calm sea state; Conduct critical activities during daylight hours; Ensure relevant authorities advised of activity; Restrict volume of fuel carried on board, ensure sufficient fuel for transit each way and contingent delays.	Audit records of contractor selection. Defined survey plan, program and procedures
Limit potential for mechanical failure	Audit and inspection of vessel, maintenance records, and operating history.	Audit records of contractor selection.

Impact consequence (residual)			
Risk focus	Consequence (financial)	Likelihood	Risk rating
Collision	Minor	Highly unlikely	Low
Mechanical Failure	Minor	Highly unlikely	Low
Refuelling	Minor	Highly unlikely	Low

Demonstration of ALARP
A 'low' residual impact consequence rating is considered to be ALARP and a 'lower order' impact. A demonstration of ALARP is therefore not required.

Demonstration of Acceptability	
Policy compliance	HPB Environment Policy objectives are met (most notably with regard to legislative compliance).
Management system compliance	Section 8 describes the EP implementation strategy to be employed for this activity.
Stakeholder engagement	Stakeholder consultation has been undertaken (see Chapter 4), with no concerns expressed regarding displacement or interference.

Legislative context	The EPS outlined in this EP align with the requirements of: • *OPGGS Act* 2006 *(Cth):* ○ Section 280(2) – 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). ○ Part 6.6 (Safety zones and the area to be avoided). • *Navigation Act* 2012 *(Cth):* ○ Chapter 6 (Safety of navigation).	
Industry practice	The consideration and adoption of the controls outlined in the below-listed codes of practice and guidelines demonstrates that BPEM is being implemented for this activity.	
	Health, Safety and Environmental Case Guidelines for Mobile Offshore Drilling Units (IADC, 2015)	Section 2.3.6.1 (environmental protection) states that location- and well- specific environmental protection plans should be prepared. The EP satisfies this requirement.
	Environmental, Health and Safety Guidelines for Offshore Oil and Gas Development (World Bank Group, 2015)	There is no specific guidance regarding management of vessel based decommissioning activitiess.
	Environmental management in oil and gas exploration and production (UNEP IE, 1997)	The environmental protection measures listed in this guideline specify the use of environmental assessment to identify protected areas and sensitivities. The EP has addressed this in Chapters 5 and 7.
	APPEA CoEP (2008)	The APPEA CoEP lists the following objective for production activities: • To reduce risks to public safety to ALARP and to an acceptable level. The EPS listed in this table meet these objectives.
Environmental context	*Marine reserve management plans*	Not triggered by this hazard.
	Species Conservation Advice/ Recovery Plans/ Threat Abatement Plans	Not triggered by this hazard.
ESD principles	The EIA presented throughout this EP demonstrates that ESD principles (a), (b), (c) and (d) are met (noting that principle (e) is not relevant).	
	Principle B: Is there a threat of serious or irreversible environmental damage?	No.
	Principle D: Is there scientific uncertainty as to the environmental damage?	No.

Environmental Monitoring
As per OSMP.
Record Keeping
Audit and Inspection reports. ROV Survey Program. Incident reports.

7.2 SEABED AND BETHNIC HABITAT DISTURBANCE

7.2.1 HAZARD

Removing the WSH-3 wellhead structure and the Wardie-1 conductor will result in seabed and bethnic habitat disturbance. The wellhead and associated trash cap protrude 2 m above the seabed and measures 0.8 m in diameter (see Figure 2.2). This directly displaces 0.45 m^2 of seabed habitat (unconsolidated sediments) typical of the eastern Bass Strait continental shelf. Wardie-1 conductor similarly displaces the same value of seabed habitat. Their removal will impact that displaced area and an area of approximately 5m radius around each well.

7.2.2 KNOWN AND POTENTIAL ENVIRONMENTAL IMPACTS

The known and potential environmental impacts of seabed disturbance are:

- Highly localised loss of habitat;
- Highly localised smothering of benthic habitats and infauna;
- Removal of created local hard substrate habitat; and
- Temporary void created in the seabed.

7.2.3 EVALUATION OF ENVIRONMENTAL IMPACTS

The combined area of seabed that is disturbed is minor (approx. 80 m^2) compared with the overall extent of the sandy seabed habitat in the region and broader Bass Strait environment.

Mortality of benthic fauna in areas directly disturbed is considered to be very small compared with the overall extent of similar habitat in the region. Given the minor area of seabed affected, there are no long-term impacts on the diversity and abundance of benthic fauna or ecosystem functioning.

The WSH-3 wellhead and Wardie-1 conductor can offer a long-term benefit of providing habitat for marine life and a localised increase in biodiversity. Studies have shown that the ecology of the Gulf of Mexico is enhanced by using abandoned oil and gas facility platform jackets as artificial reef (Fikes, 2013). In this case, the WSH-3 wellhead and Wardie-1 conductor provide hard substrate as habitat in an area otherwise dominated by sandy sediments. Barnacles, corals and other species that require hard substrates to attach to are likely to have colonised the wellhead and conductor since they were installed 14 years ago. Their removal is not considered to have a long-term environmental affect given their presence on the structures is only as a result of the introduction of those structures.

Removal of the structures will provide temporary loss of material from the sandy seabed, but this will be recovered in a relatively short time due to natural movement in the seafloor from localised currents.

7.2.4 IMPACTS TO MNES

Seabed and bethnic habitat disturbance will not have a 'significant' impact to any of the applicable MNES, as outlined in the box below.

AMPs	Nationally threatened species	Migratory species
Section 5.5.1	**Section 5.7**	**Section 5.7**
X	X	X
There are no AMPs within the activity area.	Habitat modification will not result in any significant effects to populations of threatened or migratory fauna.	
'Significant impact' is defined in DoE (2013) as 'an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value and quality of the environment, which is impacted, and upon the sensitivity, duration, magnitude and geographic extent of the impacts.' *'Likely' is defined in DoE (2013) as 'it is not necessary for a significant impact to have a greater than 50% chance of it happening; it is sufficient if a significant impact on the environment is a real or not remote chance or possibility.'*		

7.2.5 IMPACTS TO OTHER AREAS OF CONSERVATION SIGNIFICANCE

Seabed and bethnic habitat disturbance has not and will not have a 'significant' impact to any other areas of applicable conservation significance, as outlined in the box below.

KEF (Upwelling East of Eden)	State marine parks
Section 5.5.7	**Section 5.5.9**
X	X
None of these features occur within the activity area.	

7.2.6 IMPACT ASSESSMENT

Table 7.2 presents the impact assessment for Seabed and bethnic habitat disturbance .

Table 7.2 Impact assessment for Seabed and bethnic habitat disturbance.

Summary	
Summary of impacts	Displacement of seabed sediments. Removal of hard substrate. Removal of bethnic habitat.
Extent of impact	Highly localised – radius of impact <5m.
Duration of impact	Short-term (duration of activity).
Level of certainty of impacts	HIGH – the impacts of seabed displacement are well known.
Impact decision framework context	A – nothing new or unusual, represents business as usual, well understood activity, good practice is well defined.

Impact consequence (inherent)		
Negligible		
Environmental Controls and Performance Measurement		
EPO	EPS	Measurement criteria
Seabed and bethnic habitat disturbance is limited to the area occupied by the wellhead and an approximate 5m radius surrounding the wellhead.		Post-wellhead installation imagery confirms displacement is limited to the footprint of the conductor casing, and removal of same will have similar impact.
Impact consequence (residual)		
Negligible		
Demonstration of ALARP		
A 'negligible' residual impact consequence rating is considered to be ALARP and a 'lower order' impact. A demonstration of ALARP is therefore not required.		
Demonstration of Acceptability		
Policy compliance	HPB Environment Policy objectives are met (most notably with regard to legislative compliance).	
Management system compliance	Section 8 describes the EP implementation strategy to be employed for this activity.	
Stakeholder engagement	Stakeholder consultation has been undertaken (see Section 4), with no concerns expressed regarding Seabed and bethnic habitat disturbance.	
Legislative context	The performance standards outlined in this EP align with the requirements of the: • *OPGGS Act* 2006 (Cth): o Section 280(2) – a person carrying on activities in an offshore area under the permit must carry on those activities in a manner that does not interfere with…the conservation of the resources of the sea and seabed…..to a greater extent than is necessary for the reasonable exercise of the rights and performance of the duties of the first person.	
Industry practice	The consideration and adoption of the controls outlined in the below-listed codes of practice and guidelines demonstrates that BPEM is being implemented for this activity.	
	Health, Safety and Environmental Case Guidelines for Mobile Offshore Drilling Units (IADC, 2015)	Section 2.3.6.1 (environmental protection) states that location- and well- specific environmental protection plans should be prepared. The EP satisfies this requirement.

