Environmental Plan Summary

VIC 9120 ENV PLN
CDN/ID 18726200

Halladale, Black Watch Speculant

Production OPGGS Environment Plan Summary

Review record (record the last 3 revisions here or the revisions required to achieve current approval version)

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THE THREE WHATS
What can go wrong?
What could cause it to go wrong?
What can I do to prevent it?

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Definitions / Acronyms

Term / Acronym	Definition
ALARP	As Low as Reasonably Practicable
AMP	Australian Marine Park
AUS	Australia
BIA	Biologically Important Area
BSTD	Beach Standard
CAMBA	Agreement Between the Government of Australia and the Government of the People's Republic of China for the Protection of Migratory Birds and their Environment
CD	Conservation Dependent
CE	Critically Endangered
CEO	Chief Executive Officer
CHMP	Cultural Heritage Management Plan
DCCEEW	Department of Climate Change, Energy, the Environment and Wate
DEECA	Department of Energy, Environment and Climate Action
DTP	Department of Transport and Planning
EES	Environmental Effects Statement
EMAC	Eastern Maar Aboriginal Corporation
EMP	Emergency Management Plan
EP	Environment Plan
EPA	Environmental Protection Authority
EPBC	*Environment Protection and Biodiversity Conservation Act 1999*
EPO	Environment Performance Outcome
EPS	Environment Performance Standard
ERP	Emergency Response Plan
ERR	Earth Resources Regulation
ESD	Ecologically Sustainable Development
FKO	Foraging Known to Occur
FL	Foraging Likely
FPSR	First Peoples – State Relations
GHG	Greenhouse Gas
GIS	Geographical Information Systems
GMA	Groundwater Management Area
HBWS	Halladale, Black Watch and Speculant
HSE	Health, Safety and Environment
IMT	Incident Management Team

IOGP	International association of Oil and Gas Producers
ISO	International Standards Organisation
IUCN	International Union for Conservation of Nature
KEF	Key Ecological Feature
LAT	Latitude
MACA	*The Marine and Coastal Act 2018*
MNES	Matters of National Environmental Significance
NM	Nautical Miles
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
OEM	Original Equipment Manufacturers
OEMS	Operations Excellence Management System
OGUK	Oil and Gas UK
OPGGS	*Offshore Petroleum and Greenhouse Gas Storage Act*
PCNP	Port Campbell National Park
PIC	Person in Charge
PMST	EPBC Act Protected Matters Search Tool
PSSR	Pre-startup Safety Review
PSV	Platform Supply Vessel
SPRAT	Species profile and threats database
TEC	Threatened Ecological Community
UK	United Kingdom
UXO	Unexploded Ordnance
VIC	Victoria
WOMP	Well Operations Management Plan

1 Introduction

The Halladale, Black Watch, and Speculant (HBWS) gas fields are located approximately 5 km from shore in Victorian waters within the Otway Basin, as shown in Figure 1-1. The HBWS gas fields are located in Victorian Production Licence VIC/L1(V) and have been developed from an onshore wellsite using extended reach drilling. The onshore well site is located approximately 3 km south-west of Nirranda South and consists of four production wells (Halladale-2, Black Watch-1, Speculant-1, and Speculant-2 ST1. There are no plans to drill an additional well (Speculant-3)[1]. The HBWS gas fields and onshore wellsite are managed by the Otway Gas Plant.

This Offshore Operations Environmental Plan (EP) evaluates the potential impacts from the operation of the HBWS gas fields within Production Licence VIC/L1(V), and the associated Access Authority VIC/AA21(V), on the offshore environment to satisfy the requirements of Victorian *Offshore Petroleum and Greenhouse Gas Storage (OPGGS) Act 2010* and associated Victorian OPGGS Regulations 2021.

Together, the Production Licence VIC/L1(V) and the associated Access Authority VIC/AA21(V) are referred to as the 'Offshore Beach Permit Area' throughout this EP Summary.

1.1 Scope of this Document

In accordance with Regulation 13E (4) of the Victorian OPGGS Regulations 2021, this EP Summary includes details about the location and nature of the activity, the receiving environment, consultation undertaken, the environmental impacts, risks and associated control measures, monitoring and environmental performance measures and emergency response arrangements.

[1] The wellsite has provision for one additional well (Speculant-3). However, there are currently no plans to drill this additional well.

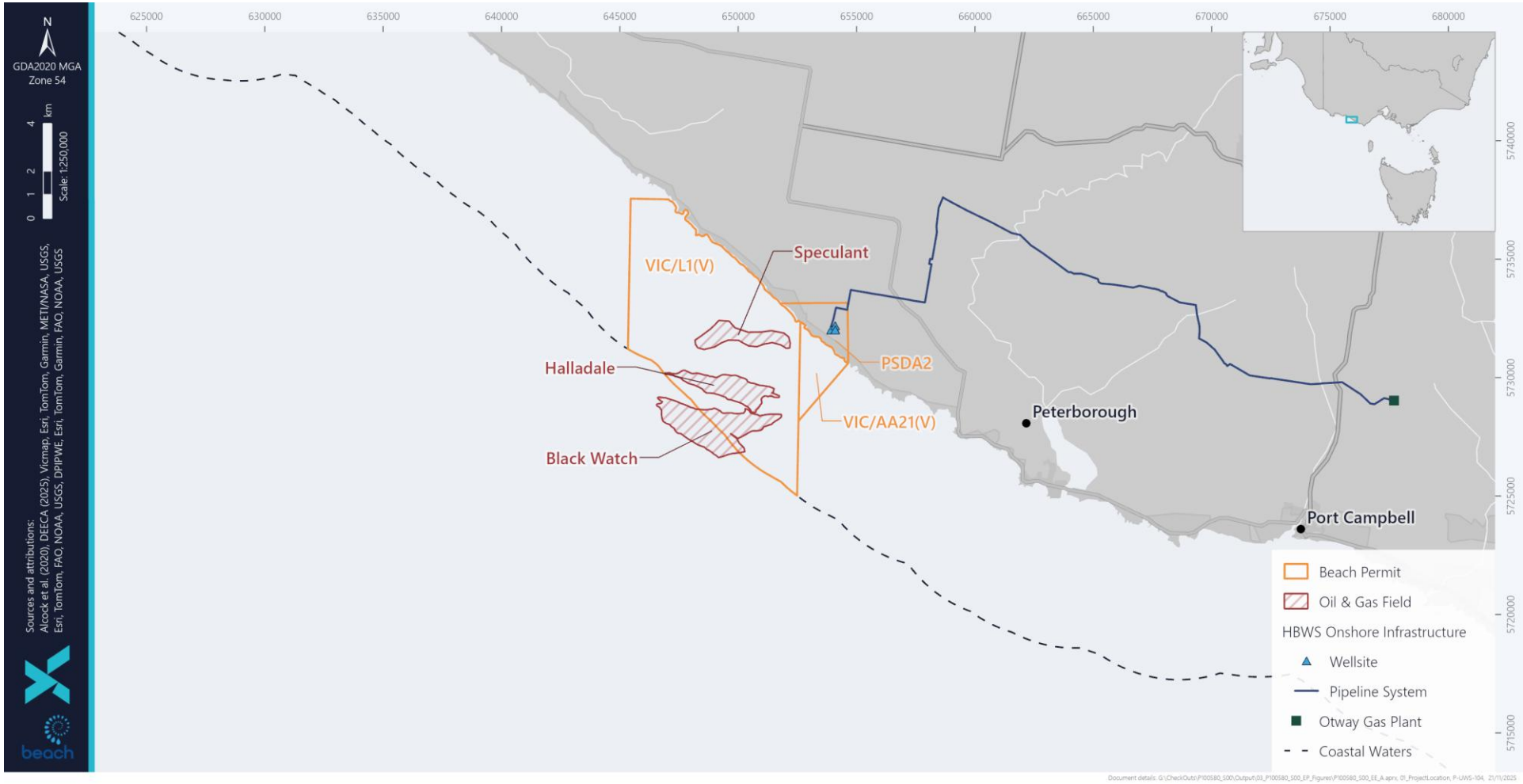


Figure 1-1: Location of the Halladale, Black Watch and Speculant Fields and Onshore Wellsite

1.2 The Proponent

The proponent, Beach Energy (Operations) Limited is the titleholder of Production Licence of VIC/L1(V) and the proponent of the associated Access Authorities and existing consents for the onshore wellsite.

In accordance with the Victorian OPGGS Regulations 2021 13E(4)(ix), the details of the titleholder's nominated liaison person for the EP are provided in Table 1-1.

Table 1-1: Titleholder and Liaison Persons

Contact	Details	
Petroleum Title		
VIC/L007745(V) and PSDA007746(V)	**Titleholder (60%) and Operator**	**Beach Energy (Operations) Limited**
	Business address	Level 8, 80 Flinders Street ADELAIDE, South Australia, 5000
	Telephone number	(08) 8338 2833
	Fax number	(08) 8338 2336
	Email address	info@beachenergy.com.au
	Australian Company Number	ACN 007 845 338
	Australian Business number	ABN 66 007 845 338
	Titleholder (40%)	**OGOG (Otway) Pty Ltd**
	Australian Company Number	ACN 628 946 752
Titleholder Liaison Person		
Luca De Iuliis Otway Production Manager	Business address	Level 10, 150 Lonsdale Street MELBOURNE VIC 3000
	Telephone	(03) 8652 6223
	Email	luca.deiuliis@beachenergy.com.au
Other Key Personnel		
Mr Kevin Galea General Manager - Offshore	Business address	Level 10, 150 Lonsdale Street MELBOURNE VIC 3000
	Telephone	Phone: (03) 9110 2166
	Email	Email: kevin.galea@beachenergy.com.au

2 Activity Description

The Offshore Beach Permit Area is located within approximately 5 km from shore in Victorian waters within the Otway Basin (Figure 1-1). The coordinates of the Production Licence area are presented in Table 2-1: and the coordinates of the Access Authority area is included in Table 2-2.

Table 2-1: VIC/L1(V) Coordinates (GDA 1994 MGA Zone 54)

Location Boundary Points	Easting	Northing
1	645455.1577	5737552.657
2	647065.1673	5737523.327
3	652626.2765	5732358.136
4	652486.4429	5725017.949
5	645340.2967	5731206.863

Table 2-2: VIC/AA21(V) Coordinates (GDA 1994 MGA Zone 54)

Location Boundary Points	Easting	Northing
1	652626.3065	5732360.213
2	654646.3208	5730606.402
3	652546.4761	5728169.872

The activity is the gas flow (recovery of petroleum) from the HBWS gas fields through existing well bores as defined under Section 4 of the Victorian OPGGS Act 2010. The well bores were drilled sub-surface (via extended reach drilling from the onshore well site), at least 600 m to 2,000 m below the sea floor. There are no additional physical facilities in the marine environment required to facilitate gas recovery (e.g. well head or pipeline) (Figure 2-1). There will be no new infrastructure or any other physical or vessel-based activities within the marine environment within the Offshore Beach Permit Area.

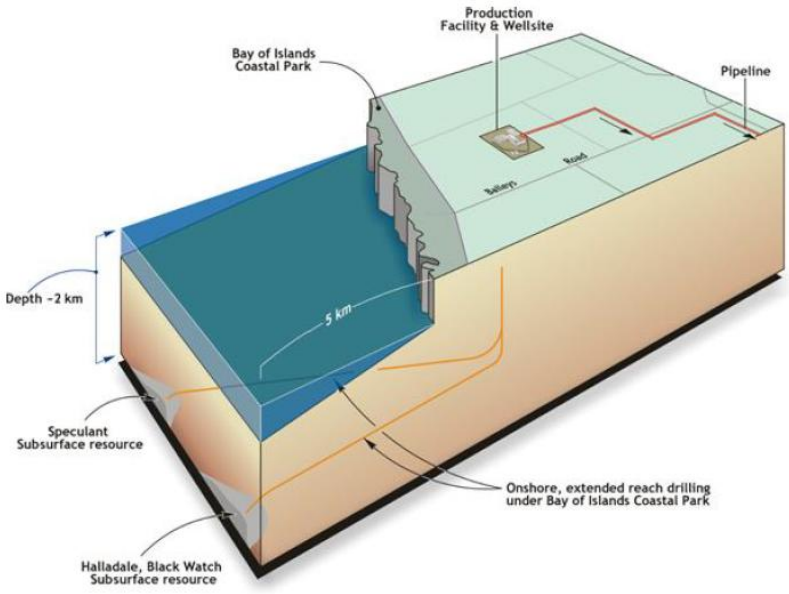


Figure 2-1 Schematic of the HBWS Facilities

Well interventions may take place during the operations phase of HBWS. The well intervention process is described within the Well Operations Management Plan (WOMP) (CDN/ID: 8818103). Onshore operations associated with well interventions are covered by the HBWS Wellsite Facility Operations Plan (CDN/ID 18986993). The well interventions will not require any activities within the Offshore Beach Permit Area.

3 Existing Environment

The environment that is described in this chapter is the marine environment within the Offshore Beach Permit Area which consists of the Production Licence area VIC/L1(V) and associated Access Authority VIC/AA21(V). The Offshore Beach Permit Area is located within the South-east Marine region.

They key sources of information used in developing this chapter include:

- The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Search Tool (PMST) database (DCCEEW, 2025a).
- Species Profile and Threats (SPRAT) Database (DoE, 2025).
- South-east Marine Region Profile (CoA, 2015).

3.1 Physical Environment

3.1.1 Climate and Meteorology

The Offshore Beach Permit Area is typical of a cool temperate climate, with cold, wet winters and warm, dry summers. The regional climate patterns are primarily influenced by sub-tropical high-pressure systems during summer and sub-polar low-pressure systems throughout winter.

3.1.2 Temperature and Rainfall

The average air temperatures recorded at Warrnambool airport for 1998-2025 range from 5.5°C to 24.7°C (BoM, 2025), with the lowest temperature in July and the highest temperatures in January and February. The mean annual rainfall recorded for the period 1998-2025 is 729.2 mm, with the highest rainfall totals falling in June, July and August (BoM, 2025).

3.1.3 Winds

The Offshore Beach Permit Area is located along the northern edge of the westerly wind belt, known as the Roaring Forties. During winter, the northward shift of the subtropical ridge across the Australian continent allows cold fronts to generate west to south-westerly winds and frequent rainfall in the region (McInnes and Hubbert, 2003). In summer, frontal systems tend to be shallower and typically occur between two high-pressure ridges, which results in more variable wind pattern and rainfall.

3.1.4 Groundwater

The onshore wellsite is located within the South West Limestone Groundwater Management Area (GMA). This groundwater system is located along the coastal plain of the Otway Basin between Warrnambool in the west, Peterborough in the east and northwards of Panmure. The Permissible Consumptive volume (PSV) (i.e. the cap on the total volume of groundwater that may be taken from the area) is 85,000 millilitres (mL) per year (DEECA, 2025).

A conceptual groundwater model for the Otway Basin, produced as part of the Victorian Gas Programme, describes the region as containing a complex system of aquifers and aquitards which are relied upon for domestic and agricultural use. Aquifers are present to depths up to 1 km below ground surface and some, such as the Lower Tertiary Sand Aquifer (Dilwyn Formation), extend several

kilometres offshore, potentially overlapping the Offshore Beach Permit Area and other offshore oil and gas operations in the Otway Basin (Torkzaben *et al.,* 2020a).

Torkzaben *et al.* (2020a) report that variable groundwater levels have occurred in recent years, showing a declining trend attributed to below-average rainfall (as reduced rainfall typically increases groundwater use). Overall, Torkzaben *et al.* (2020a) identified no evidence to suggest that historic gas production in the Otway Basin (both onshore and offshore) has impacted overlying groundwater aquifers. Torkzaben *et al.* (2020b) simulated the impact of hypothetical onshore gas development, combined with the existing gas development (including from HBWS), on groundwater resources in the Otway Basin. It was concluded that there would be no significant impact on the water table, aquifer volume, water level or surface water flow for any scenario considered.

