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Significant Impact Assessment – Desktop Marine Ecology

Aurora Green OWF

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August 2024

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Significant Impact Assessment – Desktop Marine Ecology
Aurora Green OWF

Iberdrola Australia

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Abbreviations

ALARP	As Low As Reasonably Practicable
BIA	Biologically Important Area
CPT	Core penetration testing
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DDV	drop down video
EAC	East Australian Current
EBPC Act	Environment Protection and Biodiversity Conservation Act 1999
ECC	Export Cable Corridor
EIA	Environmental Impact Assessment
GRD	gradiometer
GW	gigawatt
Iberdrola Australia	Iberdrola Renewables Australia Pty Ltd
IMMA	Important Marine Mammal Area
km	kilometre
LAT	Lowest Astronomical Tide
m	metre
m^2	square metre
MAG	magnetometer
MBES	multibeam echosounder
MNES	Matters of National Environmental Significance
NEM	National Electricity Market
NOPIMS	National Offshore Petroleum Information Management System
OWF	offshore windfarm
PCTP	Piezo core penetration testing
PMST	Protected Matters Search Tool
PSA	particle size analysis
SAC	South Australian Current
SASW	Sub-Antarctic Surface Water
SBP	sub-bottom profiler
SCPT	Seismic core penetration testing

SPRAT	Species Profile and Threats Database
SSS	side scan sonar
TCPT	Thermal core penetration testing
the project	Aurora Green Offshore Wind Farm Project
UHR	Ultra-high resolution seismic
UXO	unexploded ordnance
WSP	WSP Australia Pty Ltd

1 Introduction

1.1 Purpose

Iberdrola Renewables Australia Pty Ltd (Iberdrola Australia) is developing the Aurora Green Offshore Wind Farm (OWF) (the project) in Gippsland, Victoria, and are preparing for preliminary geophysical, geotechnical and environmental baseline surveys (the proposed activities) of the OWF and export cable corridor (ECC) (survey area) to be undertaken in 2024 and 2025.

This report is a marine ecological impact assessment of potential impacts on Matters of National Environmental Significance (MNES) from the proposed activities to support a referral under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Potential impact pathways and proposed mitigation actions are described within the context of the significant impact criteria outlined in the Commonwealth's *Significant Impact Guidelines 1.1. – Matters of National Environmental Significance* document (hereinafter Significant Impact Guidelines). Potential impacts on MNES were identified via the Department of Climate Change, Energy, the Environment and Water (DCCEEW) Protected Matters Search Tool (PMST) and other relevant desktop resources.

1.2 Scope

This report provides:

- a description of the proposed activities
- a description of the marine environmental context and relevant MNES
- an assessment of potential impacts and effects on MNES from proposed activities
- an assessment of potential additive impacts and effects on MNES considering potential future project phases
- recommendations for mitigation of potential effects on MNES.

This report is based on information provided by Iberdrola Australia, the PMST report generated on 5 July 2024 (see Appendix A), and other relevant publicly available information and databases.

This report addresses all potential impacts on MNES in the marine environment from the proposed activities, with the exception of impacts from underwater noise that are assessed in a separate report (refer to Underwater Noise Significance Impact Assessment provided). The term 'marine environment' is defined as all marine and coastal waters up to the highest astronomical tide (HAT) boundary. This is distinct from 'Commonwealth marine environment' which is from five kilometres (km) to 370 km from the coast. State waters are defined as those waters from the low tide mark and extending up to five km out to sea.

1.3 Background

On 15 July 2024, Iberdrola Australia OW 2 Pty Limited (Iberdrola Australia) was granted Feasibility Licence FL-012 in the Declared Area OEI-01-2022 under section 33 of the Offshore Electricity Infrastructure Act 2021. Iberdrola Australia is planning to develop the project in Gippsland, Victoria and have been notified that a Feasibility Licence would be awarded post completion of consultation for the project. The project would provide up to three gigawatts (GW) clean energy to the national electricity market (NEM). The project would comprise up to 150 turbines in 40 to 60 metre water depths and an ECC.

Preliminary baseline environmental characterisation surveys are required to collect benthic, archaeological, contamination, geotechnical and geophysical information (the proposed activities) from the OWF and ECC (survey area). The early characterisation surveys would form the first part of the environmental investigations for the project. Any future investigations would be subject to a separate EPBC Act referral; however, potential additive impact from the proposed and future investigations and phases of the project have been considered in this assessment.

2 Project description

2.1 Project location

Aurora Green OWF (the project) is located in the Bass Strait, approximately 25 km from the coast of Gippsland. The proposed activities would be conducted within the Aurora Green OWF area (around 700 km^2 plus two kilometre (km) buffer) and the export cable corridor (ECC) area (around 40 km^2 (including buffer)) (the survey area) as shown in Figure 2.1. The proposed survey area also includes a buffer zone around these areas to allow for vessel turns at the end of survey transects. The width of the ECC to be surveyed is one km and to a minimum depth of 10 metre lowest astronomical tide (LAT).

The general area has previously been surveyed for oil and gas exploration. There are several public domain datasets available from the Australian National Offshore Petroleum Information Management System (NOPIMS) and the AusSeabed Marine Data Portal.

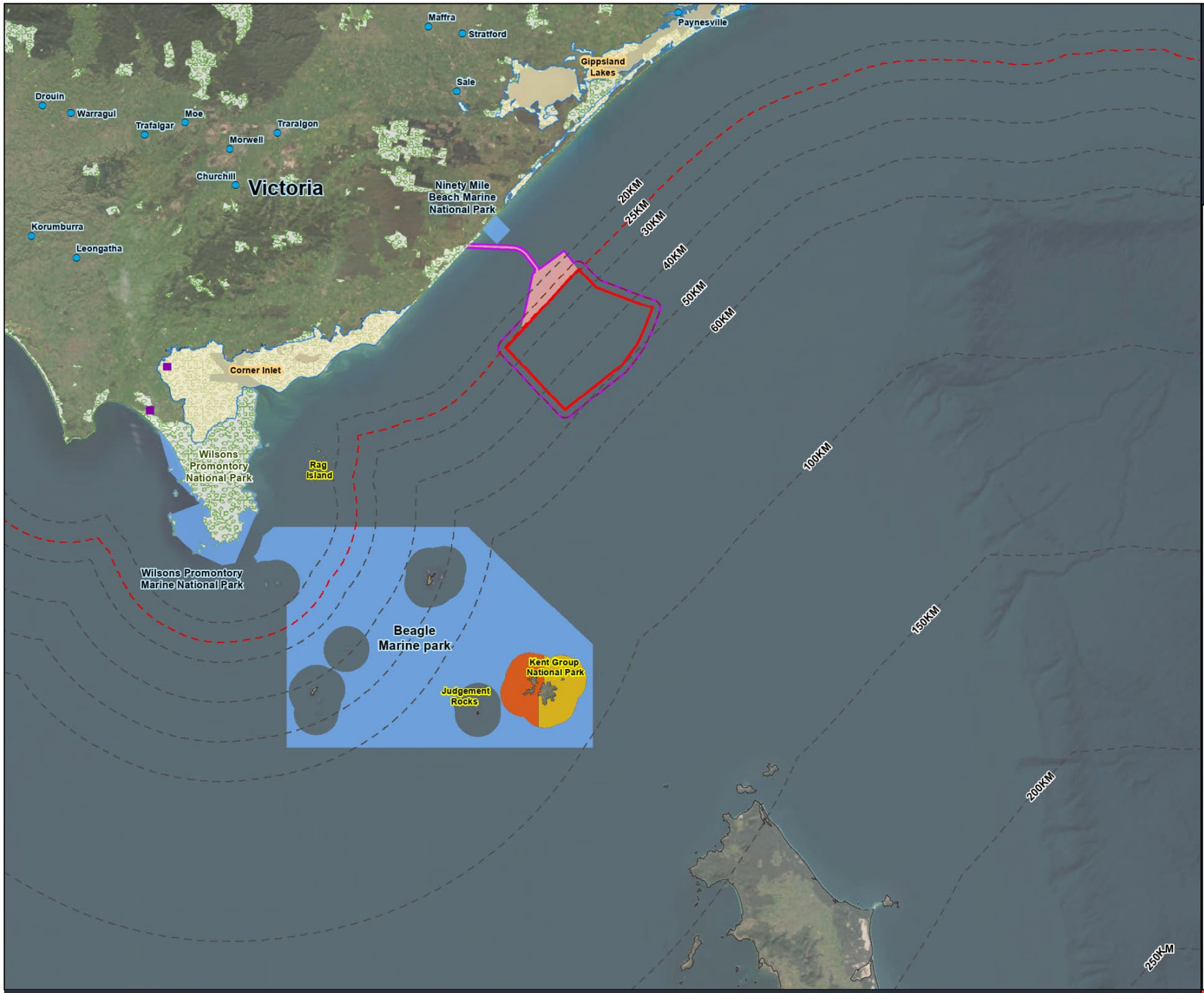
2.2 Proposed activities

Marine geophysical, geotechnical and environmental surveys (the proposed activities) would be carried out within the survey area. The proposed activities would provide a preliminary understanding of the benthic geology, ecology and hazards from man-made and natural features within these areas. These surveys are needed to inform the project program, engineering design, environmental assessments and construction methodologies for the project. All work would be conducted in accordance with Iberdrola Australia's policies, processes and requirements.

The proposed activities would be conducted in line with the *Guidance Notes for the Planning and Execution of Geophysical and Geotechnical Ground Investigations for Offshore Renewable Energy Developments* (Offshore Site Investigation and Geotechnics Group of Society for Underwater Technology, 2022). The proposed survey methods include:

- Metocean surveys – remote sensing, buoys, and other sensor technology.
- Geophysical surveys
  - multibeam echosounder (MBES) for determining the water depth and seafloor mapping (bathymetry and backscatter data)
  - side scan sonar (SSS) and/or synthetic aperture sonar (SAS) for seabed classification and detection of debris/objects
  - sub-bottom profiler (SBP) to image the shallow subsurface, typically down to tens of metres below seafloor. Multiple SBP may be utilised, such as chirp, parametric SBP, boomer or sparker
  - ultra-high resolution (UHR) seismic to image the deeper subsurface, typically down to 100 metres below seafloor utilising sparker sources or mini airguns (low volume)
  - magnetometer (MAG) and gradiometer (GRD) to detect magnetic (metallic) objects, such as shipwrecks, debris or unexploded ordinance (UXO)
  - drop down video (DDV) to ground-truth and identify seabed features.
- Benthic surveys
  - grab sampling (surficial seabed sample) to characterise seafloor sediments and benthic fauna
  - DDV used for analysing benthic fauna and specific seabed features
  - freshwater lens to supplement the towed DDV in areas of high turbidity or low visibility.

- Geotechnical surveys
  - vibrocoring (down to six metres): as gravity coring but utilised in different soil conditions
  - gravity or gravity piston coring (down to six metres), used to characterise shallow seabed sediments and geotechnical properties thereof
  - cone penetration testing (CPT), including seismic CPTs (SCPT), thermal CPTs (TCPT) and piezo-CPT (PCT), used to determine geotechnical properties of the shallow subsurface and characterising soil stratigraphy (down to approximately six metres).



Iberdrola Offshore Wind Farm

Figure 2.1

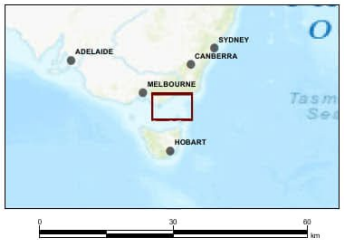
Survey Area

Legend

- Major Cities
- Flyways Sites Australia Birds
- Approximate Distance from Coastline to Proposed Lease Area
- Approximate Distance from Coastline
- Export Cable Corridor (ECC)
- Offshore Wind Farm (OWF)
- 2km Buffer Around the Offshore Wind Farm (OWF)
- Survey Area
- Australian Marine Parks
- Ramsar Wetlands
- Victoria National Park

Kent Group National Park

- No Fishing Zone
- Restricted Fishing Zone



Coordinate system: WGS 1984 Web Mercator Auxiliary Sphere

Scale ratio correct when printed at A3

1:1,200,000 Date: 06-08-24

Data sources: - DNRME, TMR, Translink, Geoscience Australia

Table 2.1 sets out the survey objectives for the proposed activities. The proposed activities would include mobilisation and demobilisation of vessels and all necessary equipment to the survey area.

Table 2.1 Preliminary baseline geophysical, geotechnical and environmental survey (the proposed activities) objectives

Survey type	Purpose
Metocean surveys	— Recording meteorological and oceanographic conditions to establish data about wind, waves, currents, and water levels in the survey area. The proposed activities would inform the measurement and analysis of meteorological and oceanographic conditions to ensure safety and reliability of the project, as well as to minimise the impact of environmental conditions. This is critical for the design of the wind turbines and other associated infrastructure.
Geophysical surveys	— Detection of UXOs for geotechnical operations and to support selection of locations for ground truthing, based on the identification of ecological and benthic targets present on the seabed. — Inform survey design for archaeological investigations. — Inform survey design for geotechnical investigations. — Habitat spatial mapping that focusses on the known seabed features to gain an understanding of potential sensitive species associated with the habitat types, and habitats sensitive to disturbance. To be groundtruthed by the physical sampling (benthic sampling) and surveying. — To generate detailed topographical information of the seabed and identify benthic and ecological attributes; selecting locations for benthic and ecological ground truthing based on the attributes, and for input for shallow portion of the ground model and mapping of near seafloor sediment types. — Allow for assessment of variations in thickness and sediment cover of the seabed sediments and shallow geology to a depth of five metres or greater, for inter array cable and export cable design purposes and development of the ground model.
Benthic surveys	— Collect data on the benthic infauna and epifauna communities and sediment characteristics of the survey areas by following a benthic sampling plan and method framework agreed with regulators and provided by Iberdrola Australia. — Collect data on potential contamination. — Collect material to allow for particle size analysis (PSA). — Identify the presence, relative abundance, and distribution of epibenthic species (animals that live on the surface of a seabed), mobile epifauna (shrimps, crabs and fish), bioturbation (indicators of animal presence, burrow, trails), and the presence and extent of habitats and key ecological features (scours, reef structures, debris to understand potential for colonisation). — Obtain data, reports, and habitat spatial mapping to be used by Iberdrola Australia to identify ecologically sensitive habitats and populations and prepare an Environmental Impact Assessment (EIA) baseline.

Survey type	Purpose
Geotechnical surveys	— Determine geotechnical properties of the shallow subsurface and characterising soil stratigraphy to inform future survey approaches and provide initial data for design consideration. — Onshore analysis for input into EIA, future pre-construction targeted survey or monitoring works, and if appropriate, the application of site protected zones to protect sensitive natural or anthropogenic features. — To inform archaeologist of organic matter which may be of archaeological interest for sub-sampling and further analysis. Input into EIA, future pre-construction targeted survey or monitoring works, and if appropriate, the application of site Archaeological Exclusion Zones to protect sensitive natural or anthropogenic features.

2.3 Timing

The proposed activities are separated into several work packages along with a tentative timeline. This timeline may change subject to availability of equipment and personnel. Nominal locations would be selected through a high-level desktop study by ecology specialists to identify expected habitats and point sources for pollution, and to optimise acquisition and adequately cover areas of interest. Final locations, including coverage, resolution and spacing, would then be selected on review of geophysical data acquisition.

The 2024 program is planned to commence in November/December 2024 and includes geophysical and benthic surveys with an option for a UXO top-up survey. The surveys are designed to provide data for the characterisation of the seabed and subsurface in the survey area as well as to obtain UXO ALARP certificates for future geotechnical work. Seabed sampling comprises approximately 25 grab samples within the OWF area and 10 grab samples within the ECC. DDV samples would be collected during the geophysical and benthic surveys as well as one benthic grab sample per location. The 2025 program includes a hydrographic survey to monitor changes in the morpho-dynamics of the seabed and provide surveys to pre-screen site investigation locations ahead of the geotechnical campaign in 2025. The geotechnical survey would involve vibrocoring and CPTs at approximately 24 sites within the OWF area and 10 sites within the ECC.

The duration of the survey works is estimated to be approximately 70 days using two vessels (or 120 days using one vessel) for each work package.

3 Methodology

3.1 Area of Influence

As described in Section 2.1, the proposed survey area includes the marine environment of both the OWF and ECC as well as a buffer zone to allow for vessel turns (Figure 2.1).

The area of influence (AoI) for the purposes of this marine ecological impact assessment extends beyond the proposed survey area to determine the presence of MNES with regular occurrence in the wider marine environment that may enter or move through the survey area. Therefore, the AoI accounts for distribution of marine species based on their migratory habits and is considered to reasonably capture ecological coherence and interconnectivity at habitat and species levels, while at the same time being precautionary regarding the scale of the impacts expected from the proposed activities.

The AoI applied to this marine ecological impact assessment includes five km and 25 km buffer zones around the OWF and ECC for consideration of nearby marine protected areas and the potential for interactions with migratory marine species or species with large territorial ranges (Figure 2.1).