	Environmental, Health and Safety Guidelines for Offshore Oil and Gas Development (World Bank Group, 2015)	This guideline contains no specific guidance regarding seabed displacement. However, it does state that abandoned wells must be plugged to prevent fluid migration within the wellbore. WSH-3 is abandoned, and does meet this requirement, as does Wardie-1.
	Environmental management in oil and gas exploration and production (UNEP IE, 1997)	The environmental protection measures listed in this guideline specify the use of environmental assessment to identify protected areas and sensitivities. The EP has addressed this in Sections 5 and 7.
	APPEA CoEP (2008)	The APPEA CoEP lists the following objective for production activities: • To reduce the impacts to benthic communities to acceptable levels and to ALARP. The EPS listed in this table meet this objective.
Environmental context	*Marine reserve management plans*	Not triggered by this hazard.
	Species Conservation Advice/ Recovery Plans/ Threat Abatement Plans	Not triggered by this hazard.
ESD principles	The EIA presented throughout this EP demonstrates that ESD principles (a), (b), (c) and (d) are met (noting that principle (e) is not relevant).	
	Principle B: Is there a threat of serious or irreversible environmental damage?	No.
	Principle D: Is there scientific uncertainty as to the environmental damage?	No.
Environmental Monitoring		
None required.		
Record Keeping		
Post-removal ROV images.		

7.3 RISK: DISPLACEMENT OF OR INTERFERENCE WITH THIRD-PARTY VESSELS AND ACTIVITIES

7.3.1 HAZARD

A 300-m radius PSZ is gazetted around the WSH-3 well and Wardie-1 conductor to minimise the risk of damage from third-party vessels (e.g., commercial fishing vessels) and minimise risk of damage to those vessels (e.g., as a result of trawl gear becoming entangled on the wellhead).

The WSH-3 wellhead and Wardie-1 conductor represents a potential hazard to fishing equipment should the PSZ be breached. It may also represent a loss of catch (and thus economic losses) should fishing equipment become snagged on the wellhead and damaged.

7.3.2 KNOWN AND POTENTIAL SOCIO-ECONOMIC IMPACTS

The risk of displacement of or interference with third-party vessels and fishing activities is damage to or loss of fishing equipment and/or loss of commercial fish catches (resulting in financial loss) as a result of collision or entanglement with the wellhead. The gazetted PSZ enforces a 300-m exclusion zone (0.283 km^2) to maximise safety in the area immediately around the wellhead and to reduce the risk of fishing equipment being damaged on the wellhead structure.

Receptors most at risk are:

- Commercial fishing vessels; and
- Commercial fishing equipment (e.g., trawl nets).

The risk of displacing merchant vessels is very low given that the activity area occurs within the Bass Strait ATBA, which prohibits vessels greater than 200 gross tonnes being present in the ATBA without NOPSEMA's permission.

7.3.3 EVALUATION OF ENVIRONMENTAL RISKS

Displacement to third-party vessels

The presence of the WSH-3 well/Wardie-1 conductor and the PSZ excludes other users of the marine environment in order to protect the wellhead and for the safety of other marine users. However, displacement of third-party vessels by the WSH-3 well/Wardie-1 conductor is unlikely because the activity area is:

- Contained entirely within the Bass Strait ATBA; and
- Distant from the Bass Strait shipping fairway (see Section 5.6.7).

If displacement was to occur, it would result in a negligible increase in travel time and fuel cost at most, but in the context of an entire journey, this is not considered significant.

The consequence of displacing other users, such as commercial and/or recreational fishers, is considered negligible given the sparse use of the area by fishers (see Section 5.6.3) and the very small excluded area (0.283 km^2) compared to the total area of fishing grounds.

Damage to or loss of fishing equipment and loss of catch

Commercial fishing vessels are prohibited from operating within the PSZ. Interactions between the WSH-3 well/Wardie-1 conductor and fishing vessels is likely to be minimal, because:

- The PSZ has been in effect since June 2008 (without any reported incidents to date);
- There is a low level of fishing in the activity area;
- The PSZ is located entirely within the Bass Strait ATBA; and
- Large vessels use sophisticated navigation aids, which will include the presence of the WSH-3 PSZ.

Vessel collision (or more likely given the water depth, entanglement of trawl fishing gear) with the WSH-3 wellhead or Wardie-1 conductor may result in gear becoming detached from the fishing vessel and the loss of any associated catch (the Commonwealth SESS fishery is active in the activity area). In addition to the cost of repairing or replacing this equipment, it could also result in the loss of income from any fish that were previously caught during that fishing expedition. This risk is negated through:

- Maintaining the PSZ for the length of the activity;
- Communicating the location of the WSH-3 wellhead with fisheries stakeholders; and
- Ensuring the WSH-3 wellhead is marked on navigation charts.

7.3.4 RISKS TO MNES

The displacement of or interference with third-party vessels and activities will not have a 'significant' impact to the applicable MNES, as outlined in the box below.

AMPs	Nationally threatened species	Migratory species
Section 5.5.1	**Section 5.7**	**Section 5.7**
X	X	X
The displacement of or interference with third-party vessels will have no impacts on MNES.		

7.3.5 RISKS TO OTHER AREAS OF CONSERVATION SIGNIFICANCE

The displacement of or interference with third-party vessels and activities will not have a 'significant' impact to any other applicable areas of conservation significance, as outlined in the box below.

KEF (Upwelling East of Eden)	State marine parks
Section 5.5.7	**Section 5.5.9**
X	X
None of these features occur within the activity area.	

7.3.6 IMPACT ASSESSMENT

Table 7.3 presents the impact assessment for the displacement of or interference with third-party vessels.

Table 7.3 Impact assessment for the displacement of or interference with third-party vessels

Summary			
Summary of impacts	Damage to or loss of fishing equipment. Loss of commercial fish catches. Displacement of vessels.		
Extent of impact	Highly localised – immediately around vessels.		
Duration of impact	Short-term (minutes for a third-party vessel detour) to medium-term (replacement of damaged fishing equipment).		
Level of certainty of impacts	HIGH – The Bass Strait Area to be Avoided was established in acknowledgement of the risk posed by merchant vessels and petroleum infrastructure and smaller vessels.		
Impact decision framework context	A – nothing new or unusual, represents business as usual, well understood activity, good practice is well defined.		
Risk rating (inherent)			
Risk focus	Consequence (financial)	Likelihood	Risk rating
Disturbance	Minor	Possible	Medium
Interference	Minor	Unlikely	Medium
Environmental Controls and Performance Measurement			
EPO	EPS	Measurement criteria	
Prevent damage to vessels and commercial fishing equipment from the WSH-3 wellhead.	The WSH-3 PSZ remains gazetted.	A copy of the WSH-3 PSZ is readily available.	
	The location of the WSH-3 well is marked on navigation charts to assist other marine users in identifying the PSZ.	WSH-3 is marked on relevant Bass Strait navigational charts.	

There is no damage to the WSH-3 wellhead.	A trash cap remains fitted to the well to protect it against damage from third-party interactions.	No reported incidents of damage from fishing equipment.
Comply with Section 572 of the OPGGS Act if the well is to be abandoned.	The wellhead and trash cap are removed to surface, with the well cut several metres below the seabed to remove any risk of interference with third parties.	ROV footage confirms the cut well bore does not protrude above the seabed.
	Prepare a well abandonment/ decommissioning EP for acceptance by NOPSEMA prior to such an activity commencing.	Well abandonment/ decommissioning EP and acceptance letter is available.

Impact consequence (residual)			
Risk focus	Consequence (financial)	Likelihood	Risk rating
Displacement	Negligible	Unlikely	Low
Interference	Minor	Highly unlikely	Low

Demonstration of ALARP
A 'low' residual impact consequence rating is considered to be ALARP and a 'lower order' impact. A demonstration of ALARP is therefore not required.

Demonstration of Acceptability	
Policy compliance	HPB Environment Policy objectives are met (most notably with regard to legislative compliance).
Management system compliance	Section 8 describes the EP implementation strategy to be employed for this activity.
Stakeholder engagement	Stakeholder consultation has been undertaken (see Chapter 4), with no concerns expressed regarding displacement or interference.

Legislative context	The EPS outlined in this EP align with the requirements of:
	• *OPGGS Act* 2006 *(Cth):*
	  ○ Section 280(2) – 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).
	  ○ Part 6.6 (Safety zones and the area to be avoided).
	• *Navigation Act* 2012 *(Cth):*
	  ○ Chapter 6 (Safety of navigation).

Industry practice	The consideration and adoption of the controls outlined in the below-listed codes of practice and guidelines demonstrates that BPEM is being implemented for this activity.