3.2 Oceanography

3.2.1 Tides and Currents

Tides within Bass Strait are predominantly semi-diurnal, exhibiting a diurnal inequality, with the maximum tidal range in the western sector reaching approximately 1.2 m (Jones and Padman, 1983). Currents generally align along a northeast/southwest axis, with peak velocities of around 0.3 m/s (Fandry, 1983). In the central region, large-scale water movement is primarily driven by astronomical tides, accompanied by a slow easterly flow and a broad anticlockwise circulation pattern (CoA, 2015). Three major ocean currents influence Bass Strait and therefore the Offshore Beach Permit Area, the Leeuwin Current, the East Australian Current, and the Bass Strait Cascade.

3.2.2 Waves

The Otway Basin and its adjoining coastline, encompassing the Offshore Beach Permit Area, are predominantly oriented towards the southwest and are subject to significant exposure from oceanic swell generated by the Southern Ocean. Typical wave heights range between 1.5 m and 2 m, with waves reaching up to 10 m during severe winter storm events.

3.2.3 Water Temperature

Surface water temperatures in the Otway Basin typically range from 14°C in winter to 21°C in summer. During summer the upwelling of colder, nutrient rich deep waters can lead to a reduction in sea surface temperatures by around 3°C compared to surrounding offshore areas (Butler et al., 2002).

3.2.4 Water Quality

Coastal weather conditions adjacent to the Offshore Beach Permit Area significantly influence offshore water quality, driving sediment transport processes and affecting both benthic and pelagic habitats. Strong wave action often stirs up seabed sediments, leading to high turbidity levels in nearshore waters, often exceeding 50 mg/L (Larcombe et al., 1995; Whinney, 2007). Despite these fluctuations, local marine communities exhibit resilience to such environmental stressors.

3.2.5 Seabed

The Offshore Beach Permit Area is located in approximately 0-50 m water depth.

The Otway Shelf's seabed consists of Miocene limestone below a thin layer of younger sediments. Boreen et.al (1993) analysed 259 sediments samples from the Otway and Sorell Basins along the

Western Tasmanian margin. Their assessment identified that the Otway continental margin is a swell-dominated, open, cool-water carbonate platform. A conceptual model was developed which divided the margin into five depth-related zones: shallow shelf, middle shelf. Deep shelf, shelf edge, and upper slope. The Offshore Beach Permit Area lies within the shallow shelf zone, where exhumed limestone substrates support dense assemblages of encrusting molluscs, sponges, bryzoans, and red algae.

3.2.6 Shorelines

The shoreline near the Offshore Beach Permit Area features steep, rocky cliffs with a few scattered sandy beaches.

3.3 Biological Environment

The PMST database serves as the principal source of information regarding species that may be present within the Offshore Beach Permit Area. The spatial extent of the search was defined by the Production Licence and Access Authority boundaries, given that no credible risk or mechanism of impact to receptors has been identified in relation to the activity.

3.3.1 Benthic Assemblages

The predominant benthic habitat within the Offshore Beach Permit Area consists of rocky limestone reef interspersed with reef/sediment zones. Studies that were conducted in areas adjacent to the Offshore Beach Permit Area (Boreen et al., 1993; BBG, 2003; CEE Consultants Pty Ltd, 2003; Ramboll, 2020) indicate that the seabed across the shallow and middle shelf (to approximately 130 m depth) is largely composed of carbonate-rich coarse to medium sands, with patches of exposed limestone substrate.

A benthic survey of inner shelf sediments near the Minerva Gas Field (~21.55 km from the Offshore Beach Permit Area) (Currie & Jenkins, 1994) found coarse, well-sorted sand supporting 196 species and 5,035 individuals, dominated by crustaceans (63%), polychaetes (15%), molluscs (8%), and echinoderms (5%). Demersal fish are likely associated with carbonate sands on the inner shelf, with assemblages influenced by habitat structure and food availability. Fish communities typically change beyond 20 m depth, where kelp-associated wrasses and leatherjackets are replaced by deeper-water species.

3.3.2 Plankton

The seasonal Bonney Coast upwelling supports highly productive pelagic habitats, characterised by diverse zooplankton communities including copepods, decapods, krill, and gelatinous species. A key species in the region is the coastal krill *Nyctiphanes australis*, which forms dense swarms throughout the continental shelf waters, particularly in summer and autumn. This krill feeds on microalgae and plays a critical role in the food chain, serving as a primary food source for blue whales.

Plankton are abundant and widely distributed across the South-east Marine Region. In the Otway Basin, their distribution is patchy, reflecting localised and seasonal productivity that drives sporadic population surges (CoA, 2015). Within the Offshore Beach Permit Area, plankton populations are expected to vary significantly in both space and time, and are likely to exhibit characteristics of tropical, southern Australian, central Bass Strait, and Tasman Sea communities.

Plankton are not protected under the EPBC Act.

3.3.3 Marine Invertebrates

Research by the Museum of Victoria (Wilson & Poore, 1987; Poore et al., 1985) found high invertebrate diversity in southern Australian waters. Species distribution was observed to be patchy with little evidence of distinct biogeographic regions. Sampling of shallow inshore sediments also reported high diversity with patchy distribution (Parry et al., 1990), where crustaceans, polychaetes, and molluscs were dominant. Rocky reefs within the Offshore Beach Permit Area are known to provide habitat for species such as the southern rock lobster.

3.3.4 Marine Flora

The subtidal and intertidal rocky reefs of the Bass Strait are known for their high macroalgal diversity. Variations among reefs are influenced by factors such as wave exposure, rock type and weathering, and the presence of rock pools, crevices, and boulders. The nearshore zones within the Offshore Beach Permit Area are characterised by extensive stands of large brown kelp. These marine plants anchor to solid substrates and extend their blades toward sunlight, forming dense canopies that block light and shade the underlying surfaces. This shading creates conditions for smaller algal species to establish themselves beneath the canopy.

3.3.5 Seabirds and Shorebirds

A diverse array of seabirds and shorebirds birds utilise the Otway region and potentially forage within or fly over the Offshore Beach Permit Area. Table 3-1 lists the seabird and shorebird species identified in the PMST Report as occurring in the Offshore Beach Permit Area. Seabird and shorebirds species Biologically Important Areas (BIAs) that overlap with the Offshore Beach Permit Area are displayed in Figure 3-1 to Figure 3-3.

Thirty-one seabirds and thirty-five shorebirds were identified in the PMST to potentially occur within the Offshore Beach Permit Area.

Table 3-1: Seabird and Shorebird species presence within the Offshore Beach Permit Area

Scientific Name	Common Name	EPBC Act Status			BIA	Recovery Plan
		Listed Threatened Species	Listed Migratory Species	Listed Marine Species		
Seabirds						
Albatross						
Diomedea antipodensis	Antipodean Albatross	V	Migratory Marine	Listed	FKO	National Recovery Plan for Albatrosses and Petrels (CoA, 2022a)
Thalassarche melanophris	Black-browed Albatross	V	Migratory Marine	Listed	FKO	
Thalassarche bulleri	Buller's Albatross (Pacific Albatross)	V	Migratory Marine	Listed	FKO	
Thalassarche impavida	Campbell Albatross (Campbell Black-browed Albatross)	V	Migratory Marine	Listed	FKO	
Thalassarche chrysostoma	Grey-headed Albatross	E	Migratory Marine	Listed	-	
Thalassarche carteri	Indian Yellow-nosed Albatross	V	Migratory Marine	Listed	FKO	
Thalassarche bulleri platei	Northern Buller's Albatross (Pacific Albatross)	V	-	Listed	-	
Diomedea sanfordi	Northern Royal Albatross	E	Migratory Marine	Listed	-	
Thalassarche salvini	Salvin's Albatross	V	Migratory Marine	Listed	-	
Thalassarche cauta	Shy Albatross	E	Migratory Marine	Listed	FL	
Phoebetria fusca	Sooty Albatross	V	Migratory Marine	Listed	-	

Diomedea epomophora	Southern Royal Albatross	V	Migratory Marine	Listed	-	
Diomedea exulans	Wandering Albatross	V	Migratory Marine	Listed	FKO	
Thalassarche steadi	White-capped Albatross	V	Migratory Marine	Listed	-	
Petrels						
Halobaena caerulea	Blue Petrel	V	-	Listed	-	Conservation Advice for *Halobaena caerulea* Blue Petrel (DoE, 2015a)
Macronectes halli	Northern Giant Petrel	V	Migratory Marine	Listed	-	National Recovery Plan for Albatrosses and Petrels (CoA, 2022a)
Pterodroma mollis	Soft-plumaged Petrel	V	-	Listed	-	
Macronectes giganteus	Southern Giant Petrel	E	Migratory Marine	Listed	-	
Pelecanoides urinatrix	Common Diving Petrel*	-	Marine	Listed	F	
Other Seabirds						
Sternula nereis nereis	Australian Fairy Tern	V	-	-	-	Approved Conservation Advice for *Sternula nereis nerei*, Australian Fairy Tern (DCCEEW, 2011) National Recovery Plan for the Australian Fairy Tern (DCCEEW, 2022)
Stercorarius antarcticus	Brown Skua	-	-	Listed	-	-
Pachyptila turtur	Fairy Prion	-	-	Listed	-	-
Pachyptila turtur subantarctica	Fairy Prion (southern)	V	-	-	-	Approved Conservation Advice for *Pachyptila turtur subantarctica* Fairy Prion (southern)(TSSC, 2015a)
Ardenna carneipes	Flesh-footed Shearwater	-	Migratory Marine	Listed	-	-

Eudyptula minor	Little Penguin	-	-	Listed	-	-
Sternula albifrons	Little Tern	V	Migratory Marine	Listed	-	Approved Conservation Advice for *Sternula albifrons* (little tern) (DCCEEW, 2025c)
Ardenna tenuirostris	Short-tailed Shearwater	-	Migratory Marine	Listed	F	-
Ardenna grisea	Sooty Shearwater	V	Migratory Marine	Listed	-	Approved Conservation Advice for *Ardenna grisea* (sooty shearwater) (DCCEEW, 2023a)
Sterna striata	White-fronted Tern	-	-	Listed	-	-
Other Birds						
Botaurus poiciloptilus	Australasian Bittern	E	-	-	-	Conservation Advice *Botaurus poiciloptilus* Australasian Bittern (TSSC, 2019) National Recovery Plan for the Australasian Bittern (*Botaurus poiciloptilus*) (CoA, 2022b)
Rostratula australis	Australian Painted Snipe	E	-	Listed	-	Approved Conservation Advice for *Rostratula australis* (Australian painted snipe) (DCCEEW, 2013) National Recovery Plan for the Australian Painted Snipe (*Rostratula australis*) (CoA, 2022c)
Limosa lapponica	Bar-tailed Godwit	-	Migratory Wetlands Species	Listed	-	-
Chalcites osculans	Black-eared Cuckoo	-	-	Listed	-	-
Monarcha melanopsis	Black-faced Monarch	-	-	Listed	-	-
Neophema chrysostoma	Blue-winged Parrot	V	-	Listed	-	-
Climacteris picumnus victoriae	Brown Treecreeper (south-eastern)	V	-	-	-	-
Bubulcus ibis	Cattle Egret	-	-	Listed	-	-

Tringa nebularia	Common Greenshank	E	Migratory Wetlands Species	Listed	-	-
Actitis hypoleucos	Common Sandpiper		Migratory Wetlands Species	Listed	-	-
Calidris ferruginea	Curlew Sandpiper	CE	Migratory Wetlands Species	Listed	-	-
Stagonopleura guttata	Diamond Firetail	V	-	-	-	-
Numenius madagascariensis	Far Eastern Curlew	CE	Migratory Wetlands Species	Listed	-	Conservation Advice for Numenius madagascariensis (Far Eastern Curlew) (DCCEEW, 2023b)
Thinornis cucullatus cucullatus	Eastern Hooded Plover	V	-	Listed	-	-
Apus pacificus	Fork-tailed Swift	-	Migratory Marine Bird	Listed	-	-
Callocephalon fimbriatum	Gang-gang Cockatoo	E	-	-	-	-
Falco hypoleucos	Grey Falcon	V	-	-	-	-
Thinornis cucullatus	Hooded Plover	-	-	Listed	-	-
Gallinago hardwickii	Latham's Snipe	V	Migratory Wetlands Species	Listed	-	Conservation Advice for *Gallinago hardwickii* (Latham's Snipe) (DCCEEW, 2024a)
Limosa lapponica baueri	Nunivak Bar-tailed Godwit, Western	E	-	-	-	Conservation Advice for *Limosa lapponica baueri* (Alaskan bar-tailed godwit) (DCCEEW, 2024b)
Neophema chrysogaster	Orange-bellied Parrot	CE	-	Listed	-	National Recovery Plan for the Orange-bellied Parrot, *Neophema chrysogaster* (DELWP, 2016)
Pandion haliaetus	Osprey	-	Migratory Wetlands Species	Listed	-	-

Grantiella picta	Painted Honeyeater	V	-	-	-	-
Calidris melanotos	Pectoral Sandpiper	-	Migratory Wetlands Species	Listed	-	-
Merops ornatus	Rainbow Bee-eater	-	-	Listed	-	-
Calidris canutus	Red Knot, Knot	V	Migratory Wetlands Species	Listed	-	-
Anthochaera phrygia	Regent honeyeater	CE	-	-	-	National Recovery Plan for the Regent Honeyeater (*Anthochaera phrygia*) (DCCEEW, 2021)
Rhipidura rufifrons	Rufous Fantail	-	-	Listed	-	-
Myiagra cyanoleuca	Satin Flycatcher	-	-	Listed	-	-
Calidris acuminata	Sharp-tailed Sandpiper	V	Migratory Wetlands Species	Listed	-	-
Lathamus discolor	Swift Parrot	CE	-	Listed	-	Conservation Advice *Lathamus discolor* Swift Parrot (TSSC, 2016) National Recovery Plan for the Swift Parrot (*Lathamus discolor*) (DCCEEW, 2024c)
Haliaeetus leucogaster	White-bellied Sea-Eagle	-	-	Listed	-	-
Hirundapus caudacutus	White-throated Needletail	V	Migratory Wetlands Species	Listed	-	-
Motacilla flava	Yellow Wagtail	-	Migratory Wetlands Species	Listed	-	-

*Note: While the Common Diving Petrel is not identified in the PMST report, a foraging zone for this species around Tasmania and Victoria has been declared and intersects with the Offshore Beach Permit Area.

Table 3-2: EPBC Act Status Definitions

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.