3.2 Desktop information review

This marine ecological impact assessment is based on a desktop assessment of the known environmental conditions of the AoI. The assessment involved evaluating the likelihood of occurrence of MNES and other ecologically significance habitats and species (collectively known as ecological receptors) in the survey area. An ecological receptor is defined as the ecological entity (species or habitat) exposed to a stressor (or impact). This term may refer to plants and animals, habitats, and ecosystems. The marine MNES relevant to the survey area and AoI include:

- listed threatened species and ecological communities
- migratory species protected under international agreements
- Ramsar wetlands of international importance
- Commonwealth marine areas
- World Heritage properties
- National Heritage places.

3.3 Information sources

Information from publicly available sources was used for this marine ecology impact assessment. Table 3.1 lists the key resources used for this review. Data on Victorian and adjacent Commonwealth waters is available through DataVic (viewable via CoastKit), the Commonwealth funded National Environmental Science Program (NESP) via the Australian Ocean Data Network (AODN), data.gov.au, and Geoscience Australia's online map-based tool (NationalMap).

Table 3.1 Sources of information used for the desktop assessment

Data source	Organisation and date	Description
The Protected Matters Search Tool (PMST) for MNES – https://pmst.awe.gov.au/	Department of Climate Change, Energy, the Environment and Water (DCCEEW), July 2024	As defined under the EPBC Act. A five km and 25 km buffer was applied to the survey area.
Species Profile and Threats Database (SPRAT) – http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl	Department of Climate Change, Energy, the Environment and Water, July 2024	The DCCEEW hosts an online database of species that occur in Australia, with their EPBC Act status and descriptions on the species' habitat and feeding behaviours.
FFG Act Threatened List – https://www.environment.vic.gov.au/conserving-threatened-species/threatened-list	Department of Environment, Land, Water, Planning (DELWP), July 2024	DELWP has created the FFG Act Threatened List which outlines species of state importance that may be threatened.
https://parks.tas.gov.au/	Tasmania Parks and Wildlife Service, July 2024	Resources on Tasmania managed Parks, including Kent Group Marine Park.
https://www.ala.org.au/	Atlas of Living Australia, July 2024	Specific species presence within the project site and/or habitat descriptions.
International Union for Conservation of Nature (IUCN) Red List of Threatened Species - https://www.iucnredlist.org/	IUCN, July 2024	Information on species populations, habitat, ecology, and threats.
www.birdlife.org	BirdLife International, July 2024	Information on bird species populations, habitat, ecology, and threats.
CoastKit - https://mapshare.vic.gov.au/coastkit/	Victoria State Government, July 2024	A central repository for Victorian marine and coastal scientific projects and datasets.
Seamap Australia - https://seamapaustralia.org/	Seamap Australia, July 2024.	A nationally synthesised product of seafloor habitat data collected from stakeholders around Australia.

Species listed in the PMST were first screened for the likelihood of occurrence in the subtidal marine environment from about 10 metre water depths and deeper, whether aquatic species (fish, sharks, whales), using the water column for migration or feeding (seabirds, other marine mammals, marine reptiles) or flying over the marine environment for migration (seabirds). The PMST results were then screened for the likelihood of occurrence in the survey area based on the known biological data using the details provided by the PMST or, where available, other sources such as published scientific literature or publicly available datasets.

The following applied when considering likelihood of occurrence:

- Known – records in the last 10 years; the species does not have highly specific niche requirements; the habitat is largely intact; the area is within the known range of the species distribution.
- Likely – records within the last 20 years; habitat and species distribution as above.

- May – records within the last 20 years and the area is within the known range of the species distribution but does not provide habitat that is largely intact; or records within 20–40 years with adequate survey effort, and habitat is intact, and species of similar habitat needs have been recorded in the area.
- Unlikely – records within 20–40 years but suitable habitat not present and species or similar habitat needs have not been recorded in the area; or no records within the last 40 years despite suitable habitat present; or no records despite adequate survey effort.

Further parsing of the PMST results for assessing the likelihood of interactions with listed ecological features is discussed in Section 4 where the reason for excluding species or features is described, for example, whether shorebird species could be encountered in the survey area or are limited to shallow marine environments. This screening is required when assessing the PMST results because the estimated boundary of the ECC abuts the terrestrial/coastal environment meaning that species with intertidal or shallow coastal habitats are captured in the data outputs but are highly unlikely to be encountered or indirectly affected by the proposed survey activities that are focused on the subtidal marine environment deeper than 10 metre water depths.

For EPBC Act listed migratory species, the Significant Impact Guidelines are based on impacts on an 'ecologically significant proportion' or an 'important habitat' for migratory species, where the former is evaluated for each case, and an important habitat is defined as:

> *a. a habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species, and/or*
>
> *b. habitat that is of critical importance to the species at particular life-cycle stages, and/or*
>
> *c. habitat utilised by a migratory species which is at the limit of the species range, and/or*
>
> *d. habitat within an area where the species is declining.'*

Biologically important areas (BIAs) were considered relevant to this assessment and are defined by the Commonwealth based on scientific knowledge. Overlap of BIAs with the survey area was considered evidence that the area represented important habitat for the species.

Within this report, the conservation status of a species is defined in accordance with the provisions of relevant legislation and its regulations and amendments and/or the EPBC Act. 'Threatened' is a common use term to collectively describe critically endangered, endangered and vulnerable species.

3.4 Impact assessment

An assessment of the potential impacts on marine ecological values from the proposed survey activities was made in accordance with the criteria of the Significant Impact Guidelines and best practice. MNES and other sensitive ecological value potentially encountered in the survey area and AoI were identified as described in Section 3.2. Proposed activities may have beneficial and adverse impacts on the marine environment, however only adverse impacts on significant marine ecological receptors have been described here for planning of ecological mitigation and management.

The Significant Impact Guidelines describe "a 'significant impact' [as] an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment that is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts." Furthermore, to be 'likely', "it is not necessary for a significant impact to have a greater than 50 percent chance of happening; it is sufficient if a significant impact on the environment is a real or not remote chance or possibility." These criteria were used to guide this assessment and were complemented where relevant with commonly used criteria and best practice for biodiversity impact assessments internationally (Brownlie and Treweek, 2018; Department of Sustainability & Environment, 2006).

Both direct and indirect impacts were considered for this assessment. A direct impact is an outcome that is directly attributable to a defined action (Treweek, 1999). An indirect impact (also known as a secondary impact) is attributable to a defined action or stressor but affects an environmental or ecological component via effects on other components. Indirect effects are often, but not necessarily, time-delayed or expressed at some distance from their source (Treweek, 1999). In the context of this assessment, direct impacts result from a direct interaction between the survey activities and the ecological values within the survey area (e.g., disturbance of the seabed by sampling equipment and the benthic habitats that are affected). Indirect impacts follow on from the direct interactions between the survey activities and the environment and result from subsequent interactions (e.g., water quality changes from sediment resuspension impacting downstream ecosystems or populations outside of the survey area).

3.5 Mitigation

Where potential impacts on MNES were identified, a sequential process has been adopted to avoid, minimise, or mitigate potential project impacts. This is referred to as the mitigation hierarchy which also includes offsetting and compensation which are not applicable to this assessment. Avoiding or minimising adverse effects is best achieved through consideration of potential impacts of a project from the earliest stages of planning, i.e. ‘embedded mitigation’. Embedded mitigation is beneficial as there is greater certainty that it would be delivered. Mitigation must have defined criteria for success to allow the success or failure to be measured by monitoring and the proposed measures must be able to be delivered within a reasonable timeframe.

While potential impacts on marine ecological values have been identified in association with the proposed survey activities, there are mitigation and management options that can be employed to maintain the baseline ecological conditions of marine and coastal habitats and species’ populations within the survey area and the wider AoI. Mitigation and management controls for marine ecological impacts have been recommended based on the outcomes of the impact assessment process.

4 Existing marine environment

4.1 Physical environment

4.1.1 Overview

The current condition of the marine environment within the survey area is described based on existing desktop information, including any outstanding natural features and any other important or unique values that apply to the survey area. 'Natural features' refers to any specific values that are protected or understood to be significant to the area.

Victoria's marine environment has very high species richness and diversity with many species' endemic to the State. The unique species that inhabit the marine environment are influenced by the mixing of temperate, tropical, and cold-water elements (VEAC, 2019). The wider ecoregional context is summarised in Section 4.1.

4.1.2 Oceanography and bathymetry

Bass Strait is a dynamic marine environment prone to severe storms and high waves. It is influenced by the South Australian Current (SAC), the East Australian Current (EAC) and sub-Antarctic Surface Water (SASW). The tides exhibit a daily pattern, and sea temperatures range from 13°C in winter to 17–18°C in summer (VEAC, 2019). The navigational charts suggest the depth of the survey area ranges from approximately 10 to 60 metres and the survey area does not appear to support biogenic reefs.

4.1.3 Benthic sediments and biology

The seabed is primarily calcareous gravel, sand, and silt (Seamap Australia 2023). There are no threatened benthic species identified in the survey area and is therefore unlikely to support critical benthic habitat (PMST 2024). However, information for benthic habitats within the survey area is limited, and benthic habitat mapping is recommended. The survey is approximately 220 metres from Ninety Mile Beach Marine Park (at its nearest point) which hosts a significant benthic habitat (Parks Victoria 2023).

In general, studies in Bass Strait describe the region as having high diversity for benthic assemblages including the presence of benthic invertebrates such as polychaetes, bivalves, molluscs and echinoderms inhabiting the sediment flats (Advisian 2017). Tubeworms, small crustaceans, nematodes, nemerteans and sea pens are burrowing species which may use the soft seabed (Advisian 2017).

4.2 Legally protected areas

4.2.1.1 Ninety Mile Beach Marine National Park

The nearest boundaries of the OWF and ECC are approximately 19.5 km and 220 metres respectively from Ninety Mile Beach Marine National Park respectively. This is a protected coastal area with high species diversity within a subtidal sandy habitat (Figure 4.1). Ninety Mile Beach Marine National Park is reported to host more organisms per square metre in sand than many marine habitats worldwide (Parks Victoria 2023).

4.2.1.2 Wilsons Promontory National Park

The site is approximately 63 km from Wilsons Promontory National Park which is a national marine park that supports significant marine life and is Victoria's largest and southern-most marine park (Figure 4.2). Within the park, Kanowna and Anderson Islands support 9,000–10,000 breeding Australian fur seals.

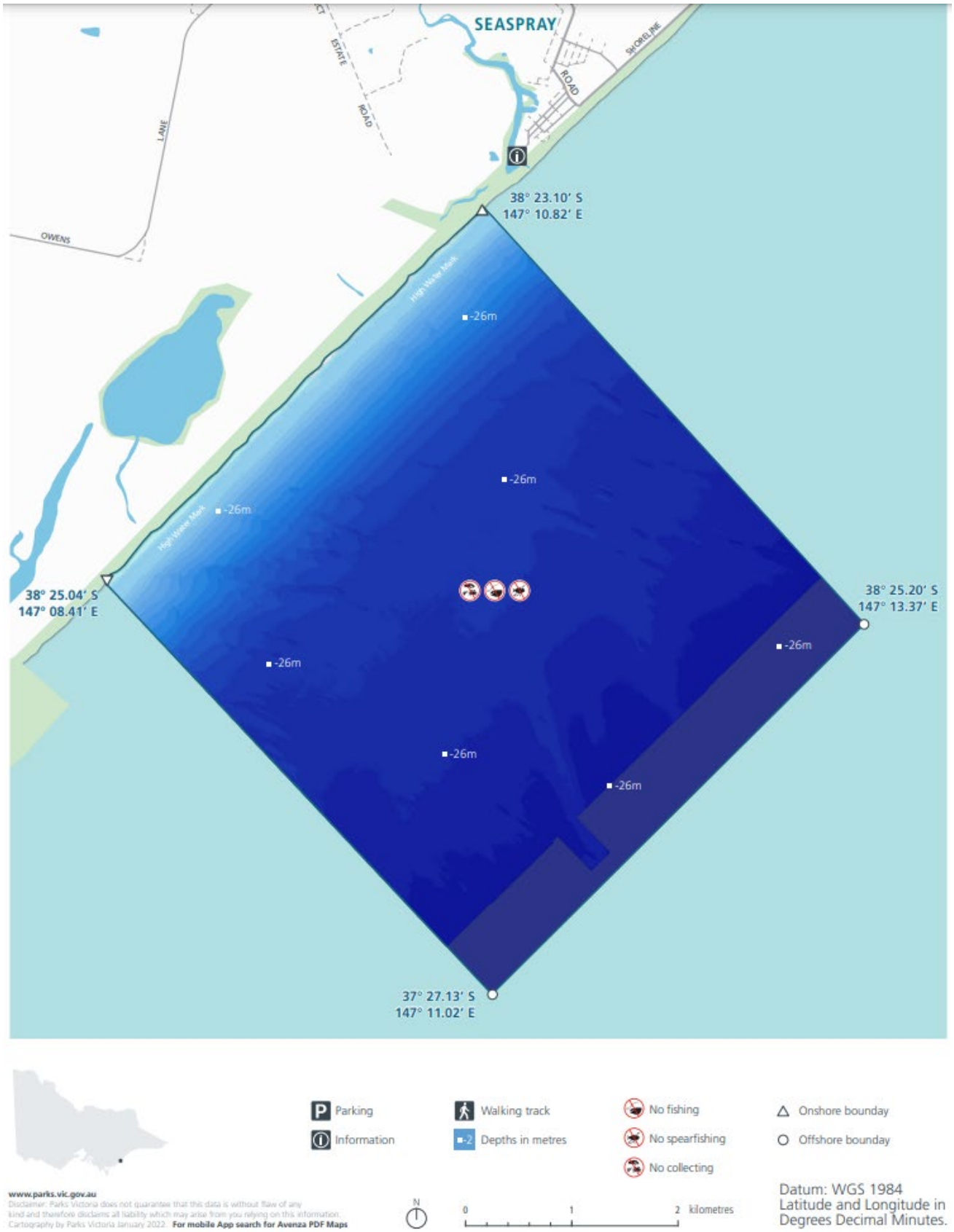


Figure 4.1 Map of Ninety Mile Beach Marine Park (source: Parks Victoria, 2022)

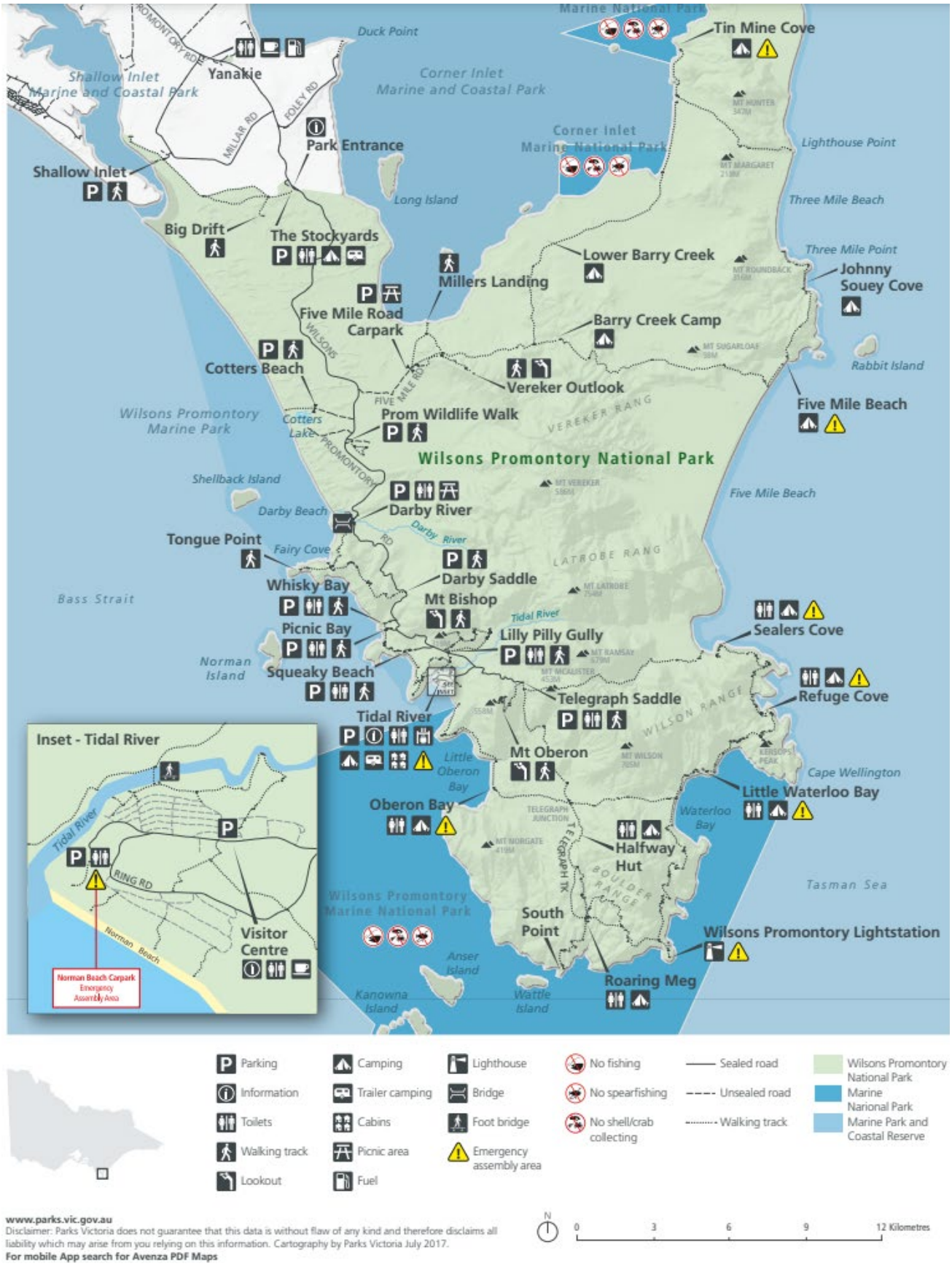


Figure 4.2 Map of Wilsons Promontory and surrounding marine parks and reserves (source: Parks Victoria, 2017)

4.2.1.3 Beagle Marine Park

Beagle Marine Park is located approximately 36.5 km from the survey area. This marine park hosts rocky reefs, diverse sponge gardens and is a critical habitat for seabirds that use the area for breeding and foraging (Australian Marine Parks 2023). Beagle Marine Park encompasses 2,928 km^2 (Australian Marine Parks 2023) and is classed as a Multiple Use Zone (refer to Figure 4.3). Multiple Use Zones provide for a wide range of sustainable activities by allowing those that do not significantly impact on benthic or have an unacceptable impact on the values of the area. This zone equates to IUCN Category VI[1].