	Health, Safety and Environmental Case Guidelines for Mobile Offshore Drilling Units (IADC, 2015)	There is no specific guidance regarding vessel interference or displacement. Section 2.3.6.1 (environmental protection) states that location- and well- specific environmental protection plans should be prepared. The EP satisfies this requirement.
	Environmental, Health and Safety Guidelines for Offshore Oil and Gas Development (World Bank Group, 2015)	There is no specific guidance regarding management of vessel interference or displacement.
	Environmental management in oil and gas exploration and production (UNEP IE, 1997)	The environmental protection measures listed in this guideline specify the use of environmental assessment to identify protected areas and sensitivities. The EP has addressed this in Chapters 5 and 7.
	APPEA CoEP (2008)	The APPEA CoEP lists the following objective for production activities: • To reduce risks to public safety to ALARP and to an acceptable level. The EPS listed in this table meet these objectives.
Environmental context	*Marine reserve management plans*	Not triggered by this hazard.
	Species Conservation Advice/ Recovery Plans/ Threat Abatement Plans	Not triggered by this hazard.
ESD principles	The EIA presented throughout this EP demonstrates that ESD principles (a), (b), (c) and (d) are met (noting that principle (e) is not relevant).	
	Principle B: Is there a threat of serious or irreversible environmental damage?	No.
	Principle D: Is there scientific uncertainty as to the environmental damage?	No.
Environmental Monitoring		
None required.		
Record Keeping		
PSZ gazettal. Navigation charts. Incident reports.		

7.4 RISK: DECOMMISSIONING OPERATIONS SOUND EMISSIONS

7.4.1 HAZARD

Sound generated from decommissioning activities is primarily associated with the vessel operation and decommissioning operations, and when entering and exiting the area.

The vessel will contribute to the existing anthropogenic sounds produced by existing shipping traffic (i.e. commercial fishing and existing oil and gas operations) and the natural ambient noise generated by atmospheric and oceanographic processes.

Sound generation and frequency bands from the operation and decommissioning activities associated with the vessel is expected to be similar to sound levels emitted from the existing Bass Strait oil and gas production platforms and is expected to have sound emissions predominantly below 120dB re 1µPa with non-continuous (less than 1 second) levels exceeding this to a range of approximately 1.4km in the frequency band 8.9Hz to 44.7Hz (infrasonic and low frequency).

Typically, marine vessels produce low frequency sound (i.e. below 1 kHz) from the operation of machinery on-board; from hydrodynamic flow noise around the hull; and from propeller cavitation, which is typically the dominant sound source. Most sounds associated with vessels are broadband (i.e. contain a broad range of frequencies), though, tones are also associated with the harmonics of the propeller blades.

7.4.2 KNOWN AND POTENTIAL SOCIO-ECONOMIC IMPACTS

The primary concern arising from drilling activity sound generation from drilling activities is the potential effect on marine fauna with effects ranging from attraction, increased stress levels, disruption of acoustic cues, behavioural changes, localised avoidance, temporary threshold shifts in hearing or physiological damage. Each of the possible effects listed is dependent on the species, the sound source levels and characteristics and exposure (distance from the sound source).

A summary of possible impacts is provided below:

- **Cetaceans:** Sound levels generated by the decommissioning and vessel operations is not sufficiently high to cause physiological harm to cetaceans. Sudden sound increases (i.e. increase in vessel activity) or the presence of cetaceans in close proximity to vessel activities may result in altered behaviour.
- **Turtles:** Sound levels generated by the decommissioning and vessel operations is not sufficiently high to cause physiological harm to turtle species. Any effect associated with drilling operations is expected to be behavioural (i.e. avoidance).
- **Pinnipeds**: Sound levels generated by the decommissioning and vessel operations is not sufficiently high to cause physiological harm to pinniped species however may have localised behavioural impacts on species foraging. Minor impact to the species is expected the activity.
- **Seabirds**: Seabirds are unlikely to be attracted to the vessel as part of foraging behaviours but may use the vessel for resting while foraging or migrating. Sound impacts associated with decommissioning operations or vessel activity is not expected to have any adverse impacts (negligible impacts).
- **Sharks:** Sound levels generated by the decommissioning and vessel operations is expected to consist of broadband sources with periodic episodes of high intensity. During these events, it is possible that the sharks may withdraw from the immediate drilling area due to the sudden increased sound source (minor impacts).
- **Fish:** Sound levels generated by the decommissioning and vessel operations is not expected to impact on fish at the drilling locations. Vessel DP operations may result in temporary localised

displacement of adult fish (minor impacts). Additionally, given the Vessel sound source levels (~180dB re 1µPa) little to no impact on fish eggs is expected from the activity.

- **Invertebrates:** Sound levels generated by the decommissioning and vessel operations is not expected to impact on vertebrates (sound or vibration) at the location given the low levels of the sound source. Vessel DP operations are broadband in nature, of low sound intensity compared with acoustic arrays, and located in water depths where particle motion impacts are considered small. On this basis, impacts to scallops in the immediate drilling area are expected to be negligible). Based upon available literature no impact to rock lobsters is expected from vessel activities.

7.4.3 EVALUATION OF ENVIRONMENTAL RISKS

Cetacean Impacts: It is considered physiological impacts to cetaceans are not possible however behavioural impacts (i.e. avoidance) may occur during Vessel activities at the location; and the possibility of sound masking is possible in close proximity to the vessel (i.e. minor impact). On the basis that the activity location is not located in biologically sensitive areas for cetaceans and given the short episodes of vessel activity, impacts are considered very unlikely. The hazard carries a **low** residual environmental risk to cetaceans.

Turtle Impacts: As per cetaceans, it is considered that physiological impact to turtle species is not possible however behavioural impacts may be experienced in close proximity to the vessel. Given the low expected encounter rate of turtle species in the area; it is very unlikely that behavioural impacts will be experienced. The residual environmental risk is **low.**

Fish Impacts: Given the observed sound thresholds which may induce displacement in fish, it is possible that fish in close proximity to the vessel during DP activities may be temporarily displaced. Given the short episodes of vessel DP activity, fish displacement is considered temporary with permanent displacement very unlikely. The residual environmental risk of this hazard to adult fish is considered **low**.
Additionally, based upon available literature fish larvae present in close proximity to an operating DP vessel are not expected to suffer mortality impacts (minimum source sound level for lethal effects is 220dB re 1µPa). On this basis negligible impacts are expected to fish larvae and population impacts are very unlikely. The residual environmental risk to fish larvae is assessed as **low.**

Pinniped Impacts: While Fur Seals may be encountered during the activity, given high SELs that may induce TTS in hearing, physiological impacts are not expected however avoidance may be expected in close proximity to the vessel. Given the short episodes of vessel activity using DP and given the species would only be transiting the area foraging (i.e. WSH-3 location is not located in proximity to colonies or haul-out sites), foraging impacts to the species is considered unlikely, particularly if fish are displaced temporarily (as above). The residual environmental risk to pinnipeds is assessed as **low.**

Shark Impacts: No physiological impact to shark species is expected given the species biology. It is possible that temporary localised shark displacement may occur during periods of vessel DP activity. Given the short episodes of vessel activity using DP and given shark species are transiting the area it is considered unlikely permanent impacts to the species will be realised. The residual environmental risk to sharks is assessed as **low.**
Crustacean Impacts: Available scientific studies identify that acoustic sound has negligible impacts (i.e. physical or behavioural impacts) to adult or larval crustaceans. Given the short duration of vessel DP activities, impacts to adult or larval crustaceans are considered very unlikely and the residual risk is considered **low.**

Scallop Impacts: Available scientific studies associated with acoustic impacts to scallop species identify minimal-to-no impacts to adult scallops from sound although more recent IMAS studies identify that large acoustic sound sources in close (near-field) proximity to adult scallops may cause increased mortality (significance to be established). Sound source levels generated by vessels operating in DP are significantly lower than the low frequency source levels utilised by IMAS which may have impacts to adult scallops and is not located within 4.8m of the seabed (as per IMAS study). Negligible impacts are expected to adult scallops from vessel activities based upon the available literature. As other fishing vessels operate within the drilling area, and sound impacts from these vessel activities have not been identified as a threat to scallops, it is considered unlikely that vessels operating on DP will have impacts. The residual environmental risk is assessed as **low.**

7.4.4 RISKS TO MNES

Sound generated from decommissioning activities will not have a 'significant' impact to the applicable MNES, as outlined in the box below.

AMPs	Nationally threatened species	Migratory species
Section 5.5.1	**Section 5.7**	**Section 5.7**
X	X	X
The displacement of or interference with third-party vessels will have no impacts on MNES.		

7.4.5 RISKS TO OTHER AREAS OF CONSERVATION SIGNIFICANCE

Sound generated from decommissioning activities will not have a 'significant' impact to any other applicable areas of conservation significance, as outlined in the box below.

KEF (Upwelling East of Eden)	State marine parks
Section 5.5.7	**Section 5.5.9**
X	X
None of these features occur within the activity area.	

7.4.6 IMPACT ASSESSMENT

Table 7.4 presents the impact assessment for the Sound generated from decommissioning activities.

Table 7.4 Impact assessment for the Sound generated from decommissioning activities.