Table 3-3: PMST Database Key

Key	
EPBC Act Status	
CD	Conservation Dependent
V	Vulnerable
E	Endangered
CE	Critically Endangered
BIA (Biologically Important Area)	
A	Aggregation
R	Reproduction
D	Distribution
F	Foraging
FKO	Foraging Known to Occur
FL	Foraging Likely
M	Migration
R	Roosting

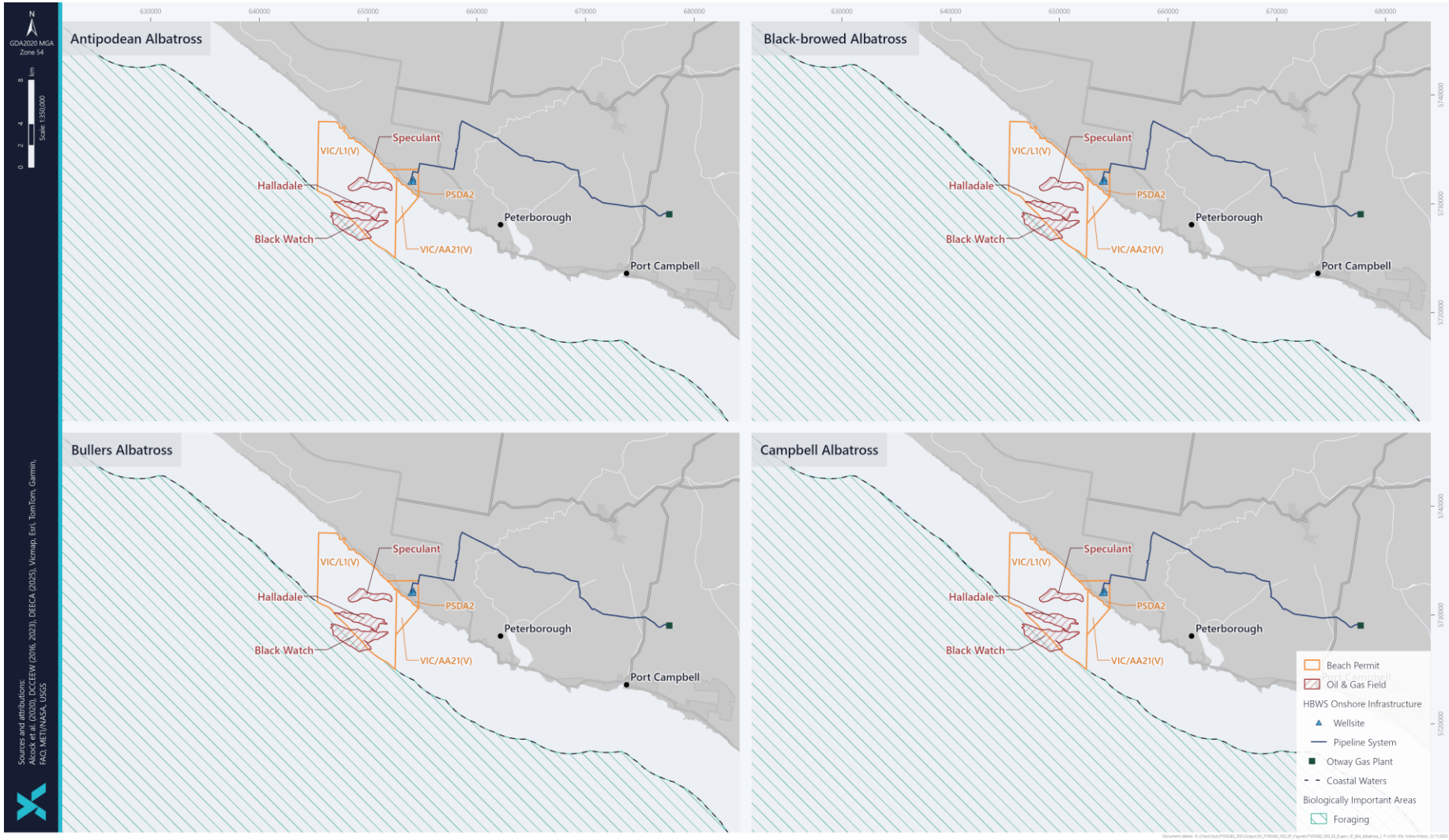


Figure 3-1: Antipodean Albatross, Black-browed Albatross, Bullers Albatross, Campbell Albatross BIAs overlapping the Offshore Beach Permit Area.



Figure 3-2: Indian Yellow-nosed Albatross, Shy Albatross and Wandering Albatross BIAs overlapping the Offshore Beach Permit Area.

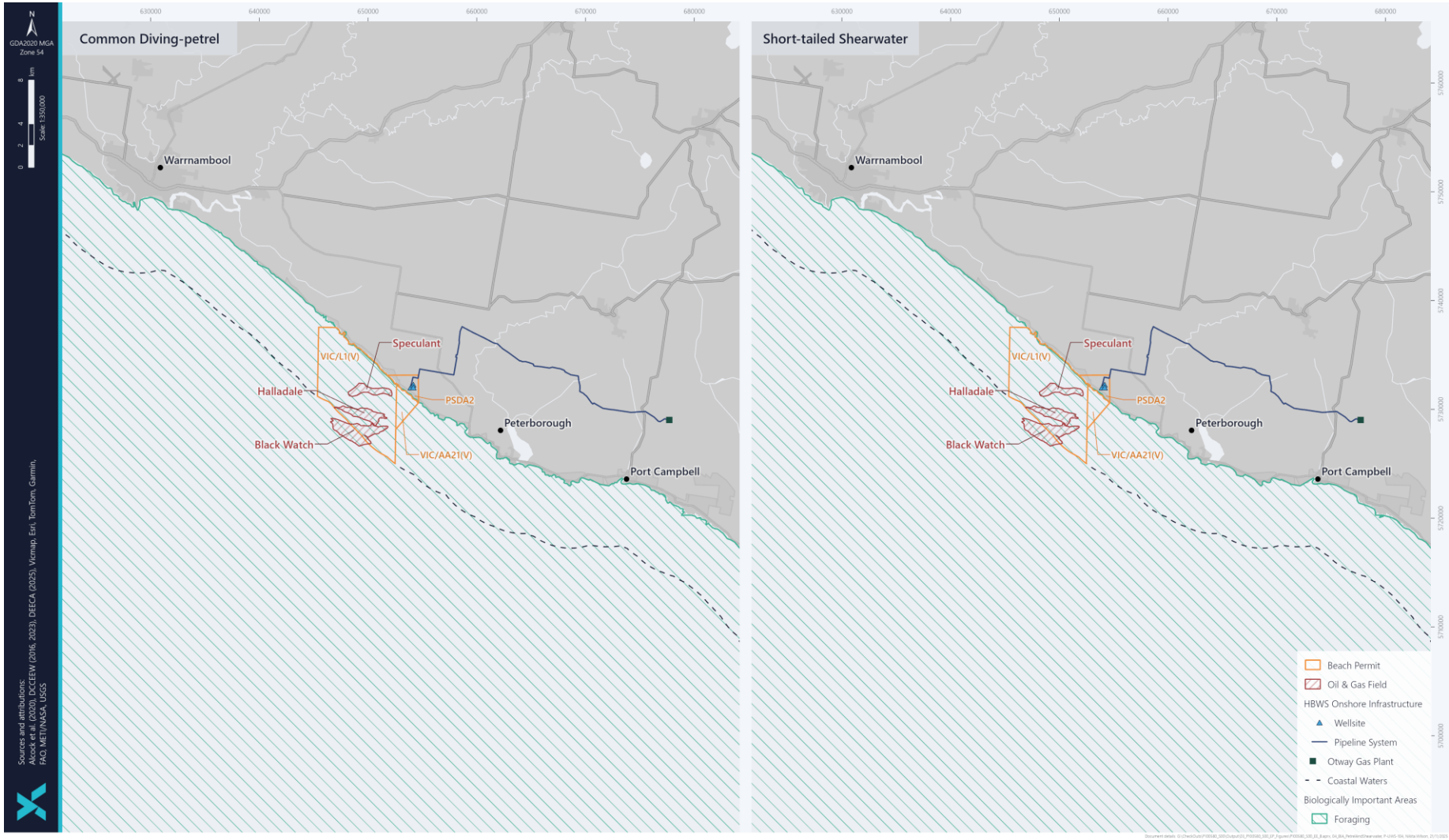


Figure 3-3: Common Diving Petrel and Short-tailed Shearwater BIAs overlapping the Offshore Beach Permit Area.

3.3.6 Cetaceans

The Otway Basin is a key migratory route for the humpback whale (*Megaptera novaeangliae*), the blue whale (*Balaenoptera musculus*), the southern right whale (*Eubalaena australis*), and occasionally the fin whale (*Balaenoptera physalus*) and the sei whale (*Balaenoptera borealis*), linking the north-eastern Australian coast with the sub-Antarctic. The Bonney Coast upwelling throughout the region brings cool, nutrient-rich waters across the continental shelf, fuelling krill blooms that attract baleen whales during summer.

Thirteen cetacean species were identified by the PMST to potentially occur within the Offshore Beach Permit Area. Table 3-4 lists the Cetacean species identified in the PMST Report as occurring in the Offshore Beach Permit Area. Cetacean species BIAs that overlap with the production area are displayed in Figure 3-4.

Table 3-4: Cetacean species presence within the Offshore Beach Permit Area

Scientific Name	Common Name	EPBC Act Status			BIA	Recovery Plan
		Listed Threatened Species	Listed Migratory Species	Listed Marine Species		
Whales						
Balaenoptera musculus	Blue Whale	E	Migratory Marine	-	F	Conservation Management Plan for the Blue Whale (DoE, 2015b)
Balaenoptera physalus	Fin Whale	V	Migratory Marine	-	-	Conservation Advice *Balaenoptera physalus* Fin Whale (TSSC, 2015b)
Megaptera novaeangliae	Humpback Whale	-	Migratory Marine	-	-	-
Orcinus orca	Killer Whale, Orca	-	Migratory Marine	-	-	-
Balaenoptera acutorostrata	Minke Whale	-	-	-	-	-
Caperea marginata	Pygmy Right Whale	-	Migratory Marine	-	-	-
Balaenoptera borealis	Sei Whale	V	Migratory Marine	-	-	Conservation Advice *Balaenoptera borealis* Sei Whale (TSSC, 2015c)
Eubalaena australis	Southern Right Whale	E	Migratory Marine	-	M R	National Recovery Plan for the Southern Right Whale *Eubalaena australis* (DCCEEW, 2024d)
Dolphins						
Tursiops truncatus s. str.	Bottlenose Dolphin	-	-	-	-	-
Delphinus delphis	Common Dolphin,	-	-	-	-	-

Lagenorhynchus obscurus	Dusky Dolphin	-	Migratory Marine	-	-	-
Tursiops aduncus	Indian Ocean Bottlenose Dolphin	-	-	-	-	-
Grampus griseus	Risso's Dolphin, Grampus	-	-	-	-	-



Figure 3-4: Pygmy Blue Whale and Southern Right Whale BIAs that overlap the Offshore Beach Permit Area.

3.3.7 Pinnipeds

Table 3-5 lists the Pinniped species identified in the PMST Report as occurring in the Offshore Beach Permit Area. There are no pinniped species BIA that overlap the Offshore Beach Permit Area.

Table 3-5: Pinniped species presence within the Offshore Beach Permit Area

Scientific Name	Common Name	EPBC Act Status			BIA	Recovery Plan
		Listed Threatened Species	Listed Migratory Species	Listed Marine Species		
Arctocephalus pusillus	Australian Fur-seal, also known as the Australo-African Fur-seal	-	-	Listed	-	-
Neophoca cinerea	Australian Sea-lion	E	-	Listed	-	Conservation Advice *Neophoca cinerea* Australian Sea Lion (TSSC, 2020) Recovery Plan for the Australian Sea Lion (*Neophoca cinerea*) (CoA, 2013a)
Arctocephalus forsteri	Long-nosed Fur-seal, New Zealand Fur-seal	-	-	Listed	-	-

3.3.8 Fish and Sharks

Table 3-6 lists the fish and shark species identified in the PMST Report as occurring in the Offshore Beach Permit Area. There are no fish species BIAs that overlap the Offshore Beach Permit Area.

Twenty-nine fish and four shark species were identified by the PMST to potentially occur within the Offshore Beach Permit Area.

Table 3-6: Fish and shark species presence within the Offshore Beach Permit Area

Scientific Name	Common Name	EPBC Act Status			BIA	Recovery Plan
		Listed Threatened Species	Listed Migratory Species	Listed Marine Species		
Fish						
Prototroctes maraena	Australian Grayling	V	-	-	-	Approved Conservation Advice for *Prototroctes maraena,* Australian Grayling (TSSC, 2021) National Recovery Plan for the Australian Grayling (*Prototroctes maraena*) (Backhouse, et. Al. 2008)
Lissocampus caudalis	Australian Smooth Pipefish	-	-	Listed	-	-
Hippocampus abdominalis	Big-belly Seahorse	-	-	Listed	-	-
Seriolella brama	Blue Warehou	CD	-	-	-	-
Leptoichthys fistularius	Brushtail Pipefish	-	-	Listed	-	-
Phyllopteryx taeniolatus	Common Seadragon, Weedy Seadragon	-	-	Listed	-	-
Histiogamphelus briggsii	Crested Pipefish	-	-	Listed	-	-
Kaupus costatus	Deepbody Pipefish	-	-	Listed	-	-
Urocampus carinirostris	Hairy Pipefish	-	-	Listed	-	-
Mitotichthys semistriatus	Halfbanded Pipefish	-	-	Listed	-	-

Lissocampus runa	Javelin Pipefish	-	-	Listed	-	-
Hypselognathus rostratus	Knifesnout Pipefish	-	-	Listed	-	-
Phycodurus eques	Leafy Seadragon	-	-	Listed	-	-
Vanacampus poecilolaemus	Longsnout Pipefish	-	-	Listed	-	-
Vanacampus margaritifer	Mother-of-pearl Pipefish	-	-	Listed	-	-
Vanacampus phillipi	Port Phillip Pipefish	-	-	Listed	-	-
Pugnaso curtirostris	Pugnose Pipefish	-	-	Listed	-	-
Notiocampus ruber	Red Pipefish	-	-	Listed	-	-
Histiogamphelus cristatus	Rhino Pipefish	-	-	Listed	-	-
Stipecampus cristatus	Ringback Pipefish	-	-	Listed	-	-
Solegnathus robustus	Robust Pipehorse	-	-	Listed	-	-
Maroubra perserrata	Sawtooth Pipefish	-	-	Listed	-	-
Hippocampus breviceps	Short-head Seahorse	-	-	Listed	-	-
Solegnathus spinosissimus	Spiny Pipehorse	-	-	Listed	-	-
Stigmatopora argus	Spotted Pipefish	-	-	Listed	-	-
Mitotichthys tuckeri	Tucker's Pipefish	-	-	Listed	-	-
Heraldia nocturna	Upside-down Pipefish	-	-	Listed	-	-
Stigmatopora nigra	Widebody Pipefish,	-	-	Listed	-	-

Nannoperca obscura	Yarra Pygmy Perch	E	-	-	-	Conservation Advice for *Nannoperca obscura* (Yarra pygmy perch) (DCCEEW, 2023c) National recovery plan for the Yarry Pygmy Perch (*Nannoperca obscura*) (Saddlier, et. al,. 2010)
Sharks						
Carcharias taurus	Grey Nurse Shark	-	Migratory Marine Species	-	-	-
Lamna nasus	Porbeagle Shark	-	Migratory Marine Species	-	-	-
Galeorhinus galeus	Eastern School Shark	CD	-	-	-	-
Carcharodon carcharias	White Shark	V	Migratory Marine Species	-	-	Recovery plan for the White Shark (*Carcharodon carcharias*) (DSEWPaC, 2013)

3.3.9 Reptiles

Table 3-7 lists the marine reptile species identified in the PMST Report as occurring in the Offshore Beach Permit Area. There are no reptile species BIA that overlap the Offshore Beach Permit Area.

Table 3-7: Reptile species presence within the Offshore Beach Permit Area

Scientific Name	Common Name	EPBC Act Status			BIA	Recovery Plan
		Listed Threatened Species	Listed Migratory Species	Listed Marine Species		
Chelonia mydas	Green Turtle	V	Migratory Marine Species	Listed	-	Recovery Plan for Marine Turtles in Australia
Dermochelys coriacea	Leatherback Turtle	E	Migratory Marine Species	Listed	-	Approved Conservation Advice for *Dermochelys coriacea* (Leatherback Turtle) (DCCEEW, 2008) Recovery Plan for Marine Turtles in Australia
Caretta caretta	Loggerhead Turtle	E	Migratory Marine Species	Listed	-	Recovery Plan for Marine Turtles in Australia

3.4 Conservation Values and Sensitivities

The following section describes conservation values and sensitivities relevant to the Offshore Beach Permit Area.

3.4.1 Australian Marine Parks

There are no AMPs that occur within the Offshore Beach Permit Area.

The nearest AMP to the Offshore Beach Permit Area is the Apollo Marine Park Multiple Use Zone (IUCN Category VI), located approximately 73 km southeast of the Offshore Beach Permit Area (Figure 3-5).