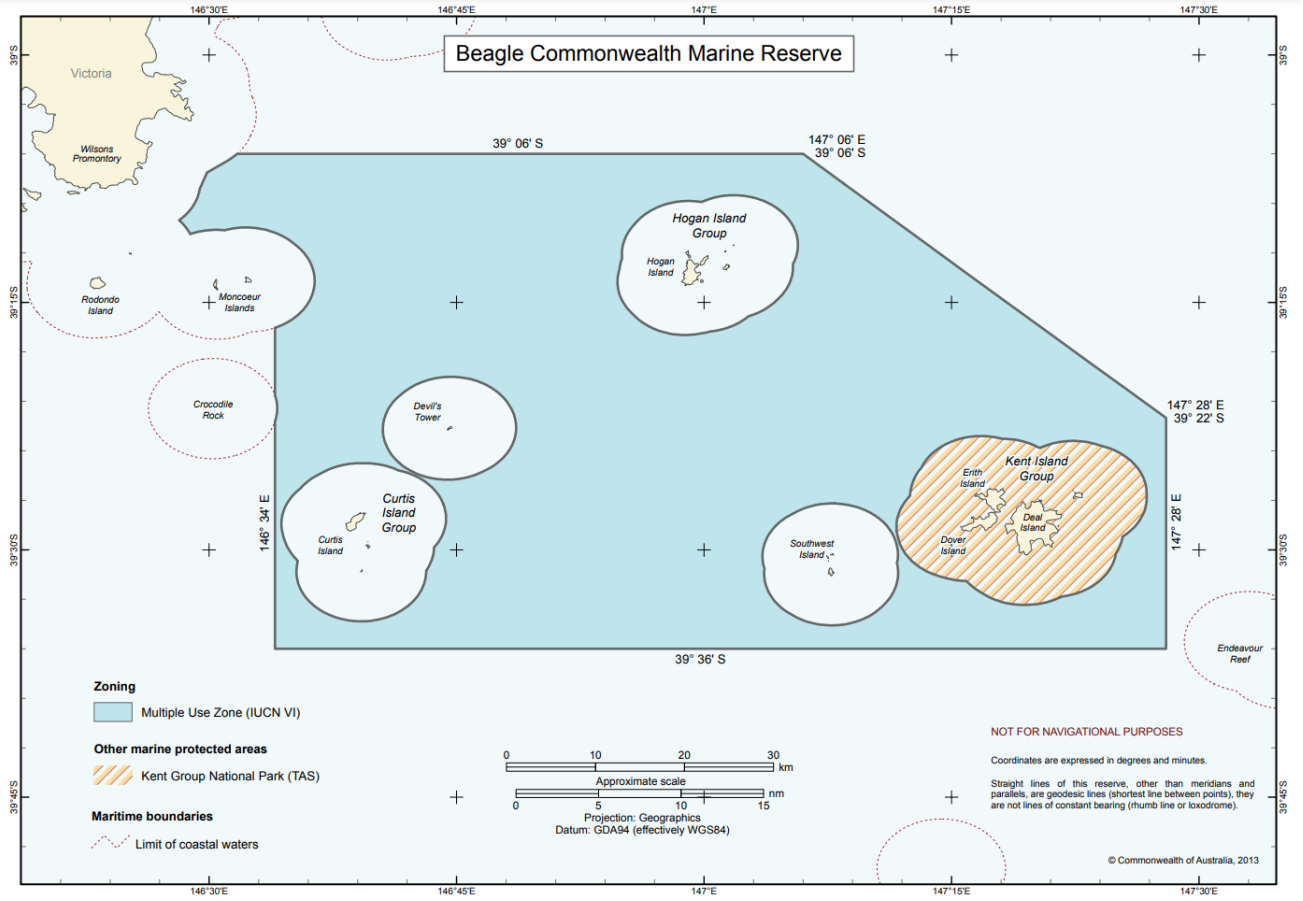


Figure 4.3 Map of Beagle Marine Park and the Kent Group National Park (source: DoNP, 2013)

The islands enclosed by Beagle Marine Park are important sanctuaries for Australian fur seal (*Arctocephalus pusillus*), many Australian seabirds, and great white shark (*Carcharodon carcharias*) have a foraging area within its waters (Barrett et al., 2021). Large aggregations of Port Jackson shark (*Heterodontus portusjacksoni*) have also been found within the Beagle Marine Park (Barrett et al., 2021).

4.2.1.4 Kent Group National Park

Kent Group National Park is located approximately 60 km from the survey area. The park sits within Beagle Marine Park and is a group of islands managed by Tasmania Parks & Wildlife Service. Kent Group hosts Tasmania's largest Australian fur seal population on Judgement Rocks (Tasmania Parks & Wildlife Service, 2020). The five km surrounding the park forms part of a Kent Group Marine Reserve, which is a marine protected area that restricts fishing in the area.

[1] IUCN Categories are the internationally recognised (International Union for the Conservation of Nature) set of seven protected area management categories. The categories are further defined in the Australian IUCN reserve management principles in Schedule 8 of the EPBC Regulations.

4.3 Relevant Matters of National Environmental Significance

4.3.1 Introduction

MNES were identified using DCCEEW's PMST in accordance with the Significant Impact Guidelines. Results from the PMST report generated on 5 July 2024 are summarised below. For detailed information on the MNES identified, refer to the full PMST report in Appendix A.

4.3.2 Listed threatened species and ecological communities

4.3.2.1 Threatened ecological communities

There are no threatened marine ecological communities within five km of the survey area. There is a vulnerable Subtropical and Temperate Coastal Saltmarsh habitat within 25 km of the survey area. However, this habitat occurs in coastal areas under regular or intermittent tidal influence in the intertidal zone and estuaries. Therefore, this ecological community is not within or near to the subtidal marine environment in which the proposed survey activities would occur.

4.3.2.2 Threatened marine mammals

Four listed threatened marine mammals are known or likely to be within or near the survey area:

- southern right whale (*Eubalaena australis*) – endangered
- blue whale (*Balaenoptera musculus*) – endangered
- sei whale (*Balaenoptera borealis*) – vulnerable
- fin whale (*Balaenoptera physalus*) – vulnerable.

These whales are migratory species. The three *Balaenoptera* species (baleen whales) are likely to be present for foraging, feeding or related behaviour and the southern right whales is known to occur in the area.

The survey area falls within the BIA for the southern right whale (*E. australis*) for migration and the BIA for reproduction intersects with the ECC in shallower depths therefore, is it probable that these whale species could be encountered in or near the survey area. However, the distribution of the southern right whale (*E. australis*) in Australia concentrates in certain areas to breed with major calving areas located in Western Australia at Doubtful Island Bay, east of Israelite Bay; and in South Australia at Head of Bight and evidence suggests that fewer than 10 percent of reproductively mature females calving on the coast in any one year use the coast off Tasmania, Victoria, New South Wales and eastern South Australia (DoE 2024a). Therefore, the likelihood of the survey area being a significant breeding area is low.

4.3.2.3 Threatened sharks

Three listed threatened sharks are known, likely or may occur within or near the survey area:

- great white shark (*C. carcharias*) – vulnerable
- whale shark (*Rhincodon typus*) – vulnerable
- school shark (*Galeorhinus galeus*) – conservation dependent.

The great white shark is a migratory species and is known to occur in the survey area. The survey area is within a critical habitat for great white sharks (*C. carcharias*) and is included within the species' BIA for distribution, breeding and foraging. There are no known direct sightings within the survey area, however satellite tracking indicates juvenile sharks within the survey area (ALA 2023; Bruce and Bradford 2012). Genetic and tracking studies have found that great white sharks (*C. carcharias*) may return to their birthplace for breeding, and juveniles are known to aggregate at Corner Inlet in Eastern Victoria (DCEEW 2013). Great white sharks (*C. carcharias*) commonly prey on pinniped species, with known aggregations of sharks around seal colonies. This means Rag Island, which is the closest fur seal colony, may be a great

white shark aggregation point. Therefore, it is probable that great white sharks (*C. carcharias*) could be encountered in or near the survey area.

The PMST results indicate that whale sharks (*R. typus*) may occur in the survey area, however they are only occasionally seen in Victorian waters and most commonly seen in Western Australia, Northern Territory and Queensland (Department of the Environment (DoE), 2024b). The are no seasonal aggregation sites for whale sharks (*R. typus*) (DoE, 2020). They are generally encountered as single individuals. Therefore, the probability of encountering a whale shark or a significant proportion of the whale shark (*R. typus*) population in or near the survey area is low.

The Significant Impact Guidelines states that Conservation Dependent species are not MNES for the purposes of Part 3 of the EPBC Act relating to requirement for environmental approval, therefore school shark (*G. galeus*) is not considered further in this assessment.

4.3.2.4 Threatened reptiles

Three listed threatened marine reptiles could occur within or near the survey area:

- loggerhead turtle (*Caretta caretta*) – endangered
- leatherback turtle (*Dermochelys coriacea*) – endangered
- green turtle (*Chelonia mydas*) – vulnerable.

These turtles are migratory species and none of these turtle species have a BIA within five km of the survey area. The leatherback turtle (*D. coriacea*) is the most likely species to be encountered in the survey area and more likely during the months of April and May. Owing to the relatively cold-water temperatures in Bass Strait, the probability of encountering a loggerhead (*C. caretta*) and green turtle (*C. mydas*) or a significant proportion of their populations in or near the survey area is low.

4.3.2.5 Threatened fish

There are three threatened fish species that are known or likely to occur within or near the survey area:

- Australian grayling (*Prototroctes maraena*) – vulnerable
- blue warehou (*Seriolella brama*) – conservation dependent
- southern bluefin tuna (*Thunnus maccoyii*) – conservation dependent.

Australian grayling (*P. maraena*) primarily occur in streams and rivers or coastal lagoons; however, it is a diadromous species and spends part of its lifecycle as larval and juvenile stages in coastal seas (DoE, 2024c). Newly-hatched larvae drift downstream and out to sea around May where they remain for approximately six months with juveniles returning to the freshwater environment around November where they remain for the remainder of their lives. Key threats are to their freshwater environments and conservation and mitigation efforts are focused on these habitats. It is possible that larvae or juvenile animals could be encountered in or near the survey area, however the probability of encountering a significant proportion of their population is low.

Blue warehou (*S. brama*) and southern bluefin tuna (*T. maccoyii*) are Conservation Dependent species and are therefore not considered further in this assessment.

There are no BIAs for listed threatened fish species overlapping the survey area.

4.3.2.6 Threatened birds

Bass strait is a significant area for seabirds, supporting many breeding populations that consume an array of prey items (Fromant et al. 2020). The convergence of many currents seasonally in this area means prey availability varies through the year (Fromant et al. 2020).

There are 56 threatened bird species that are known, likely or may occur within 25 km of the survey area, either to overfly the coastal area or use marine habitats foraging, feeding or related behaviour. Thirty-four of these are shorebird species that primarily overfly the shallow marine environment or use the shallow coastal margins, some of which are migratory. Given their common behaviour and habitat preferences, the probability of encountering these birds in or near the subtidal marine study area is low.

There are 22 species of seabirds (i.e., albatross, petrels, and sooty shearwater) that could use the survey area based on their habitat preferences, including for foraging, feeding or related behaviour. This includes six endangered species and 16 vulnerable species. The survey area is within the BIAs for the endangered shy albatross and the vulnerable black-browed albatross (*Thalassarche melanophris*), Buller's albatross (*Thalassarche bulleri),* Indian yellow-nosed albatross (*Thalassarche carteri*), wandering albatross (*Diomedea exulans*) and Campbell albatross (*Thalassarche impavida*). It is probable that these threatened species could be encountered in or near the study area. Seventeen of these seabird species are migratory.

4.3.3 Listed migratory species

4.3.3.1 Migratory marine mammals

There are four threatened migratory marine mammals described in Section 4.3.2. There are five non-threatened migratory cetacean species listed under the EPBC Act that are known, likely or may occur within 25 km of the survey area:

- Bryde's whale (*Balaenoptera edeni*)
- pygmy right whale (*Caperea marginata*)
- dusky dolphin (*Lagenorhynchus obscurus*)
- humpback whale (*Megaptera novaeangliae*)
- orca (*Orcinus orca*).

The BIA for the pygmy right whale (*C. marginata*) overlaps the survey area for foraging, feeding or related behaviour. Generally, these cetaceans have been previously threatened by whaling and/or are now threatened by typically anthropogenic threats including pollution, illegal killing, interactions with fisheries and incidental capture.

Migratory sharks

There are two threatened migratory shark species described in Section 4.3.2.3. There are three non-threatened migratory shark species listed under the EPBC Act that are likely or may occur within 25 km of the survey area:

- oceanic whitetip shark (*Carcharhinus longimanus*)
- mako shark (*Isurus oxyrinchus*)
- porbeagle (*Lamna nasus*).

Generally, these species are threatened by overfishing globally (DoE 2024d-f).

Migratory marine reptiles

The migratory reptiles listed in the PMST are all threatened species described in Section 4.3.2.4.

Migratory birds

There are 55 migratory birds listed under the EPBC Act that are known, likely or may occur within 25 km of the survey area. Most species are shorebirds that are highly unlikely to be encountered in the subtidal marine environment where the survey activities are focussed. The seabirds are more likely to be encountered and include five endangered species and 12 vulnerable species of albatross, petrel or shearwater, as well as the non-threatened flesh-footed shearwater (*Ardenna carneipes*) that could use the subtidal marine area for foraging, feeding or related behaviours. Key threats to the flesh-footed shearwater (*A. carneipes*) are generally related to incidental impacts from interactions with fisheries.

4.3.4 Wetlands of international importance

Corner Inlet Ramsar Wetland is around 70 km northwest from the survey area. This wetland is an outstanding example of the processes involved in barrier island formation, development of multiple beach ridges, lagoons and swamps, tidal creeks, deltas, and washovers (RSIS, 2023). Of international importance for migratory waterbirds, the area regularly supports up to 29,000 waders, including 50 per cent of the waders wintering in Victoria, and is important as a drought refuge. Several birds, mammals, and plants recorded from the wetland are rare or endangered.

4.3.5 Commonwealth marine areas

The Commonwealth Marine Area is defined by the EPBC Act for the purposes of this assessment as any waters of the sea, the seabed under those waters and the airspace over those waters that are inside the seaward boundary of the exclusive economic zone and over the continental shelf, except where rights in respect of which have been vested in the state of Victoria by section 4 of the *Coastal Waters (Victoria) Act 1980*. The Commonwealth Marine Area commences five km from LAT (as defined under the *Seas and Submerged Lands Act 1973* from the coastline; also known as the Territorial Sea Baseline (TSB)). Most of the survey area is within the Commonwealth Marine Area with the shallower portion of the ECC within State waters greater than 10 metre water depths.

The listed species occurring within the Commonwealth Marine Area are discussed in the preceding sections for threatened and migratory species. A further six cetaceans could be encountered in or near the proposed survey area:

- minke whale (*Balaenoptera acutorostrata*)
- common dolphin (*Delphinus delphis*)
- Risso's dolphin (*Grampus griseus*)
- false killer whale (*Pseudorca crassidens*)
- Indian Ocean bottlenose dolphin (*Tursiops aduncus*)
- bottlenose dolphin (*T. truncates*).