Summary	
Summary of impacts	Potential effect on marine fauna, including attraction, increased stress levels, disruption, behavioural changes, localised avoidance, or physical damage.
Extent of impact	Localised – immediately around vessel and activity area.
Duration of impact	Short-term for the duration of onsite activity.
Level of certainty of impacts	HIGH – The vessel and decommissioning activities will generate noise during operations and entering or exiting the area.
Impact decision framework context	A – nothing new or unusual, represents business as usual, well understood activity, good practice is well defined.

Risk rating (inherent)			
Risk focus	Consequence (financial)	Likelihood	Risk rating
Displacement	Negligible	Likely	Low
Interference	Minor	Unlikely	Low

Environmental Controls and Performance Measurement		
EPO	EPS	Measurement criteria
Equipment used during campaign meets manufacturers specification with respect to noise emissions.	Manufacturers' specifications.	PMS records verify equipment is operational to manufacturer's specifications.
Vessel propulsion system meets manufacturers specification with respect to noise emissions.	Manufacturers' specifications.	PMS records verify propulsion system is operational to manufacturer's specifications..
Vessel to observe cetacean (whale and dolphin) proximity distances and low speeds during transits within the operational area	Vessel Masters observe speed restrictions and proximity distances as required in the EPBC Regulations 2000 (Part 8).	Vessel logs verify interactions between the vessel and cetaceans (whale and dolphin) comply with these requirements

Environmental Induction	**Vessel crew** has completed an environmental induction covering the requirements for cetacean/vessel interaction distances consistent with EPBC Regulations 2000 (Part 8) and are familiar with the requirements	Induction records verify that vessel crews have completed an environmental induction.

Impact consequence (residual)			
Risk focus	Consequence	Likelihood	Risk rating
Displacement	Negligible	Unlikely	Low
Interference	Minor	Highly unlikely	Low

Demonstration of ALARP

A 'low' residual impact consequence rating is considered to be ALARP and a 'lower order' impact. A demonstration of ALARP is therefore not required.

Demonstration of Acceptability

Policy compliance	HPB Environment Policy objectives are met (most notably with regard to legislative compliance).	
Management system compliance	Section 8 describes the EP implementation strategy to be employed for this activity.	
Stakeholder engagement	Stakeholder consultation has been undertaken (see Chapter 4), with no concerns expressed regarding displacement or interference.	

Legislative context	The EPS outlined in this EP align with the requirements of:
	• *OPGGS Act* 2006 *(Cth):*
	  ○ Section 280(2) – 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).
	  ○ Part 6.6 (Safety zones and the area to be avoided).
	• *Navigation Act* 2012 *(Cth):*
	  ○ Chapter 6 (Safety of navigation).	

Industry practice	The consideration and adoption of the controls outlined in the below-listed codes of practice and guidelines demonstrates that BPEM is being implemented for this activity.	
	Health, Safety and Environmental Case Guidelines for Mobile Offshore Drilling Units (IADC, 2015)	There is no specific guidance regarding vessel interference or displacement. Section 2.3.6.1 (environmental protection) states that location- and well- specific environmental protection plans should be prepared. The EP satisfies this requirement.
	Environmental, Health and Safety Guidelines for Offshore Oil and Gas Development (World Bank Group, 2015)	There is no specific guidance regarding operations generated noise.

	Environmental management in oil and gas exploration and production (UNEP IE, 1997)	The environmental protection measures listed in this guideline specify the use of environmental assessment to identify protected areas and sensitivities. The EP has addressed this in Chapters 5 and 7.	
	APPEA CoEP (2008)	The APPEA CoEP lists the following objective for production activities: • To reduce risks to public safety to ALARP and to an acceptable level. The EPS listed in this table meet these objectives.	
Environmental context	*Marine reserve management plans*	Not triggered by this hazard.	
	Species Conservation Advice/ Recovery Plans/ Threat Abatement Plans	Not triggered by this hazard.	
ESD principles	The EIA presented throughout this EP demonstrates that ESD principles (a), (b), (c) and (d) are met (noting that principle (e) is not relevant).		
	Principle B: Is there a threat of serious or irreversible environmental damage?		No.
	Principle D: Is there scientific uncertainty as to the environmental damage?		No.
Environmental Monitoring			
None required.			
Record Keeping			
Vessel logs. Audit logs. Incident reports.			

8 IMPLEMENTATION STRATEGY

The OPGGS(E) Regulation 22(1) requires that an implementation strategy be included in an EP. CHPL retains full and ultimate responsibility as the Titleholder of the activity and is responsible for ensuring that the environmental performance outcomes and standards outlined throughout Section 8 are adequately implemented.

8.1 ACTIVITY ORGANISATIONAL STRUCTURE

Figure 8.1 provides an overview of the CHPL organisation chart as relevant to this activity. CHPL has overall responsibility for the environmental management of the activity to ensure that:

- Design and execution of the activities is in accordance with industry best practice and legislated standards;
- All regulatory approvals are in place for the activity;
- The environmental impacts and risks of the activity are managed to be ALARP and acceptable;
- Environmental performance is monitored.

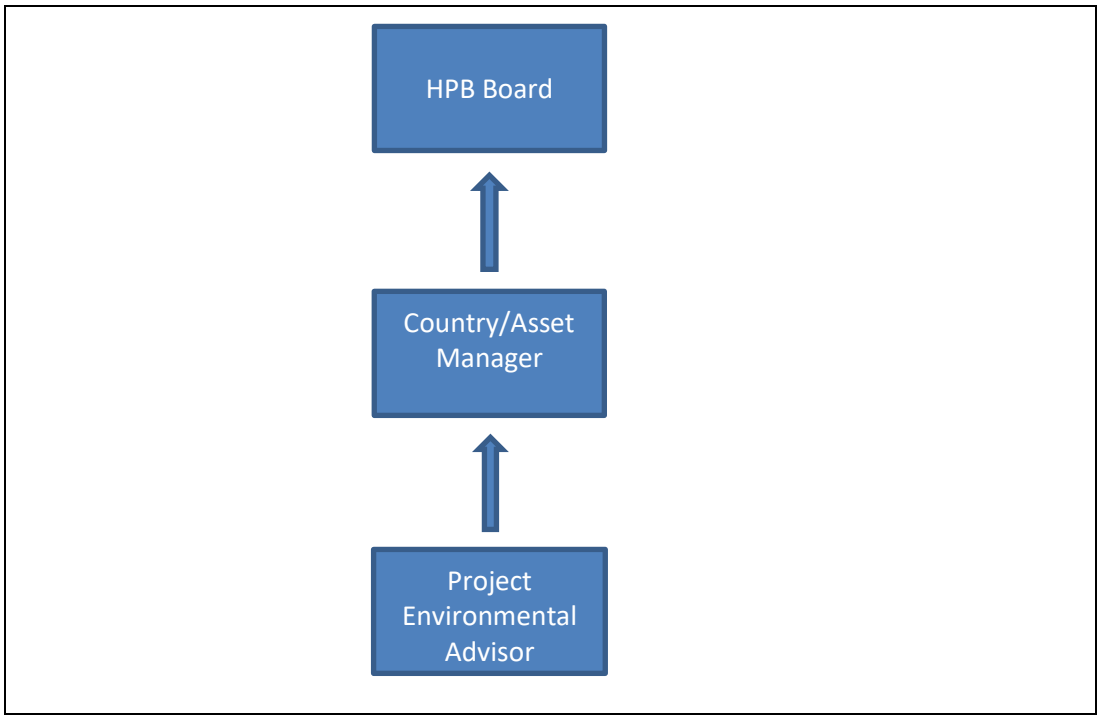


Figure 8.1. WSH-3 activity organisational structure

8.2 ROLES AND RESPONSIBILITIES

The OPPGS(E) Regulation 22(3) requires a clear chain of command is established for the activity with roles and responsibilities assigned to ensure efficient implementation of the EP.

The organisational structure for the activity is illustrated in Figure 8.1, while the environmental roles and responsibilities of key activity team members are summarised in Table 8.1. Given the small number of additional contractors required to perform on-water activities (vessel-based

decommissioning activities), the organisational structure is relatively small for this activity. The personnel fulfilling the roles in Table 8.1 each have over 20 years' experience in managing petroleum activities and are cognisant of their environmental roles and responsibilities.

Table 8.1. Roles and Responsibilities for the activity

Role	Environmental responsibilities
HBP CEO	• Ensures CHPL is adequately resourced to implement the EPS in this EP.
CHPL In-Country Manager	• Ensures that contractors have appropriate equipment and systems in place to undertake activities in accordance with industry best practice and this EP. • Undertakes consultation with government personnel. • Facilitates clear communication between CHPL and the Project Environmental Advisor. • Ensures compliance with this EP. • Prepares and issues routine and incident reports for submission to NOPSEMA. • Approves the Environmental Performance Report for submission to NOPSEMA. • Approves the end-of-activity notification for submission to NOPSEMA.
Project Environmental Advisor	• Prepares this EP. • Undertakes stakeholder consultation. • Plans for the implementation of the EP. • Assists in the preparation of external regulatory reports required. • Assists with review, investigation and reporting of environmental incidents.

