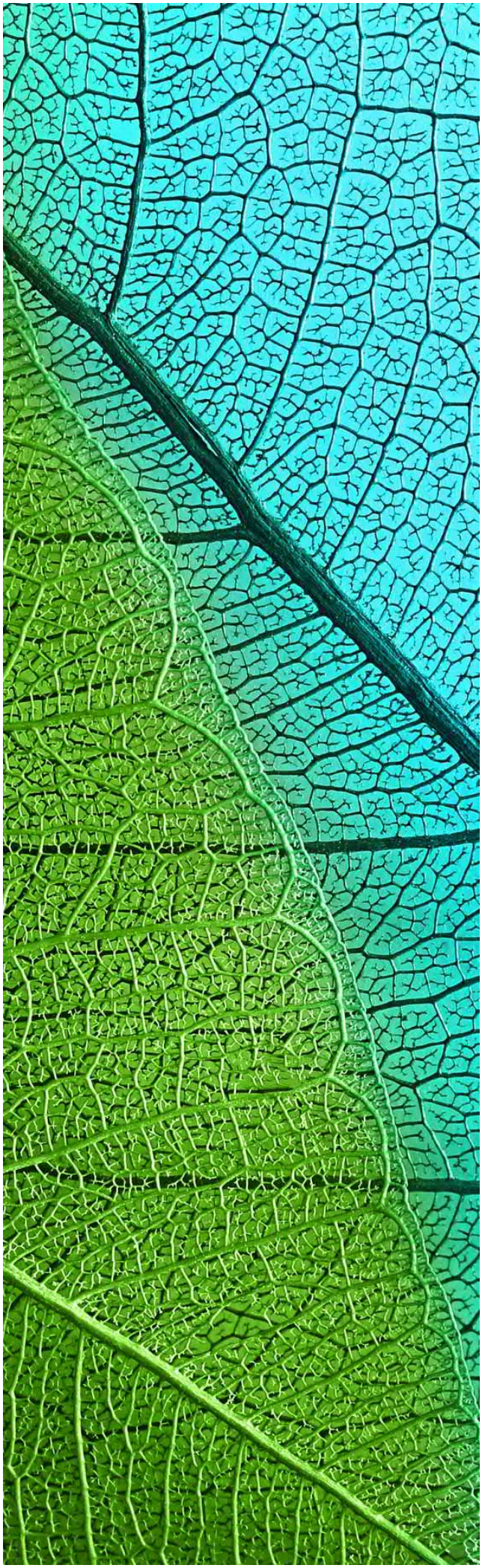
# Attachment 2 - Preliminary onshore ecology assessment

Star of the South Offshore Wind Farm Project EES referral



# Star of the South Wind Farm - Onshore Infrastructure

# Initial Biodiversity Assessment for Referrals

## Prepared for:

**Star of the South Wind Farm Pty. Ltd.**

April 2020

Report No. 19200 (2.3)

Prepared in Association with:

AECOM

Nature Advisory

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## Appendices

# 1. Executive summary

The Star of the South Offshore Wind Farm ('the project') is a proposed offshore wind farm to be located off the coast of Central Gippsland in Victoria. The project would supply renewable electricity to the Australian electricity market and play a key role in supporting Victoria's transition to a clean electricity supply. The key components of the project are:

- Wind turbines, inter-array cables and offshore substations in the ocean
- Subsea export cables to connect the wind farm to the Gippsland coast
- Transmission infrastructure including substations to provide a connection to the Latrobe Valley
- Port modifications to support project construction and operations.

This report includes a desktop assessment of risks to listed threatened flora and fauna, threatened communities and migratory fauna from construction and operation of the on-shore elements of the Star of the South Wind Farm.

The proposed construction of the onshore transmission component of this project involves the preparation of the transmission corridor and station sites, including clearing vegetation from selected land, removal and storage of topsoil for future use. Access roads and public intersection upgrades, site buildings and construction compounds with hard stands and laydown areas and similar infrastructure will also be required in some places.

Cable installation will involve construction of cable trenches, laying bedding materials, cables and engineered backfill, replacement of topsoil. Installation of above ground transmission infrastructure will involve installation of overhead powerlines, excavating foundations, concrete pouring, topsoil replacement and excess material discard in line with relevant regulations. Construction of sub-stations, and operation and maintenance buildings will involve excavation and pouring of building foundations and concrete pads at switchyard and transformer locations and installation of facility cabling and other ancillary electricity infrastructure. Sites will be progressively rehabilitated.

For the purpose of this preliminary assessment it is assumed that impacts to important coastal habitats including coastal beach, dune and wetland systems will be avoided to prevent impacts to ecological communities as well as the flora, fauna and the habitats for these species. It is anticipated that impacts will be avoided through design development and siting the landfall location in agricultural land behind the coastal complex. Any impacts associated with the landfall location will be assessed during detailed investigations. Trenchless construction methods will also be used where practicable to avoid impacts to sensitive areas, including some waterways.

Because the project is in its early development, the referral area allows for three options of corridor locations between approximately three and five kilometres in width to enable flexibility in the project design. This impacted area will be refined as the project progresses and is likely to be reduced to a footprint with a width of less than 100 metres where possible. This should considerably reduce impacts and so this report very likely presents an overestimation of impacts and a precautionary approach.

Key ecological considerations that relate to the Project are as follows:

- Potential impacts to four EPBC-Act-listed ecological communities including Gippsland Red Gum (*Eucalyptus tereticornis* subsp. *mediana*) Grassy Woodland and Associated Native Grassland, Subtropical and Temperate Coastal Saltmarsh, Natural Damp Grasslands of the Victorian Coastal Plain and Seasonal Herbaceous Wetlands (freshwater) of the Temperate Lowland Plains.

- Potential impacts to nine EPBC Act-listed flora species including River Swamp Wallaby-grass, Dwarf Kerrawang, Green-striped Greenhood, Matted Flax-lily, Strzelecki Gum, Trailing Hop-bush, Metallic Sun-orchid, Spiral Sun-orchid and Swamp Everlasting.
- Potential impacts to two Wetlands of International Significance (Ramsar sites) including Corner Inlet and Western Port.
- Potential impacts to eight Ecological Vegetation Classes (EVCs) with an Endangered bioregional conservation status. These EVCs include Grassy Woodland, Creekline Herb-rich Woodland, Floodplain Riparian Woodland, Swampy Riparian Woodland, Plains Grassy Woodland, Swamp Scrub, Swamp Scrub/ Plains Grassland Mosaic and Damp Forest
- Potential to impact ten FFG-listed flora species or species identified as endangered or vulnerable by DELWP, for which the referral area is likely to represent some of the best 50% of habitat for four species, including Dwarf Kerrawang, Trailing Hop-bush, Green-striped Greenhood and Maroon Leek-orchid.
- Potential to impact three FFG-listed ecological communities, Forest Red Gum Grassy Woodland Community, Herb-rich Plains Grassy Wetland (West Gippsland) Community, The Plains Grassland (South Gippsland) Community.
- Potential to impact seven EPBC Listed fauna species including Southern Brown Bandicoot, Southern Greater Glider, Spotted-tailed Quoll, Swamp Antechinus[1], Growling Grass Frog, Australian Grayling and Dwarf Galaxias.
- Potential to impact seven FFG-listed fauna species or identified as endangered by DELWP and for which the referral area likely represents some of the best 50% of habitat, including Martins Toadlet, Southern Toadlet, Swamp Skink, New Holland Mouse, Dwarf Galaxias, Grey Goshawk and Chestnut-rumped Heathwren.
- Potential to impact about 20 waterways.

The impacts of the 2019/2020 bushfires in Queensland, New South Wales, Victoria and South Australia, have destroyed significant areas of habitat, and populations of some species are predicted to have declined significantly, meaning that impacts might be expected to be more significant as a proportion of habitat than previously would have been the case. Habitat loss and impacts on species associated with the bushfires will be considered as part of the ongoing detailed assessments for Star of the South.

[1] Note there have been no records of this species in the referral area since 1990 but fauna surveys for other mammals may detect it, in which case a revised assessment would be required.

# 2. Introduction

## 2.1. Project Overview

Star of the South (the Project) comprises an offshore wind farm, supporting electricity transmission assets required to transfer energy generated by the wind farm to the existing network, and modifications to existing ports and harbours required to support the construction and operation of the wind farm. The Project would supply renewable electricity to the Australian electricity market and play a key role in supporting Victoria's transition to a clean electricity supply.

The key components of the Project are:

- Offshore wind assets, including wind turbine generators (WTGs), substructures installed on foundations and a network of subsea cables connecting strings of WTGs together and connecting the WTGs to the offshore transmission assets.
- Offshore transmission assets, including substation platforms, substructures installed on foundations and subsea export cables to connect the wind farm to the Gippsland coast
- Onshore transmission infrastructure, including substations, to provide a connection to the National Electricity Market (NEM) in the Latrobe Valley
- Existing port and harbour modifications to support project construction and operations.