The PMST results included 26 marine fish species, however these were all Syngnathidae species (pipefish, seahorse and sea dragons) that are typically associated with rocky reefs, seagrass and other biogenic benthic habitats in harbours, sheltered bays and in water depths of less than 50 metres and commonly much shallower (i.e., 15 metres or less). Therefore, it is highly unlikely that these species would be encountered in or near the survey area which is in waters deeper than 10 metres.

There are ten listed bird species listed as marine species in the PMST results that are not included as threatened or migratory species. Several of these are shorebirds such as plovers or terns that are high unlikely to be encountered in or near the survey areas as their common habitat and behaviour focusses on the shallow nearshore and intertidal areas and they use the marine space for flying over. Although, a further two species during the marine environment further offshore for feeding and foraging or breeding and, therefore, could be encountered in or near the survey area:

- white-bellied sea-eagle (*Haliaeetus leucogaster*)
- fairy prion (*Pachyptila turtur*).

For the white-bellied sea-eagle (*H. leucogaster*), the PMST results indicate that breeding is known to occur within the survey area. Breeding has been recorded on the coast, at inland sites, and on offshore islands, with breeding records patchily distributed, mainly along the coastline, and especially the eastern coast, extending from Queensland to Victoria, and to Tasmania (DoE, 2024g). There have been no published estimates of the extent of occurrence, and no specific information is available on changes in the extent of occurrence. Although the sea-eagle has declined at some locations within its range, these declines appear more likely to have resulted in a reduction in the area of occupancy than in the extent of occurrence. No quantitative information is available on likely future changes in the extent of occurrence, but it is believed that the extent of occurrence is unlikely to decrease in the near future (DoE, 2024g). Based on this information, it may be possible that this species could be encountered during the proposed activities, however the survey area is entirely within the sea meaning there are no breeding site specifically within the survey area.

For the fairy prion (*P. turtur*), the PMST results indicate that foraging, feeding or related behaviour is likely to occur within the survey area. The diet of the fairy prion consists mainly of planktonic crustaceans and tiny fish, which they catch by either seizing prey while on the surface or by dipping their bill into the water while in flight. Based on this information, it may be possible that fairy prion could be encountered during the proposed activities.

The ecological function of the marine habitat to each species is the key determinant of potential to encounter or impact on marine species. For instance, seabirds foraging in the survey area are more likely to be encountered and at risk of potential impacts within the survey area than the shorebirds and terrestrial birds that migrate through the survey area. BIAs are indicative of an area with a high level of importance for a species and are fundamental for biologically important behaviour such as breeding, foraging, resting and migration (DCCEEW 2021). The survey area overlaps BIAs for the marine species listed in Table 4.1. There are no BIAs for the fairy prion or white-bellied sea-eagle that overlap the survey area.

Table 4.1 Marine species with BIAs overlapping the survey area (DCCEEW 2023a)

Group	Scientific name	Common name	Likelihood of occurrence in survey area	Biologically important behaviour(s)
Whales	*Balaenoptera musculus brevicauda*	Pygmy blue whale	Likely	Foraging (likely)
	Eubalaena australis	Southern right whale	Known	Core range; migration and resting on migration
Sharks	*Carcharodon carcharias*	Great white shark	Known	Breeding (nursery area); foraging (in buffer area only).
Seabirds	*Ardenna tenuirostris*	Short-tailed shearwater	Known	Foraging (known)
	Diomedea exulans	Wandering albatross	Likely	Foraging (known)
	Pelagodroma marina	White-faced storm-petrel	Known	Foraging (known)
	Pelecanoides urinatrix	Common diving-petrel	Known	Foraging (known)
	Thalassarche bulleri	Buller's albatross	Known	Foraging (known)
	Thalassarche cauta	Shy albatross	Likely	Foraging (likely)
	Thalassarche chlororhynchos bassi	Indian yellow-nosed albatross	Known	Foraging (known)
	Thalassarche melanophris	Black-browed albatross	Known	Foraging (known)
	Thalassarche melanophris impavida	Campbell albatross	Known	Foraging (known)

Additionally, the Australian fur seal (*A. pusillus*), and New Zealand fur seal (*A. forsteri*) are noted as listed marine species under the EPBC Act but do not have a threatened status. It is possible that these species could be encountered in the vicinity of the survey area. There have been no records of Australian fur seal (*A. pusillus*) within the survey area (ALA 2023). They typically forage in oceanic waters of the continental shelf and are known to forage up to 500 km from a colony, with foraging peaking in Autumn and Winter (DCCEEW 2023). These seals typically mate during summer and give birth in December (DCCEEW 2023). The three closest breeding colonies of Australian fur seal (*A. pusillus*) to the study area are Rag Island (52 km from the survey area), Judgement Rocks (76 km from the survey area) and Kanowna Island (91.5 km from the survey area). There have been no records of New Zealand fur-seal (*A. forsteri*) within the survey area, however it is widespread, being found on rocky shores around New Zealand, Chatham Islands, subantarctic islands and coastlines in southern Australia (ALA, 2023). New Zealand fur seals (*A. forsteri*) come to the surface at night to hunt for prey and stay at depths during the day. During the summer they prefer to forage near the

continental shelf (DOC NZ 2023). They breed from mid-November to mid-January (DOC NZ 2023). Therefore, both fur seals may possibly be encountered in the vicinity of the survey area, however this is not a critical habitat for these species.

4.3.6 World heritage properties

There are no World Heritage Properties within 25 km of the survey area.

4.3.7 National heritage places

There are no National Heritage Places within 25 km of the survey area.

5 Impact assessment

5.1 Potential impacts

5.1.1 Overview

This assessment considers potential impacts related to marine ecological values and receptors in the vicinity of the proposed survey area. Potential mitigation strategies are proposed based on legislative requirements and best practice. The assessment considers the proposed activities at their broadest scope. Consideration of impacts on marine species and habitats is based on the PMST report generated on 7 July 2024 and the desktop information review in Section 4. The impacts of the proposed survey activities on MNES protected under the EPBC Act have been assessed against the Commonwealth significant impact criteria. The general test for significance is whether an impact is 'important, notable or of consequence, having regard to its context or intensity'. The following proposed activities were considered during this impact assessment:

- disturbance from marine vessel operations
- introduction of marine invasive species
- interactions with marine vessels and equipment
- seabed disturbance.

The assessment of underwater noise is complex and relates to specialised equipment used for geophysical and geotechnical surveying as well as vessel noise, therefore, this aspect is covered in a separate report (refer to Attachment 3: Significance Impact Assessment – Underwater Noise of this referral application).

Table 5.1 presents the potential impact pathways for the proposed preliminary baseline geophysical, geotechnical and marine environmental survey activities and identifies those impacts that have, or are likely to have, a significant impact on MNES, with the exception of underwater noise.

Table 5.1 Potential impact pathways for the proposed preliminary baseline geophysical, geotechnical and marine environment survey activities and potentially affected MNES

Activity	Description	Potential impact
Vessel use – transit to survey area and general use	Vessel transit to and from survey area following maritime navigation routes. 24-hour vessel operation.	Direct impact: — Disturbance at sea surface from vessel presence, vessel noise, or operational and navigational lights at night — Vessel strike — Benthic habitat disturbance from anchors Indirect impact: — Introduction of invasive marine species and diseases in ballast water or hull biofouling — Accidental discharge of pollutants

Activity	Description	Potential impact
Vessel use – surveying	Low speed vessel movements along survey route. 24-hour vessel operation.	Direct impact: — Disturbance from vessel presence, vessel noise, or operational and navigational lights at night
Metocean surveys – remote sensing, buoys and other sensor technology	Deployment of metocean/LiDAR buoys in nearshore and offshore environment.	Direct impact: — Localised disturbance of seabed from anchor while in place and during removal (approx. 2 years) — Fauna entanglement
Multi-beam echo sounder (MBES)	Multibeam echo-sounders transducers emit a broad acoustic pulse across the vessel track to acquire wide swaths (or strips) of bathymetric data perpendicular to the vessel track. The MBES may be hull-mounted (preferred option), over-the-side pole mounted or (where part of the manufacturer's design) installed in a towed body. The MBES could be in continuous operation for the duration of the survey at vessel speeds of less than four knots.	Direct impact: — Fauna entanglement
Side scan sonar (SSS)	The SSS method of surveying generates oblique acoustic images of the seabed by towing a sonar 'towfish' (i.e. transducer mounted inside in a protective body), approximately seven to 10 metres above the seabed. The towfish is towed from the vessel using an armoured tow cable. The SSS could be in continuous operation for the duration of the survey. The SSS would generally operate at vessels speeds of less than four knots.	Direct impact: — Fauna entanglement
Synthetic aperture sonar (SAS)	SAS is a type of sonar that uses an artificial array to capture high-resolution images. A towfish is used as for SSS.	Direct impact: — Fauna entanglement
Sub-bottom profiler (SBP) – chirp, parametric SBP, boomer or sparker	Acoustic sub-bottom profiling systems are used to determine physical properties of the sub-seabed through seismic reflection and to image and characterise geological information from a few to tens of metres below the seabed. There are four a variety of SBP survey methods/equipment that could be employed during the geophysical surveys. The final selection of the SBP for either of the geophysical surveys would be based on site conditions. Options include: — Chirp – may be vessel mounted for shallow water operations or a towfish that is towed behind or below the vessel, a tow cable, and a topside control unit; could be in continuous operation for the duration of the geophysical surveys. The vessel would tow this system at speeds of up to four knots.	Direct impact: — Fauna entanglement

Activity	Description	Potential impact
	— Pingers – a vessel mounted or towfish that is towed behind or below the vessel, a tow cable, and a topside control unit; could be in continuous operation for the duration of the geophysical surveys. — Boomers – emits sound waves through a rubber diaphragm directed vertically downward to the seabed, which are reflected back toward the surface at sea level where they may be received by a streamer receiver; streamer is typically five metres long and towed offset to the Boomer sound source; Boomers are mostly surface towed but may also be towed below the surface; could be in continuous operation for the duration of the geophysical surveys. — Sparkers – a device towed on the water surface behind the vessel; could be in continuous operation for the duration of the geophysical surveys.	
Ultra-high resolution (UHR) seismic	Multi-channel streamers are used for ultra-high resolution seismic operation, with the configuration depending on the environmental conditions and available technology. These primarily consist of cables trailing with the vessel movement.	Direct impact: — Fauna entanglement
Magnetometer (MAG) and Gradiometer (GRD)	This equipment is used to detect large and small metallic objects on or below the seabed that cannot be identified by acoustic means. The magnetometer sensor is housed in a towfish that is towed as close to the seabed as possible (typically two to four metres from the seabed) and sufficiently far away from the vessel to isolate the sensor from the magnetic field of the vessel. Gradiometers would typically be mounted in an array on an underwater frame. The magnetometer or gradiometer would be used to detect any ferrous objects which include buried infrastructure like pipeline and cables. The magnetometer or gradiometer would be operational for the full duration of the geophysical survey. These are passive listening systems and do not emit signals into the environment.	Direct impact: — Fauna entanglement — Benthic habitat disturbance if too close to the seabed Indirect impact: — Sediment resuspension
Vibrocorer (down to six metres)	Vibracoring is a technique for collecting core samples of underwater sediments. A core tube is driven into the seabed by the force of gravity, enhanced by vibration energy. The vibrations cause a thin layer of material to mobilize along the inner and outer tube wall, reducing friction and easing penetration into the substrate. Vibrocoring uses hydraulic, pneumatic, mechanical or electrical power from an external source to generate vibration energy to assist in sediment penetration.	Direct impact: — Benthic habitat disturbance from sample collection Indirect impact: — Sediment resuspension

Activity	Description	Potential impact
Gravity or gravity piston coring (down to six metres)	Gravity coring is a technique for collecting core samples of underwater sediments. A weighted core free falls into the seabed sediment. Piston corers have a piston mechanism that is triggered when the corer hits the bottom to reduce the disturbance of the sediment.	Direct impact: — Benthic habitat disturbance from sample collection Indirect impact: — Sediment resuspension
Cone penetration testing (CPT), including seismic CPT (SCPT), thermal CPT (TCPT) and piezo-CPT (PCPT)	CPT involves hydraulically pushing an instrumented cone into the seabed sediments to characterise the soil stratigraphy. A steel casing may be placed below the mudline to assist the CPT reach the target depth. SCPT involves collecting seismic wave data at one metre intervals by generating seismic waves at the mudline. A mechanical seismic wave generator ("thumper") is lowered to the mudline via an on-board crane winch line (or similar) and remains in place during testing. Shear waves are generated mechanically by the thumper and travel through the underlying soils and recorded by a data acquisition system connected to the thumper by cable. Alternatively, seismic waves can be generated by striking a barge spud with a small handheld hammer. TCPT involves pushing a cone into the seafloor at a controlled rate and measuring the temperature of the sediment. PCPT involves pushing a cone into the seafloor at a controlled rate and measuring the resistance and friction of the penetration.	Direct impact: — Benthic habitat disturbance Indirect impact: — Sediment resuspension
Drop down video (DDV)	Towing an underwater camera and frame a few meters above the seabed along a transect behind the vessel. DDV transect-located with benthic grab sample collection.	Direct impact: — Fauna entanglement — Benthic habitat disturbance if too close to the seabed Indirect impact: — Sediment resuspension
Benthic grab sampler	Mechanical grab samples used to scoop (grab) samples of surface sediments from the seafloor typically covering less than one metre squared. Benthic grab samples co-located with DDV transects.	Direct impact: — Fauna entanglement — Benthic habitat disturbance from sample collection Indirect impact: — Sediment resuspension

5.1.2 Habitat disturbance from marine vessel operations (indirect impact)

Marine vessel operations can cause disturbance of the surface and immediate sub-surface marine environment by the presence and movement of the vessel, generation of vessel noise above the surface (e.g., propellors, bow thrusters), artificial light at night (operational and navigational lights), planned discharges and accidental release of hazardous substances, and the introduction of invasive marine species via ballast water or hull biofouling. The movements and noise of vessels would be influenced by the activity being conducted (e.g. whether the vessel is at idle, holding position using bow thrusters, or accelerating). The potential for significant impacts associated with the vessel operations are generally comparable to standard maritime operations in the area that has been subject to vessel traffic associated with fishing, commercial shipping and oil and gas facility support, noting that underwater noise impacts are addressed in a separate report.

There is the potential for vessel operations to disturb the marine fauna using the marine habitat within the survey area as identified in Section 4. However, the impact would be temporary for the duration of each survey period (approximately 70 days using two vessels or 120 days using one vessel), restricted to the immediate area around the vessel, would not extend outside of the survey area, and would generally be a low level of impact on marine fauna after implementation of standard maintenance and operation of offshore vessels as required by relevant statutory regulations and industry guidelines (refer Section 1).

5.1.3 Introduction of invasive marine species or disease (indirect impact)

The introduction and establishment of marine pests and diseases has the potential to occur through marine biofouling on vessels or survey equipment transiting between port and the proposed survey area, and transport through ballast water discharge. Invasive marine species introduced this way could result in potential effects to seabed habitat and marine ecosystems due to competition with native species for resources, reducing native species diversity and abundance, and predation on local species. The risk of introducing marine invasive species is expected to be low after implementation of standard maintenance and operation of offshore vessels as required by relevant statutory regulations and industry guidelines (refer Section 6).

Similarly, the likelihood of introducing diseases that may cause marine species to decline is considered highly unlikely given the magnitude of the surveys and the fact the vessels utilised by the survey would be required to follow strict guidelines for ballast water and biofouling management.

5.1.4 Interactions with marine vessels and equipment (direct impact)

All types and sizes of vessels have potential to collide with marine species and most marine species are vulnerable to vessel strike. Strikes can result in death or injury to the animal and have the potential to go unnoticed by the vessel operator. The types of vessels documented in vessel strikes include large vessels, such as cargo ships, whale-watching boats, ferries, and military vessels, and all manner of private watercraft used for commercial and recreational purposes. Most reported collisions involve large whales, seals, or sea lions. Collisions may occur anywhere vessels cross paths with marine life. Marine animals can be difficult for a vessel operator to see because they are not always clearly visible from the surface or there may be no time for either the vessel or animal to avoid a collision. Some whale species are especially vulnerable to vessel strikes because their habitat and migration routes are close to major ports and often overlap with shipping lanes. All species of sea turtles are also vulnerable to vessel strikes as they surface to breathe, bask near the surface, or forage in shallow areas or on prey near the sea surface. Adult sea turtles appear to be at increased risk during breeding and nesting season. Marine mammals and sea turtles struck by vessels are often seriously injured or killed. Collisions involving larger marine animals can also damage vessels and consequently injure crew members.

Without management, the potential for significant impacts from vessel strike is high for MNES, especially marine mammals, marine reptiles, great white sharks and diving seabirds. However, the risk of vessel collision with marine species is expected to be low due to the requirement of the survey vessel to follow Part 8 of the EPBC regulations includes requirements for: trained crew members to maintain watch for cetaceans, survey vessels to maintain slow speeds less than six knots within the 300 metre caution zone, and the survey vessels to maintain a minimum distance from any marine mammals (50 metres for dolphin and 100 metres for whales).