8.3 ENVIRONMENTAL MANAGEMENT SYSTEM

The OPPGS(E) Regulation 22(2) requires that an implementation strategy describe the environmental management system for the activity, which is described in this section.

For this activity, CHPL adopts the HPB Management System Standards (MSS) (HPB-SP-CPL-SD01), which provides a framework for HSE management at HPB (and subsidiary) sites. The MSS applies to all aspects of operation and maintenance activities and includes contractors and other third parties operating on site.

The MSS is designed specifically to:

- Provide a set of performance standards covering the various aspects (or 'elements') of health, safety, security, environment (HSSE) and quality management, which are managed to ensure complete coverage of the assets and activities controlled by HPB.
- Provide an auditable trail from management's policy statements of HSSE and Quality through the MSS to the documents that define the physical activities on the operating sites managed by HPB.
- Be consistent with the international good practice standards for oil and gas operating companies for HSSE and Quality management.

The key HSSE and Quality performance standards of the MSS and their applicability to this EP are summarised in Table 8.2.

The HPB Environment Policy (HPB-00-GEN-HSSE-ENV-POL-NA-0001) is provided in Figure 8.2.

HIBISCUS Petroleum

Environment Policy

Minimising the impact of our operations on the environment is of utmost importance to us.

Hibiscus Petroleum will achieve its environmental goals by:

- Ensuring environmental management is in compliance with relevant legislative regulatory, international standards and industry best practices;
- Assessing the impacts of our operations to our surroundings, with the objective of preventing pollution and reducing environmental impacts;
- Operating in a safe manner to avoid spills, leaks or accidental discharges of polluting materials;
- Limiting the quantities of wastes and other discharges by handling them in a responsible manner, re-use and recycle where practicable;
- Maintaining pollution contingency plans and the capability to respond in an emergency; and
- Endeavouring to use energy and natural resources wisely and efficiently.

To ensure compliance with the Company's Environment Policy, Hibiscus Petroleum shall:

- Comply with all applicable standards of the laws and regulations of the jurisdictions in which the Company is operating in, in addition to the international oil and gas industry regulations;
- Consider the environmental impact of all of our activities;
- Perform a regular audit of our compliance with the Company's Environment Policy;
- Reduce or prevent emissions, where possible, that cause global warming likely due to the increase in atmospheric greenhouse gas concentrations to mitigate climate change;
- Implement a systematic, best practice approach to environment risk management, in which risks to the environment will be assessed, where possible eliminated to As Low As Reasonably Practicable (ALARP);
- Ensure that the environmental goals and standards are understood and followed at all levels throughout the Company; and
- Collaboratively plan, implement specific activities, develop appropriate development strategies and make the relevant investment to mitigate risks on water security.

These goals are fundamental to the wellbeing of the communities at locations where Hibiscus Petroleum operates, and contribute to the efficient operations of the Company. Contributing to the fulfilment of these goals is the responsibility of everyone who works at Hibiscus Petroleum.

Zainul Rahim bin Mohd Zain
Chairman

Figure 8.2. HPB Environment Policy

Table 8.2. Summary of the HPB MSS

Standard		Description
1	Leadership, Policy, Objectives and Compliance	This standard ensures there is an HPB Policy that is consistent with and meets the requirements of the governing legislation in all HPB operating jurisdictions. The preparation of this EP is consistent with meeting governing legislative requirements.
2	Organisation Responsibility	This standard addresses the commitment to an effective organisational structure for the implementation of the policies and objectives with a clear reporting line for ultimate responsibility to the Directors of HPB. The organisational responsibility is illustrated in this EP in Figure 8.1.
3	Information Management and Document Control	This standard addresses the need for information on the configuration and capabilities of processes and facilities, properties of materials handled, HSSE hazards, business critical matters and regulatory requirements to be used in managing risk and complying with laws and regulations. Information and document management is implemented in this activity through adherence to HPB's Management System Document Numbering and Control Procedure (HPB-IMG-GEN-PCD-01).
4	Risk Assessment and Risk Management	The aim of this standard is to prevent or minimise the likelihood of a hazardous event occurring by systematically identifying hazards. This has been implemented for this EP as described in Chapters 2, 6 and 7.
5	Operating Procedures	This standard provides for a healthy, safe and environmentally responsible and business efficient operation through the establishment of well-defined procedures. Relevant procedures have been referred and adhered to throughout this EP.
6	Communications, Consultation and Community Involvement	This standard provides for effective participation and consultative mechanisms that promote active communication and involvement of all personnel in the management of HSSE, the control of workplace hazards and engagement with the community's expectations and concerns. The consultation method employed for this EP is described in Chapter 4.
7	Employee Selection, Competency, Health and Training	This standard provides the requirements for employee selection in order to ensure that the HPB operations meet all laws and regulations, are safe, environmentally responsible, protect health and meet business requirements. Training, competency and selection relevant to this EP is described in Section 8.4.

Standard		Description
8	Contractor and Support Services	This standard ensures that all contractors perform work in a healthy, safe and environmentally sound manner and compatible with the company's policies and objectives. The selection of contractors for this activity is described in Section 8.4.
9	Procurement	This standard ensures that purchased products meet specified requirements and purchasing is carried out in accordance with procedures, which include third party supplier selection, ordering, and verification of product and traceability.
10	Design, Construction, Commissioning, Decommissioning and Abandonment	This standard ensures a system is in place to provide for the decommissioning and the long-term shutdown or abandonment of facilities. The status of the WSH-3 and Wardie-1 wells and the planned decommissioning of the wells is described in Chapter 2.
11	Maintenance, Inspection, Testing and Modification	This standard ensures the provision of maintenance and inspection programmes that maintain plant, equipment, structures and vessels in a safe and environmentally responsible condition. This standard is not relevant to this activity.
12	Change Management	This standard ensures a system is in place that manages both temporary and permanent changes covering the organisation, procedures, engineering, facilities and materials. The change management procedure for this activity is described in Section 8.9.
13	Emergency Response	This standard ensures emergency plans and procedures are in place to ensure the safety and protection of the employee, contractors, community, environment, and assets. The WSH-3 and Wardie-1 Decommissioning campaign will be conducted under a ERP and OPEP to ensure timely response and effective management of any emergency.
14	Incident Reporting and Investigation	This standard ensures a system is in place to report and then investigate each incident or near-miss incident which resulted in or could have reasonably resulted in a situation detrimental to the health and safety of personnel, the environment in which they work or have a significant impact on the business. Incident recording and reporting relevant to this activity is described in Section 8.6 of this EP.
15	Managing Materials, Waste and Discharges	This standard provides for a system to be in place that ensures the handle, use or disposal of materials involved with operations do so in a healthy, safe and environmentally responsible manner. Given operations will be undertaken as a vessel-based activity management of all materials, wastes and discharges will be included in the approved vessel SOPEP.

Standard		Description
16	Performance Monitoring	This standard ensures a system is in place to monitor and assess operating performance to ensure that the processes and systems adopted are effective in meeting HPB policies and objectives, and legislative requirements. Performance reporting is described in Section 8.6 of this EP.

8.4 TRAINING AND AWARENESS

The OPGGS(E) Regulation 22(4) requires that employees and contractors working on the activity are aware of their environmental responsibilities in accordance with the EP.

8.4.1 Induction

To ensure all crews involved in the Decommissioning campaign understand the environmental constraints of operation and EPOs required, all offshore personnel will receive a CHPL Campaign Induction. The Vessel OIM in conjunction with the Exceed Supervisor is responsible for ensuring personnel receive this induction prior to undertaking activities.

The CHPL Campaign induction will be provided at the following times:

- **Pre-mobilisation Meeting**: Induction provided to vessel, offshore and marine contractors;
- **Pre-spud Meeting**: Provided to vessel, offshore and marine contractors; and
- **Vessel Arrival:** all parties arriving for first time.

Induction material will include:

- Adherence to the requirements of the accepted EP and associated regulatory requirements;
- Environmental sensitivities associated with the campaign (e.g. Proximity to shore, fauna, etc.);
- Environmental hazards (equipment, spills, waste/discharges, interaction with fauna) and required outcome standards;
- Incident reporting requirements with defined reportable/recordable environmental incidents associated with the campaign;
- Personnel roles and responsibilities during the campaign; and
- Spill preparedness and response arrangements.

All personnel are required to sign an attendance sheet to confirm their participation in and understanding of the induction. These records shall be retained by the CHPL Project Manager (Pre-move/Pre-spud) and Offshore Exceed HSE Advisor (Rig Arrival) via the Vessel Safety Officer. These records will be maintained in the CHPL Sharepoint System.

8.4.2 Training and Competency

Key CHPL and Exceed personnel maintain up to date well control certificates in accordance with the International Association of Drilling Contractors. CHPL and Exceed personnel are trained and competent to the requirements detailed in the CHPL Drilling Management Manual.