3.4.2 Heritage Places

No World Heritage Properties, Places or Commonwealth Heritages Places were identified to occur within the Offshore Beach Permit Area.

The Offshore Beach Permit Area adjoins the nearshore boundary of the Great Ocean Road and Scenic Environs, which is listed on the National Heritage List and protected under the EPBC Act as a matter of national environmental significance (Figure 3-8).

The Australian Heritage Council recognises the Great Ocean Road and its 242 km scenic route from Torquay to Allansford as a place of outstanding national heritage significance. Built by over 3,000 returned servicemen as a memorial to First World War soldiers, it symbolises their service and the nation's gratitude. The route offers iconic views, including the Twelve Apostles, Bay of Islands, and dramatic coastal cliffs (AHC, 2021).

3.4.3 Threatened Ecological Communities (TECs)

There were no Threatened Ecological Communities (TECs) identified by the PMST report to occur within the Offshore Beach Permit Area. The closest TECs to the Production License area are displayed below in Table 3-8 and Figure 3-6.

Table 3-8: TECs in the vicinity of the Offshore Beach Permit Area.

TEC	Approximate distance from the Offshore Beach Permit Area	Description
Subtropical and Temperate Coastal Saltmarsh	5.5 km	The Subtropical and Temperate Coastal Saltmarsh ecological community occurs along Australia's southern and eastern coasts, including islands within these zones. It occupies narrow coastal margins subject to regular or intermittent tidal influence in subtropical and temperate climates (TSSC, 2013).
Assemblages of species associated with open-coast salt-wedge estuaries of western and central Victoria ecological community	5.5 km	The Assemblages or species associated with open-coast salt-wedge estuaries of western and central Victoria ecological community comprises of native plants, animals, and micro-organisms linked to dynamic salt-wedge estuaries along Victoria's temperate, microtidal (<2 m), high-wave-energy coastline (DEE, 2018). .

Giant Kelp Marine Forests of Southeast Australia	6.5 km	The Giant Kelp Marine Forests of South East Australia ecological community occurs mainly along Tasmania's east and south coasts, with some patches in Victoria and South Australia. It is characterised by a forest-like canopy of *Macrocystis pyrifera*, the only kelp species forming a three-dimensional structure from seafloor to surface, providing habitat for diverse benthic, pelagic, and canopy organisms (TSSC, 2012).

3.4.4 Wetlands of National and International Importance

No Wetlands of International Importance (Ramsar wetlands) or Nationally Important Wetlands have been identified within the Offshore Beach Permit Area.

3.4.5 Victorian Protected Areas

The Bay of Islands Coastal Park occurs within the Offshore Beach Permit Area (Figure 3-5).

The Bay of Islands Coastal Park is a 32 km reserve along the Great Ocean Road between Peterborough and Warrnambool. It features limestone cliffs, offshore stacks, and sandy beaches, supporting diverse coastal vegetation and providing habitat for seabirds and marine fauna. The park's dynamic shoreline and nutrient-rich waters contribute to high ecological value and scenic significance (Parks Victoria, 1998).

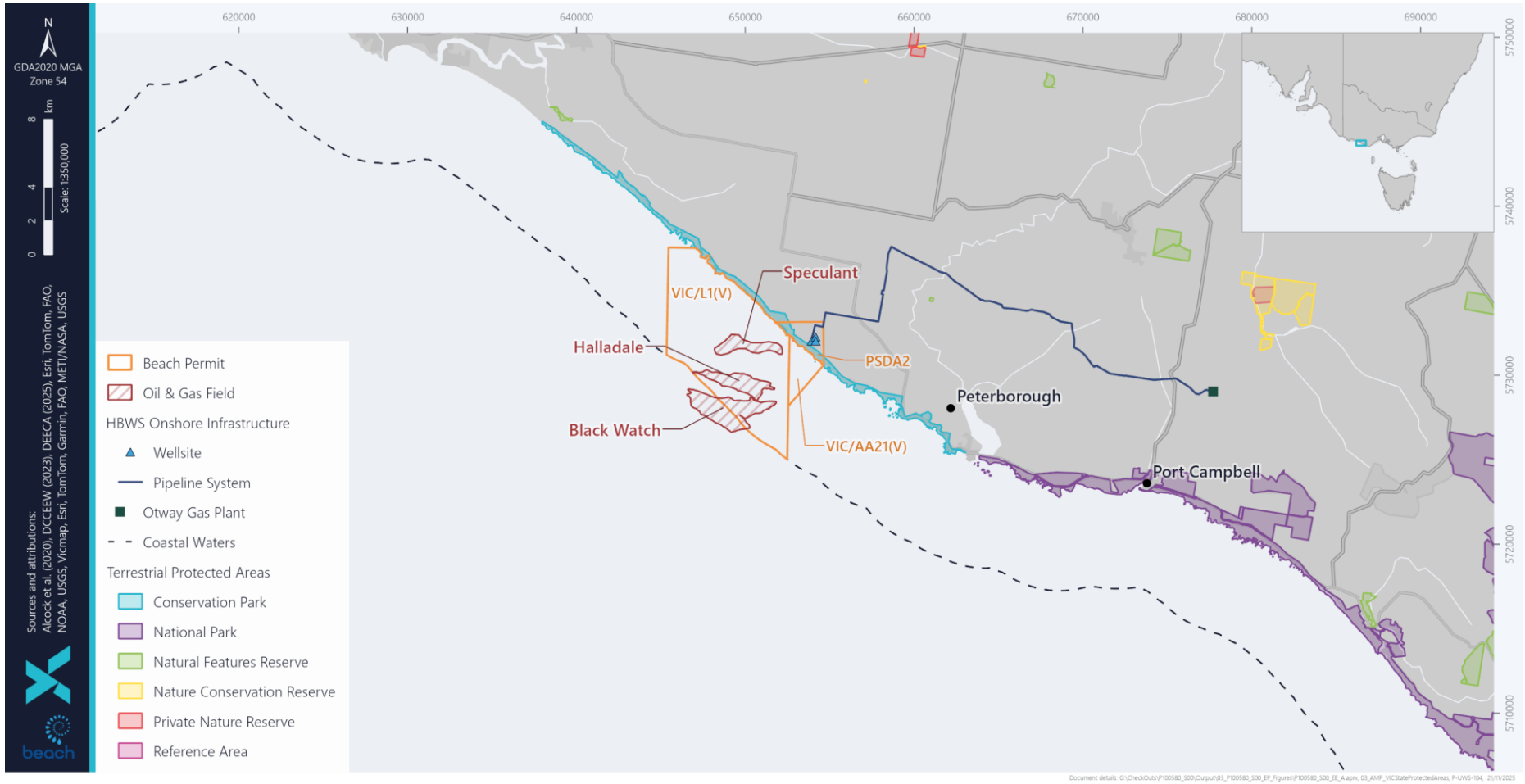


Figure 3-5: Australian Marine Parks and Victorian Protected Areas within the vicinity of the Offshore Beach Permit Area.

3.4.6 Key Ecological Features

There are no KEFs identified to occur within the Offshore Beach Permit Area. The closest KEF to the license is the Bonney Coast Upwelling, occurring ~47.50 km west of the Offshore Beach Permit Area (Figure 3-6).

The Bonney Coast upwelling is a seasonal, nutrient-rich oceanic process that drives exceptional productivity and species diversity in an otherwise low-productivity region. Recognised as a key ecological feature, it supports dense aggregations of marine life, including whales, threatened species, and krill-dependent seabirds and fish (CoA 2015; DCCEEW 2025b).

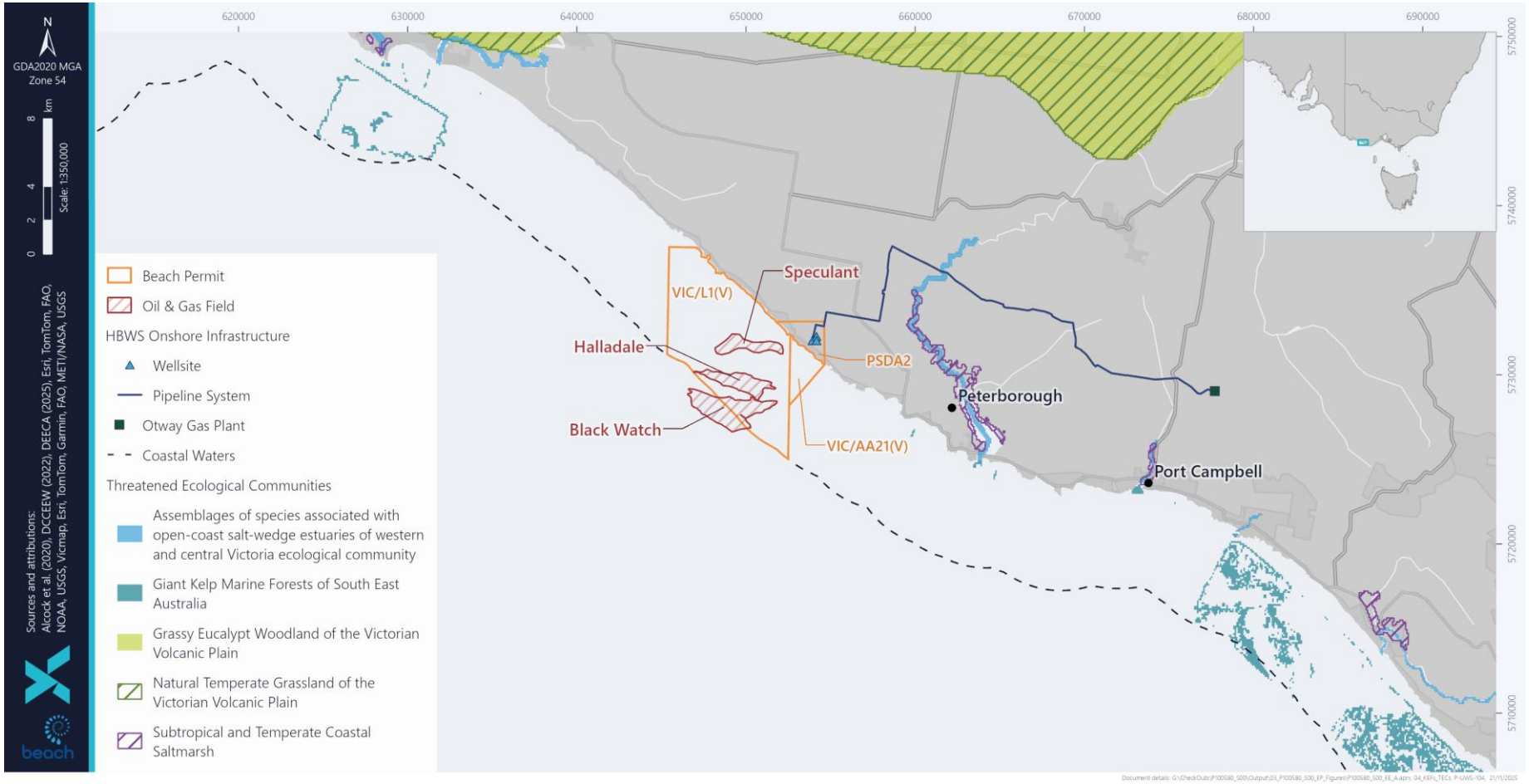


Figure 3-6: KEFs and TECs in the vicinity of the Offshore Beach Permit Area.

3.5 Native Title

The National Native Title Tribunal Register records a determination (VCD2023/001) that extends 100 metres seaward from the mean low-water mark along the coastline forming the landward boundary of Production Licence, VIC/L1(V) and the Access Authority, VIC/AA21(V) (Figure 3-7). The registered native title holders are the Eastern Maar people represented by the Eastern Maar Aboriginal Corporation (EMAC) (NNTT, 2023).

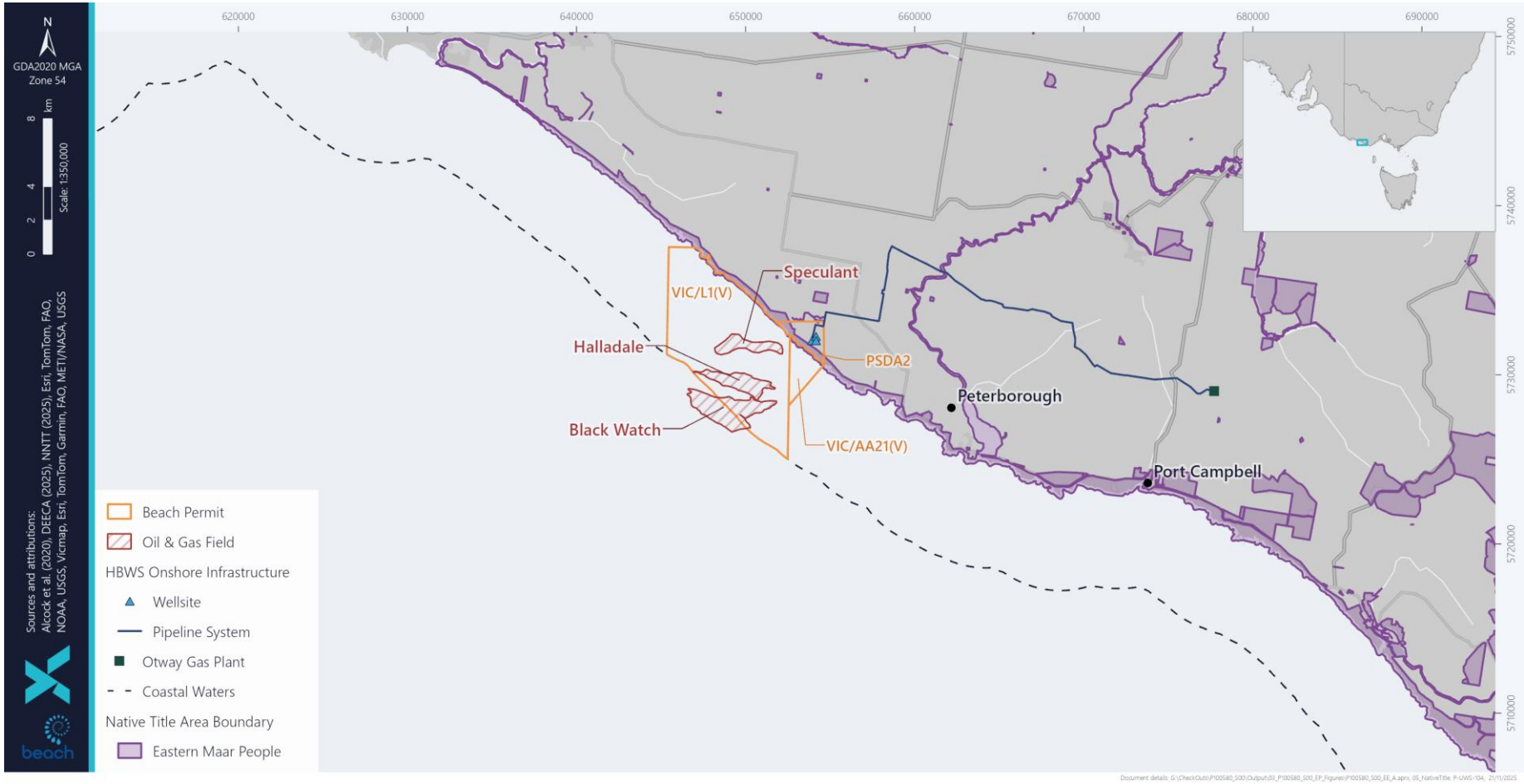


Figure 3-7: Native Title determination for the Offshore Beach Permit Area.

3.6 Cultural Heritage

3.6.1 Aboriginal Heritage

Aboriginal communities have long inhabited the southwest Victorian coast, as evidenced by numerous terrestrial sites of archaeological significance across the region. During the most recent ice age, which ended around 14,000 years ago, sea levels were much lower. This allowed occupation and movement across areas that are now submerged.