Marine species are also susceptible to entanglement with the survey equipment, especially as most techniques require deployment of cables. The risk of entanglement for cetaceans, marine reptiles, sharks and seabirds is also considered low because the operation of the gear would employ best-practise environmental methods, including making sure that the equipment would not be used with slack lines and would always be tended.

With no permanent infrastructure being installed, there would be no impact to the air space used by seabirds or shorebirds above the proposed survey area. With the lack of permanent infrastructure or breeding colonies within the proposed action area, adverse impacts on habitat critical to the survival of seabird species is negligible.

5.1.5 Seabed disturbance (direct and indirect impact)

The proposed activities would cause disturbance from geotechnical activities, benthic grab sampling and other sampling equipment or anchors landing on the seabed, however this would be for small, localised areas of the seafloor at each proposed sampling site. For geotechnical sampling, equipment is lowered to the seabed and operated remotely from the vessel for seafloor drilling and seabed CPT or a drill rig is positioned on the vessel and the drill string is advanced through boreholes to take samples and perform in-situ testing. Representative soil samples are required to provide detailed geotechnical parameters and for further onshore lab testing. However, given the vast spatial scale of the seafloor habitats, the proposed activities are not expected to have a significant impact on habitat health or availability to the detriment of the reliant marine species or the habitat itself (i.e., habitat fragmentation).

Similarly, indirect impacts from benthic habitat disturbance (i.e., sediment resuspension and water quality changes) would be limited to small and defined areas of the seabed.

These potential impacts would not extend to Ninety Mile Beach Marine Park which is located 220 metres east of the survey area.

5.1.6 Water quality changes (indirect impact)

Drilling boreholes for geotechnical core sampling may involve the use of drilling fluids that may escape. Environmentally friendly and biodegradable drilling fluids would be used and geotechnical sampling would be at localised areas of the seafloor at each proposed sampling site and for the limited duration of sample collection (i.e., hours). Water quality changes from vessel discharges and spills or associated with seabed sediment resuspension are discussed in preceding sections and are expected to be limited to small and defined areas of the sea or within the scope of typical sea vessel operations. These activities are unlikely to result in long term or expensive water quality changes or impact on marine habitats or species owing to the limited duration and spatial extent of the surveys and sampling techniques.

5.1.7 Additive impacts (direct and indirect impacts)

The additive impacts from the proposed activities with potential future investigations and phases of the project have been considered for cumulative effects on the marine ecology in and near the survey area. While the specifics of future investigation are unknown, it is reasonable to assume that they would include similar physical sampling techniques with a more targeted approach for specific locations based on the baseline information gained from the preliminary surveys described herein. Additional survey techniques could target specific species or animal groups, such as sea bird and marine mammal surveys. It is generally expected that many of the future investigative techniques would be as non-invasive as possible to avoid undue stress and influence the typical behaviour of the species being studied. Sampling techniques that may impact the seabed and benthic habitat would be similar to those already described for the preliminary benthic surveys and would be focussed on non-destructive methods for assessment biogenic features of the seabed. As for the preliminary surveys, future investigations would be for a limited period of time and focussed on the OWF and ECC areas within specific sites located within that wider area.

The potential for additive impacts with further phases of the project involve the development of the OWF itself. The physical impacts from the preliminary baseline surveys are on a minor scale, being localised and temporary, within the scope of the proposed project. Furthermore, these surveys are important for gaining a greater understanding of the potential impacts from the OWF development and for future siting of any infrastructure with the least physical impact on the environment.

Therefore, given the temporary and limited spatial extent of the proposed preliminary sampling activities, the potential additive impacts with future investigations and phases of the project are negligible for marine species potentially encountered during these preliminary survey activities.

5.2 Potential effects on MNES

5.2.1 Listed threatened species and ecological communities

5.2.1.1 Critically endangered and endangered ecological communities

There would be no impacts on threatened marine ecological communities because there are none within five km of the survey area.

5.2.1.2 Critically endangered and endangered species

Table 5.2 presents the potential effects on endangered MNES from the proposed survey activities after recommended mitigation and management actions (Section 6), based on the marine environmental and species information described in Section 4.3.2 (including the likelihood of encountering the species in or near the survey area) and the potential impacts of the proposed activities as described in Section 5.1. Any residual ecological impacts are described in the tabulated assessment. This assessment does not include potential impacts or mitigation for underwater noise which is addressed in a separate report.

Table 5.2 Impact assessment for critically endangered and endangered marine MNES.

Significant impact criteria	Potentially affected MNES	Impact assessment	Criteria triggered
Lead to a long-term decrease in the size of a population	Endangered marine mammals — southern right whale (*E. australis*) — blue whale (*B. musculus*)	Potential impacts are considered temporary and localised to the area of vessel and equipment operation. Cetaceans can immediately re-utilise the area after the survey vessel has moved on meaning there is no long-lasting impact from the proposed survey to the health of either individuals or the threatened species population, or their recovery. Behavioural impacts would also be very localised and temporary. With the recommended management measures, the proposed activities are unlikely to have a significant impact that would lead to a long-term decrease in the size of these marine mammal populations.	Unlikely

Significant impact criteria	Potentially affected MNES	Impact assessment	Criteria triggered
	Endangered marine reptiles — loggerhead turtle (*C. caretta*) — leatherback turtle (*D. coriacea*)	Owing to the relatively cold-water temperatures in Bass Strait, the probability of encountering a loggerhead turtle (*C. caretta*) or a significant proportion of their populations in or near the survey area is low. There are no BIAs of important turtle breeding, foraging, nesting, or migration areas within the proposed action area as it is outside the foraging range for leatherback turtles (*D. coriacea*) and loggerhead (*C. caretta*) foraging is opportunistic with no defined area. Given that the proposed survey area does not provide critical habitat for these endangered turtle species, the likelihood of encountering turtles is very low and likely to be transiting individuals, and the management measures to reduce potential impacts on cetaceans would likely benefit other marine species and reduce the magnitude of the impact, therefore the proposed activities are unlikely have a significant impact that would lead to a long-term decrease in the size of these marine turtle populations.	Unlikely
	Endangered seabirds — northern royal albatross (*Diomedea sanfordi*) — southern giant petrel (*Macronectes giganteus*) — Gould's petrel (*Pterodroma leucoptera leucoptera*) — shy albatross (*T. cauta*) — grey-headed albatross (*T. chrysostoma*) — Chatham albatross (*T. eremita*)	The survey area is within a BIA for the endangered shy albatross. There is no breeding or roosting habitat within the proposed survey area and these seabird species are most likely to be using the marine environment for feeding (i.e. diving for prey) or flying over including during migration movements. The proposed activities do not involve the use of nets or large/extensive arrays of sampling equipment in which feeding or floating birds could get entangled, nor do they include activities that would interfere with their flying activities. Therefore, the proposed activities are unlikely have a significant impact that would lead to a long-term decrease in the size of these endangered seabird populations. Shorebird species primarily overfly the shallow marine environment or use the shallow coastal margins. Given their common behaviour and habitat preferences, the probability of encountering these birds in or near the survey area is low.	Unlikely

Significant impact criteria	Potentially affected MNES	Impact assessment	Criteria triggered
Reduce the area of occupancy of the species	— southern right whale (*E. australis*) — blue whale (*B. musculus*) — loggerhead turtle (*C. caretta*) — leatherback turtle (*D. coriacea*)	The proposed activities are localised to the survey area and sample collection locations, are temporary, and would be managed with the recommended control measures. Therefore, it is unlikely that there would be a reduction in the area of occupancy for critically endangered or endangered MNES in or near the survey area.	Unlikely
Fragment an existing population into two or more populations	— southern right whale (*E. australis*) — blue whale (*B. musculus*)	The proposed activities are for a short duration, and unlikely to affect critical habitat or population dynamics and, therefore, would not fragment an existing population of critically endangered or endangered MNES in or near the survey area.	No impact
Adversely affect habitat critical to the survival of a species	Endangered seabirds — southern right whale (*E. australis*) — blue whale (*B. musculus*)	The proposed activities are localised and for a short duration, and unlikely to affect critical habitat for critically endangered or endangered MNES in or near the survey area.	Unlikely
Disrupt the breeding cycle of a population	— southern right whale (*E. australis*) — blue whale (*B. musculus*)	There are no known significant breeding areas known within the proposed survey area for critically endangered and endangered MNES. In addition, the disturbance from the survey activities is temporary and managed with recommended control measures. Therefore, the proposed activities are unlikely to disrupt the breeding cycles of a critically endangered or endangered MNES.	Unlikely
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	— southern right whale (*E. australis*) — blue whale (*B. musculus*) — northern royal albatross (*D. sanfordi*) — southern giant petrel (*M. giganteus*) — Gould's petrel (*P. leucoptera leucoptera*) — shy albatross (*T. cauta*) — grey-headed albatross (*T. chrysostoma*) — Chatham albatross (*T. eremita*)	The proposed activities are localised and for a short duration, and unlikely to affect habitat for critically endangered or endangered MNES to the extent that a species would decline.	Unlikely

Significant impact criteria	Potentially affected MNES	Impact assessment	Criteria triggered
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat	— southern right whale (*E. australis*) — blue whale (*B. musculus*) — leatherback turtle (*D. coriacea*)	The survey vessel would abide by the ballast water exchange guidelines defined by DAWR in the Australian Ballast Water Management requirements (DAWE, 2020), with no discharge of ballast water within 12 nautical miles of land and adhere to the requirements of the National Biofouling Management Guidance (Commonwealth of Australia, 2009) regarding the management biofouling risks. Therefore, the introduction and establishment of invasive marine species through biofouling or ballast water discharge that results in impacts to critically endangered or endangered species is unlikely.	Unlikely
Introduce disease that may cause the species to decline	— southern right whale (*E. australis*) — blue whale (*B. musculus*) — leatherback turtle (*D. coriacea*)	As above for invasive marine species, therefore, the introduction of disease that results in impacts to critically endangered or endangered species is unlikely.	Unlikely
Interfere with the recovery of the species	— southern right whale (*E. australis*) — leatherback turtle (*D. coriacea*) — northern royal albatross (*D. sanfordi*) — southern giant petrel (*M. giganteus*) — Gould's petrel (*P. leucoptera leucoptera*) — shy albatross (*T. cauta*) — grey-headed albatross (*T. chrysostoma*) — Chatham albatross (*T. eremita*)	The recovery plan for southern right whale identifies seismic surveys as a high risk for the recovery objectives for the species in the absence of mitigation. The impacts of underwater noise from seismic activities are addressed in a separate report. Although the southern right whale (*E. australis*), leatherback turtle (*D. coriacea*) and listed endangered seabirds may experience disturbance from potential vessel interactions, it is expected to be temporary and limited to the immediate vicinity of the vessel at the time of the survey programme only. Potential risks, such as vessel collision with cetaceans, is considered low due to the requirement of the survey vessel to follow EPBC Act and any other relevant government regulations. There is negligible threat concern for other MNES and therefore no considered interference with the recovery of critically endangered and endangered MNES in or near the survey area.	Unlikely

5.2.1.3 Vulnerable species

Table 5.3 presents the potential effects on endangered MNES from the proposed survey activities after recommended mitigation and management actions (Section 6), based on the marine environmental and species information described in Section 4.3.2 (including the likelihood of encountering the species in or near the survey area) and potential impacts of the proposed activities as described in Section 5.1. Any residual ecological impacts are described in the tabulated assessment.

Table 5.3 Impact assessment for vulnerable marine MNES.

Significant impact criteria	Potentially affected MNES	Impact assessment	Criteria triggered
Lead to a long-term decrease in the size of an Important population of a species	Vulnerable marine mammals — sei whale (*B. borealis*) — fin whale (*B. physalus*)	Potential impacts are considered temporary and localised to the area of vessel and equipment operation. Cetaceans can immediately re-utilise the survey area after the survey vessel has moved on meaning there is no long-lasting impact from the proposed survey to the health of either individuals or the threatened species population, or their recovery. Behavioural impacts would also be very localised and temporary. With the recommended management measures, the proposed activities are unlikely to have a significant impact that would lead to a long-term decrease in the size of a marine mammal population.	Unlikely
	Vulnerable sharks — great white shark (*C. carcharias*) — whale shark (*R. typus*)	The probability of encountering a whale shark (*R. typus*) or a significant proportion of the whale shark (*R. typus*) population in or near the survey area is low. The white shark (*C. carcharias*) foraging BIA and three distribution BIAs overlap with the proposed survey area. Potential impacts are considered temporary and localised to the area of vessel and equipment operation. White sharks (*C. carcharias*) can immediately re-utilise the survey area after the survey vessel has moved on meaning there is no long-lasting impact from the proposed activities to the health of either individuals or the threatened species population, or their recovery. Behavioural impacts would also be very localised and temporary. With the recommended management measures, the proposed activities are unlikely to have a significant impact that would lead to a long-term decrease in the size of the great white shark (*C. carcharias*) population.	Unlikely

Significant impact criteria	Potentially affected MNES	Impact assessment	Criteria triggered
	Vulnerable marine reptiles — green turtle (*C. mydas*)	Owing to the relatively cold-water temperatures in Bass Strait, the probability of encountering a green turtle (*C. mydas*) or a significant proportion of their populations in or near the survey area is low and there are no BIAs of important turtle breeding, foraging, nesting, or migration areas within the survey area. The proposed survey area does not provide critical habitat for this turtle species and is only likely to be used by transiting individuals. The management measures to reduce potential impacts on cetaceans would likely benefit other marine species and reduce the magnitude of the impact, therefore the proposed activities are unlikely have a significant impact that would lead to a long-term decrease in the size of the green turtle population.	Unlikely
	Vulnerable fish — Australian grayling (*P. maraena*)	Australian grayling (*P. maraena*) primarily occur in streams and rivers or coastal lagoons, however it is a diadromous species and spends part of its lifecycle as larval and juvenile stages in coastal seas. Key threats are to their freshwater environments and conservation and mitigation efforts are focused on these habitats. It is possible that larvae or juvenile animals could be encountered in or near the survey area, however the probability of encountering a significant proportion of their population is low and the project activities are unlikely to have a significant impact on this populations.	Unlikely

Significant impact criteria	Potentially affected MNES	Impact assessment	Criteria triggered
	Vulnerable seabirds — sooty shearwater (*Ardenna grisea*) — Antipodean albatross (*Diomedea antipodensis*) — Gibson's albatross (*D. antipodensis gibsoni*) — southern royal albatross (*D. epomophora*) — wandering albatross (*D. exulans*) — white-bellied storm-petrel (*Fregetta grallaria grallaria*) — blue petrel (*Halobaena caerulea*) — northern giant petrel (*Macronectes halli*) — sooty albatross (*Phoebetria fusca*) — Buller's albatross (*T. bulleri*) — northern Buller's albatross (*T. bulleri platei*) — Indian yellow-nosed albatross (*T. carteri*) — Campbell albatross (*T. impavida*) — black-browed albatross (*T. melanophris*) — Salvin's albatross (*T. salvini*) — white-capped albatross (*T. steadi*)	The survey area is within the BIAs for the vulnerable black browed albatross (*T. melanophris*), Buller's albatross (*T. bulleri*), Indian yellow-nosed albatross (*T. carteri*), wandering albatross (*D. exulans*) and Campbell albatross (*T. impavida*). It is probable that these threatened species could be encountered in or near the study area. There is no breeding or roosting habitat within the proposed survey area and these seabird species are most likely to be using the marine environment for feeding (i.e. diving for prey) or flying over including during migration movements. The proposed activities do not involve the use of nets or large/extensive arrays of sampling equipment in which feeding or floating birds could get entangled, nor do they include activities that would interfere with their flying activities. Therefore, the proposed activities are unlikely have a significant impact that would lead to a long-term decrease in the size of these endangered seabird populations. Shorebird species primarily overfly the shallow marine environment or use the shallow coastal margins. Given their common behaviour and habitat preferences, the probability of encountering these birds in or near the survey area is low.	Unlikely
Reduce the area of occupancy of an important population	Sei whale (*B. borealis*), fin whale (*B. physalus*), great white shark (*C. carcharias*), green turtle (*C. mydas*), Australian grayling (*P. maraena*)	As described for critically endangered and endangered species in Table 5.2.	Unlikely