Vessel Contractors utilise marine crew who are trained and competent to undertake their respective activities. Vessel Watch crews will be competent to the *International Convention on Standards of Training Certification and Watch Keeping for Seafarers* (STCW95).

8.4.3 On-going Workforce Environmental Awareness/Participation

Programs on-board the Vessel will maintain an awareness of, and participation in, identifying environmental hazards and for allowing feedback on the effectiveness of control measures. The Vessel OIM and Exceed Supervisor are responsible for keeping the workforce informed about environmental issues and act as a focal point for personnel to raise environmental concerns. These positions will consult and involve all personnel in the following:

- Issues associated with the implementation of the EP;
- Any proposed changes to equipment, systems or methods of operation of plant where these may have environmental implications; and
- Any proposals for continuous improvement of environmental protection including the setting of environmental objectives and training.

Regular HSE Meetings will be held on-board the Vessel to maintain an awareness of environmental requirements. Minutes are taken of all HSE Meetings and all actions are managed through the Vessel contractor and CHPL Management systems.

A daily morning meeting between the CHPL Project Manager, Exceed Supervisor, Vessel OIM and crew will be conducted where HSE items and lessons learnt will be discussed.

Other forms of internal communication include toolbox meetings and task-based hazard assessments prior to critical or unfamiliar jobs. For all personnel involved in potentially hazardous activities on-board the Vessel (e.g. requires a work permit, handling hazardous materials, etc.) a pre-job meeting is held where a Task-Based Risk Assessment (TBRA) will be undertaken to ensure that a full understanding of the hazards and risks, and the required safeguards associated with the task at hand. All TBRAS will be recorded on a TBRA form and stored in the Vessel contractor and CHPL Management systems.

8.5 ENVIRONMENTAL EMERGENCIES AND PREPAREDNESS

The OPGGS(E) Regulation 22(8) requires the development, implementation and testing of an Oil Pollution Emergency Plan (OPEP).

Because WSH-3 is plugged in accordance with international standards (as described throughout Chapter 2) the risk of hydrocarbon release from WSH-3 is the same as a permanently abandoned well. This limits the worst-case scenario risk form decommissioning activities to that of a Level 2 MDO spill.

The VIC/RL17 Oil Pollution Emergency Plan (OPEP) West Seahorse Decommissioning (WSH-CHP-60-RG-RA-0002) outlines the oil spill response arrangements and strategies adopted by CHPL for responding to oil spills from decommissioning activities in the Gippsland Basin consistent with the Hibiscus HSEQ Policy. The OPEP also addresses the requirements of International Conventions and the Commonwealth and State regulatory requirements as outlined in this EP. The practices adopted within the OPEP also follow those recommended by the International Petroleum Industry Environmental Conservation Association (IPIECA).

The OPEP document serves as a command and control tool and as a reference for CHPL related personnel and oil spill responders to facilitate an effective and timely response to any oil spills from CHPL's activities in the Gippsland Basin.

8.6 ROUTINE RECORDING AND REPORTING

8.6.1 Internal

Activity Reports

All environmental near-misses and incidents, including non-compliances with the EP EPO and EPS, will be communicated and reviewed internally in accordance with Standard 14 and 16 of the HPB MSS.

The Daily Decommissioning Report is distributed to CHPL by the Exceed Offshore Supervisor. The Daily Drilling Report will be submitted to NOPTA at reporting@nopta.gov.au by midday on the day after the day to which the report relates. Submission of the report is the responsibility of the CHPL Project Manager. HSE matters are discussed in the Daily Meeting held between Vessel contractor, Exceed and CHPL personnel.

The Exceed HSE Manager is responsible for generating a weekly HSE Report which is forwarded and reviewed by the CHPL Project Manager and senior CHPL management.

Incident Notification and Investigation

All environmental and serious near-miss incidents on-board the Vessels will be notified in accordance with CHPL requirements observing the minimum requirements contained in this EP for recordable and reportable incidents.

All environmental incidents will be reported in the first instance to the Vessel OIM and Exceed Supervisor, who will in turn notify the CHPL Project Manager based in Melbourne. The CHPL Project Manager will notify NOPSEMA and other regulatory agencies as required. The CHPL Project Manager will manage actions arising from incidents via the *Corrective and Preventative Action Procedure* and all actions will be entered into the CHPL Action Tracker System, which will be monitored and closed-out by the CHPL Project Manager.

During induction and regularly throughout the program, the requirement to communicate incidents to Exceed and CHPL Management will be reinforced.

As a minimum, any recordable and reportable environmental incidents shall be investigated in accordance with the CHPL *Incident Reporting and Investigation Procedure*. Corrective and preventative actions taken to eliminate the cause of potential incidents will be commensurate with the magnitude of the environmental risks.

The results of incident investigations are communicated to relevant crews during standard forums such as HSE Meetings. CHPL will carry forward the identified corrective/preventative actions from incidents for consideration in future campaigns to ensure 'lessons learnt' are captured, and to assist with continuous improvement in environmental management, or to provide frequency data (i.e. likelihood determination) associated with decommissioning operations.

Corrective Action Management

The CHPL Project Manager will manage actions arising from incidents via the *Corrective and Preventative Action Procedure* and all actions will be entered into the CHPL Action Tracker System, which will be monitored and closed-out by the CHPL Project Manager. Close-out of actions arising will only be undertaken by the Project Manager when documentation is provided, or records sighted which verify the corrective action has been implemented.

All records shall be stored in accordance with the WSH *Project Control Requirements for Contractors Procedure* and maintained on the CHPL Sharepoint system.

8.6.2 External

Regulation 45 of the OPGGS specifies that consultation with relevant authorities, persons and organisations must take place in the course of preparing an EP. This consultation includes an implicit obligation to report on the progress of the activity. Table 8.3 outlines the routine reporting obligations that CHPL will undertake with external organisations.

Table 8.3. External routine reporting obligations

Requirement	Timing	Contact details	OPGGS(E)
Submit an annual performance report to NOPSEMA.	Annually	submissions@nopsema.gov.au	Reg 51
Notify NOPSEMA of the end of the operation of the EP.	Submit with EP Performance Report.	submissions@nopsema.gov.au	Reg 46

8.6.3 INCIDENT RECORDING AND REPORTING

Regulation 5 of the OPGGS(E) defines the following incident types:

- Recordable incident – a breach of an EPO or EPS in the EP that applies to the activity that is not a reportable incident.
- Reportable incident – means an incident relating to the activity, that has caused, or has the potential to cause, moderate to significant environmental damage.

CHPL interprets 'moderate to significant' environmental damage as being those consequences in the HPB consequence definitions (see Table 6.1) as having a consequence of 'major', 'severe' or 'catastrophic'. For this activity there are no identified impacts or risks with these consequences (as outlined throughout Chapter 7).

Table 8.4 presents CHPL's reporting obligations in the case of recordable and reportable incidents.

Table 8.4. External reportable incident reporting obligations

Requirement	Timing	Contact
Recordable incidents		
As a minimum, the written recordable report must contain: • A record of all recordable incidents that occurred during the calendar month; and • All material facts and circumstances concerning the recordable incidents that the titleholder knows or is able, by reasonable search or enquiry, to find out; and • Any action taken to avoid or mitigate any adverse environment impacts of the recordable incidents; and	As soon as practicable after the end of the calendar month, and in any case not later than 15 days after the end of the calendar month.	submissions@nopsema.gov.au

Requirement	Timing	Contact
• The corrective action that has been taken, or is proposed to be taken, to stop, control or remedy the recordable incident; and • The action that has been taken, or is proposed to be taken, to prevent a similar incident occurring in the future.		
Reportable incidents – verbal notification		
Reportable incidents are defined in the paragraph preceding this table. The notification must contain: • All material fact and circumstances concerning the incident. • Any action taken to avoid or mitigate the adverse environmental impact of the incident. • The corrective action that has been taken or is proposed to be taken to stop control or remedy the reportable incident.	Within 2 hrs of becoming aware of the incident.	TBA
Reportable incidents – written notification		
A written report must follow a verbal notification of a reportable incident to NOPSEMA. As a minimum, the written report must contain: • All material facts and circumstances concerning the reportable incident that the titleholder knows or is able, by reasonable search or enquiry, to find out. • Any action taken to avoid or mitigate any adverse environment impacts. • The corrective action that has been taken, or is proposed to be taken, to stop, control or remedy the incident. • The action that has been taken, or is proposed to be taken, to prevent a similar incident occurring in the future.	As soon as practicable, and in any case not later than 3 days after the first occurrence of the reportable incident.	submissions @nopsema. gov.au

8.6.4 ENVIRONMENTAL PERFORMANCE REPORTING

In accordance with OPGGS(E) Regulation 22(7), CHPL will submit to NOPSEMA an annual Environmental Performance Report. Given the simplicity of this activity, this report will take the form of a letter to notify NOPSEMA whether the EPO have been met during the reporting period.