Recognised coastal Aboriginal heritage sites primarily include shell middens, stone artefacts, staircases carved into coastal cliffs, and burial sites. Many of the shell middens within the Port Campbell National Park (PCNP) and Bay of Islands Coastal Park are located near coastal access points, some of which now serve as visitor entry points (Parks Victoria, 1998).

Beach has engaged with the EMAC since the inception of the Project with respect to cultural heritage matters. A Cultural Heritage Management Plan (CHMP) [11593] was prepared for the HBWS development (onshore wellsite and pipeline) in accordance with the requirements of the *Aboriginal Heritage Act 2006* and the Aboriginal Heritage Regulations 2007 (now superseded by the Aboriginal Heritage Regulations 2018). The CHMP included a 'Complex Assessment' which involved background research, a field survey, and subsurface testing. A second CHMP 12952 was prepared due to a change in the alignment of the wellsite access road which resulted in the newly constructed road overlapping an Aboriginal place on the Victorian Aboriginal Heritage Register. The activity under the EP will not involve any new infrastructure or other physical or vessel-based activities and it is not considered to qualify as requiring a new CHMP.

3.6.2 Maritime Archaeological History

Shipwrecks over 75 years old are protected within Commonwealth waters under the *Historic Shipwrecks Act 1976 (Cth)* and in Victorian waters under the *Victorian Heritage Act 1995* (Vic). The only shipwreck within the Production Licence area is the John Scott, which was wrecked in 1848 (Figure 3-8). The Antares shipwreck is located within the Access Authority area, which was wrecked in 1914 (Figure 3-8). There are no historic shipwreck protection zones in or around the Offshore Beach Permit Area.

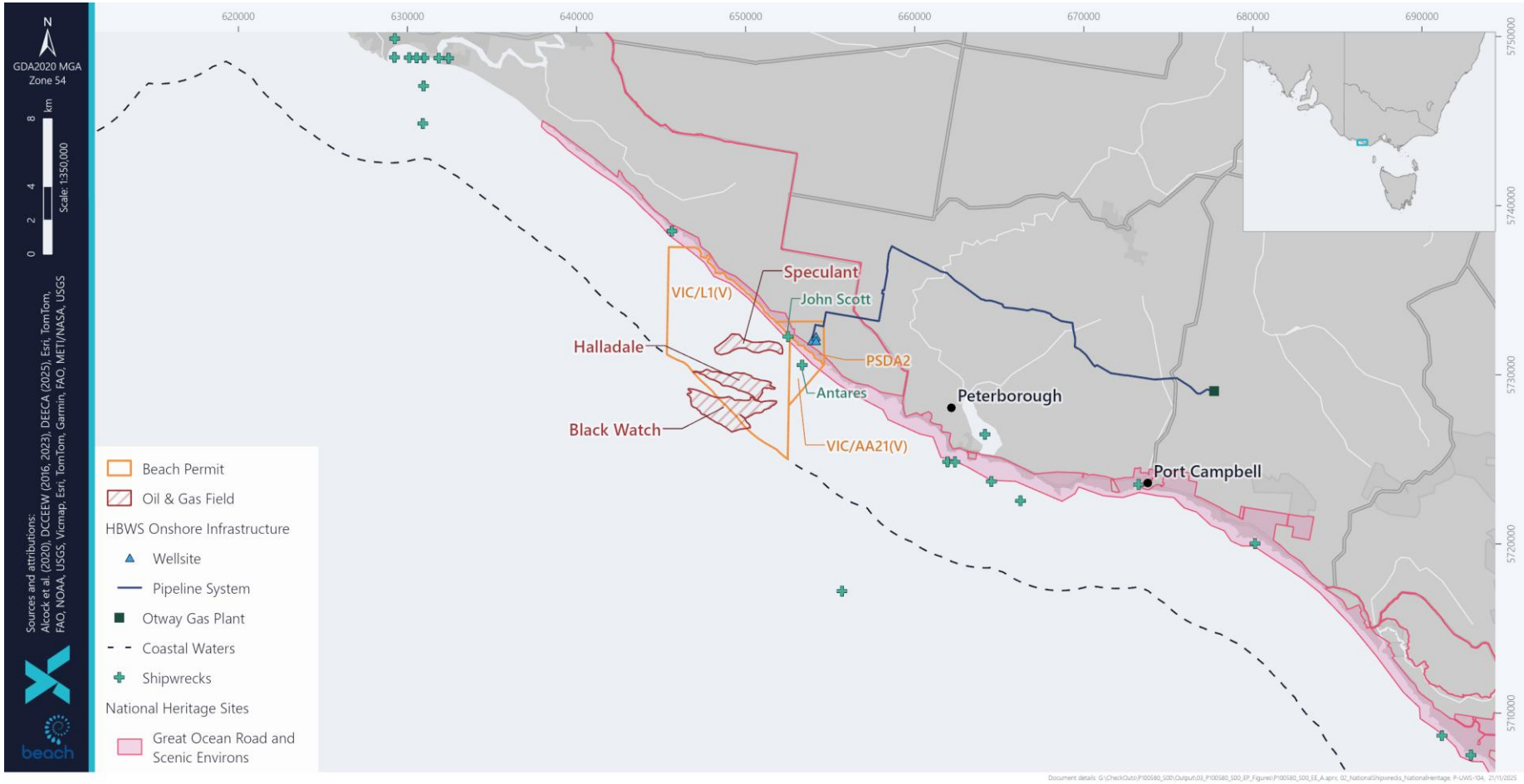


Figure 3-8: Heritage Places and Maritime Archaeological Heritage in the vicinity of the Offshore Beach Permit Area.

3.7 Socio-economic Environment

3.7.1 Coastal Settlements

There are two coastal settlements in the vicinity of the Offshore Beach Permit Area (Table 3-9), Port Campbell and Warrnambool.

Table 3-9: Coastal Settlements in the vicinity of the Offshore Beach Permit Area.

Coastal Settlement	Distance from the Offshore Beach Permit Area
Port Campbell	~22 km
Warrnambool	~23 km

3.7.2 Offshore energy exploration and production

Petroleum exploration in the Otway Basin began in the early 1960s, with more than 200 wells drilled onshore and offshore across Victoria, South Australia, and Tasmania (Geoscience Australia, 2023). There are is no active infrastructure within the Offshore Beach Permit Area. Several pipelines are located approximately 20 km to the east, including the Thylacine/Geographe pipeline operated by Beach Energy, which connects to an offshore well outside the Offshore Beach Permit Area.

3.7.3 Other Infrastructure

No other types of infrastructure exist within the Offshore Beach Permit Area.

3.7.4 Defence Activities

No defence activities or unexploded ordinance (UXO) has been identified within the Production License area.

3.7.5 Tourism and Recreation

Tourism and recreation activities in the region surrounding the Offshore Beach Permit Area primarily includes land-based sightseeing along the Great Ocean Road and its lookouts, helicopter tours, and offshore activities such as diving and fishing.

3.7.6 Commercial Fisheries

The following Commonwealth commercial fisheries management areas are licensed within the Production License area:

- Southern and Eastern Scalefish and Shark Fishery.
- Southern Bluefin Tuna Fishery.
- Eastern Tuna and Billfish Fishery.

The Eastern Skipjack Tuna Fishery has a management area recorded within the Offshore Beach Permit Area. This fishery has been inactive since the 2008-2009 fishing season and is not discussed further.

The following Victorian commercial fisheries management areas are licensed within the Offshore Beach Permit Area:

- Victorian Pipi Fishery
- Victorian Scallop Fishery
- Victorian Octopus Fishery
- Victorian Ocean Wrasse Fishery
- Victorian Giant Crab Fishery
- Victorian Inshore Fishery
- Victorian Rock Lobster Fishery
- Victorian Abalone Fishery
- Victorian Ocean General Fishery

3.7.7 Commercial Shipping

The South-east Marine Region is one of the busiest shipping regions in Australia and the Bass Strait is one of Australia's busiest shipping routes. Commercial vessels use the route when transiting between ports on the east, south and west coasts of Australia, with regular passenger and cargo services moving between mainland Australia and Tasmania (NOO, 2004). The nearshore nature of the Offshore Beach Permit Area implies that it is not as heavily shipped as parts of Bass Strait further south.

4 Stakeholder Consultation

4.1 Summary

Beach operates offshore and onshore facilities in the Otway Basin and has consulted relevant persons and organisations and local communities for years, including for the previous HBWS Operations Environment Plan (EP). While preparing the EP, Beach continued to review its methodology for identifying relevant persons and refined its engagement methods in response to case law and growing community interest.

Beach has consulted relevant persons in the course of preparing the EP in accordance with applicable regulations, case law, guidelines and relevant Beach policies and standards.

Beach understands the purpose of consultation is to inform its understanding of the environment, including people and communities, the heritage value of places, and their social and cultural features, which may be affected by the activity described in the EP. This ensures Beach can understand and address all the environmental impacts and risks that might arise from the activity described in the EP. Consultation therefore enables Beach to refine or change measures proposed to reduce impacts and risks to an acceptable level and ALARP.

Beach's consultation period for the purposes of the EP commenced on 13 November 2025 and concluded on 12 December 2025.

Consultation was designed to ensure that relevant persons and organisations were identified and provided sufficient information and a reasonable period to allow them to make an informed assessment of the potential consequences of the activity on them.

Beach has provided sufficient information in different formats including emails and information sheets. Relevant persons and organisations were advised of the purpose of consultation, provided opportunities over a reasonable period to ask questions, raise concerns, and provide feedback. Beach also included advice regarding sensitive information not being published.

Response levels were tracked during consultation, with no objections or concerns raised. Beach examined non-responses individually and followed up as needed.

Consultation in the course of preparing the EP has been completed and Beach believes it has met the regulatory engagement requirements. Ongoing consultation is outlined in Section 5.14 of the EP. Should concerns or feedback about adverse impacts and risks from the activity be received, Beach will assess the matters raised, and where a further measure or control may be required, Beach will apply its Management of Change process as detailed in Section 7.2.1.

4.2 Relevant persons identification methodology

4.2.1 Identification process

In following the law set out in *Santos NA Barossa Pty Ltd v Tipakalippa* [2022] FCAFC 193 (appeal decision), Beach undertook further comprehensive reviews of its methodology for identifying and consulting with relevant persons resulting in multiple state and commonwealth accepted activity EMPs and EPs for Beach's HBWS Operations and Offshore Gas Victoria projects. Beach is constantly refining

its methodology cognisant of regulatory guidelines, recent case law, and industry best practice applicable to the nature, scale and complexity of the ongoing activity described in the EP.

The relevant person identification methodology utilised for the EP follows a process of assessing elements of the document to identify potentially relevant persons: the existing relevant persons list consulted for the previous EP; defined activity; the spatial extent of the operational area – noting there is no planning area (EMBA) for this activity; environmental values and sensitivities; and assessment of risks and impacts – noting there are no credible risks to the environment within the offshore permit areas. That process is set out in Figure 4-1.

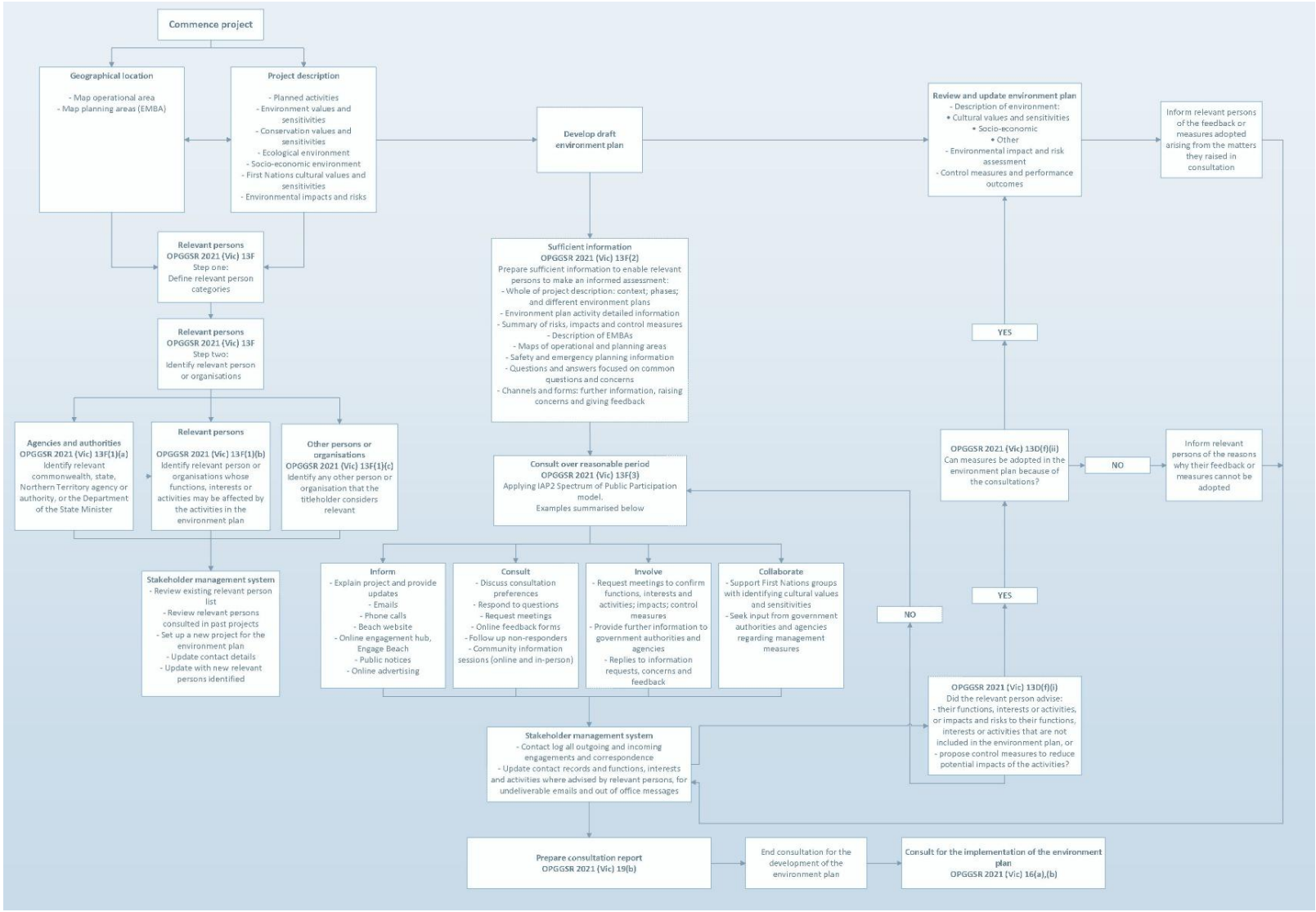


Figure 4-1: Relevant person methodology

4.3 Report on consultations

The consultation report (Appendix D) attached to the EP details the information provided to relevant persons, summarises the responses received and outlines the assessment of any concerns raised and the corresponding responses.

5 Impact and Risk Assessment Methodology

5.1 Overview

The objective of the Victorian OPGGS Regulations 2021 is to *'provide for the elimination and minimisation, so far as is practicable, of the environmental hazards and risks involved in undertaking petroleum and greenhouse gas storage activities.'*

Regulation 15(3) of the Victorian OPGGS Regulations 2021 requires that an EP includes an evaluation of the environmental impacts and risks of the activity and to specify measures to ensure that they are reduced to ALARP.

Beach uses its Corporate Risk Management Framework as per the Risk Management Procedure (CDN/ID 18985371) to mitigate and manage risks for all its activities. The methodology is consistent with the Australian and New Zealand Standard for Risk Management (AS/NZS ISO 31000:2018, Risk Management – Principles and Guidelines). The Risk Management Procedure is a component of the Beach Business Management System (BMS) Legal, Risk & Corporate Affairs (CDN/ID 19061886). Figure 5-1 outlines this risk assessment process.