Significant impact criteria	Potentially affected MNES	Impact assessment	Criteria triggered
Fragment an existing important population into two or more populations	Sei whale (*B. borealis*), fin whale (*B. physalus*), great white shark (*C. carcharias*), green turtle (*C. mydas*), Australian grayling (*P. maraena*)	As described for critically endangered and endangered species in Table 5.2.	No impact
Adversely affect habitat critical to the survival of a species	Sei whale (*B. borealis*), fin whale (*B. physalus*), great white shark (*Carcharodon carcharias*), green turtle (*Chelonia mydas*), vulnerable seabirds	As described for critically endangered and endangered species in Table 5.2, and the BIAs for black browed albatross, Buller's albatross, Indian yellow-nosed albatross, wandering albatross and Campbell albatross cover a large spatial extent, across the continental shelf waters of Victoria and Tasmania, with no identified aggregation sites within the survey area. Due to the large distribution ranges and lack of aggregation sites in association with the short duration of the proposed activities, the proposed activities are unlikely to affect critical habitat for vulnerable seabirds in or near the survey area.	Unlikely
Disrupt the breeding cycle of an important population	Sei whale (*B. borealis*), fin whale (*B. physalus*), great white shark (*C. carcharias*), green turtle (*C. mydas*), Australian grayling (*P. maraena*)	As described for critically endangered and endangered species in Table 5.2.	Unlikely
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Sei whale (*B. borealis*), fin whale (*B. physalus*), great white shark (*C. carcharias*), green turtle (*C. mydas*), Australian grayling (*P. maraena*), vulnerable seabirds	As described for critically endangered and endangered species in Table 5.2.	Unlikely

Significant impact criteria	Potentially affected MNES	Impact assessment	Criteria triggered
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	Sei whale (*B. borealis*), fin whale (*B. physalus*), great white shark (*C. carcharias*), whale shark (*R. typus*), green turtle (*C. mydas*), Australian grayling (*P. maraena*), vulnerable seabirds	As described for critically endangered and endangered species in Table 5.2.	Unlikely
Introduce disease that may cause the species to decline	Sei whale (*B. borealis*), fin whale (*B. physalus*), great white shark (*C. carcharias*), whale shark (*R. typus*), green turtle (*C. mydas*), Australian grayling (*P. maraena*), vulnerable seabirds	As described for critically endangered and endangered species in Table 5.2.	Unlikely
Interfere substantially with the recovery of the species	Sei whale (*B. borealis*), fin whale (*B. physalus*), great white shark (*C. carcharias*), green turtle (*C. mydas*), Australian grayling (*P. maraena*), vulnerable seabirds	The recovery plan for sei whale identifies historical whaling and the resultant low population size as the key threat to the species and there is a lack of data to understand the sei whale population in Australian waters. The proposed activities are not expected to interfere with the recovery of their population. Potential risks, such as vessel collision with cetaceans, is considered low due to the requirement of the survey vessel to follow EPBC Act and any other relevant government regulations. There is negligible threat concern for other MNES and therefore no considered interference with the recovery of vulnerable MNES in or near the survey area.	Unlikely

5.2.2 *Listed migratory species*

Table 5.4 presents the potential effects on migratory MNES from the proposed activities after recommended mitigation and management actions, based on the marine environmental and species information described in Section 4.3.2 (including the likelihood of encountering the species in or near the survey area), the potential impacts of the proposed activities as described in Section 5.1, and the proposed management measures described in Section 6. Any residual ecological impacts are described in the tabulated assessment.

Table 5.4 Impact assessment for listed migratory MNES.

Significant impact criteria	Potentially affected MNES	Impact assessment	Criteria triggered
Substantially modify (including by fragmenting, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species.	Migratory marine mammals — Bryde's whale (*B. edeni*) — sei whale (*B. borealis*) — blue whale (*B. musculus*) — fin whale (*B. physalus*) — pygmy right whale (*C. marginata*) — southern right whale (*E. australis*) — dusky dolphin (*L. obscurus*) — humpback whale (*M. novaeangliae*) — orca (*O. orca*)	The proposed activities are localised to the area around the vessel or at relatively small sampling sites and for a short duration. Migratory marine species can immediately re-utilise the area after the survey vessel has moved on meaning there is no long-lasting impact from the proposed activities. Therefore, the proposed activities are unlikely to substantially affect habitat for migratory MNES.	Unlikely
	Migratory sharks — oceanic whitetip shark (*C. longimanus*) — great white shark (*C. carcharias*) — mako shark (*I. oxyrinchus*) — porbeagle (*Lamna nasus*) — whale shark (*R. typus*)	As described above for migratory marine mammals.	Unlikely

Significant impact criteria	Potentially affected MNES	Impact assessment	Criteria triggered
	Migratory marine turtles — loggerhead turtle (*C. caretta*) — green turtle (*C. mydas*) — leatherback turtle (*D. coriacea*)	As described above for migratory marine mammals.	Unlikely
	Migratory seabirds — 5 endangered seabird species — 12 vulnerable species — flesh-footed shearwater (*A. carneipes*)	As described above for migratory marine mammals.	Unlikely
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species.	Migratory marine mammals, marine turtles, sharks and seabirds	Survey vessel would abide by the ballast water exchange guidelines defined by DAWR in the Australian Ballast Water Management requirements (DAWE, 2020), with no discharge of ballast water within 12 nautical miles of land and adhere to the requirements of the National Biofouling Management Guidance (Commonwealth of Australia, 2009) regarding the management biofouling risks. Therefore, the introduction and establishment of invasive marine species through biofouling or ballast water discharge that results in impacts to migratory species is unlikely.	Unlikely
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.	Migratory marine mammals, marine turtles, sharks and seabirds	There are no known significant breeding areas known within the proposed survey area for migratory species. Potential impacts are considered temporary and localised to the area of vessel and equipment operation. Migratory marine species can immediately re-utilise the survey area after the survey vessel has moved on meaning there is no long-lasting impact from the proposed activities to the health of either individuals or the migratory species' population. Behavioural impacts would also be very localised and temporary. With the recommended management measures, the proposed activities are unlikely to have a significant impact that would substantially modify, isolate or destroy important habitat for a migratory species.	Unlikely

5.2.3 Wetlands of international importance

Corner Inlet Ramsar Wetland is around 24.5 km northwest from the survey area and it is highly unlikely that the proposed activities would impact on the species that use the wetland as most are shorebirds or wetland migrants. Therefore, there would be no significant impacts on wetlands of international importance.

5.2.4 Commonwealth marine areas

Table 5.5 presents the potential effects on Commonwealth Marine Area MNES from the proposed activities after recommended mitigation and management actions, based on the marine environmental and species information described in Section 4.3.2 (including the likelihood of encountering the species in or near the survey area), potential impacts of the proposed activities as described in Section 5.1, and the proposed management measures described in Section 6. Any residual ecological impacts are described in the tabulated assessment.

Table 5.5 Impact assessment for commonwealth marine area MNES.

Significant impact criteria	Potentially affected MNES	Impact assessment	Criteria triggered
Result in a known or potential pest species becoming established in the Commonwealth marine area	All listed marine species identified as probably presented in Section 4.3 for relevant MNES	The survey vessel would abide by the ballast water exchange guidelines defined by DAWR in the Australian Ballast Water Management requirements (DAWE, 2020), with no discharge of ballast water within 12 nautical miles of land, and adhere to the requirements of the National Biofouling Management Guidance (Commonwealth of Australia, 2009) regarding the management biofouling risks. Therefore, the introduction and establishment of invasive marine species through biofouling or ballast water discharge that results in impacts to critically endangered or endangered species is unlikely	Unlikely
Modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity in a Commonwealth marine area results	Marine environment including all listed marine species identified as probably presented in Section 4.3 for relevant MNES	The proposed activities are localised to the area around the vessel or at relatively small sampling sites and for a short duration. Marine species can immediately re-utilise the area after the survey vessel has moved on meaning there is no long-lasting impact from the proposed activities. Therefore, the proposed activities are unlikely to substantially affect habitat for marine MNES or ecosystem functioning and integrity.	Unlikely

Significant impact criteria	Potentially affected MNES	Impact assessment	Criteria triggered
Have a substantial adverse effect on a population of a marine species or cetacean including its life cycle (for example, breeding, feeding, migration behaviour, life expectancy) and spatial distribution	All listed marine species identified as probably presented in Section 4.3 for relevant MNES	There are no known significant breeding areas known within the proposed survey area for commonwealth marine species. Potential impacts are considered temporary and localised to the area of vessel and equipment operation. Marine species can immediately re-utilise the survey area after the survey vessel has moved on meaning there is no long-lasting impact from the proposed activities to the health of either individuals or the species' population. Behavioural impacts would also be very localised and temporary. With the recommended management measures, the proposed activities are unlikely to have a significant impact that would have a substantial adverse effect on a population of marine species or cetacean including its life cycle and spatial distribution.	Unlikely
Result in a substantial change in air quality or water quality (including temperature) which may adversely impact on biodiversity, ecological integrity; social amenity or human health	Marine environment including all listed marine species identified as probably presented in Section 4.3 for relevant MNES	Potential indirect effects from the proposed activities include water quality impacts from vessel operations, however these are short-term and localised. Discharges, litter and accidental spills would be managed by standard regulations and marine industry and vessel requirements. The impacts from discharges would be localised to the vessel and the discharge would mix rapidly into the immediate waters.	Unlikely
Result in persistent organic chemicals, heavy metals, or other potentially harmful chemicals accumulating in the marine environment such that biodiversity, ecological integrity, social amenity or human health may be adversely affected	Marine environment including all listed marine species identified as probably presented in Section 4.3 for relevant MNES	Discharges, litter and accidental spills would be managed by standard regulations and marine industry and vessel requirements. The risk of persistent organic chemicals, heavy metals, or other potentially harmful chemicals accumulating in the marine environment is considered unlikely. The impacts from discharges would be localised to the vessel and the discharge would mix rapidly into the immediate waters.	Unlikely

Significant impact criteria	Potentially affected MNES	Impact assessment	Criteria triggered
Have a substantial adverse impact on heritage values of the Commonwealth marine area, including damage or destruction of an historic shipwreck	Shipwrecks	No known World Heritage Properties, National Heritage Places or Commonwealth Heritage Places were identified through the PMST within the survey area. One of the objectives of the geophysical surveys would be to identify unknown wreck sites. Given the scope and magnitude of the proposed activities, a substantial adverse impact on the heritage values of the Commonwealth marine area is not expected.	No impact

5.2.5 World heritage properties

There are no World Heritage Properties within 25 km of the survey area, therefore there would be no significant impact on World Heritage Properties.

5.2.6 National heritage places

There are no National Heritage Places within 25 km of the survey area, therefore there would be no significant impact on National Heritage Places.

6 Impact mitigation

6.1 Management plans

The Contractor would be required to prepare and gain approval for relevant management plans for the proposed activities to address health, safety and environmental Australian Standards and guidelines. Mitigation measures may include:

- compliance with EPBC referral decision
- emergency management
- stakeholder consultation, including fisheries liaison officer
- marine mammal observer
- passive acoustic monitoring
- unexpected finds protocol, including archaeology, threatened species and contamination.

Management plans should include:

- Waste Management Plan detailing wastes generated, waste storage requirements, and waste disposal requirements
- Garbage Management Plan compliant with MARPOL 73/78 Annex V and AMSA Marine Order 95: Marine Pollution Prevention – Garbage
- Marine Mammal Management and Mitigation Plan in accordance with the recommendations from the underwater noise impact assessment report.

6.2 Mitigation measures

6.2.1 Marine vessel operations

General vessel maintenance and operations are recommended to include:

- regular maintenance of vessel operating systems
- engines maintained according to maintenance schedule, to minimise emissions
- vessels will use compliant Sewage Treatment Plants (STP) in accordance with MARPOL 73/78 Annex IV (sewage)
- all food scraps and other putrescible wastes to be handled, stored and disposed of in accordance with MARPOL 73/78 Annex V, and AMSA Marine Order 95: Marine Pollution Prevention – Garbage
- compliance with MARPOL 73/78 Annex I and AMSA Marine Order Part 91: Marine Pollution Prevention – Oil
- drainage and discharge overboard managed in accordance with MARPOL 73/78 Annex I
- main deck drain scuppers will be closed in the event of a spill on deck
- daily inspections to ensure deck areas are clean of spillages and accumulations of oil, grease and chemicals
- all liquid chemicals and oils to be stored in bunded containers or areas and in accordance with MSDS
- appropriate spill response materials located in the vicinity of chemical stores/oily wastes and hydraulic deck equipment with crew instructed on their use
- compliance with MARPOL 73/78 Annex VI and AMSA Marine Order Part 97: Marine Pollution Prevention – Air Pollution, where applicable to the vessel class
- vessel will hold a valid International Air Pollution Prevention (IAPP) Certificate
- non-essential lighting will be switched off when not in use
- external lighting will be directed onto the deck, reducing light spill to the environment where practicable for safe operations
- maintain vessel propulsion systems to reduce unnecessary noise
- bow and stern thrusters to be used only as required, considering vessel requirement to maintain course and position during survey activities
- maintain a slow vessel speed during survey (4 to 5 knots).

6.2.2 Marine biosecurity

The risk of introducing marine invasive species to be managed by:

- abide by the ballast water exchange guidelines defined by DAWR in the Australian Ballast Water Management requirements (DAWE, 2020), with no discharge of ballast water within 12 nautical miles of land
- adhere to the requirements of the National Biofouling Management Guidance (Commonwealth of Australia, 2009) regarding the management biofouling risks
- vessel(s) from international waters will submit a Quarantine Pre-Arrival Report (QPAR) form to the DAWR between 12 and 96 hours prior to arriving and ballast water management summary logs will be confirmed by the DAWR prior to entry
- maintenance of ballast water system in accordance with manufacturer's specifications
- anti-fouling system certification is in place in accordance with AMSA Marine Order Part 98 (Anti-fouling systems)
- routine cleaning and inspection of submersible equipment (airgun array, streamers, tail buoys), consistent with the requirements of the National Biofouling Management Guidance.

6.2.3 Interaction with marine vessels and equipment

The interaction of seismic and support vessels with marine species, especially cetaceans and marine turtles, during the survey will be managed in alignment with the Part 8 of the EPBC Regulations (2000). Management of vessel strike risk to include:

- seismic survey and support vessels will not travel at greater than 6 knots within 300 metres of a cetacean (caution zone)
- seismic survey and support vessels will not approach closer than 50 metres for a dolphin and/or 100 metres for a whale (with the exception of animals bow riding)
- seismic survey and support vessels will not travel at speeds greater than 10 knots within the BIAs for southern right whale (*E. australis*) and pygmy blue whale (*B. musculus brevicauda*) when these cetaceans are likely to be present to reduce the risk of vessel strike, i.e., May to September in waters within 2.5 km of the coastline for southern right whale (*E. australis*) breeding and November to May for pygmy blue whale (*B. musculus brevicauda*) foraging throughout the survey area
- watch maintained for marine fauna prior to deployment of wet equipment, with deployment delayed if entanglement risk is considered high
- buoys (including GPS transponder, lights) and automatic recovery devices will be attached to the SBP streamer (if used) to facilitate recovery in the event of loss and reduce entanglement risk.

7 Conclusion

This report is a marine ecological impact assessment of potential impacts MNES from proposed preliminary baseline geophysical, geotechnical and marine environmental activities to support a referral under the EPBC Act. Potential impact pathways and proposed mitigation actions are described within the context of the significant impact criteria outlined in the Significant Impact Guidelines. Potential impacts on MNES were identified via the Department of Climate Change, Energy, the Environment and Water (DCCEEW) Protected Matters Search Tool (PMST) undertaken on 5 July 2024 and other relevant desktop resources.

The project is located in the Bass Strait, approximately 25 km from the coast of Gippsland. The proposed survey area includes both the OWF plus two km buffer and ECC (including buffers) to allow for vessel turns at the end of survey transects. The AoI applied to this marine ecological impact assessment includes five km and 25 km buffer zones around the OWF and ECC for consideration of nearby marine protected areas and the potential for interactions with migratory marine species or species with large territorial ranges.

With regard to relevant MNES, the following conclusions were made based on available desktop information:

- there are no threatened marine ecological communities, wetlands of international importance, world heritage properties, national heritage place or commonwealth heritage places within or near the survey area
- there are no critically endangered marine species expected to be encountered within or near the survey area
- endangered or vulnerable marine species that could be encountered or impacted during the proposed activities include southern right whale (*E. australis*), blue whale (*B. musculus*), sei whale (*B. borealis*), fin whale (*B. physalus*), great white shark (*C. carcharias*), whale shark (*R. typus*), leatherback turtle (*D. coriacea*), loggerhead turtle (*C. caretta*), green turtle (*C. mydas*) and several species of albatross or petrel (seabirds)
- many of the endangered or vulnerable species are also migratory species as well as non-threatened species including pygmy right whale (*C. marginata*), humpback whale (*M. novaeangliae*), Bryde's whale (*B. edeni*), orca (*O. orca*), dusky dolphin (*L. obscurus*), the porbeagle (*L. nasus*) and mako (*I. oxyrinchus*) and oceanic whitetip (*C. longimanus*) sharks and flesh-footed shearwater (*A. carneipes*)
- potential impacts on endangered, vulnerable, and migratory species as well as the commonwealth marine area and marine species are expected to be unlikely if the recommended mitigation measures are applied to the proposed activities.

Recommended mitigation measures include:

- standard industry and marine vessel management in accordance with statutory and international maritime regulations
- marine biosecurity risk reduction measures to minimise the potential for introducing invasive marine species and diseases to the survey area and marine species populations
- measures to minimise and mitigate the impact of potential interactions between marine species or the marine environment with vessels and survey equipment.