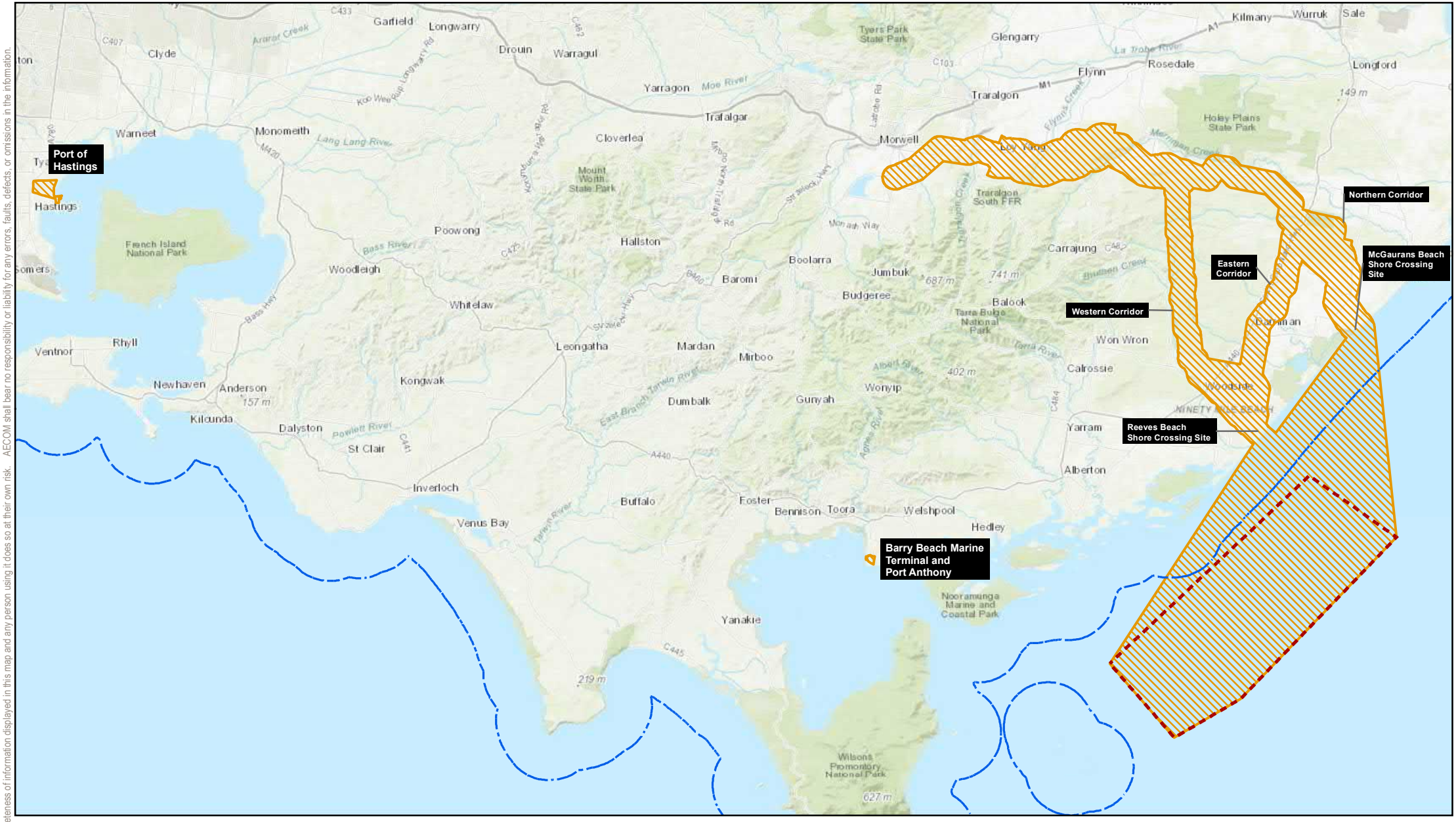
The Project would be located within Commonwealth and Victorian jurisdictions. The offshore wind farm, connecting subsea cables and offshore substations would be located in Commonwealth waters, within the boundary of the Exploration Licence Area (the Licence Area) (issued under an Exploration Licence granted by the Commonwealth Government in March 2019) (Figure 1),

The subsea export cables would be located in the Licence Area, Commonwealth waters, and Victorian coastal waters. The onshore transmission infrastructure and existing port and harbour modifications are proposed within Victorian jurisdiction. The onshore transmission infrastructure would be located within the Wellington Shire and/or City of Latrobe. The proposed port and harbour modifications are located within the South Gippsland and/or Mornington Peninsula Shires.

## 2.2. Purpose of the report

As the Project is located both within Victorian and Commonwealth jurisdictions, it is being referred under the *Environment Effects Act 1978 (Vic)* ('EE Act') and the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* ('EPBC Act'). Nature Advisory Pty Ltd and AECOM Australia Pty Ltd were engaged to carry out a desktop assessment of potential impacts and risks to listed threatened flora, fauna and ecological communities, and migratory fauna from construction and operation of the onshore elements of the Star of the South Wind Farm, in South Gippsland, Victoria. The areas assessed, termed the 'referral area', are described below.

This report is designed to complement a similar analysis of potential ecological impacts for the offshore components of the project prepared by RPS (RPS 2020). Both reports inform the two required Referrals. This onshore report covers ecological values in the referral area above high-water mark on the coast and the referral area inland from there. The marine ecology report covers ecological values below the high-water mark. For shorebirds, this report considers impacts inland from Ninety Mile Beach and at the three possible port sites.




## Legend

- Extent of Victorian Coastal Waters
- EPBC Referral Area
- Exploration Licence Area

DATUM GDA94 MGA 55

0 10 20

Kilometres

1:625,000 (when printed at A4)

Data Sources:
State Data © (VICMAP) 2019

Disclaimer:
Victoria State Government - Environment, Land, Water and Planning © (VICMAP) 2019

Star of the South

**EPBC REFERRAL AREA**

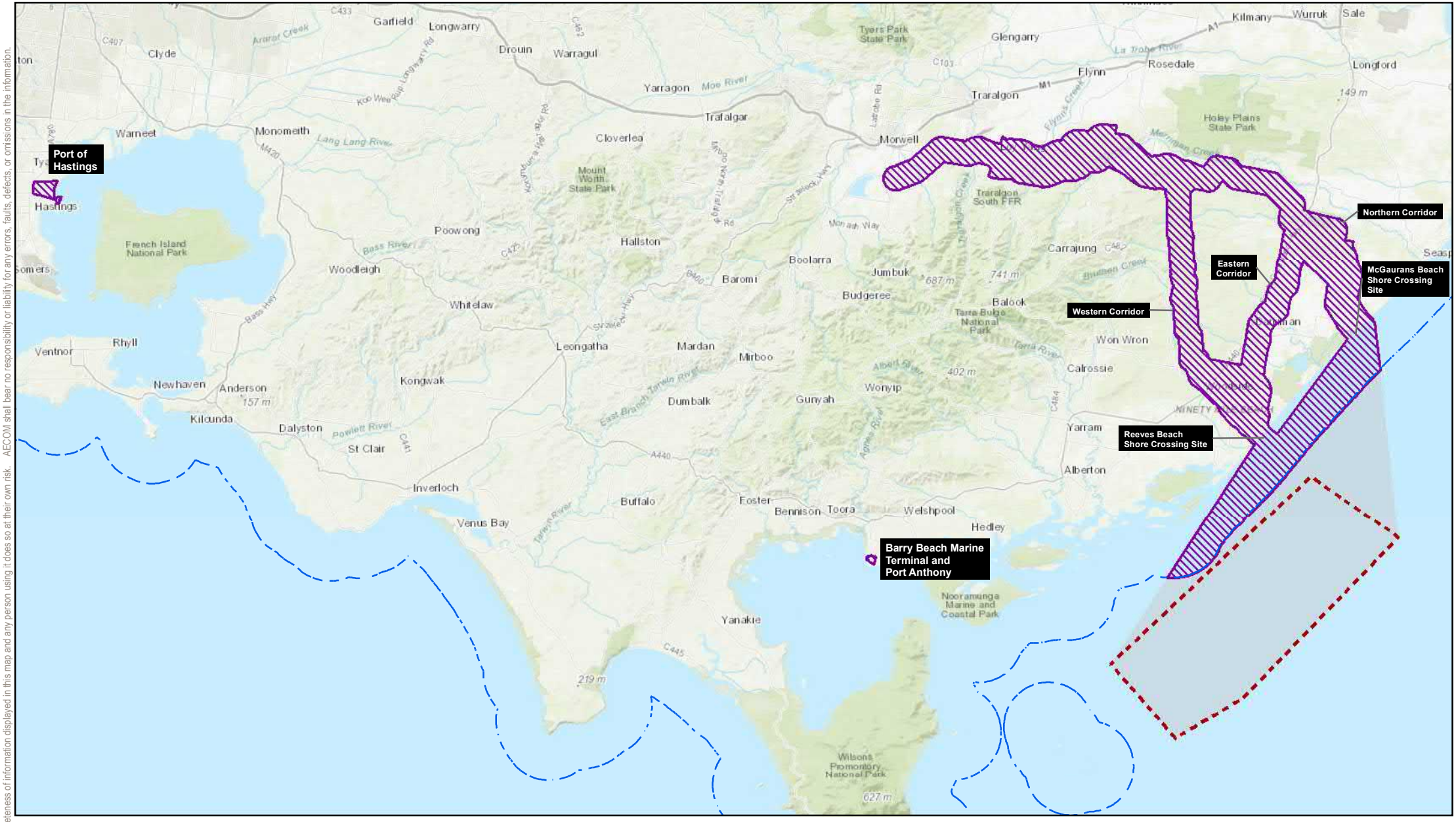
| | |
|---|---|
| PROJECT #: | 60616204 |
| CREATED BY: | JB |
| LAST MODIFIED: | brierej: 19/03/2020 |
| VERSION: | 1 |