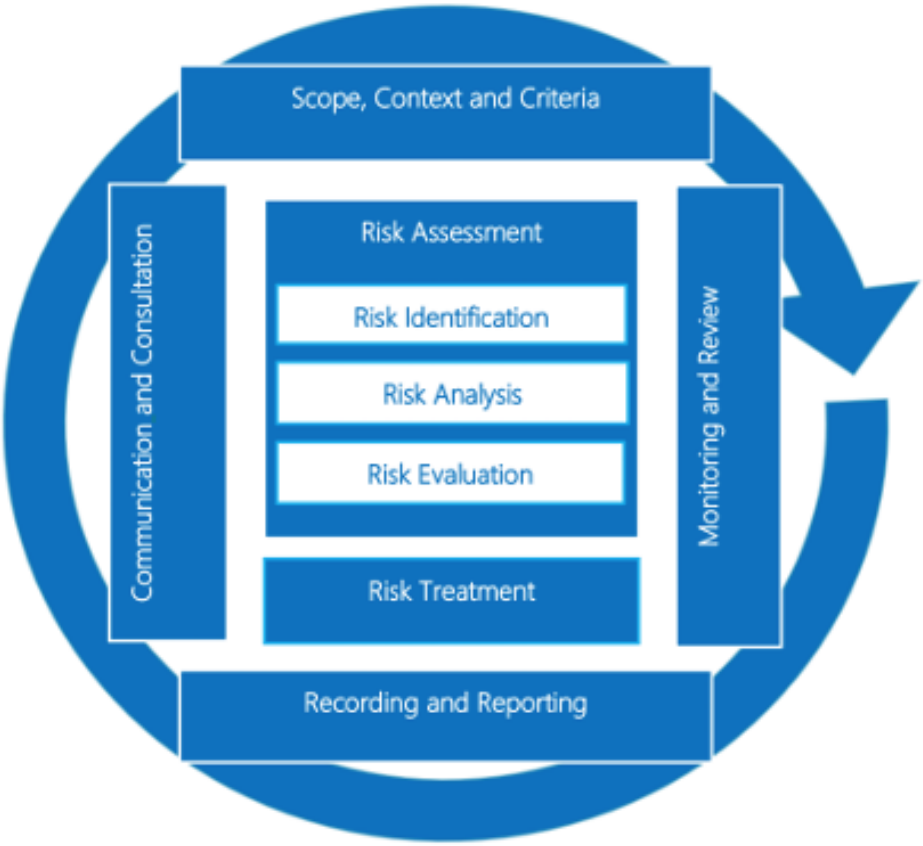


Figure 5-1: Risk assessment process in accordance with the Risk Management Procedure (CDN/ID 18985371)

Beach's Corporate Risk Management Framework requires the following steps to be implemented:

- Establish the scope, context and criteria.
- Identify the activities and the potential impacts associated with them.
- Identify the sensitive environmental resources at risk within and adjacent to the Offshore Beach Permit 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.
- Assign a level of risk to each potential environmental impact using a risk matrix.

5.2 Establish the Scope, Context and Criteria

The **scope** of the activity, operation, program or project must first be established ('Description of the Activity') to identify the aspects of the activity that will or may cause environmental impacts or may present risks to the environment.

Context for the risk assessment process is established by:

- Understanding the objections or claims of relevant persons and incorporating their feedback and any information provided into the design of the activity where appropriate.
- Understanding the regulatory framework in which the activity takes place'.
- Describing the environment in which the activity takes place t.

The **criteria** are the measures by which impacts and risks are evaluated. Beach's risk matrix includes six levels of consequence and likelihood to assign an overall risk rating.

5.3 Identify the Potential Impacts and Risks

Once the scope, context and criteria have been established, hazards of the activity can be identified, along with the potential impacts and risks of these hazards. The Victorian OPGGS Regulations 2021 define an environmental impact as '*Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an activity*', whereas risk refers to the likelihood of such an impact occurring and the severity of its consequences. Beach has used the following definitions to differentiate between impacts and risks:

- **Impacts** result from planned events and are inherent part of the activity. As the event is planned, the likelihood is known and only a consequence is assigned.

- **Risks** result from unplanned events and are not an inherent part of the activity. As the event is unplanned, both a likelihood and consequence is assigned to determine a risk rating (likelihood multiplied by consequence).

Potential impacts (planned) and risks (unplanned) associated with the environmental aspects of the activity are identified in relation to the receptors that may be affected, either directly or indirectly, by one or multiple aspects of the activity i.e. identifying the cause-effect pathway by which environmental and social receptors may be impacted. Knowledge of the risks and impacts associated with Beach's other Otway offshore operations was used to establish a list of potential risks and impacts for the activity.

5.4 Analyse the Potential Impacts and Risks

Once impacts and risks have been identified, an analysis of the nature and scale of the impact or risk is undertaken. This involves determining the possible contributing factors associated with the impact or risk and determining the maximum credible impact (i.e. reasonable worst-case). Each possible impact or risk is identified separately, particularly where controls to manage the impact or risk differ. In this way, the controls can be directly linked to the impact or risk.

5.5 Evaluate and Treat Potential Impacts and Risks

The following steps are undertaken using the Beach Risk Matrix (Table 5-1) to evaluate the potential impacts and risks:

- Identify the consequences of each potential environmental impact, corresponding to the maximum credible impact.
- For unplanned events (risks), identify the likelihood (probability) of unplanned environmental impacts occurring.
- For unplanned events (risks), assign a level of risk to each potential environmental impact using the risk matrix.
- Identify control measures to manage potential impacts and risks to as low as reasonably practicable (ALARP) (Section 5.6) and an acceptable level (Section 5.7).
- Establish Environmental Performance Standards (EPS) for each of the identified control measures.

The Beach Risk Matrix provides a six-level scale for assessing both consequence and likelihood which leads to an overall risk level which can be Low, Medium, High or Very High. Consequence and likelihood levels are defined in Table 5-1. The risk levels can be understood as follows:

- Low: risks can be considered broadly acceptable and are required to be reviewed annually by the risk owner. Compliance with 'good industry practice' is generally sufficient for these risks to be considered acceptable by the Site Activity Manager. No further controls are required for risks at this level.
- Medium: risks can be considered broadly acceptable and are required to be reviewed annually by the risk owner. In addition to 'good industry practice', further controls may be

considered for risks at this level to be reduced to a level deemed acceptable by the Asset/Project/Site Manager.

- High: Beach considers High risks to be material risks which require regular quarterly reviews to ensure they are being managed effectively. Further controls will be considered for risks at this level to be reduced to a level deemed acceptable.
- Very High: Beach considers Very High risks to be material risks which require regular monthly reviews to ensure they are being managed effectively. Further controls and high level oversight is maintained for risks at this level.

An environmental impact and risk register records the outcomes of the risk assessment and the environmental control measures (e.g., measures to prevent, minimise and mitigate impacts and risks) for the activity.

Table 5-1: Beach risk matrix

CDN 14740489 Beach Risk Matrix

Risk Matrix		CONSEQUENCE CATEGORY					LIKELIHOOD						
		PEOPLE	ENVIRONMENT	REPUTATION	FINANCIAL[1]	LEGAL	A. Remote	B. Highly Unlikely	C. Unlikely	D. Possible	E. Likely	F. Almost Certain	
		Impact to Beach or contracting personnel	Natural environment	Community safety, reputation/social licence. media, items of cultural significance.	Financial impact (e.g. due to loss of revenue, business interruption, asset loss etc.)	Breach of law, prosecution, civil action	<1% chance of occurring within the next year. Requires exceptional circumstances, unlikely event in the long-term future. Only occur as a 100-year event.	>1% chance of occurring within the next year. May occur but not anticipated. Could occur years to decades.	>5% chance of occurring within the next year. May occur but not for a while. Could occur within a few years.	>10% chance of occurring within the next year. May occur shortly but a distinct probability it won't. Could occur within months to years.	>50% chance of occurring within the next year. Balance of probability will occur. Could occur within weeks to months.	99% chance of occurring within the next year. Impact is occurring now. Could occur within days to weeks.	
CONSEQUENCE	6 Catastrophic	Multiple fatalities >4 or severe irreversible disability to large group of people (>10)	Catastrophic offsite or onsite release or spill; long-term destruction of highly significant ecosystems; significant effects on endangered species or habitats; irreversible or very long-term impact	Multiple community fatalities; complete loss of social licence; prolonged negative national media; complete loss of items of cultural significance	>$500m	Prolonged and complex civil and/or regulatory litigation; potential jail terms and/or very high fines and/or damages claim	HIGH	HIGH	VERY HIGH	VERY HIGH	VERY HIGH	VERY HIGH	6 Catastrophic
	5 Critical	1-3 fatalities or serious irreversible disability (>30%) to multiple persons (<10)	Significant offsite or onsite release or spill; eradication or impairment of the ecosystem; significant impact on highly valued species or habitats; widespread long-term impact	Community fatality; significant loss of social licence; negative national media for 2 or more days; significant damage to items of cultural significance	$100m-$500m	Civil and/or regulatory litigation; potential significant fines and/or damages claim	MEDIUM	MEDIUM	HIGH	HIGH	VERY HIGH	VERY HIGH	5 Critical
	4 Major	Serious permanent injury/ illness or moderate irreversible disability (<30%) to one or more persons	Major offsite or onsite release or spill; very serious environmental effects, such as displacement of species and partial impairment of ecosystem; major impact on highly valued species or habitats; widespread medium and some long-term impact	Serious permanent injury to community member; major damage to social licence; negative national media; major damage to items of cultural significance	$10m-$100m	Civil and/or regulatory litigation; potential major fine and damages claim	MEDIUM	MEDIUM	MEDIUM	HIGH	HIGH	VERY HIGH	4 Major
	3 Serious	Serious reversible/ temporary injury/illness; Lost Time Injury >5 days or Alternate/Restricted Duties >1 month	Minor offsite or onsite release or spill; serious short-term effect to ecosystem functions; serious impact on valued species or habitats; moderate effects on biological or physical environment	Serious reversible injury to community member; serious damage to social licence; negative state media; serious damage to items of cultural significance	$1m-$10m	Serious potential breach of law; report and investigation by regulator; possible prosecution or regulatory notice (e.g. improvement notice or equivalent), or possible civil litigation and serious damages claim	LOW	MEDIUM	MEDIUM	MEDIUM	HIGH	HIGH	3 Serious
	2 Moderate	Reversible temporary injury/ illness requiring Medical Treatment; Lost Time Injury ≤5 days or Alternate/Restricted Duties for ≤1 month	Event contained within site; short-term effects but not affecting ecosystem functions; some impact on valued species or habitats; minor short-term damage to biological and/or physical environment	Moderate injury to community member; moderate impact to social licence; negative local media; moderate damage to items of cultural significance	$100k-$1m	Potential breach of law or non-compliance; inquiry by a regulator leading to Low-level legal issues; possible civil litigation and moderate damages claim	LOW	LOW	MEDIUM	MEDIUM	MEDIUM	HIGH	2 Moderate
	1 Minor	First Aid Injury/illness	Spill limited to release location; minor effects but not affecting ecosystem functions; no impact on valued species or habitats; low-level impacts on biological and physical environment	Minor injury to community member, public concern restricted to local complaints, minor damage to items of cultural significance	≤$100k	Minor potential breach of law; not reportable to a regulator; on the spot fine or technical non-compliance	LOW	LOW	LOW	MEDIUM	MEDIUM	MEDIUM	1 Minor

5.6 Demonstration of ALARP

Beach's approach to demonstration of 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. When identifying potential controls, the following is considered:
    - Whether the control is preventative (i.e. prevents the risk from occurring) or mitigative (i.e. reduces the consequence) or both.
    - Whether the control is aligned to the identified causes and consequences.
    - What assurance checks are required to ensure the control's effectiveness.
    - Whether the control introduces additional risks that must be further considered.
- For higher order impacts and risks undertake a layer of protection analysis and implement further controls if both feasible and reasonably practicable to do so.

The principle of ALARP requires a demonstration that the cost involved in reducing the risk further would be grossly disproportionate to the benefit gained. Beach Energy's Risk Management Procedure (CDN/ID 18985371) under the Legal, Risk & Corporate Affairs Standard (CDN/ID 19061886) recognises that when further controls are required to modify a risk, the selection of controls requires balancing the benefits of the activity against the cost and effort of risk treatment.

Demonstration of ALARP is an ongoing and iterative process and new risk reduction measures may be identified at any time, including during operations. All risks are subject to risk acceptance and within Beach the level of authority required to accept a risk is commensurate with the level of risk.

The level of ALARP assessment is dependent upon the:

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

5.6.1 Residual Impact and Risk Levels

5.6.1.1 Lower-order Environmental Impacts and Risk

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 Beach Environmental Risk Assessment Matrix (Table 5-1), the impact consequence is rated as 'minor' or 'moderate' or risks are rated as 'low' or 'medium'. In these cases, applying 'good industry practice' (as defined in Section 5.6.2.1) is sufficient to manage the impact or risk to ALARP.

5.6.1.2 Higher-order Environmental Impact and Risks

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 higher-order when, using the Beach Environmental Risk Assessment Matrix (Table 5-1), the impact consequence is rated as 'serious', 'major', 'critical' or 'catastrophic', or when the risk is rated as 'high' or 'very high'. In these cases, further controls must be considered as per Section 5.6.2.

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 for the consequence of planned operations and the risks of unplanned events is outlined in Table 5-2.

Table 5-2: ALARP determination for consequence (planned operations) and risk (unplanned events)

Consequence Ranking	**Minor**	**Moderate**	**Serious**	**Major**	**Critical**	**Catastrophic**
Planned operation	Broadly acceptable	Tolerable if ALARP		Intolerable		
Residual impact category	Lower order impacts		Higher order impacts			
Risk ranking	Low	Medium	High	Very High		
Unplanned event	Broadly acceptable	Tolerable if ALARP		Intolerable		
Residual risk category	Lower order risks		Higher order risks			

5.6.2 Uncertainty of Impacts and Risks

In addition to the evaluation of residual impacts and risks as described above, the relative level of uncertainty associated with the impact or risk is also used to inform whether the application of industry good practice is sufficient to manage impacts and risks to ALARP, or if the evaluation of further controls is required.

Beach have adapted the approach developed by Oil and Gas UK (OGUK) (OGUK, 2014) for use in an environmental context to determine the assessment technique required to demonstrate that potential impacts and risks are ALARP (Figure 5-2). Specifically, the framework considers impact severity and several guiding factors:

- Activity type.
- Risk and uncertainty.
- Stakeholder influence.