Additive impacts from the proposed activities with potential future investigations and phases of the project have been considered for cumulative effects on the marine ecology in and near the survey area. While the specifics of future investigation are unknown, it is reasonable to assume that they would include similar physical sampling techniques with a more targeted approach for specific locations based on the baseline information gained from the preliminary surveys described herein. Potential for additive impacts with further phases of the project involve development of the OWF itself. Physical impacts from the preliminary baseline surveys are on a minor scale, being localised and temporary, within the scope of the proposed project. Therefore, potential additive impacts are negligible for marine species potentially encountered during these preliminary survey activities. Furthermore, these surveys are important for gaining a greater understanding of the potential impacts from the OWF development and for future siting of any infrastructure with least physical impact on the environment.

8 Limitations

This Report is provided by WSP Australia Pty Limited (*WSP*) for Iberdrola Renewables Australia Pty Ltd (*Client*) in response to specific instructions from the Client and in accordance with WSP's proposal dated July 2023 and agreement with the Client dated 7 February 2024 (*Agreement*).

8.1 Permitted purpose

This Report is provided by WSP for the purpose described in the Agreement and no responsibility is accepted by WSP for the use of the Report in whole or in part, for any other purpose (*Permitted Purpose*).

8.2 Qualifications and assumptions

The services undertaken by WSP in preparing this Report were limited to those specifically detailed in the Report and are subject to the scope, qualifications, assumptions and limitations set out in the Report or otherwise communicated to the Client.

Except as otherwise stated in the Report and to the extent that statements, opinions, facts, conclusion and / or recommendations in the Report (*Conclusions*) are based in whole or in part on information provided by the Client and other parties identified in the report (*Information)*, those Conclusions are based on assumptions by WSP of the reliability, adequacy, accuracy and completeness of the Information and have not been verified. WSP accepts no responsibility for the Information.

WSP has prepared the Report without regard to any special interest of any person other than the Client when undertaking the services described in the Agreement or in preparing the Report

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This Report can only be relied upon for the Permitted Purpose and may not be relied upon for any other purpose. The Report does not purport to recommend or induce a decision to make (or not make) any purchase, disposal, investment, divestment, financial commitment or otherwise. It is the responsibility of the Client to accept (if the Client so chooses) any Conclusions contained within the Report and implement them in an appropriate, suitable and timely manner.

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8.4 Disclaimer

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Appendix A

PMST search results

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 05-Jul-2024

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	83
Listed Migratory Species:	55

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	88
Whales and Other Cetaceans:	14
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	4
Regional Forest Agreements:	1
Nationally Important Wetlands:	1
EPBC Act Referrals:	23
Key Ecological Features (Marine):	None
Biologically Important Areas:	11
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands) [Resource Information]

Ramsar Site Name	Proximity	Buffer Status
Gippsland lakes	Within 10km of Ramsar site	In feature area

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name	Buffer Status
Commonwealth Marine Areas (EPBC Act)	In feature area
Commonwealth Marine Areas (EPBC Act)	In feature area

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Natural Damp Grassland of the Victorian Coastal Plains	Critically Endangered	Community likely to occur within area	In feature area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area	In feature area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia			
Regent Honeyeater [82338]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Ardenna grisea			
Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Botaurus poiciloptilus](#) Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area	In feature area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
[Callocephalon fimbriatum](#) Gang-gang Cockatoo [768]	Endangered	Species or species habitat likely to occur within area	In feature area
[Calyptorhynchus lathami lathami](#) South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Charadrius leschenaultii](#) Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Charadrius mongolus](#) Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area	In buffer area only
[Climacteris picumnus victoriae](#) Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat may occur within area	In feature area
[Diomedea antipodensis](#) Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Diomedea antipodensis gibsoni](#) Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Fregetta grallaria grallaria White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat may occur within area	In feature area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In feature area
Pterodroma leucoptera leucoptera Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Breeding likely to occur within area	In feature area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche bulleri platei Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area	In feature area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Thinornis cucullatus cucullatus](#) Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area	In feature area
FISH			
[Galaxiella pusilla](#) Eastern Dwarf Galaxias, Dwarf Galaxias [56790]	Endangered	Species or species habitat may occur within area	In feature area
[Prototroctes maraena](#) Australian Grayling [26179]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Seriolella brama](#) Blue Warehou [69374]	Conservation Dependent	Species or species habitat known to occur within area	In feature area
[Thunnus maccoyii](#) Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area
FROG			
[Litoria aurea](#) Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Litoria raniformis](#) Southern Bell Frog,, Growling Grass Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Uperoleia martini](#) Martin's Toadlet [1873]	Endangered	Species or species habitat may occur within area	In feature area
MAMMAL			
[Antechinus minimus maritimus](#) Swamp Antechinus (mainland) [83086]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Balaenoptera borealis](#)			
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Balaenoptera musculus](#)			
Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In feature area
[Balaenoptera physalus](#)			
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Dasyurus maculatus maculatus (SE mainland population)](#)			
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat may occur within area	In feature area
[Eubalaena australis](#)			
Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area	In feature area
[Petaurus australis australis](#)			
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Pseudomys novaehollandiae](#)			
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Pteropus poliocephalus](#)			
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In feature area
PLANT			
[Amphibromus fluitans](#)			
River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Caladenia tessellata](#)			
Thick-lipped Spider-orchid, Daddy Long-legs [2119]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Commersonia prostrata Dwarf Kerrawang [87152]	Endangered	Species or species habitat likely to occur within area	In feature area
Dianella amoena Matted Flax-lily [64886]	Endangered	Species or species habitat likely to occur within area	In feature area
Dodonaea procumbens Trailing Hop-bush [12149]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Glycine latrobeana Clover Glycine, Purple Clover [13910]	Vulnerable	Species or species habitat may occur within area	In feature area
Lepidium hyssopifolium Basalt Pepper-cress, Peppercress, Rubble Pepper-cress, Pepperweed [16542]	Endangered	Species or species habitat likely to occur within area	In feature area
Prasophyllum spicatum Dense Leek-orchid [55146]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pterostylis chlorogramma Green-striped Greenhood [56510]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Senecio psilocarpus Swamp Fireweed, Smooth-fruited Groundsel [64976]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Xerochrysum palustre Swamp Everlasting, Swamp Paper Daisy [76215]	Vulnerable	Species or species habitat likely to occur within area	In feature area
REPTILE			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Chelonia mydas			
Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area	In feature area
Delma impar			
Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat may occur within area	In feature area
Dermochelys coriacea			
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In feature area
Lissolepis coventryi			
Swamp Skink, Eastern Mourning Skink [84053]	Endangered	Species or species habitat likely to occur within area	In feature area
SHARK			
Carcharodon carcharias			
White Shark, Great White Shark [64470]	Vulnerable	Breeding known to occur within area	In feature area
Galeorhinus galeus			
School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area
Rhincodon typus			
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area

Listed Migratory Species		[Resource Information]	
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Ardenna carneipes			
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Ardenna grisea			
Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In feature area
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area	In feature area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area	In feature area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Migratory Marine Species			
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In feature area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Caperea marginata](#) Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In feature area
[Carcharodon carcharias](#) White Shark, Great White Shark [64470]	Vulnerable	Breeding known to occur within area	In feature area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area	In feature area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area	In feature area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In feature area
[Eubalaena australis as Balaena glacialis australis](#) Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area	In feature area
[Isurus oxyrinchus](#) Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area	In feature area
[Lagenorhynchus obscurus](#) Dusky Dolphin [43]		Species or species habitat may occur within area	In feature area
[Lamna nasus](#) Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area	In feature area
[Megaptera novaeangliae](#) Humpback Whale [38]		Species or species habitat known to occur within area	In feature area
[Orcinus orca](#) Killer Whale, Orca [46]		Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Migratory Terrestrial Species			
[Hirundapus caudacutus](#) White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
[Myiagra cyanoleuca](#) Satin Flycatcher [612]		Species or species habitat likely to occur within area	In feature area
[Rhipidura rufifrons](#) Rufous Fantail [592]		Species or species habitat likely to occur within area	In feature area
Migratory Wetlands Species			
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat known to occur within area	In feature area
[Calidris ruficollis](#) Red-necked Stint [860]		Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius bicinctus Double-banded Plover [895]		Species or species habitat known to occur within area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area	In buffer area only
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat known to occur within area	In buffer area only
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In feature area
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area	In feature area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Charadrius bicinctus Double-banded Plover [895]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area	In buffer area only
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea antipodensis gibsoni as Diomedea gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Breeding known to occur within area	In feature area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area	In feature area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area overfly marine area	In feature area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In feature area
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area	In feature area
Sterna striata White-fronted Tern [799]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Species or species habitat may occur within area	In feature area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche bulleri platei as Thalassarche sp. nov. Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche impavida			
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini			
Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Thinornis cucullatus as Thinornis rubricollis			
Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area	In feature area
Thinornis cucullatus cucullatus as Thinornis rubricollis rubricollis			
Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Tringa stagnatilis			
Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Fish			
Heraldia nocturna			
Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Hippocampus abdominalis Big-belly Seahorse, Eastern Potbelly Seahorse, New Zealand Potbelly Seahorse [66233]		Species or species habitat may occur within area	In feature area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area	In feature area
Hippocampus minotaur Bullneck Seahorse [66705]		Species or species habitat may occur within area	In feature area
Histiogamphelus briggsii Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242]		Species or species habitat may occur within area	In feature area
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area	In feature area
Hypselognathus rostratus Knifesnout Pipefish, Knife-snouted Pipefish [66245]		Species or species habitat may occur within area	In feature area
Kaupus costatus Deepbody Pipefish, Deep-bodied Pipefish [66246]		Species or species habitat may occur within area	In feature area
Kimblaeus bassensis Trawl Pipefish, Bass Strait Pipefish [66247]		Species or species habitat may occur within area	In feature area
Leptoichthys fistularius Brushtail Pipefish [66248]		Species or species habitat may occur within area	In feature area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area	In feature area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Mitotichthys semistriatus Halfbanded Pipefish [66261]		Species or species habitat may occur within area	In feature area
Mitotichthys tuckeri Tucker's Pipefish [66262]		Species or species habitat may occur within area	In feature area
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area	In feature area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In feature area
Solegnathus robustus Robust Pipehorse, Robust Spiny Pipehorse [66274]		Species or species habitat may occur within area	In feature area
Solegnathus spinosissimus Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area	In feature area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In feature area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In feature area
Stipecampus cristatus Ringback Pipefish, Ring-backed Pipefish [66278]		Species or species habitat may occur within area	In feature area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area	In feature area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Vanacampus margaritifer			
Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In feature area
Vanacampus phillipi			
Port Phillip Pipefish [66284]		Species or species habitat may occur within area	In feature area
Vanacampus poecilolaemus			
Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area	In feature area
Mammal			
Arctocephalus forsteri			
Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In feature area
Arctocephalus pusillus			
Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat may occur within area	In feature area
Reptile			
Caretta caretta			
Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area	In feature area
Chelonia mydas			
Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area	In feature area
Dermochelys coriacea			
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In feature area

Whales and Other Cetaceans			[Resource Information]
Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
Balaenoptera acutorostrata			
Minke Whale [33]		Species or species habitat may occur within area	In feature area
Balaenoptera borealis			
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Current Scientific Name	Status	Type of Presence	Buffer Status
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In feature area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Caperea marginata](#) Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In feature area
[Delphinus delphis](#) Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In feature area
[Eubalaena australis](#) Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area	In feature area
[Grampus griseus](#) Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In feature area
[Lagenorhynchus obscurus](#) Dusky Dolphin [43]		Species or species habitat may occur within area	In feature area
[Megaptera novaeangliae](#) Humpback Whale [38]		Species or species habitat known to occur within area	In feature area
[Orcinus orca](#) Killer Whale, Orca [46]		Species or species habitat likely to occur within area	In feature area
[Pseudorca crassidens](#) False Killer Whale [48]		Species or species habitat likely to occur within area	In feature area
[Tursiops aduncus](#) Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In feature area

Current Scientific Name	Status	Type of Presence	Buffer Status
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In feature area

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State	Buffer Status
Darriman H29 B.R	Natural Features Reserve	VIC	In buffer area only
Jack Smith Lake W.R	Natural Features Reserve	VIC	In buffer area only
Lake Denison W.R	Natural Features Reserve	VIC	In buffer area only
Ninety Mile Beach	Marine National Park	VIC	In buffer area only

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State	Buffer Status
Gippsland RFA	Victoria	In feature area

Nationally Important Wetlands [Resource Information]

Wetland Name	State	Buffer Status
Jack Smith Lake State Game Reserve	VIC	In feature area

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Blue Marlin Offshore Wind Energy Project	2023/09532		Referral Decision	In feature area
Gippsland Offshore Wind Farm Marine Survey Investigations	2023/09682		Referral Decision	In feature area
Gippsland Renewable Energy Zone Project	2022/09346		Assessment	In buffer area only
Greater Gippsland Offshore Wind Project	2022/09379		Assessment	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Greater Gippsland Offshore Wind Project Initial Marine Field Investigations	2022/09374		Completed	In feature area
Seadragon Offshore Wind, Early Marine Surveys	2023/09670		Completed	In feature area
Seadragon Offshore Wind Farm	2022/9163		Completed	In feature area
South East Australia Carbon Capture and Storage Project, Commonwealth waters	2023/09732		Referral Decision	In feature area
Controlled action				
Star of the South Offshore Wind Farm Project	2020/8650	Controlled Action	Guidelines Issued	In feature area
Not controlled action				
2004/2005 drilling program for exploration and production (VIC 01-06, 09-11, 16, 18 & 19 and VIC/RL	2003/1282	Not Controlled Action	Completed	In feature area
Development of Turrum Oil Field and associated infrastructure	2003/1204	Not Controlled Action	Completed	In feature area
Gippsland Basin Seismic Programme	2004/1866	Not Controlled Action	Completed	In feature area
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
West Triton Drilling Program - Gippsland Basin	2007/3915	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
Apache 3D seismic exploration survey	2006/3146	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Bream 3D seismic survey	2006/2556	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Gas Pipeline	2000/20	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Gippsland 2D Marine Seismic Survey - VIC/P-63, VIC/P-64 and T/46P	2009/5241	Not Controlled Action (Particular	Post-Approval	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (particular manner)				
		Manner)		
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Northern Fields 3D Seismic Survey	2001/140	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Seismic Survey	2001/206	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Southern Flanks 2D Marine Seismic Survey	2010/5288	Not Controlled Action (Particular Manner)	Post-Approval	In feature area

Biologically Important Areas			[Resource Information]
Scientific Name	Behaviour	Presence	Buffer Status
Seabirds			
Ardenna tenuirostris Short-tailed Shearwater [82652]	Foraging	Known to occur	In feature area
Diomedea exulans (sensu lato) Wandering Albatross [1073]	Foraging	Known to occur	In feature area
Pelagodroma marina White-faced Storm-petrel [1016]	Foraging	Known to occur	In feature area
Pelecanoides urinatrix Common Diving-petrel [1018]	Foraging	Known to occur	In feature area
Thalassarche bulleri Bullers Albatross [64460]	Foraging	Known to occur	In feature area
Thalassarche cauta cauta Shy Albatross [82345]	Foraging likely	Likely to occur	In feature area
Thalassarche chlororhynchos bassi Indian Yellow-nosed Albatross [85249]	Foraging	Known to occur	In feature area

Scientific Name	Behaviour	Presence	Buffer Status
Thalassarche melanophris Black-browed Albatross [66472]	Foraging	Known to occur	In feature area
Thalassarche melanophris impavida Campbell Albatross [82449]	Foraging	Known to occur	In feature area
Sharks			
Carcharodon carcharias White Shark [64470]	Breeding (nursery area)	Known to occur	In feature area
Whales			
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Likely to be present	In feature area

Bioregional Assessments			[Resource Information]
SubRegion	BioRegion	Website	Buffer Status
Gippsland	Gippsland Basin	BA website	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

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Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	2
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	98
Listed Migratory Species:	72

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	104
Whales and Other Cetaceans:	15
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	1
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	21
Regional Forest Agreements:	1
Nationally Important Wetlands:	2
EPBC Act Referrals:	37
Key Ecological Features (Marine):	None
Biologically Important Areas:	12
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands) [Resource Information]

Ramsar Site Name	Proximity	Buffer Status
Corner inlet	Within Ramsar site	In buffer area only
Gippsland lakes	Within Ramsar site	In feature area

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name	Buffer Status
Commonwealth Marine Areas (EPBC Act)	In feature area
Commonwealth Marine Areas (EPBC Act)	In feature area