**Figure 1**

A4 size



Document Path: \\aumel1fp001.au.aecomnet.com\Projects\606X\60616204\900_CAD_GIS\920_GIS\02_Maps\EES_EPBC_Referral_Areas\F2_EPBC_Referral_A4.mxd




## Legend

- Extent of Victorian Coastal Waters
- EES Referral Area
- Exploration Licence Area
- Project Area within Commonwealth Jurisdiction

DATUM GDA94 MGA 55

0 10 20

Kilometres

1:625,000 (when printed at A4)

*Data Sources:*
State Data © (VICMAP) 2019

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Star of the South

**EES REFERRAL AREA**

| | |
|---|---|
| PROJECT #: | 60616204 |
| CREATED BY: | JB |
| LAST MODIFIED: | brierej: 19/03/2020 |
| VERSION: | 1 |

**Figure 2**

Table 1: Summary of the five transmission corridor segments and port locations comprising the referral area.

| Section | Description | Corresponding Corridor |
|---|---|---|
| 1 | Old Rosedale Road to Reeves Beach | Western |
| 2 | South Gippsland Highway to Reeves Beach | Eastern |
| 3 | South Gippsland Highway to McGauran Beach | Northern |
| 4 | Old Rosedale Road to South Gippsland Highway | Northern, eastern |
| 5 | Hazelwood to Old Rosedale Road | Western, northern, eastern |
| Port 1 | Port Anthony, near BBMT | NA |
| Port 2 | BBMT | NA |
| Port 3 | Port of Hastings - Bluescope | NA |

This report provides an initial screening of existing information on the foregoing areas for the presence and potential status of native vegetation (Ecological Vegetation Classes, EVCs), and threatened flora, fauna and communities in the foregoing areas, and partial ground truthing. Threat status is determined based on listing under the EPBC Act, FFG Act or DELWP Advisory Lists (DSE 2009,2013; DEPI 2014). It then provides an assessment of the likelihood of occurrence for each of these species and communities, then assesses impacts on species considered likely or possibly present against:

- The Commonwealth EPBC Act Significant Impact Guidelines (DoEE 2015); and
- The Victorian Ministerial Guidelines under the EE Act (DSE 2006).

At this early stage in project development, the locations of all the onshore transmission assets have not been confirmed but will lie within the foregoing assessment areas. For this reason, this initial biodiversity assessment is considered conservative and likely to overestimate the number and extent of species and communities potentially affected.

Ecological values (species, communities, and their habitats) are discussed in the context of their listing status, distribution and *potential* for project impacts only. Quantification of impacts is not possible at this early stage. Once the project design is further advanced and, ultimately, transmission route and associated infrastructure locations selected, these potential impacts will likely reduce or be avoided in some instances.

# 3. Legislative and Policy Context

The onshore elements of the Star of the South Wind Farm are subject to Commonwealth, Victorian and Municipal controls that protect biodiversity. Table 2 summarises the legislation and planning policies relevant to biodiversity that the project must address.

Table 2: Legislation descriptions and relevance to the project

| Legislation and Authority | Description | Project relevance |
|---|---|---|
| International | | |
| Ramsar Convention on Wetlands of International Importance (Ramsar Convention) | The Ramsar Convention's broad aims are to halt the worldwide loss of wetlands and to conserve, through wise use and management, those that remain. | Ramsar wetlands are recognised as a matter of national environmental significance under the EPBC Act. Consequently, an action that has, will have, or is likely to have, a significant impact on the ecological character of a Ramsar wetland must be referred to the Minister and undergo an environmental assessment and approval process. |
| Commonwealth | | |
| EPBC Act<br>*Commonwealth Minister for the Environment* | The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) protects Matters of National Environmental Significance which includes Ramsar Wetlands, threatened species, threatened ecological communities and migratory species. | Any significant impacts on these matters require the approval of the Australian Minister for the Environment. This is done though a three-step process: Referral, Assessment and Approval. This initial biodiversity assessment addresses the Referral stage of this process.<br>The Department of Agriculture, Water and Environment (DAWE) assesses the information in the Referral and attachments (including this report) makes recommendations to the Commonwealth Minister for the Environment (or delegate) on whether the project impacts are significant enough to require Assessment and Approval. |
| Victorian | | |
| FFG Act<br>*Victorian Department of Environment Land Water and Planning* | The Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act) lists threatened and protected species and ecological communities (DELWP 2018b, DELWP 2017b). | Any removal from public land of protected flora (threatened flora species and the plants that make up threatened communities listed under the FFG Act) requires a Protected Flora Licence or Permit under the Act, obtained from the Department of Environment, Land, Water and Planning (DELWP). This initial biodiversity assessment addresses this to the extent that impacts on these species and communities are relevant under the *Environment Effects Act 1978* |

| Legislation and Authority | Description | Project relevance |
|---|---|---|
| EE Act<br>*Victorian Minister for Planning* | In Victoria, environment assessment of the potential environmental impacts or effects of a proposed development may be required under the *Environment Effects Act 1978* (EE Act) | One or a combination of criteria may trigger a requirement for a Referral to the Victorian Minister for Planning who will determine if an Environmental Effects Statement (EES) is required according to the *Ministerial Guidelines for Assessment of Environment Effects under the Environment Effects Act 1978* (DSE 2006). This initial biodiversity assessment addresses the Referral stage under this Act. |
| Municipal Planning Schemes | | |
| Cl. 52.17<br>*Relevant Local Council (or Victorian Minister for Planning)* | In Victoria, a municipal planning permit is required for the removal of native vegetation. | All native vegetation removal must be documented consistent with the application requirements of the *Guidelines for the removal, destruction and lopping of native vegetation* (DELWP 2017), an incorporated document in all Victorian planning schemes. This initial biodiversity assessment addresses requirements under this planning provision. |

Although other legislation and planning policies will be relevant to the final, detailed assessment, these are not relevant to the two Referrals addressed by this report and are therefore not considered here.

# 4. Description of the project and referral area

As Star of the South would be located within both Commonwealth and Victorian jurisdictions, the following sections describe the key components of the Project and outline which are relevant to the EPBC and EES referral areas.

## 4.1. EPBC referral

For the EPBC referral, all key components of the project are relevant because of their potential to impact matters of environmental significance, including Commonwealth marine waters. This includes:

- Offshore wind assets which comprise of:
  - Up to 400 WTGs
  - Substructures each installed on foundations
  - A network of buried or mechanically protected (in areas where burial is not possible), subsea cables connecting strings of WTGs together and connecting the WTGs to the offshore transmission assets.
- Offshore transmission assets which comprise of:
  - Up to four Alternating Current (AC) substation platforms collecting the generated electricity and transforming the electricity for transmission to shore. These substations may also be linked to one another via connecting subsea cables
  - Substructures each installed on foundations
  - Up to 13 AC subsea export cables, buried or mechanically protected (in areas where burial is not possible), transmitting the electricity from the wind farm to the shore.
- Onshore transmission assets which comprise of:
  - Underground cable/combined underground cable and overhead powerlines
  - Up to four AC substations
  - Connection to the National Electricity Market (NEM) in the Latrobe Valley.
- Existing port and harbour modifications which comprise of:
  - Use of Port of Hastings, Barry Beach Marine Terminal (BBMT) and Port Anthony and/or other ports in the region for construction and operation of the project
  - Landside development at ports to prepare land for the manufacturing and storage facilities for the wind farm
  - Minor upgrades to the existing jetty at Port of Hastings may be required which could include works in the water in the immediate vicinity of the existing jetty
  - At BBMT structural improvements to a quay wall may be required however these works are anticipated to be undertaken from the landside area

The EPBC referral area is shown in Figure 1 and represents the area within which the Project components would be located. More detail on the proposed action can be found in Section 1.2 of the Star of the South Offshore Wind Farm EPBC Act Referral.

### 4.2. EES referral

As part of the EES referral, it is the impacts within Victorian jurisdiction that are relevant. This would typically be limited to impacts caused by components that are located within Victorian jurisdiction, which include:

- Offshore transmission assets that occur within three nautical miles of shore (e.g. export cables connecting the offshore infrastructure to the shore)
- Onshore transmission assets
- Existing port and harbour modifications

There may be some cases where the infrastructure located within Commonwealth jurisdiction has the potential to result in indirect impacts on receptors within Victorian jurisdiction and these will be assessed where relevant.