In accordance with OPGGS(E) Regulation 50, CHPL will report recordable environmental incidents to NOPSEMA on a monthly basis during operations.

8.7 CHANGE MANAGEMENT

CHPL adopts the HPB Management of Change Procedure (HPB-SP-DOC-PCD02) that defines the method, level of documentation required and process for initiating changes to CHPL work programs. All Management of Change (MOC) must undergo a risk hazard review, where severity and probability of the change to the program are reviewed, considered and, if required, mitigated. Once an MOC has been generated, it must be submitted to the relevant facilitator for documenting and tracking.

The Exceed Supervisor will maintain an awareness of the Management of Change activities on-board the Vessel during the decommissioning campaign, ensuring the changes are assessed for compliance with the requirements of the accepted EP; and for change activities which have the potential to significantly increase environmental impacts or risk.

Decommissioning Program related change events will be managed in accordance with the CHPL *Management of Change Procedure.*

8.8 MONITORING, AUDITING, NON-CONFORMANCE AND REVIEW

The OPGGS(E) Regulation 22(6) requires that monitoring, auditing, management of non-conformance and review of environmental performance are described in an EP.

The objective of the monitoring, audit and review program for the WSH-3 and Wardie-1 Decommissioning Campaign is to ensure the EP EPOs are observed, verified and measured; EP controls are implemented, and performance verified; emissions and discharges are recorded and the EP implementation strategy is assessed for effectiveness. These activities assist CHPL to review environmental performance with a view to continuous improvement.

Collation of information provided by control measure 'custodians', EPO incident records and emissions/discharge records allows the Exceed HSE Advisor to assess environmental performance against nominated EPOs and standards.

8.8.1 EMMISSIONS/DISCHARGE MONITORING, QUANTIFICATION AND REPORTING

CHPL will maintain a quantitative record of emissions and discharges as required under Regulation 22(6) of the OPGGS(E). These records will include all emissions and discharges to the environment. Results will be reported in the end-of-program EP compliance report submitted to NOPSEMA.

Monitoring parameters provided in Table 8.5 identify the emission and discharge parameters which will be monitored during the Drilling Campaign and forms a consolidated list of items.

Table 8.5. WSH-3/Wardie-1 Decommissioning Campaign Discharge/Emissions Monitoring Program

Discharge	Parameters	Record	Responsibility
Atmospheric Emissions			
Atmospheric Emissions	Quantity of Marine diesel used by the Vessel	Daily Fuel Use Log	Vessel Master
Discharges to sea			
Sewage/Grey Water discharge (if any)	Volume of sewage discharges	Garbage Record Book	Vessel Master

Discharge	Parameters	Record	Responsibility
Disposal of wastes			
Hazardous Wastes	Volume of hazardous wastes transferred onshore.	Garbage Record Book / Oil Record Book	Exceed Materials Coordinator
Solid Non-biodegradable Wastes	Volume of non-hazardous wastes transferred onshore.	Garbage Record Book	Exceed Materials Coordinator
Acoustic Source Operations – if required			
Cetacean Sightings (Cutting Tools - if required)	Details required on Whale and Dolphin Sighting Reports (DOE) Record of operations commencements, and visual checks undertaken before commencement and actions taken if whale sightings within 1km of vessel during survey activities of sewage discharges	Observer records Observer records	Trained crew Trained observers

The Exceed HSE Advisor is responsible for the collation of this information and for the acquisition of records to support discharge volumes. Records will be stored in the CHPL Sharepoint system.

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APPENDIX 1 INFORMATION FLYER

WEST SEAHORSE-3 TEMPORARILY ABANDONED WELL
WARDIE-1 ABANDONED WELL
Invitation to Comment

SUMMARY

Carnarvon Hibiscus Pty Limited (CHPL), a wholly owned subsidiary of Hibiscus Petroleum Berhad (Hibiscus Petroleum), is the titleholder of retention license VIC/RL17 (formerly production license VIC/L31) in eastern Bass Strait. The West Seahorse-3 (WSH-3) well is located within this license area and is temporarily abandoned (suspended). The Wardie-1 well also lies within this permit, (approximately 2.8m distance from WSH-3) and is abandoned with a short section of surface conductor remaining approximately 2m above the seabed.

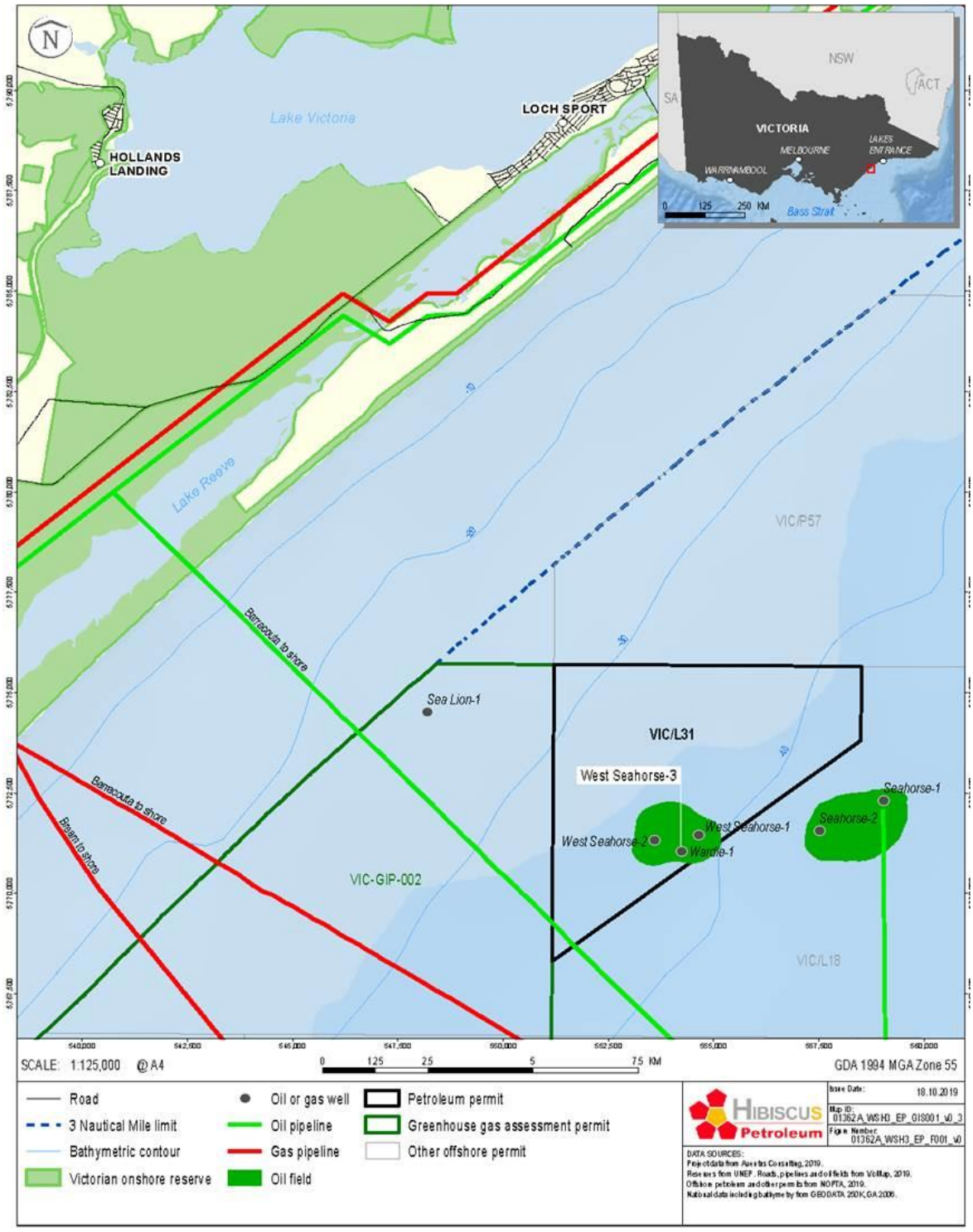
Both wells were originally drilled in 2008 by 3D Oil Limited (3D Oil) and temporarily abandoned / abandoned in accordance with international standards. There have been no further works on WSH-3 or Wardie-1 since this time.

In accordance with its obligations under the Commonwealth Offshore Petroleum and Greenhouse Gas Storage Act 2006 (OPGGS Act), CHPL developed an Environment Plan (EP) to continue the non-production operations phase of WSH-3 until such time that it is completed as a producing well or it is permanently abandoned.

CHPL is now revising this EP to include the remaining Wardie-1 surface conductor and to permanently abandon and fully decommission both wells and is seeking to engage with relevant persons whose functions, interests or activities may be affected by the existence of the WSH-3 suspended well, or the Wardie-1 abandoned well.

LOCATION

The WSH-3 wellhead is located in eastern Bass Strait approximately 13 km off the Gippsland coast in a water depth of 39.5 m (see location map below). Wardie-1 is adjacent to WSH-3 approximately 2.8m away.