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Gippsland Red Gum (Eucalyptus tereticornis subsp. mediana) Grassy Woodland and Associated Native Grassland	Critically Endangered	Community likely to occur within area	In buffer area only
Natural Damp Grassland of the Victorian Coastal Plains	Critically Endangered	Community likely to occur within area	In feature area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area	In feature area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia			
Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In feature area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area	In buffer area only
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area	In buffer area only
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In buffer area only
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Fregetta grallaria grallaria White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat known to occur within area	In feature area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat may occur within area	In feature area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Phoebetria fusca](#) Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In feature area
[Pluvialis squatarola](#) Grey Plover [865]	Vulnerable	Roosting known to occur within area	In buffer area only
[Pterodroma leucoptera leucoptera](#) Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area	In feature area
[Pycnoptilus floccosus](#) Pilotbird [525]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
[Rostratula australis](#) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
[Stagonopleura guttata](#) Diamond Firetail [59398]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Sternula nereis nereis](#) Australian Fairy Tern [82950]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Thalassarche bulleri](#) Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area
[Thalassarche bulleri platei](#) Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In feature area
[Thalassarche carteri](#) Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Thalassarche cauta](#) Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area	In feature area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Species or species habitat may occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Thinornis cucullatus cucullatus Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat known to occur within area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area	In feature area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area	In buffer area only
FISH			
Galaxiella pusilla Eastern Dwarf Galaxias, Dwarf Galaxias [56790]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Prototroctes maraena Australian Grayling [26179]	Vulnerable	Species or species habitat known to occur within area	In feature area
Seriolella brama Blue Warehou [69374]	Conservation Dependent	Species or species habitat known to occur within area	In feature area
Thunnus maccoyii Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area
FROG			
Heleioporus australiacus Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Litoria aurea Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat known to occur within area	In feature area
Litoria raniformis Southern Bell Frog,, Growling Grass Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Uperoleia martini Martin's Toadlet [1873]	Endangered	Species or species habitat known to occur within area	In feature area
MAMMAL			
Antechinus minimus maritimus Swamp Antechinus (mainland) [83086]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Balaenoptera physalus			
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population)			
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat may occur within area	In feature area
Eubalaena australis			
Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area	In feature area
Mastacomys fuscus mordicus			
Broad-toothed Rat (mainland), Tooarrana [87617]	Endangered	Species or species habitat may occur within area	In buffer area only
Petauroides volans			
Greater Glider (southern and central) [254]	Endangered	Species or species habitat known to occur within area	In buffer area only
Petaurus australis australis			
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Potorous tridactylus trisulcatus			
Long-nosed Potoroo (southern mainland) [86367]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pseudomys novaehollandiae			
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pteropus poliocephalus			
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In feature area
PLANT			
Amphibromus fluitans			
River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat known to occur within area	In feature area
Caladenia tessellata			
Thick-lipped Spider-orchid, Daddy Long-legs [2119]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Commersonia prostrata Dwarf Kerrawang [87152]	Endangered	Species or species habitat known to occur within area	In feature area
Dianella amoena Matted Flax-lily [64886]	Endangered	Species or species habitat known to occur within area	In feature area
Dodonaea procumbens Trailing Hop-bush [12149]	Vulnerable	Species or species habitat known to occur within area	In feature area
Glycine latrobeana Clover Glycine, Purple Clover [13910]	Vulnerable	Species or species habitat may occur within area	In feature area
Lepidium hyssopifolium Basalt Pepper-cress, Peppercress, Rubble Pepper-cress, Pepperweed [16542]	Endangered	Species or species habitat likely to occur within area	In feature area
Prasophyllum frenchii Maroon Leek-orchid, Slaty Leek-orchid, Stout Leek-orchid, French's Leek-orchid, Swamp Leek-orchid [9704]	Endangered	Species or species habitat known to occur within area	In buffer area only
Prasophyllum spicatum Dense Leek-orchid [55146]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Prostanthera galbraithiae Wellington Mintbush [64959]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Pterostylis chlorogramma Green-striped Greenhood [56510]	Vulnerable	Species or species habitat known to occur within area	In feature area
Senecio psilocarpus Swamp Fireweed, Smooth-fruited Groundsel [64976]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thelymitra epipactoides Metallic Sun-orchid [11896]	Endangered	Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Thelymitra matthewsii](#) Spiral Sun-orchid [4168]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Thesium australe](#) Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Xerochrysum palustre](#) Swamp Everlasting, Swamp Paper Daisy [76215]	Vulnerable	Species or species habitat known to occur within area	In feature area
REPTILE			
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In feature area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area	In feature area
[Delma impar](#) Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat may occur within area	In feature area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Lissolepis coventryi](#) Swamp Skink, Eastern Mourning Skink [84053]	Endangered	Species or species habitat known to occur within area	In feature area
SHARK			
[Carcharodon carcharias](#) White Shark, Great White Shark [64470]	Vulnerable	Breeding known to occur within area	In feature area
[Galeorhinus galeus](#) School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area	In feature area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area	In feature area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Species or species habitat may occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Migratory Marine Species			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In feature area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In feature area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area	In buffer area only
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Breeding known to occur within area	In feature area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In feature area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Isurus oxyrinchus](#) Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area	In feature area
[Lagenorhynchus obscurus](#) Dusky Dolphin [43]		Species or species habitat may occur within area	In feature area
[Lamna nasus](#) Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area	In feature area
[Megaptera novaeangliae](#) Humpback Whale [38]		Species or species habitat known to occur within area	In feature area
[Orcinus orca](#) Killer Whale, Orca [46]		Species or species habitat likely to occur within area	In feature area
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Migratory Terrestrial Species			
[Hirundapus caudacutus](#) White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Monarcha melanopsis](#) Black-faced Monarch [609]		Species or species habitat may occur within area	In buffer area only
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
[Myiagra cyanoleuca](#) Satin Flycatcher [612]		Breeding known to occur within area	In feature area
[Rhipidura rufifrons](#) Rufous Fantail [592]		Species or species habitat known to occur within area	In feature area
Migratory Wetlands Species			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area	In buffer area only
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area	In feature area
Calidris alba Sanderling [875]		Roosting known to occur within area	In buffer area only
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area	In feature area
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting known to occur within area	In buffer area only
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area	In buffer area only
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area	In buffer area only
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat known to occur within area	In buffer area only
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area	In buffer area only
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area	In buffer area only
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area	In buffer area only
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area	In buffer area only
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area	In buffer area only
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In feature area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area	In buffer area only
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area	In buffer area only
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area	In feature area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area	In buffer area only
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Defence		
Defence - EAST SALE - SURVEILLANCE RADAR [21445]	VIC	In buffer area only

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area	In buffer area only
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area	In feature area
Calidris alba Sanderling [875]		Roosting known to occur within area	In buffer area only
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area	In feature area
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting known to occur within area overfly marine area	In buffer area only
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area overfly marine area	In buffer area only
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area overfly marine area	In buffer area only
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area overfly marine area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In buffer area only
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area overfly marine area	In buffer area only
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea antipodensis gibsoni as Diomedea gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area	In buffer area only
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area	In buffer area only
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Breeding known to occur within area	In feature area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area	In feature area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area	In buffer area only
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area overfly marine area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat may occur within area overfly marine area	In buffer area only
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Breeding known to occur within area overfly marine area	In feature area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area	In buffer area only
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area	In buffer area only
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In feature area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area	In buffer area only
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area overfly marine area	In buffer area only
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area overfly marine area	In buffer area only
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area	In feature area
Sterna striata White-fronted Tern [799]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Species or species habitat may occur within area	In feature area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche bulleri platei as Thalassarche sp. nov.			
Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri			
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta			
Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche chrysostoma			
Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area	In feature area
Thalassarche eremita			
Chatham Albatross [64457]	Endangered	Species or species habitat may occur within area	In buffer area only
Thalassarche impavida			
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini			
Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Thinornis cucullatus as Thinornis rubricollis			
Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thinornis cucullatus cucullatus as Thinornis rubricollis rubricollis			
Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Tringa brevipes as Heteroscelus brevipes			
Grey-tailed Tattler [851]		Roosting known to occur within area	In buffer area only
Tringa glareola			
Wood Sandpiper [829]		Roosting known to occur within area overfly marine area	In buffer area only
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Tringa stagnatilis			
Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area	In buffer area only
Xenus cinereus			
Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area overfly marine area	In buffer area only
Fish			
Heraldia nocturna			
Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area	In feature area
Hippocampus abdominalis			
Big-belly Seahorse, Eastern Potbelly Seahorse, New Zealand Potbelly Seahorse [66233]		Species or species habitat may occur within area	In feature area
Hippocampus breviceps			
Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area	In feature area
Hippocampus minotaur			
Bullneck Seahorse [66705]		Species or species habitat may occur within area	In feature area
Histiogamphelus briggsii			
Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area	In feature area
Hypselognathus rostratus Knifesnout Pipefish, Knife-snouted Pipefish [66245]		Species or species habitat may occur within area	In feature area
Kaupus costatus Deepbody Pipefish, Deep-bodied Pipefish [66246]		Species or species habitat may occur within area	In feature area
Kimblaeus bassensis Trawl Pipefish, Bass Strait Pipefish [66247]		Species or species habitat may occur within area	In feature area
Leptoichthys fistularius Brushtail Pipefish [66248]		Species or species habitat may occur within area	In feature area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area	In feature area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In feature area
Mitotichthys semistriatus Halfbanded Pipefish [66261]		Species or species habitat may occur within area	In feature area
Mitotichthys tuckeri Tucker's Pipefish [66262]		Species or species habitat may occur within area	In feature area
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area	In feature area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Solegnathus robustus Robust Pipehorse, Robust Spiny Pipehorse [66274]		Species or species habitat may occur within area	In feature area
Solegnathus spinosissimus Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area	In feature area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In feature area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In feature area
Stipecampus cristatus Ringback Pipefish, Ring-backed Pipefish [66278]		Species or species habitat may occur within area	In feature area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area	In feature area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area	In feature area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In feature area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area	In feature area
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area	In feature area
Mammal			
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Arctocephalus pusillus			
Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat likely to occur within area	In feature area
Reptile			
Caretta caretta			
Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In feature area
Chelonia mydas			
Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area	In feature area
Dermochelys coriacea			
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area

Whales and Other Cetaceans			[Resource Information]
Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
Balaenoptera acutorostrata			
Minke Whale [33]		Species or species habitat may occur within area	In feature area
Balaenoptera borealis			
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Balaenoptera edeni			
Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only
Balaenoptera musculus			
Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In feature area
Balaenoptera physalus			
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Current Scientific Name	Status	Type of Presence	Buffer Status
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In feature area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In feature area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area	In feature area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In feature area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In feature area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In feature area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat likely to occur within area	In feature area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area	In feature area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In feature area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In feature area

Australian Marine Parks		[Resource Information]
Park Name	Zone & IUCN Categories	Buffer Status
Beagle	Multiple Use Zone (IUCN VI)	In buffer area only

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Darriman H29 B.R	Natural Features Reserve	VIC	In buffer area only
Darriman H33 B.R	Natural Features Reserve	VIC	In buffer area only
Fresh-water Swamp, Woodside Beach W.R	Natural Features Reserve	VIC	In buffer area only
Giffard (Rifle Range) F.R.	Nature Conservation Reserve	VIC	In buffer area only
Giffard H30 B.R	Natural Features Reserve	VIC	In buffer area only
Giffard H31 B.R	Natural Features Reserve	VIC	In buffer area only
Gippsland Lakes Coastal Park	Conservation Park	VIC	In buffer area only
Holey Plains	State Park	VIC	In buffer area only
Jack Smith Lake W.R	Natural Features Reserve	VIC	In buffer area only
Kangaroo Swamp N.C.R.	Natural Features Reserve	VIC	In buffer area only
Lake Denison W.R	Natural Features Reserve	VIC	In buffer area only
Mullungdung	Reference Area	VIC	In buffer area only
Mullungdung F.F.R	Nature Conservation Reserve	VIC	In buffer area only
Ninety Mile Beach	Marine National Park	VIC	In buffer area only
Nooramunga Marine & Coastal Park	National Parks Act Schedule 4 park or reserve	VIC	In buffer area only

Protected Area Name	Reserve Type	State	Buffer Status
Stradbroke F.F.R.	Nature Conservation Reserve	VIC	In buffer area only
Warrigal Creek SS.R.	Natural Features Reserve	VIC	In buffer area only
Woodside H25 B.R	Natural Features Reserve	VIC	In buffer area only
Woodside H26 B.R.	Natural Features Reserve	VIC	In buffer area only
Woodside H27 B.R	Natural Features Reserve	VIC	In buffer area only
Woodside H28 B.R	Natural Features Reserve	VIC	In buffer area only

Regional Forest Agreements

[Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State	Buffer Status
Gippsland RFA	Victoria	In feature area

Nationally Important Wetlands

[Resource Information]

Wetland Name	State	Buffer Status
Corner Inlet	VIC	In buffer area only
Jack Smith Lake State Game Reserve	VIC	In feature area

EPBC Act Referrals

[Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Blue Marlin Offshore Wind Energy Project	2023/09532	Referral Decision		In feature area
Gippsland Offshore Wind Farm Marine Survey Investigations	2023/09682	Referral Decision		In feature area
Gippsland Renewable Energy Zone Project	2022/09346	Assessment		In buffer area only
Greater Gippsland Offshore Wind Project	2022/09379	Assessment		In feature area
Greater Gippsland Offshore Wind Project Initial Marine Field Investigations	2022/09374	Completed		In feature area
Marine Route Survey for Subsea Fibre Optic Data Cable System - Australia East	2024/09795	Completed		In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Seadragon Offshore Wind, Early Marine Surveys	2023/09670		Completed	In feature area
Seadragon Offshore Wind Farm	2022/9163		Completed	In feature area
South East Australia Carbon Capture and Storage Project, Commonwealth waters	2023/09732		Referral Decision	In feature area
South East Australia Carbon Capture and Storage Project, Onshore and State waters	2023/09731		Referral Decision	In buffer area only
Controlled action				
Golden Beach Gas Project	2019/8513	Controlled Action	Post-Approval	In buffer area only
Installation of replacement crude-condensate pipeline, Vic	2014/7202	Controlled Action	Post-Approval	In buffer area only
Star of the South Offshore Wind Farm Project	2020/8650	Controlled Action	Guidelines Issued	In feature area
Thomson River Mercury Recovery Project	2010/5734	Controlled Action	Completed	In buffer area only
Not controlled action				
2004/2005 drilling program for exploration and production (VIC 01-06, 09-11, 16, 18 & 19 and VIC/RL	2003/1282	Not Controlled Action	Completed	In feature area
Allmans Levee Track - Maintenance Work	2003/1053	Not Controlled Action	Completed	In buffer area only
Development of Turrum Oil Field and associated infrastructure	2003/1204	Not Controlled Action	Completed	In feature area
Gippsland Basin Seismic Programme	2004/1866	Not Controlled Action	Completed	In feature area
Hemingway1/Oil Exploration	2001/177	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Long Waterhole project, South Gippsland Highway	2001/277	Not Controlled Action	Completed	In buffer area only
Melville 1 Oil Exploration Well	2001/167	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Offshore Petroleum Exploration	2001/289	Not Controlled Action	Completed	In buffer area only
West Triton Drilling Program - Gippsland Basin	2007/3915	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
Apache 3D seismic exploration survey	2006/3146	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Bream 3D seismic survey	2006/2556	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Gas Pipeline	2000/20	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Gippsland 2D Marine Seismic Survey - VIC/P-63, VIC/P-64 and T/46P	2009/5241	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Golden Beach gas field development	2003/1031	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Northern Fields 3D Seismic Survey	2001/140	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Pelican 3D Marine Seismic Survey, Gippsland Basin, Vic	2017/8097	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Seismic Survey	2001/206	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Seismic survey, Gippsland Basin	2001/525	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (particular manner)				
Soil and Organic Recycling Facility	2005/2216	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Southern Flanks 2D Marine Seismic Survey	2010/5288	Not Controlled Action (Particular Manner)	Post-Approval	In feature area

Biologically Important Areas			[Resource Information]
Scientific Name	Behaviour	Presence	Buffer Status
Seabirds			
Ardenna tenuirostris Short-tailed Shearwater [82652]	Foraging	Known to occur	In feature area
Diomedea exulans (sensu lato) Wandering Albatross [1073]	Foraging	Known to occur	In feature area
Pelagodroma marina White-faced Storm-petrel [1016]	Foraging	Known to occur	In feature area
Pelecanoides urinatrix Common Diving-petrel [1018]	Foraging	Known to occur	In feature area
Thalassarche bulleri Bullers Albatross [64460]	Foraging	Known to occur	In feature area
Thalassarche cauta cauta Shy Albatross [82345]	Foraging likely	Likely to occur	In feature area
Thalassarche chlororhynchos bassi Indian Yellow-nosed Albatross [85249]	Foraging	Known to occur	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Foraging	Known to occur	In feature area
Thalassarche melanophris impavida Campbell Albatross [82449]	Foraging	Known to occur	In feature area
Sharks			
Carcharodon carcharias White Shark [64470]	Breeding (nursery area)	Known to occur	In feature area

Scientific Name	Behaviour	Presence	Buffer Status
Carcharodon carcharias White Shark [64470]	Foraging	Known to occur	In buffer area only

Whales			
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Likely to be present	In feature area

Bioregional Assessments			[Resource Information]
SubRegion	BioRegion	Website	Buffer Status
Gippsland	Gippsland Basin	BA website	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

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-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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