The EES referral area is shown in Figure 2 includes the area within which all of the infrastructure will be located within Victorian jurisdiction. The Commonwealth jurisdiction is shown in grey because this area is outside of direct jurisdiction of the EE Act. More detail on the Project can be found in Part 1 of the Star of the South Offshore Wind Farm EES Referral.

### 4.3. Construction phase

At the early stages of the Project, the proposed construction of the onshore transmission component involves the following key activities:

- The preparation of the transmission corridor and station sites, including clearing vegetation from selected land, removal and storage of topsoil for future use;
- Access road and public intersection upgrades, where required;
- Establishment of site buildings and construction compounds;
- Construction of hard stands and laydown areas;
- Construction and installation of joint bays;
- Construction of cable trenches, laying bedding materials, cables and engineered backfill, replacement of topsoil, or transmission infrastructure, excavating foundations, concrete pouring, topsoil replacement and excess material discard in line with relevant regulations;
- Construction of sub-stations, and operation and maintenance buildings involving excavation and pouring of building foundations and concrete pads at switchyard and transformer locations;
- Installation of facility cabling and other ancillary electricity infrastructure; and,
- Progressive rehabilitation of the sites.

It should be acknowledged that because the project is in its early development and to allow flexibility in the project design, the referral area allows for three options of corridor locations between approximately three and five kilometres in width within which impacts may occur. The impacted area will be refined as the project progresses and is likely to be reduced to a footprint with a width of less than 100 metres where possible.

Where the power cable crosses the coast, a range of construction methods are being explored, all of which will avoid the need to excavate trenches through dunes and coastal wetlands. Methods may include horizontal directional drilling, micro-boring and/or piping.

# 5. Method

This assessment has been undertaken using the steps described below.

- A full list of potentially occurring ecological values was compiled from existing data sources (see section 5.1 below) for:
    - Native vegetation (specifically Ecological Vegetation Classes, EVCs);
    - Threatened flora species;
    - Threatened fauna species;
    - Threatened ecological communities;
    - Migratory species; and
    - Wetlands of International Importance (Ramsar Wetlands).
- Values likely or possible occurring in the referral area were then determined based on a combination of existing records in and near the area (see Section 5.1) and an overview field assessment in January 2020 to ascertain the characteristics of vegetation and habitat and, based on this, the likelihood that any sites in the referral area support the foregoing values. Likelihood was assessed as:
    - Likely (>50% likelihood of occurring);
    - Possible (50% likelihood of occurring);
    - Unlikely (<50% likelihood of occurring); and
    - Rare (<5% likelihood of occurring).
- For values considered likely or possibly occurring, the potential for impacts was then assessed as described below.
    - For EPBC Act listed matters of national environmental significance (i.e. threatened species and ecological communities, migratory species and Ramsar wetlands) the significance of potential impacts was assessed in accordance with published administrative guidelines (DoEE 2015) that include specific criteria for significant impacts to determining if Referral of projects under the EPBC Act is warranted.
    - For the EE Act, the potential scale of impacts on native vegetation, threatened species and valuable ecosystems (e.g. Ramsar wetlands) was determined in accordance with the published guidelines for Referral of projects to the Victorian Minister for Planning for a decision on whether an Environment Effects Statement is required (DSE 2006).

This approach ensured a consistent assessment of the possibility of ecological impacts in a transparent manner relevant to the two required Referrals for every ecological value considered likely or possibly present in the referral area.

## 5.1. Desktop Assessment

Three alternative proposed transmission corridors have been reviewed. As these three corridors share some common areas, they have been divided into five sections to allow for ecological assessments of discrete places (see Table 1).

The onshore referral area has been set large enough (see Figure 1 and Figure 2) to encompass all possible project infrastructure. As the environmental investigations are currently preliminary, setting the

area large allows for the project to be designed to respond to any constraints found during investigations. Ultimately, the final footprint of the project is likely to be contained within a 100 metre wide infrastructure corridor restricted to one of the transmission corridor options within the referral area.

The desktop assessment was completed using the following sources of information:

- Victorian Biodiversity Atlas (VBA) administered by DELWP. The VBA search included the 'VBA_FLORA25, FLORA100' and 'VBA_FAUNA25, FAUNA100' datasets and was completed for a 2.5 km buffer on a notional alignment identified from shapefiles of the referral area.
- MapshareVic – the central data resource managed by DELWP. A search of MapshareVic was undertaken to identify:
    - Ecological Vegetation Classes (EVCs – DELWP 2005 EVC modelled data)
    - Mapped wetlands
    - Waterways
    - Conservation areas
    - Bioregions
    - Administrative boundaries.
- EPBC Act Protected Matters Search Tool (PMST) administered by the DAWE, which was searched for an area encompassing an additional 5-kilometre buffer on the referral area.

The Native Vegetation Regulations (NVR) EnSym tool managed by DELWP was used to screen for protected species for which important habitat has been modelled. This was run for a 500 m-wide corridor. Those species identified as possible or likely were cross-checked against the EnSym and the output was used as a proxy for the "*potential long-term loss of a significant proportion (e.g. 1 to 5 percent depending on the conservation status of the species) of known remaining habitat or population of a threatened species within Victoria"* as defined in the EES criteria (DSE 2006). Obviously, native vegetation removal will be much less that this; the tool was used to screen a relevant region for modelled threatened species habitat to ensure no species was missed for this initial assessment.

The eBird database, the Victorian Biodiversity Atlas (DELWP 2020a) and the Atlas of Living Australia (ALA, 2020) were consulted as part of the likelihood assessment for species records, descriptions and preferred habitat.

Reports from assessments previously undertaken for areas associated with the referral area were reviewed as background information on the ecological values. These were:

- Port of Hastings: Flora and Fauna Assessment of Crown land and BlueScope Steel property (Biosis, 2015)
- Flora and Fauna Assessment of the proposed Old Rosedale Road alignment option for Basslink (Biosis, 2001)

Based on this initial biodiversity assessment, the detailed assessment work, including field assessment, will be scoped. This scope is not included in this report as the purpose of this report is to inform the EPBC Act and EE Act Referral processes, after which the views of regulators will need to be considered before this scope is finalised.

## 5.2. Field Assessment

### *5.2.1. Native vegetation and flora*

The purpose of the preliminary assessment was to broadly collect information on the type, condition and extent of native vegetation present within the three corridors and the two port areas. The preliminary field assessment was conducted over five days between 20th and 24th January 2020 by two AECOM botanists. In addition to recording the general condition of native vegetation, a key aim of the field assessment was to record characteristics of vegetation communities including the key canopy species and general floristic structure and composition. Where possible, the extent and connectivity of remnant vegetation was mapped in the field using ArcCollector and refined during post-data processing. Mapping of vegetation extent was generally undertaken by verifying the DELWP 2005 Ecological Vegetation Class (EVC) modelled data.

Detailed Vegetation Quality Assessments (VQA) and flora surveys were not undertaken as part of the preliminary assessment. Rather, the assessment provided a broad overview of the vegetation communities which informed the likelihood assessment for threatened flora species and ecological communities. Once the Project design progresses, detailed surveys for threatened flora species and ecological communities will be completed.

The high-level assessment did not cover the entire referral area; assessments were generally limited to those areas accessible to the public and excluded areas requiring access to private land. Where vegetation extended into private land, aerial imagery and the 2005 EVC model was used to interpret the extent of native vegetation.

**Mapping**

A field mapping exercise was undertaken to understand the general type and extent of vegetation within the referral area. This included validating the DELWP 2005 EVC model. This process was important to gain an understanding of the actual extent of vegetation communities within the referral area and therefore, suitable habitat for threatened flora species which informed the species likelihood of occurrence assessment. The following attributes where recorded in the field:

- Corrections to the EVC type;
- Inaccuracies in EVC extent – any increase or decrease in vegetation extent (e.g. where an EVC was modelled but was no longer present, or non-native vegetation had been modelled as native vegetation); and
- Areas where mapping understated groups of scattered trees or smaller EVC patches.

### *5.2.2. Fauna*

Nature Advisory Pty Ltd zoologists conducted an overview field assessment of the referral area from 20th to 24th January 2020. This was designed to determine the likelihood of habitat and species occurrence within the referral area based on visual confirmation of and, on public land, direct visitation to areas of potential habitat for listed threatened and migratory fauna species.

A reconnaissance of the entire area was conducted on the 20th of January, to determine suitable sites for further inspection. From 21st to 23rd January, 12 public land sites were visited via gazetted roads and by walking into the habitats out to a distance of up to 1.5km from the centre of the corridors. Silviculture and plantations, and private property were surveyed from public land and roads where practical. The Hastings Port and BBMT areas were visited on 24th January and deemed inaccessible without permission from the landholders. These sites will require further investigation.

Fauna species observed during these visits were recorded, as were incidental observations of significance between sites. No specific fauna survey techniques were consistently employed as the purpose of the field work was to ascertain the suitability of habitat for listed species of fauna. This review has short-listed species for which targeted field surveys would be required in the later assessment phase of the development application process.