The WSH-3 well coordinates are:

Latitude: 38° 12’ 24.9422” S (5,771,044.135 N)

Longitude: 147° 37’ 09.8649” E (554,229.358 E).

The Wardie-1 well coordinates are:
Latitude: 38° 12’ 24.881” S (5,771,046.028 N)
Longitude: 147° 37’ 09.793” E (554,227.625 E).

WELL HISTORY

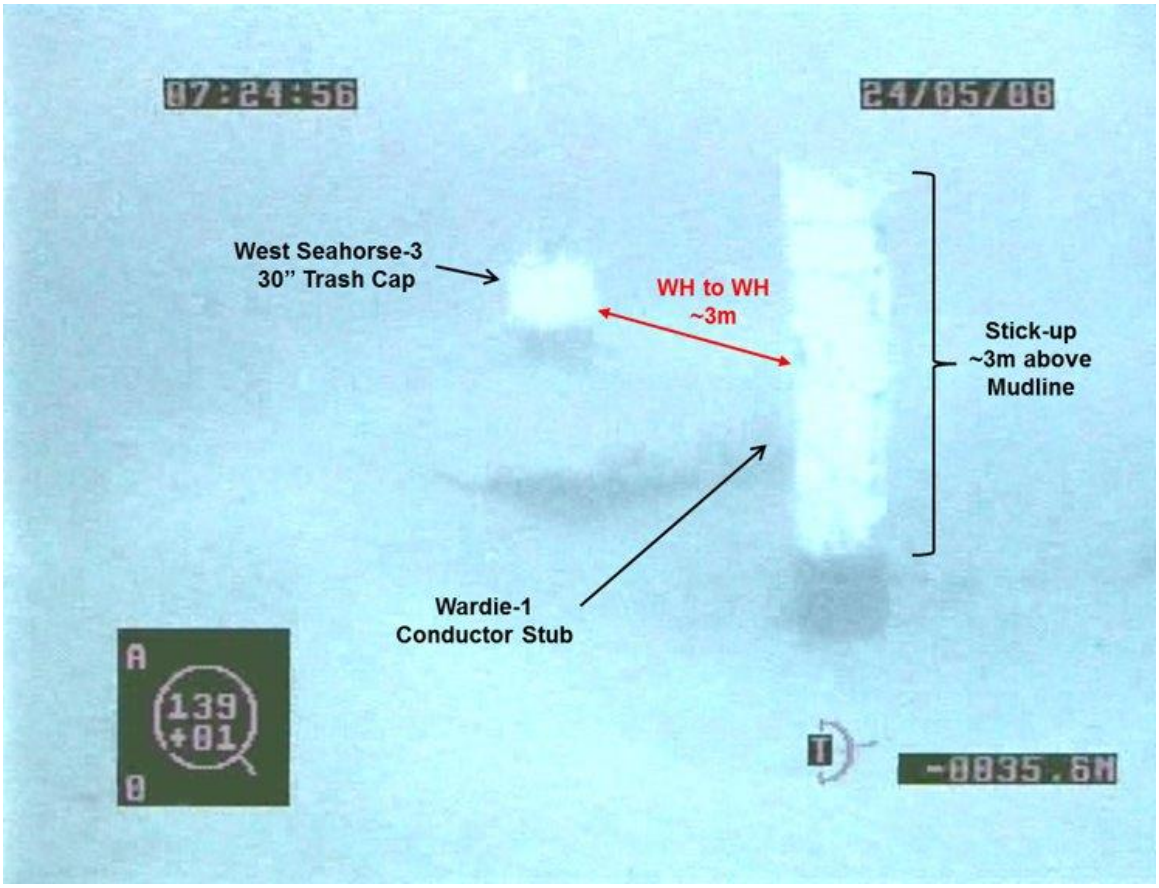
WSH-3 and Wardie-1 were originally drilled by 3D Oil in early 2008 in the then Exploration Permit VIC/P57.

The objectives of the WSH-3 well were to appraise and develop the oil-bearing sandstones of the Latrobe Group in the West Seahorse field, originally discovered by drilling the West Seahorse-1 well in 1981. The well confirmed the presence of oil in a high-quality reservoir.

Following completion of the well, WSH-3 was successfully temporarily abandoned in early May 2008 in accordance with international well integrity standards, which involved the installation and testing of four cement plugs to prevent any hydrocarbons flowing to surface. A temporary abandonment cap was installed over the conductor casing and protrudes 2 m above the seabed and measures approximately 1.1 m in diameter (see image below). This cap is designed to prevent damage to the wellhead from marine growth and third-party activities (such as trawler drag or anchor drop).

Wardie-1 was a deviated exploration well drilled immediately following WSH-3 from an adjacent slot and the wells are approximately 2.8 m apart. The main objectives were the Eocene sandstones intersected in the West Seahorse oil field. Results indicated the potential recoverable oil volume was not considered significant enough to justify suspension of the well. Wardie-1 was successfully plugged and abandoned in May 2008 in accordance with international standards for well integrity. Despite numerous attempts the conductor could not be pulled free. As a result the landing string was backed out and released casing pulled to surface. The 30” conductor remains in-situ approximately 3 m above the seabed. Given its location, Wardie-1 is incorporated into the associated Safety Zone for WSH-3.

Since CHPL’s acquisition of VIC/L31, there have been no further works on either well. The WSH-3 wellhead remains temporarily abandoned in place until such time as it is permanently abandoned, and the Wardie-1 conductor remains approximately 2.8 m from WSH-3 and 2.8 m above the seabed.



WSH-3 well and temporary abandonment cap / Wardie1 Conductor Stub

THE TITLEHOLDER

Hibiscus Petroleum is Malaysia's first listed independent oil and gas exploration and production company and is headquartered in Kuala Lumpur. Its key activities are focused on monetising producing oilfields and growing its portfolio of development and production assets.

CHPL acquired the VIC/P57 permit in December 2012 and successfully applied for a Production Licence (VIC/L31) over a portion of the block holding the West Seahorse Field, which was granted by the National Offshore Petroleum Titles Authority (NOPTA) in December 2013. In September 2014 CHPL purchased 3D Oil's share in the permit. CHPL has since been the 100% titleholder and Operator of VIC/L31. CHPL successfully applied for a Retention Lease (VIC/RL17) which was granted in November 2021

ENVIRONMENTAL CONSIDERATIONS AND REGULATORY APPROVALS

CHPL is cognisant of the ecological and socio-economic values of the Gippsland marine environment and has developed an EP for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) which was accepted in 2019. The EP described the known and potential impacts and risks on the environment of the well and detail control measures to manage these impacts and risks. CHPL is revising the EP to include the Wardie-1 conductor stub.

CHPL will be undertaking a vessel-based campaign to sever both conductors at or below the seabed and remove them from location. They will be returned to an onshore supply base, cleaned, and recycled or disposed as per best industry practice. They are made from steel and other than some possible marine growth, no other materials are included.

A 300-m radius Petroleum Safety Zone (PSZ) (0.283 km^2) has been in place around the well since 2008, and this is the defined operations area for this activity. The risk of a vessel based marine diesel oil (MDO) spill has been assessed and preliminary modelling has shown under worst case scenario conditions that the majority contents of any marine diesel oil spill would be fully adsorbed into the water column or evaporated and limited particles would make landfall. Stringent operating practices and preventative measure limit the likelihood of any MDO spill to be extremely low during the proposed operations and further mitigating strategies limit the potential volume of any potential spill.

The impacts arising as a result of the abandonment operations phase are limited to those associated with the physical presence of the WSH-3 well (and the temporary abandonment cap), the Wardie-1 surface conductor, and the associated PSZ (such as the exclusion of trawling activity in this PSZ), and very low-level impact of an MDO spill contacting the shore line should the operating vessel be involved in a collision.

STAKEHOLDER CONSULTATION

Under the OPGGS Act and associated environmental regulations, the operator of an activity must engage with ‘relevant persons’ (i.e., government agencies, organisations and individuals) whose functions, interests or activities may be affected by an offshore petroleum activity.

You have been identified as a potential relevant person for this activity. The purpose of this email is to inform you of the presence of WSH-3 and Wardie-1 conductor, establish a communication channel and determine whether you may be impacted by the presence of the well or the proposed decommissioning activities.

Accordingly, CHPL invites your comments on the existence of this suspended well and surface conductor to enable it to fully consider the potential impacts of this activity, which will assist in refining the control measures in the revised EP that aim to protect the environment and minimise disruption to marine users.

Should CHPL not receive a response from you in the coming weeks, we will endeavour to re-make contact with you to solicit your views. Please note that you may request that any information you provide during the consultation be not published in the revised EP.

If you would like further information about CHPL's WSH-3 and Wardie-1 suspended well operations or would like to provide feedback on how your functions, interests or activities may be affected by the well, please contact us using the details provided below. The revised EP for this activity will be re-submitted in November 2023.

CONTACT DETAILS

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