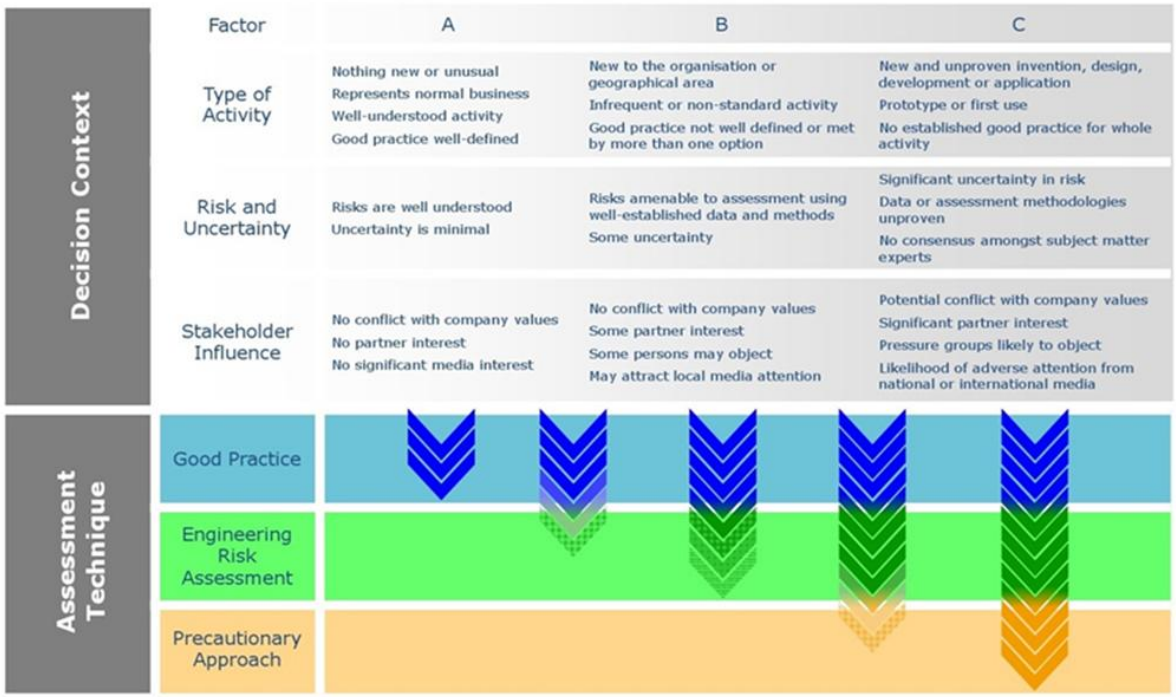


Figure 5-2: OGUK (2014) decision support framework

A **Type A** decision is made if the risk is relatively well understood, the potential impacts are low, activities are well practised, and there are no conflicts with company values, no partner interests, and no significant media interests. However, if good practice is not sufficiently well-defined, additional assessment may be required.

A **Type B** decision is made if there is greater uncertainty or complexity around the activity and/or risk, the potential impact is moderate, and there are no conflict with company values, although there may be some partner interest, some persons may object, and it may attract local media attention. In this instance, established good practice is not considered sufficient and further assessment is required to support the decision and ensure the risk is ALARP.

A **Type C** decision typically involves sufficient complexity, high potential impact, uncertainty, or stakeholder influence to require a precautionary approach. In this case, relevant good practice still must be met, additional assessment is required, and the precautionary approach applied for those controls that only have a marginal cost benefit.

In accordance with the regulatory requirement to demonstrate that environmental impacts and risks are ALARP, Beach has considered the above decision context in determining the level of assessment required.

The levels of assessment techniques considered include:

- Good practice.
- Engineering risk assessment.
- Precautionary approach.

5.6.2.1 Good Practice

OGUK (2014) defines 'good practice' as the recognised risk management practices and measures that are used by competent organisations to manage well-understood impacts and risks arising from their activities.

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

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

If the ALARP technique is determined to be 'good practice', further assessment ('engineering risk assessment') is not required to identify additional controls. However, additional controls that provide a suitable environmental benefit for an insignificant cost are also identified at this point.

5.6.2.2 Engineering Risk Assessment

All potential impacts and risks that require further assessment are subject to an 'engineering risk assessment'. Based on the various approaches recommended in OGUK (2014), Beach believes the methodology most suited to this activity is a comparative assessment of risks, costs, and environmental benefit. A cost–benefit analysis should show the balance between the risk benefit (or environmental benefit) and the cost of implementing the identified measure, with differentiation required such that the benefit of the control can be seen and the reason for the benefit understood.

5.6.2.3 Precautionary Approach

OGUK (2014) states that if the assessment, considering all available engineering and scientific evidence, is insufficient, inconclusive, or uncertain, then a precautionary approach to impact and risk management is needed. A precautionary approach will mean that uncertain analysis is replaced by conservative assumptions that will result in control measures being more likely to be implemented.

That is, environmental considerations are expected to take precedence over economic considerations, meaning that a control measure that may reduce environmental impact is more likely to be implemented. In this decision context, the decision could have significant economic consequences to an organisation.

5.7 Demonstration of Acceptability

The Victorian OPGGS Regulations 2021 requires demonstration that environmental impacts and risks are of an acceptable level.

Targets for environmental performance are generally detailed via Environmental Performance Outcomes (EPO). EPOs are developed to provide a measurable level of performance for the management of environmental aspects of an activity to ensure that environmental impacts and risks will be of an acceptable level. The process of defining an appropriate EPO, has relied on the required levels of performance set either in legislation (such as the Victorian OPGGS Act *2010*), Government guidance notes such as the Matters of National Environmental Significance– Significant Impact Guidelines (CoA, 2013b), EPBC Act recovery/management plans or may be the result of consultation with relevant persons and/or organisations (e.g. fishers, marine users, First Nations). EPOs demonstrate that environmental impacts and risks will be managed to an acceptable level.

Additionally, Beach also considers the following when determining the demonstration of acceptability:

- The principles of ecologically sustainable development (ESD) as defined under the EPBC Act 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*'.

- Other requirements (e.g. laws, policies, standards, conventions etc.), including significant impacts to MNES.

- Internal context, to ensure the impact or risk is compliant with Beach's Environmental Policy, where relevant.

- External context, to ensure any claims or objections raised by stakeholders have been adequately considered and additional controls adopted where appropriate.

5.8 Monitoring and Review

Monitoring and review activities and controls are incorporated into the impact and risk management process to ensure that controls are effective and efficient in both design and operation. This is achieved through the EPO, EPS and measurement criteria that are described for each environmental impact or risk.

6 Impact and Risk Assessment

The activity is the gas flow (recovery of petroleum) from the HBWS gas fields through existing well bores within the Production Licence area VIC/L1(V) and Access Authority VIC/AA21(V).

There is no vessel-based activities and therefore no impacts from routine vessel-based discharges and emissions, and no risk of vessel-based hydrocarbon spills. There is no infrastructure on the sea floor and therefore no seabed disturbance. The risk of a well blow out within the Production Licence area is not considered credible (if such an event were to occur, it would occur onshore at the wellsite).

Any well intervention activities are conducted onshore, and impacts and risks associated with these and other activities required for the operation of the HBWS onshore wellsite are covered in the HBWS Wellsite Facility Operations Plan (CDN/ID 18986993) and associated Halladale, Black Watch Speculant Wellsite Operations Environmental Management Plan (EMP) (CDN/ID 8255348) .

Table 6-1 lists the typical impacts and risks associated with offshore wellhead and pipeline operations, based on Beach's other Otway operations with an evaluation of whether these hazards are relevant to the activity. In summary, there is no credible impact pathway for the environment, commercial fishing, commercial shipping or tourism activities within the permit area and therefore potential environmental or socioeconomic impacts cannot be meaningfully assessed for this activity.

In conclusion, there are no credible impacts or risks to the marine environment within the Offshore Beach Permit Area during the offshore operations phase. As a result, all identified impacts and risks are considered to be reduced to ALARP and are of an acceptable level. Since no activity is proposed in the marine environment during offshore operations and no credible pathway for impact exists, the establishment of EPOs, standards and measurement criteria for each environmental risk has not been undertaken in preparing the EP.

Table 6-1: Typical impacts and risks associated with offshore wellhead and pipeline operations

Hazard		**Why hazard is not applicable to offshore HBWS operations**
Impacts		
Activity-specific		
1	Seabed disturbance	Wellbore is sub-surface (600-2,000m below the seabed) within the Production Licence area, wellhead and associated production infrastructure is located onshore.
2	Discharge of control fluids	
3	Discharge of gas/condensate during choke replacement	
4	Removal of marine growth	

5	Groundwater drawdown impacts[2]	Torkzaben *et al.* (2020b) identified no significant impacts from existing oil and gas developments in the Otway Basin (including HBWS) on the water table, aquifer volume or water level, or surface water flow out. The conceptual groundwater model for the Otway Basin shows there are impermeable layers between the gas reservoirs and aquifers (including mudstones) (Torkzaben *et al.* 2020a). The report notes that these mudstone layers provide a "*broad and effective seal for underlying gas-bearing formations*" (Torkzaben *et al.* 2020a). Therefore, this impact is considered to be ALARP and at an acceptable level. Therefore, this impact does not require further assessment within the EP.
Routine vessel impacts		
6	Underwater sound	No vessel-based activities are undertaken in the Offshore Beach Permit Area.
7	Light emissions	
8	Atmospheric emissions	
9	Putrescible waste discharges	
10	Sewage and grey water discharges	
11	Cooling and brine water discharges	
12	Bilge water and deck drainage discharges	
13	Displacement of other marine users	
Risks		
Activity-specific		
1	Gas condensate release - pipeline rupture	Wellhead and associated production infrastructure is located onshore.
2	Gas condensate release - loss of well control	
3	Fluid migration to aquifer	The change in gas reservoir pressure may result in a pressure gradient between the reservoir and adjacent aquifers, causing fluids to migrate along the gradient. If faults or fractures are present, contaminants may move towards aquifers. The conceptual groundwater model for the Otway Basin shows there are impermeable layers between the gas reservoirs and aquifers (including mudstones) (Torkzaben *et al.* 2020a). The report notes that these mudstone layers provide a "*broad and effective seal for underlying gas-bearing formations*" (Torkzaben *et al.* 2020a).

[2] Groundwater drawdown can be caused by gas reservoir depressurisation when hydrocarbons are extracted. If the gas reservoir is hydraulically connected to an aquifer, water from the aquifer may flow toward the reservoir to maintain pressure and can result in a lowering of the water level in the aquifer.

		Therefore, this risk is considered to be ALARP and at an acceptable level. Therefore, this impact does not require further assessment within the EP.
Routine vessel risks		
4	Accidental discharge of waste to the ocean	No vessel-based activities are undertaken in the Offshore Beach Permit Area.
5	Interference with third party vessels	
6	Vessel strike or entanglement with megafauna	
7	Introduction of invasive marine species	
8	Diesel spill	

7 Implementation Strategy

The implementation strategy for the EP has been prepared in accordance with the requirements of Regulation 16 of the Victorian OPGGS Regulations 2021 and includes the following information:

- The environmental management system for the activity.
- The chain of command, including roles and responsibilities, for the implementation, management and review of the environment plan.
- Measures to ensure all employees or contractors are aware of their responsibilities under the environmental plan.
- Measures for monitoring, recording, audit and management of non-conformance and for the review of environmental performance.
- Measures for ongoing consultation.
- Measures for the maintenance of an environmental emergency response manual.

As there are no physical or vessel-based activities to take place within the Offshore Beach Permit Area and no credible pathway for impacts or risks to the marine environment, several requirements for the implementation strategy under the Victorian OPGGS Regulations 2021 are not considered to be relevant to the EP. The sections below clearly outline where the requirements of the Victorian OPGGS Regulations 2021 are not considered appropriate for the activity, noting that all onshore impacts and risks are covered by the Halladale, Black Watch Speculant Wellsite Operations EMP (CDN/ID 8255348) in accordance with the requirements of the *Petroleum Act 1988* and the Petroleum Regulations 2021.

7.1 Environmental Management System

Regulation 16 of the Victorian OPGGS Regulations 2021 requires that the implementation strategy describe the environmental management system that will be used to ensure that:

- Risks and impacts are identified and reduced to ALARP.
- Control measures are effective in reducing risks and impacts to ALARP and an acceptable level.
- EPO and EPS are being met.

The Beach Operations Excellence Management System (OEMS), originally launched in 2020, was reviewed and revised in February 2025. The revised OEMS (Figure 7-2) is an integrated health, safety and environment (HSE) management system and includes all HSE management standards and procedures. The OEMS provides guidance on how Beach will meet the requirements of its Environment Policy (Figure 7-1) and has been developed using the principles of the IOGP Report 510. The revised OEMS consists of 5 Management Standards (Table 7-1) that detail specific performance requirements to ensure the effective management of HSE risks and impacts.

Environment Policy

Objective

Beach is committed to conducting operations in an environmentally responsible and sustainable manner.

Strategy

To achieve this, Beach will:

- Comply with relevant environmental laws, regulations, and the Beach Operations Excellence Management System which is the method by which Beach identifies and manages environmental risk.
- Establish environmental objectives and targets, and implement programs to achieve them that will support continuous improvement;
- Identify, assess and control environmental impacts of our operations by proactive management of activities and mitigation of impacts;
- Ensure that incidents, near misses, concerns and complaints are reported, investigated and lessons learnt are implemented;
- Inform all employees and contractors of their environmental responsibilities including consultation and distribution of appropriate environmental management guidelines, regulations and publications for all relevant activities;
- Efficiently use natural resources and energy, and engage with stakeholders on environmental issues; and
- Publicly report on our environmental performance.

Application

This policy applies to all personnel associated with Beach activities.

This policy will be reviewed periodically as required, and in any event at least once every three years.

April 2023

Document status

Version	Date reviewed	Prepared by	Reviewed by	Endorsed by	Final approval
1.0	2015	HSE Manager	HSE Committee	Risk Management Committee	Board 1 March 2015
2.0	October 2017	HSE Manager	HSE Committee	Risk Management Committee	Board 26 October 2017
3.0	September 2019	Head of Environment	Risk Management Committee	RCGS Committee	Board 13 Dec 2019
4.0	April 2023	Head of Environment	Risk Management Committee		CEO Apr 2023

Amendment record

March 2025	-	Accountable executive and requirement for minimum 3 yearly review added
Version	Clause	Description of amendment
October 2017	Multiple	Minor amendments to wording
September 2019	Multiple	Branding, and changes to obligations
April 2023	Strategy	Update to include reference to OEMS

Figure 7-1: Beach Energy's Environment Policy

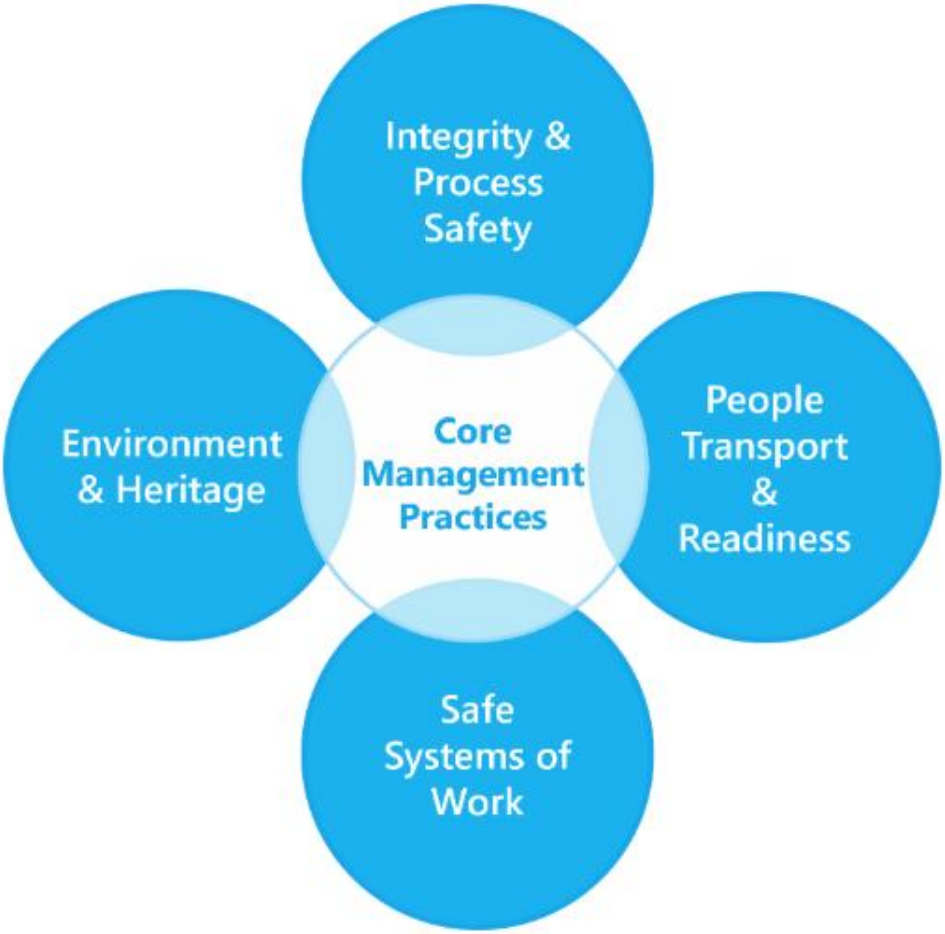


Figure 7-2: Beach OEMS

Table 7-1: Beach OEMS Standards

OEMS Management Standards	
Standard 1: Core management practices	1.1 OEMS leadership
	1.2 Asset risk management
	1.3 Management of change
	1.4 Incident management
	1.5 Emergency management
	1.6 Assurance and improvement
Standard 2: Integrity and process safety	2.1 Well lifecycle management
	2.2 Plant and pipeline lifecycle management
	2.3 Safety critical elements
	2.4 Pre-startup safety review (PSSR)
	2.5 Safe operating envelope
	2.6 Asset information
Standard 3: People, transport and readiness	3.1 Induction, training and competency
	3.2 Fitness for work
	3.3 Driving
	3.4 Aviation
Standard 4: Safe systems of work	4.1 Permit to work
	4.2 Hot work
	4.3 Energy isolation
	4.4 Confined space
	4.5 Working at height
	4.6 Lifting and load safety
	4.7 Electrical safety
	4.8 Excavation
	4.9 Occupational exposure
Standard 5: Environment and heritage	5.1 Environment permissions documents
	5.2 Cultural heritage
	5.3 Emissions monitoring and reporting

Note – Standards are numbered for ease of reference for the EP

As there are no credible offshore impacts and risks associated with this activity, there are no asset or activity specific environmental management procedures and plans, in addition to the Management Standards of the OEMS, that are relevant to the EP. Onshore management plans and procedures are outlined within the Halladale, Black Watch Speculant Wellsite Operations EMP (CDN/ID 8255348), in accordance with the Petroleum Regulations 2021.