Fauna habitats were described using habitat components that include old-growth trees, fallen timber, leaf litter and surface rocks.

Habitat connectivity (i.e. degree of isolation/fragmentation) in the referral area, including linkages to other habitats in the region, was determined using field observations, recent aerial photography and DELWP's NatureKit (DELWP 2017a).

### 5.3. Likelihood assessment

The potential for the project to impact on ecological values depends on the likelihood of ecological communities, threatened or migratory species occurring within the referral area. A preliminary field assessment was therefore undertaken to identify the presence of potential habitat and inform an assessment of the likelihood of threatened or migratory species occurring within the referral area. Likelihood of occurrence was based on the following categories:

- Likely: It is more probable than not that the species or community could occur in any year and within the referral area (>50 per cent)
- Possible: It is equally probable that the species or community could or could not occur in any year and within the referral area (50 per cent)
- Unlikely: It is less probable than not that the species or community could occur in any year and within the referral area (<50 per cent)
- Rare: It is improbable that the species or community could occur in any year and within the referral area (<5 per cent). The species or community is only theoretically possible, or would require exceptional circumstances to occur.

### 5.4. Impact assessment

For each species and community considered possible or likely to occur, assessment of potential project impacts has been undertaken against the significant impact criteria under the EPBC Act (DoEE 2015) and the biodiversity elements of the Ministerial Guidelines under the EE Act (DSE 2006). Sections 8.1 and 8.2 of this report provide a broad overview of the potential threatened species and ecological communities that may be impacted by the Project. At this stage of the Project, the location of a specific project corridor has not yet been determined and a number of corridor and construction techniques are being considered. In the absence of a developed Project design and with preliminary information for flora, fauna and ecological communities available, the impact assessments should be considered preliminary.

The impact assessments consider all values that occur in the investigation area and are likely to overstate actual Project-related impacts. Values are discussed in terms of their listing status, existing knowledge and the potential for project interaction only, as quantification of impacts is not possible at this time. Once the Project design is further advanced and a corridor and footprint selected, these potential impacts may be reduced or avoided, and the number of species and ecological communities affected by the Project may decrease.

Impact assessments will be refined as the Project progresses and once detailed flora, fauna and vegetation surveys are completed, the scope of which will be based on the findings of this initial assessment.

The impact assessment comprises two assessments: an assessment against the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Significant Impact Criteria; and an assessment against the individual and combined effects under the *Environment Effects Act 1978*, as described below.

### *5.4.1. Assessment on Matters of National Environmental Significance against the EPBC Act Significant Impact Criteria*

Section 8.1 provides a preliminary assessment against the Commonwealth EPBC Act Significant Impact Criteria. Species and ecological communities listed under provisions of the EPBC Act of relevance to the Project include:

- Ramsar wetlands
- Threatened species
- Threatened ecological communities
- Migratory species

Determining if the project could have a significant impact on MNES referenced the Commonwealth significant impact guidelines (DoE 2013) as well as an understanding of the ecology of the species/ecological community, and its status with the project referral area based on the desktop review and limited ground-truthing.

The likelihood of the Project resulting in a significant impact is therefore assessed as:

- Unlikely
- Potentially
- Likely

Assessments against the criteria relevant to the EPBC Act Significant Impact Guidelines will be refined as the Project design is refined and once detailed ecological assessments are completed. It is feasible that these impacts will be further reduced and potentially avoided through design development and mitigation.

### *5.4.2. Assessment against the individual and combined effects under the EE Act referral guidelines*

Section 8.2 provides a preliminary assessment against the Victorian *Ministerial Guidelines for Assessment of Environmental Effects under the Environment Effects Act 1978* (DSE, 2006). This includes consideration of threatened species and ecological communities listed under the FFG Act.

The likelihood of the Project resulting in an impact is assessed as:

- Yes
- No
- Potential

## 5.5. Assumptions and limitations

The field work for this initial assessment was limited to areas accessible to the public and did not cover the entire referral area. No access to private land was approved at this preliminary stage but these areas are likely to support native vegetation and habitat for threatened flora and fauna species.

The majority of the referral area at the Port of Hastings and Port Anthony/BBMT was inaccessible to the public and limited information was gathered from adjoining areas. This meant that assessment of fauna habitat was not possible, though high-level vegetation assessment was able to be carried out.

The impact assessment considers all values within the referral area, when not all may occur in the final development footprint. For this reason, project-related impacts have been identified conservatively and are likely to be overstated. The impact assessments (Section 10 and 11) can be refined once the onshore project design and construction methods has been confirmed.

Initial vegetation assessments were high-level in nature and do not constitute a thorough vegetation quality assessment. Assessments were intended to capture the key vegetation characteristics in order to confirm Ecological Vegetation Class, where possible, to determine their suitability to provide habitat for threatened species and/or to determine whether vegetation communities corresponded with threatened ecological communities.

Threatened species records may be duplicated where sections one to five overlap. This is considered a limitation but is unlikely to affect the reliability of results.

EVC areas may be overstated where sections one to five overlap. EVC areas will be confirmed during detailed assessments.

Comprehensive flora and fauna species lists were not compiled during the initial field surveys.

The EnSym report was produced based on a 500m-wide clearance corridor (rather than the full referral investigation area, which allows for three options of corridor locations between approximately three and five kilometres in width to enable flexibility in the project design). The EnSym was unable to run based on a wider corridor. The impacted area will be refined as the project progresses and is likely to be reduced to a footprint with a width of less than 100 metres where possible.

Records of species for which habitat does not exist in the referral area from the PMST and VBA listing for this area were excluded, such as marine and coastal migratory species unlikely to occur in the initial onshore assessment area.

Wherever appropriate, a precautionary approach was adopted in determining the likelihood of occurrence or fauna listed under the EPBC Act and FFG Act. That is, where insufficient evidence was available on the potential occurrence of a listed species, it was assumed that it could be in an area of suitable habitat. This is considered an appropriate and conservative response to uncertainty and incomplete information.

For the purpose of this preliminary assessment it is assumed that impacts to important coastal habitats including coastal beach, dune and wetland systems will be avoided to prevent impacts to ecological communities as well as the flora, fauna and the habitats for these species. Impacts will be avoided through design development and siting the landfall location in agricultural land behind the coastal complex. Any impacts associated with the landfall location will be assessed during detailed investigations.

This report covers threatened species listed on the EPBC and FFG Act-only. *Victoria's Guidelines for the removal destruction or lopping of native vegetation* (DELWP 2017a 'the Guidelines') is the state-based legislation that provides the mechanism for protection of rare or threatened species listed under the Advisory List of Rare or Threatened Plants in Victoria (DEPI, 2014) and the Advisory List for Threatened Vertebrate Fauna in Victoria (DSE, 2013). At the time of this report, an assessment under The Guidelines

has not been completed. As the project progresses, this assessment will be undertaken as well as an assessment of the status of and impacts on Advisory List threatened species that may be impacted by the project.

# 6. Desktop Assessment

## 6.1. Literature Review

The following assessments and studies have informed the preliminary onshore assessment and the proposed future field investigations for the project. The respective study areas for these assessments and studies are different to the referral area for this project. It is therefore likely that the findings from these assessments would not wholly apply to this project, but are used to inform this assessment.

**Port of Hastings: Flora and Fauna Assessment of Crown land and BlueScope Steel property (Biosis, 2015)**

Biosis (2015) recorded approximately 330 hectares of remnant native vegetation within Crown Land and BlueScope Steel land at the Port of Hastings. This comprised a number of EVCs including:

- Damp Sands Herb-rich Woodland
- Coastal Saltmarsh
- Estuarine Wetland
- Heathy Woodland
- Swamp Scrub
- Wetland Formation
- Swampy Riparian Woodland
- Plains Grassy Wetland
- Sedge Wetland
- Mangrove Shrubland
- Grassy Woodland
- Aquatic Herbland
- Damp Heathland
- Damp Heathy Woodland
- Estuarine Scrub

Of these EVCs recorded, two were consistent with EPBC Act-listed communities. These communities and the area of occupation included:

- 43.4 ha of Subtropical and Temperate Coastal Saltmarsh; and,
- 3 ha of Seasonal Herbaceous Wetland (freshwater) of the Temperate Lowland Plains

A population of the EPBC-act listed River Swamp Wallaby-grass (*Amphibromus fluitans*) was also recorded during targeted surveys.

Remnant vegetation within Crown Land and Bluescope Steel land was considered to support high quality values for flora and fauna (Biosis, 2015).

Fourteen Threatened species were assessed as having a medium or higher likelihood of occurrence. All species assessed by this Report as having a medium or higher likelihood of occurrence have been assessed in this referral report.

**Port of Hastings Development Authority, Port of Hastings Container Expansion Project Ecology Description Final Report GHD, 2013**

Twenty-eight threatened or near threatened fauna species were recognised as having have a moderate or high likelihood of occurring in the saltmarsh habitats of Western Port. Most were bird species likely to be associated with coastal or marine environments. Five were more closely linked to, and may occur only in terrestrial habitats, Sothern Brown Bandicoot, Brown Quail, Swamp Skink, Glossy Grass Skink and Sothern Toadlet.

Of the 28 species, two, the Southern Brown bandicoot and the Fairy Tern were listed under the EPBC Act of the Twelve of the 28 species were listed under the FFG act.

Nineteen of the threatened fauna species were also listed as Migratory under the EPBC Act. Of those the Migratory shorebirds Caspian Tern, Little tern and the Eastern Great Egret were recognized as being likely to occur inland.

**Flora and Fauna Assessment of the proposed Old Rosedale Road alignment option for Basslink (Biosis, 2001)**

Biosis (2001) conducted a broad-level ecological assessment of six alignment options for the Basslink power transmission corridor. Of these six alignment options, the report focused on the preferred alignment option along Old Rosedale Road, with a 100m buffer (Western option in the current project). Only public land was assessed along the alignment as permission to enter private property had not been obtained.

During the assessment, six species of national and 11 of state conservation significance were recorded within the preferred alignment. These are presented in Table 3 below with their listing status in 2001 and current status (where changes have occurred).

Table 3. Flora of national and state conservation significance recorded during the Basslink assessment

| 2001 Status | Current Status | Scientific Name | Common Name | Notes |
|---|---|---|---|---|
| R, r | r, P, # | *Acacia howittii* | Sticky Wattle | |
| v | r | *Agrostis aemula var. setifolia* | Purple Blown-grass | Current species name is *Lachnagrostis semibarbata* subsp. *semibarbata* |
| k | k | *Arthropodium* sp. 2 | Greenish-flower Vanilla-lily | |
| K | P | *Caladenia clarkiae* | Clark's Hood-orchid | |
| v | P | *Craspedia paludicola* | Swamp Billy-buttons | |
| k | - | *Cuscuta tasmanica* | Golden Dodder | |
| E, e | E, L, e, P | *Dianella amoena* | Matted Flax-lily | |
| r | r, # | *Eucalyptus bosistoana* | Coast Grey-box | |
| E, e | e | *Geranium* sp. nov. (sp.23) | Crane's Bill | Could not identify what the current species name is or conservation status |
| v | - | *Geranium* sp. 14 | Valley Crane's-bill | |
| r | r, P | *Grevillea chrysophaea* | Golden Grevillea | |
| k | - | *Lepidosperma gunnii* | Slender Sword-sedge | |
| k | k | *Lomandra glauca s.s.* | Blue Mat-rush | |
| V, v | V, L, v, P | *Pterostylis chlorogramma* | Green-striped Greenhood | |
| r | r | *Pterostylis grandiflora* | Cobra Greenhood | |
| r | r | *Sowerbaea juncea* | Rush Lily | |

| 2001 Status | Current Status | Scientific Name | Common Name | Notes |
|---|---|---|---|---|
| k | P | *Thelymitra juncifolia* | Rush-leaf Sun-orchid | |

*The legend for this table is adapted from Biosis (2001)

Legend E = endangered in Australia; e = endangered in Victoria; R = rare in Australia; r = rare in Victoria;
V = vulnerable in Australia; v = vulnerable in Victoria; K = poorly known in Australia; k = poorly known in Victoria;
L = listed under the FFG Act; P = protected under the FFG Act.

A further four species of national significance and ten of state significance were identified during the desktop assessment within the broader area (Table 4).

Table 4. Flora of national and state significance recorded in the broader Basslink desktop assessment for the six alignments

| 2001 Status | Current Status | Scientific Name | Common Name | Notes |
|---|---|---|---|---|
| k | - | *Agrostis avenacea* var. *perennis* | Marsh Blown-grass | Current species name is *Lachnagrostis palustris* |
| k | - | *Austrodanthonia induta* | Shiny Wallaby-grass | Current species name is *Rytidosperma indutum* |
| v | r | *Austrofestuca littoralis* | Coast Fescue | Current species name is *Poa billardierei* |
| k | k, P | *Caladenia alata* | Fairy Orchid | |
| r | r, P | *Caladenia aurantiaca* | Orange-tip Finger-orchid | |
| k | k | *Caladenia dilatata s.s.* | Green-comb Spider-orchid | |
| v | L, v, P | *Diuris punctata* var. *punctata* | Purple Diuris | |
| k | k | *Entolasia stricta* | Upright Panic | |
| R, k | r | *Eucalyptus yarraensis* | Yarra Gum | |
| r | r | *Pomaderris aurea* | Golden Pomaderris | |
| r | r | *Pomaderris pilifera* subsp. *pilifera* | Striped Pomaderris | |
| V, v | V, L, v, P | *Prostanthera galbraithiae* | Wellington Mint-bush | |
| E, e | E, L, e, P | *Rulingia prostrata* | Dwarf Kerrawang | Current species name is *Commersonia prostrata* |
| k | k | *Stackhousia spathulata* | Coast Stackhousia | |
| v | v, P | *Thelymitra circumsepta* | Naked Sun-orchid | |
| V, v | V, L, v, P | *Thelymitra matthewsii* | Spiral Sun-orchid | |

*The legend for this table is adapted from Biosis (2001)

Legend E = endangered in Australia; e = endangered in Victoria; R = rare in Australia; r = rare in Victoria;
V = vulnerable in Australia; v = vulnerable in Victoria; K = poorly known in Australia; k = poorly known in Victoria;
L = listed under the FFG Act; P = protected under the FFG Act.

In Section 8.7, Biosis (2001) noted that undeveloped plant material described as Leek Orchid *Prasophyllum sp.*, collected from the grasslands of Stringybark Lane, has the potential to be Maroon Leek Orchid *P. frenchii*, a species listed as endangered under the EPBC Act.

The Basslink study identified 226 Native Species as having been recorded within 2.5 kilometers of the study area. Surveys in September 2000 recorded 122 native fauna species including nine amphibians, among which was Martins Toadlet. The report assessed 26 Threatened species as being likely or potentially occurring in that referral area.

Biosis (2001) also identified five sites of national, state or regional significance, which are summarised in Table 5.

Table 5. Sites of significance identified by Biosis (2001)

| Site | Significance | Site attributes |
|---|---|---|
| Mullungdung State Forest (north of Shield Road) | State | ▪ Listed on the now repealed Register of National Estate;<br>▪ Part of the largest vegetation remnant on the Gippsland Plains containing relatively intact examples of Heathy Woodland (least concern), Lowland Forest (vulnerable), and Riparian Scrub Complex (vulnerable), including areas of old growth Heathy Woodland;<br>▪ Five plant species of state significance |
| Mullungdung State Forest (south of Shield Road) | National | ▪ Listed on the now repealed Register of National Estate;<br>▪ Part of the largest vegetation remnant on the Gippsland Plains containing relatively extensive and intact examples of Gippsland Plains Grassy Forest (endangered), Lowland Forest (vulnerable), Damp Forest (endangered), Swamp Scrub (endangered), and Riparian Scrub Complex (vulnerable);<br>▪ Presence of four plant species of state significance; and<br>▪ Potential habitat for at least four other plant species of state significance |
| Jack Smith Lake | National | ▪ Listed on the now repealed Register of National Estate;<br>▪ Large, relatively intact wetland area, with extensive open water, and fringing patches of emergent vegetation including Swamp Paperbark thickets and salt marsh vegetation dominated by Saw-sedge *Gahnia* spp.;<br>▪ Presence of one plant species of national significance, and two plants of state significance; and<br>▪ Potential habitat for at least one other plant species of state significance. |
| Stringybark Lane (Road reserve) – Plains Grassland | National | ▪ Relatively large, intact remnant of South Gippsland Plains Grassland – which is most likely representative of the EPBC Act-listed community, Natural Damp Grasslands of the Victorian Coastal Plains (listed in 2015)<br>▪ Presence of two plants of national significance and one of state significance. |
| Starling Lane & Stringybark Lane – Plains Grassy Forest | Regional | ▪ Presence of one plant species of national significance and one plant species of state significance. |

## 6.2. Database searches

### 6.2.1. Protected Matters Search Tool

The EPBC Act Protected Matters Search Tool (PMST) identified a number of Matters of National Environmental Significance (MNES) that may occur, or for which suitable habitat may occur within the study area.

Results of the PMST search as requested on the 28 January 2020 are summarised in Table 6.

Table 6: Summary of the PMST results (5km search extent from outer edge of referral area)

| MNES | Number of occurrences |
|---|---|
| World Heritage Properties | None |
| Wetlands of International Significance (Ramsar Sites) | Three wetlands of international significance<br>▪ Corner Inlet<br>▪ Gippsland Lakes<br>▪ Western Port |
| Listed threatened species and ecological communities | Four threatened ecological communities:<br>▪ Assemblages of species associated with open-coast salt-wedge estuaries of western and central Victoria ecological community<br>▪ Subtropical and Temperate Coastal Saltmarsh<br>▪ Natural Damp Grasslands of the Victorian Coastal Plain<br>▪ Gippsland Red Gum (*Eucalyptus tereticornis* subsp. *mediana*) Grassy Woodland and Associated Native Grassland |
| Threatened Flora species | 18 listed threatened flora species |
| Threatened Fauna species | 78 listed fauna species |
| Migratory Species | 70 migratory species |
| Commonwealth Marine Areas | Exclusive Economic Zone and Territorial Sea (not relevant to onshore assessment) |

A list of threatened and migratory fauna species identified by the PMST is provided in Appendix 2 along with their conservation status, likelihood of occurrence, habitat descriptions, and information on any records within close proximity to the study area. The full PMST results are provided in Appendix 3.