The application of OEMS Management Standards relevant to the activity and the Victorian OPGGS Regulations 2021 are described in Section 9 of the EP.

7.2 Assurance and Reporting

7.2.1 Management of Change

The Beach Management of Change Procedure (CDN/ID 3675087) (MoC Procedure) has been developed to specify the requirements for raising, progressing and closing of a MoC request to ensure that all temporary and permanent changes to the organisation, personnel, systems, procedures, equipment, products, and materials are identified and managed to ensure HSE risks arising from these changes remain at an acceptable level.

It ensures:

- Holistic assessment of a proposed change.
- Consultation with stakeholder's dependent upon the nature of the change.
- Clear accountability for the change.

Changes to equipment, systems and documentation will be managed in accordance with the MoC procedure to ensure that all proposed changes are adequately defined, implemented, reviewed, and documented by suitably competent persons. The MoC process is managed using an electronic tracking database, which provides assurance that all engineering and regulatory requirements have both been considered and met before any change is operational.

Not all changes require a technical MoC review. Each change is assessed on a case-by-case basis. The potential environmental impacts and/or risks are reviewed by a member of the Beach Environment Team to determine whether the MoC review process is triggered using the Environmental Management of Change Offshore Environment Plans Procedure (CDN/ID 18446109).

Where the MoC review processes identifies a change in impacts, risks, or controls compared to those described and assessed in Section 6, and triggers a regulatory requirement to revise the EP, the revision shall be defined, endorsed, completed and communicated in accordance with the MoC Procedure.

7.2.2 Environmental Plan Review

A member of the Beach Environment Team may determine that an internal review of the EP is necessary based on any one or all of the following factors:

- Changes to hazards and/or controls identified in the review of the EP, which in itself is supported by:
    - Activity design changes.
    - Environment and industry legislative updates.
    - Remaining in regular contact with stakeholders.

- Implementation of corrective actions to address internal or external inspection findings.
- An environmental incident and subsequent investigation identifies issues in the EP that require review and/or updating.
- A modification of the activity is proposed that is not significant but needs to be documented in the EP.
- Changes identified through the MoC process, such as hazards or controls, organisational changes affecting personnel in safety critical roles or OEMS.

The Environment Team provides advice on the material impact of the items listed previously and whether or not a review of the EP should be undertaken. The scope of a review is determined by the factors that trigger the review and an appropriate team will be assembled by the Environmental Advisor to conduct the review. The team may consist of representatives from the Community, Engineering, HSE, Operations or Supply Chain teams as required by the scope.

All personnel can propose changes to HSE documentation via a register located in the Beach document management system. If a review of the EP is initiated, then any proposed changes held in the register will also be considered by the review team.

If a review of the EP relates to a topic that had previously been raised by a stakeholder, an updated response to affected stakeholders will be prepared and provided to affected stakeholders in a process managed by the Community Manager.

7.2.3 Environmental Plan Revision

Beach will revise and re-submit the EP for assessment as required by the requirements of the Victorian OPGGS Regulations 2021, listed in Table 7-2.

Table 7-2: Variation of an EP requirements

Regulations	OPGGS regulation
Submission of a proposed variation of the EP before the commencement of a new activity	20(1)
Submission of a proposed variation of the EP before the commencement of any significant modification or new stage of the activity that is not provided for in the EP as currently in force	20(2)
Submission of a proposed variation of the EP before, or as soon as practicable after, the occurrence of any significant new or significant increase in environmental impact or risk not provided for in the EP, or series of environmental impacts or risks or a series of increases in existing environmental impacts or risks that is not provided for in the EP	20(3)
Submission of a proposed variation of the EP if a change in titleholder will result in a change in the manner in which the environmental impacts and risks of the activity are managed	20(4)

Variations and re-submission of the EP generally centre around 'new' activities, impacts or risks and 'increased' or 'significant' impacts and risks. Beach defines these terms in the following manner:

- New impact or risk – one that has not been assessed in Section 6.
- Increased impact or risk – one with greater extent, severity, duration or uncertainty than is detailed in Section 6.
- Significant change – the change to the integrity of the well deviates from the EP to the degree that it results in new activities that are not intrinsic to the existing Activity Description in Section 2.

A change in the activities, knowledge, or requirements applicable to the well operations is considered to result in a 'significant new' or 'significant increased' impact or risk if any offshore infrastructure is proposed to be installed or any vessel-based activities are proposed.

While an EP variation is being assessed by Department of Energy, Environment and Climate Action (DEECA), any activities addressed under the existing accepted EP are authorised to continue.

7.2.4 Minor EP Revisions

Minor revisions to the EP that do not require resubmission to DEECA will be made where minor administrative changes are identified that do not impact on the environment (e.g., document references, contact details, etc.).

Minor revisions to the EP will not be submitted to the DEECA for assessment. Minor revisions will be tracked in the Beach document control system.

7.2.5 Document Management

Beach document management systems will be utilised for the activity to support safe and efficient operations in a manner that complies with Company and statutory obligations. The EP, and documents and records relevant to the implementation of the EP will be stored and maintained in the Beach document management systems and these records will be made available to regulators upon request.

In accordance with Regulations 32 and 33 of the Victorian OPGGS Regulations 2021, documents and records relevant to the implementation of the EP are stored and maintained in the Beach document control system for a minimum of five years. These records will be made available to regulators in electronic or printed form upon request.

7.2.6 Emissions and Discharge Records

Beach maintains a quantitative record of emissions and discharges associated with their assets and in accordance with regulatory requirements, including emissions and discharges to air and water (from both planned and unplanned activities).

In the absence of offshore activities associated with this activity, emissions and discharges will be limited to onshore operations and will be recorded and reported in accordance with the requirements of the Halladale, Black Watch Speculant Wellsite Operations EMP (CDN/ID 8255348) in accordance with the requirements of the *Petroleum Act 1988* and the Petroleum Regulations 2021.

7.2.7 Incident Reporting

The Beach Incident Management Procedure defines how Beach classifies, investigates, reports and learns from incidents. An incident is any unplanned event or change that results in potential or actual adverse effects or consequences to people, the environment, assets, reputation, or the community.

The standards and outcomes to be delivered under this procedure will be defined below.

7.2.7.1 Incident Management Standard

The Beach Incident Management Procedure (CDN/ID 18985406) has been developed to:

- Ensure that all incidents (including near misses) are reported, investigated, documented and analysed in a consistent manner.
- Encourage open and practical analysis of incidents, aimed to establish relevant causes so that action can be taken to correct the situation and eliminate or mitigate potential reoccurrence.
- Address regulatory requirements for managing incidents.

The procedure applies to all incidents associated with the scope of the EP and to all personnel, contractors and visitors working on the activities.

Incident reports and corrective actions for the activities will be managed using the Beach Incident Management System.

As part of the review and investigation of incidents - additional, or increased, environmental impacts or risks may be identified. These are managed as per the MoC process detailed in Section 7.2.1.

7.2.7.2 Recordable Incident Management

Regulation 6 of the Victorian OPGGS Regulations 2021 defines a 'recordable' incident as:

- A breach of an EPO or EPS in the EP that applies to the activity that is not a reportable incident.

In the absence of offshore activities associated with the EP, routine monthly recordable incident reports will not be completed. Onshore recordable incidents will be recorded and reported as outlined in the Halladale, Black Watch Speculant Wellsite Operations EMP (CDN/ID 8255348) in accordance with the requirements of the *Petroleum Act* 1988 and the Petroleum Regulations 2021.

7.2.7.3 Reportable Incident Management

Regulation 6 of the Victorian OPGGS Regulations 2021 defines a 'reportable' incident as:

- An incident relating to the activity, whether or not described in an EP in force for the activity, that has caused, or has the potential to cause, moderate to catastrophic environmental

consequences and a breach of, or non-compliance with the Act, the regulations or the EPOs set out in an EP in force for the activity.

In the context of the Beach Environmental Risk Matrix, Beach interprets 'moderate to catastrophic' environmental consequence to be those hazards identified through the risk assessment process (see Section 6) as having an inherent or residual impact consequence of 'moderate (2)' or greater. There are no such hazards with such consequences for the activity.

In the absence of offshore activities associated with the EP, reportable incident reports will be limited to onshore operations. Onshore reportable incidents will be recorded and reported as outlined in the Halladale, Black Watch Speculant Wellsite Operations EMP (CDN/ID 8255348) in accordance with the requirements of the *Petroleum Act 1988* and the Petroleum Regulations 2021.

7.2.7.4 Incident Investigation

In the absence of offshore activities associated with the EP, incident investigations will be limited to onshore operations. Onshore incidents will be investigated and reported as outlined in the Halladale, Black Watch Speculant Wellsite Operations EMP (CDN/ID 8255348) in accordance with the requirements of the *Petroleum Act 1988* and the Petroleum Regulations 2021.

7.2.8 Emergency Response Framework

The Beach Crisis and Emergency Management Framework consists of a tiered structure whereby the severity of the emergency triggers the activation of emergency management levels. The emergency response framework contains three tiers based on the severity of the potential impact, as outlined in Figure 7-3. This framework is described in the Beach Emergency Management Plan (CDN/ID 18025990).

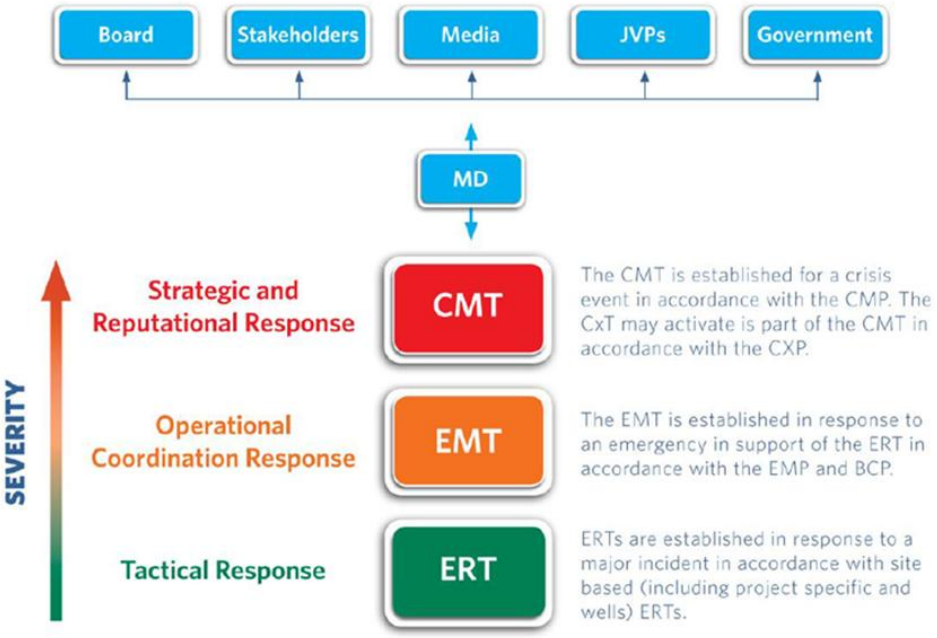


Figure 7-3: Beach Crisis and Emergency Management Framework

The key emergency response arrangements for the HBWS well operations are outlined in the Emergency Response Plan Otway Onshore/Offshore Assets (ERP) (CDN/ID 3977022). The ERP contains generic response procedures for a range of credible emergency scenarios, reporting requirements, and site-specific appendices where individual requirements are captured, such as site evacuation plans, and particular areas of risk. The ERP is regularly reviewed and updated to incorporate lessons learned from training, exercises and incidents, both internally and externally.

The Beach ERP will be reviewed and updated, as necessary, to incorporate lessons learned from training, exercises and incidents, both internally and externally. The ERP will be updated as required following a major accident, near miss or an exercise. Review and testing of the ERP will involve:

- Conducting an emergency response drill on location.
- Testing of associated procedures and system when they are first devised or significantly changed, and on a regular basis not exceeding 12 months.
- Weekly discussion during toolbox talks.
- Undertaking a review of all tests to identify opportunities for improvement and amendment of the ERP.

Emergency response reviews to test the emergency response arrangements will be undertaken throughout the operational life of HBWS in accordance with the Emergency Response Plan Otway Onshore/Offshore Assets (ERP) (CDN/ID 3977022). The outcomes of the reviews will be documented to assess the effectiveness of the review and to record any lessons and actions, and the outcomes will be communicated to participants. Actions will be recorded and tracked to completion.

7.2.9 Routine Reporting

Regulation 34 of the Victorian OPGGS Regulations 2021 specifies that the titleholder must notify the Minister within 10 days of the start and end of an activity.

Regulation 31A of the Victorian OPGGS Regulations 2021 specifies that a titleholder undertaking an activity must submit a report to the Minister in relation to the titleholder's environmental performance for the activity, at intervals provided for in the EP.

In the absence of EPO's and EPS's relevant to the activity to report against, the reporting of environmental performance will be limited to onshore operations and will be provided as outlined in the Halladale, Black Watch Speculant Wellsite Operations EMP (CDN/ID 8255348) in accordance with the requirements of the *Petroleum Act 1998*. As such, no regular reporting of environmental performance by Beach to the DEECA is required for this activity.

Table 7-3: Routine notifications and reporting requirements

Requirements	Timing and contact
Notifications	
Regulation 34(1): Notify the Minister with petroleum activity commencement date.	At least 10 days prior to the commencement of a petroleum activity via email: Operational.reports@ecodev.vic.gov.au
Regulation 34(2): Notify the Minister with the petroleum activity completion date.	Within 10 days of completion via email: Operational.reports@ecodev.vic.gov.au
Performance reporting	
Regulation 31A Submit an annual performance report.	No reporting required for Victorian offshore petroleum activities (Regulation 31A applies only to greenhouse gas storage activities).

7.3 Community Engagement and Consultation

As outlined in Section 4**Error! Reference source not found.**, consultation in the course of preparing the EP has been completed in accordance with the regulations. Beach engages in ongoing consultation and communications during implementation of this revised EP and relevant persons can provide Beach feedback on any new relevant matter that may emerge. Beach will assess any new matters and where appropriate, Beach will apply its Management of Change standard.

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