### 6.2.2. Victorian Biodiversity Atlas

*Flora*

From the desktop study, 43 threatened flora species have been recorded (VBA) or are predicted (PMST) to occur within 5 km of the referral area. This include 28 EPBC Act-listed species, 34 FFG-Act listed species

and 42 species listed on the Victorian Rare or Threatened Species (VROTS) list (DEPI, 2014). Lists of all flora species recorded or predicted to occur are provided in Appendix 1. Those species assessed as having an unlikely or rare occurrence in the referral area are not considered further.

Species with a likely or possible likelihood of occurrence in the referral area are subject to impact assessments set out in Sections 8.1 and 8.2.

*Fauna*

From the desktop study, 112 threatened fauna species have been recorded (VBA) or are predicted (PMST and Ensym report) to occur within 5 km of the referral area. This includes 43 EPBC Act-listed threatened species, 47 Migratory species 59 FFG-Act listed species and 85 species listed on the Victorian Rare or Threatened Species (VROTS) Advisory List (DEPI, 2014). Lists of all fauna species recorded or predicted to occur are provided in Appendix 2. Those species assessed as having an unlikely or rare occurrence in the referral area are not considered further.

Species with a likely or potential likelihood of occurrence in the referral area are subject to impact assessments set out in Sections 8.1 and 8.2.

### 6.2.3. Ecological Vegetation Classes (EVCs)

DELWP's 2005 EVCs modelled data within the referral area are provided in Table 7 and presented in Figure 3.

Table 7: Ecological Vegetation Classes modelled within the referral area – corridors, Port of Hastings and Port Anthony/BBMT

| EVC | Bioregional Conservation Status | EVC number | Corridors (ha) | | | Port of Hastings (ha) | Port Anthony/BBMT (ha) |
|---|---|---|---|---|---|---|---|
| | | | Western | Eastern | Northern | | |
| Clay Heathland | Depleted | 7 | 4 | - | - | - | - |
| Coast Banksia Woodland | Vulnerable | 2 | 8 | 8 | - | - | - |
| Coastal Dune Scrub/Coastal Dune Grassland Mosaic | Depleted | 1 | 41 | 41 | 28 | - | - |
| Coastal Saltmarsh | Least Concern | 9 | 3 | 3 | 3 | 2 | 5 |
| Creekline Herb-rich Woodland | Endangered | 164 | 153 | - | - | - | - |

| EVC | Bioregional Conservation Status | EVC number | Corridors (ha) | | | Port of Hastings (ha) | Port Anthony/BBMT (ha) |
|---|---|---|---|---|---|---|---|
| | | | Western | Eastern | Northern | | |
| Damp Forest | Endangered | 29 | 48 | 46 | 46 | -- | - |
| Damp Sands Herb-rich Woodland | Vulnerable | 3 | 63 | 258 | 214 | 58 | - |
| Estuarine Wetland | Least Concern | 10 | 15 | 15 | 110 | - | - |
| Floodplain Riparian Woodland | Endangered | 56 | 19 | - | - | - | - |
| Grassy Woodland | Endangered | NA | - | - | - | - | - |
| Heathy Woodland | Least Concern | 48 | 1653 | 689 | 732 | 38 | 18 |
| Lowland Forest | Vulnerable | 16 | 3272 | 2672 | 2910 | - | 12 |
| Lowland Forest/Heathy Woodland Mosaic | Vulnerable | 698 | - | 50 | 242 | - | - |
| Mangrove Shrubland | Least Concern | - | - | - | - | 1 | - |
| Plains Grassy Forest | Vulnerable | 151 | 199 | 609 | 31 | - | - |
| Plains Grassy Woodland | Endangered | 55 | 194 | 194 | 194 | - | - |
| Riparian Forest | Vulnerable | 18 | 30 | 1 | 1 | - | - |
| Riparian Scrub | Vulnerable | 191 | 904 | 486 | 385 | - | - |

| EVC | Bioregional Conservation Status | EVC number | Corridors (ha) | | | Port of Hastings (ha) | Port Anthony/BBMT (ha) |
|---|---|---|---|---|---|---|---|
| | | | Western | Eastern | Northern | | |
| Sedge Wetland | Vulnerable | 136 | 48 | 30 | 56 | - | - |
| Swamp Scrub | Endangered | 53 | 79 | 150 | 103 | 6 | - |
| Swamp Scrub/Plains Grassland Mosaic | Endangered | 687 | 24 | 65 | - | - | - |
| Swampy Riparian Woodland | Endangered | 83 | 31 | 31 | 31 | - | - |

### *6.2.4. Wetlands and waterways*

The three transmission corridor options are located within an area that contains around 20 waterways from within the Latrobe River and South Gippsland catchments. The main waterways within the area are Merriman Creek which starts near Balook and flows more than 80 kilometres to the coast at Seaspray and Bruthen Creek which originates near Carrajong Lower and reaches its estuary around 30 kilometres away near Mcloughlins Beach. The Bruthen Creek sub-catchment is linked to the Corner Inlet Ramsar site. The remainder of the named waterways are tributaries of the Latrobe River, Merriman Creek or Bruthen Creek or smaller streams.

Waterways:

- South Gippsland Catchment
    - Merriman Creek
    - Monkey Creek
    - Little Monkey Creek
    - Long Creek
    - Bayliss Gully
    - Morris Creek
    - Warrigal Creek
    - Hoddinott Creek
    - Bruthen Creek
    - Toms Cap Creek
    - Reedy Creek
- Latrobe River Catchment

- Waterhole Creek
- Traralgon Creek
- Flynns Creek
- Bennetts Creek
- Plough Creek
- Boyds Creek
- Sheepwash Creek
- Blind Joe Creek

- Bunyip River Catchment
  - Olivers Creek

No significant waterways occur at Port Anthony/BBMT. At this stage of the project it is not possible to quantify the number of unnamed waterways.

The *Current wetlands map* is used to identify wetlands which can be difficult to detect onsite due to their dynamic nature (DELWP 2017c). The map has been generated by DELWP using a combination of aerial photo interpretation and field validation. Areas identified by the *Current wetlands map* (also referred to as mapped wetlands) are regarded as a patch of native vegetation when considering native vegetation to be removed or managed as an offset in accordance with the Guidelines.

Wetlands and waterways that intersect the referral area are presented in Table 8.

Table 8: Number of wetlands and waterways that intersect the referral area (MapshareVic)

| Referral area | Number of wetlands | Number of designated waterways |
|---|---|---|
| Western corridor | 228 | 19 |
| Eastern corridor | 253 | 19 |
| Northern corridor | 242 | 15 |
| Port Anthony/BBMT | 2 | 0 |
| Port of Hastings | 3 | 2 |

### *6.2.5. Conservation reserves that intersect the referral area*

Table 9 presents the conservation reserves that intersect the referral area. In total, the referral area intersects seven Bushland Reserves (BR), one Marine and Coastal Park (MCP), two Wildlife Reserves (WR), three Flora Reserves (FR), two Flora and Fauna Reserves (FFR), one State Park (SP), two State Forests (SF), three Coastal Reserves (CR),one Streamside Reserve (SSR), five Water Frontages (WF) and two other reserves (Hazelwood Road and Trig Reserve).

Table 9: Conservation reserves that intersect the referral area

| Reserve Name | Corridors | | | Port of Hastings | Port Anthony/BBMT Beach |
|---|---|---|---|---|---|
| | western | Eastern | northern | | |
| Bruthen Creek Water Frontage (WF) | X | | | | |
| Callignee State Forest (SF) | X | X | X | | |
| Carrajung H34 Bushland Reserve (BR) | X | - | - | - | - |
| Corner Inlet Marine & Coastal Park (MCP) | - | - | - | - | X |
| Darriman H29 Bushland Reserve (BR) | | | X | | |

| Reserve Name | Corridors | | | Port of Hastings | Port Anthony/BBMT Beach |
|---|---|---|---|---|---|
| | western | Eastern | northern | | |
| Darriman H33 Bushland Reserve (BR) | - | X | - | - | - |
| Flynns Creek Water Frontage (WF) | X | X | X | | |
| Fresh-water Swamp, Woodside Beach Wildlife Reserve (hunting) (WR) | X | X | - | - | - |
| Giffard (Rifle Range) Flora Reserve (FR) | - | X | X | - | - |
| Gormandale Flora Reserve (FR) | X | X | X | - | - |
| Gormandale State Forest (SF) | X | X | X | | |
| Hazelwood Road | X | X | X | | |
| Holey Plains State Park (SP) | - | X | X | - | - |
| Jack Smith Lake Wildlife Reserve (hunting) (WR). | - | X | X | - | - |
| Mcloughlins Beach - Seaspray Coastal Reserve (CR) | X | X | X | - | - |
| Merrimans Creek Flora Reserve (FR) | X | X | X | - | - |
| Merrimans Creek Water Frontage (WF) | X | X | X | | |
| Mullungdung Flora and Fauna Reserve (FFR) | X | - | - | - | - |
| Mullundung State Forest (SF) | X | X | X | | |
| Port Franklin - Port Welshpool Coastal reserve (CR) | - | - | - | - | X |
| Stradbroke Flora and Fauna reserve (FFR) | X | X | X | - | - |
| Traralgon Creek Water Frontage (WF) | X | X | X | | |
| Trig Reserve | | | X | | |
| Warrigal Creek Streamside Reserve (SSR) | - | X | - | - | - |
| Water Frontage (WF) | X | X | X | | |
| Western Port Coastal Reserve (CR) | - | - | - | X | - |
| Woodside H25 Bushland Reserve (BR) | X | | | | |
| Woodside H26 Bushland Reserve (BR) | X | - | - | - | - |
| Woodside H27 Bushland Reserve (BR) | | X | | | |

| Reserve Name | Corridors | | | Port of Hastings | Port Anthony/BBMT Beach |
|---|---|---|---|---|---|
| | western | Eastern | northern | | |
| Woodside H28 Bushland Reserve (BR) | - | X | - | - | - |

# 7. Existing Conditions

## 7.1. Landscape values

The following section provides an overview of the landscape context and values within the referral area. The referral area is located entirely within the Gippsland Plan bioregion.

### *7.1.1. Corridors*

The location of the development corridors being considered as well as the proposed connection points are described below and shown in Figure 1. In general, the corridors extend from the west Gippsland coast (Reeves Beach – sections 1 and 2, McGaurans Beach – section 3) north to Willung (section 1) and Stradbroke (sections 2 and 3) before following the existing Basslink corridor west/north-west to Loy Yang.

The corridor options span five landforms, including coastal areas, lowland plains, the Haunted Hills Formation (hills and low hills between Loy Yang and the South Gippsland Highway), floodplains and the low-lying plains and former river terraces north of the Haunted Hills Formation. These landforms and the vegetation communities they support are described below.

Coastal and near-coastal areas support permanent and semi-permanent saline wetlands, estuarine tidal mud and sand flats, intertidal marshes (saltmarshes) and intertidal forested wetlands (mangrove forests) (DSEWPaC, 2010). Coastal scrub and woodland communities are also present on the primary and secondary dunes. Lowland coastal plains and swampy flats extend from the near-coastal areas to the inland hills and low hills located north of the South Gippsland Highway. Lowland plains support Plains Grassy Woodland, Plains Grassy Forest, Valley Grassy Forest. Lowland Forest, Heathland and Heathy Woodland EVCs are also represented in areas including Stradbroke Flora and Fauna Reserve and Giffard (Rifle Range) Flora Reserve. Creeks, drainage lines and poorly drained areas support Riparian Forest, Swamp Scrub and Riparian Scrub. Monkey Creek and associated head water tributaries traverse the referral area provide gradual relief in the lowland hills and plains. A wide and flat floodplain associated with Merriman Creek spans the mid-northern part of the referral area. The floodplain extends east from Gormandale and traverses the northern section of the referral area dividing the Mullungdung State Forest from Holey Plains State Park.

The Haunted Hills Formation (hills and low hills) extending east from Loy Yang to Hiamdale and south from Willung to Woodside (encompassing Mullungdung State Forest). Hills and low hills support Damp Sands Herb-rich Woodland, Heathy Woodland and Lowland Forest. Low lying plains and former river terraces associated with tributaries of the La Trobe River occur in the northern part of the referral area between Morwell and Hiamdale, north of the Haunted Hills Formation. Major tributaries of the La Trobe River that flow in a northerly direction include Waterhole Creek, Traralgon Creek and Flynns Creek. Plains, terraces and waterways in this area support Plains Grassy Woodland, Lowland Forest and Riparian Forest which are generally restricted to roadside and creekline reserves. Land use across the referral area largely falls into one of three categories – primary industry (agriculture), commercial forestry and areas set aside for the reservation of biodiversity conservation (state forests and conservation reserves). Commercial forestry operation across the region includes Radiata Pine *Pinus radiata* and Blue Gum *Eucalyptus globulus* ssp. *globulus* plantations.

### *7.1.2. Ports*

Port Anthony/BBMT is located approximately 6.5 km south-west of Port Welshpool within Corner Inlet Ramsar site. The Port of Hastings encompasses land owned by Bluescope Steel immediately north of Hastings and includes coastal habitat within Western Port Ramsar wetland. The two ports areas largely

support ecological communities typical of the coastal complex along their associated shorelines. The areas surrounding both ports have been subject to a high-level of historical disturbance, although some native vegetation remains. Port Anthony/BBMT is bordered by private land predominantly used for primary industry (agriculture). Some scattered remnants of native vegetation remain comprising EVCs such as Coastal Woodland and Heathy Woodland. The Port of Hastings is surrounded by land used for industrial, urban and some primary industry (agricultural) purposes, with planted vegetation and remnant native vegetation also present.

## 7.2. Ecological values

### *Corridors*

Remnant native vegetation within the three corridors is considered to be of moderate to high condition. High-quality and extensive areas of remnant forest and woodland vegetation communities are represented in Mullungdung State Forest, Stradbroke Flora and Fauna Reserve, Merrimans Creek Flora and Fauna Reserve, Giffard (Rifle Range) Flora Reserve, Woodside Bushland Reserve and Darriman Bushland Reserve. These areas support a continuous cover of native vegetation and lifeforms characteristic of these EVCs. In addition, they also contain a number of Large Trees (LTs) which are likely to provide important habitat for fauna. The fungal plant pathogen *Phytophthera cinnamon*i ('cinnamon fungus') was observed within Mullungdung State Forest and Merriman's Creek Flora Reserve.

Outside these areas, moderate to high quality remnant woodland and forest communities are also present in smaller reserves, private land, linear roadside verges and streamside reserves. These smaller areas also support moderate to high quality vegetation and generally contain at least two vegetation strata and LTs.

Coastal complexes at Reeves Beach and Jack Smith Lake encompass a number of vegetation communities of moderate to high quality, some of which are consistent with the EPBC Act listed threatened community Subtropical and Temperate Coastal Saltmarsh. Note that this community is classed as 'vulnerable' and, as such, is not a matter of national environmental significance requiring detailed impact assessment.

### *Ports*

Port Anthony/BBMT and the Port of Hastings were inaccessible at the time of the preliminary field assessment and limited information was able to be collected from adjoining areas accessible to the public. The existing condition of the two port areas is therefore based on desktop results and a literature review only.

## 7.3. Flora

Threatened species listed under the EPBC Act and FFG Act that are recorded from (VBA) or are predicted (PMST) to occur in the referral area are provided in Appendix 1, along with an assessment of their likelihood. The eleven species listed in Table 10 are those with a possible or likely likelihood of occurrence in the referral area or have the potential to utilise the area. Those species assessed as having an unlikely or rare likelihood of occurrence are not discussed further.

The location of threatened flora species from the VBA are shown in Figure 5.

Table 10: Summary of EPBC Act and FFG Act-listed species with a likely or possible likelihood of occurrence in the referral area.

| Species name | Listing status | Areas of value within the referral area |
|---|---|---|
| River Swamp Wallaby-grass | VU | Likely to occur in wetlands and waterbodies (both natural and man-made) including swamps, lagoons and dams. |
| Dwarf Kerrawang | En, L, en | Likely to occur in swampy land and lake margins in Rosedale-Stradbroke and Providence Ponds area |
| Matted Flax-lily | En, L, en | Possible to occur in grassy woodland and grassland communities |
| Trailing Hop-bush | VU, vu | Possible to occur in low-lying wet areas of woodlands, low open forests, heathlands and grasslands on sand and clay soils. |
| Strzelecki Gum | VU, L, vu | Possible to occur on ridges slopes and streambanks on deep fertile soils |
| Green-striped Greenhood | VU, L, vu | Likely to occur in moist areas of heathy and shrubby forest on well-drained soils |
| Maroon Leek-orchid | En, L, en | Possible to occur in grasslands, grassy woodlands and heaths in or near coastal swamps. |
| Metallic Sun-orchid | EN, L, en | Possible to occur in coastal areas on fertile loams but may also be found inland in scrubby heaths, grasslands, woodlands and near swampy depressions |
| Spiral Sun-orchid | VU, L, vu | Possible to occur in a number of vegetation communities from alongside watercourses to scrubby woodlands on sand, gravel or clay soils. |
| Swamp Everlasting | Vu, L, vu | Possible to occur in swamps and wetlands in the Port of Hastings |
| Winter Sun-Orchid | L, en | Possible to occur in heathland and heathy woodland on well-drained soils |

### 7.4. Ecological Vegetation Classes

EVCs modelled within the referral area during the desktop assessment are described in Section 6.2.3 and presented in Figure 3.

During the field assessment, the DELWP 2005 EVC model was used to verify the type and extent of vegetation within the referral area. A summary of this assessment is provided in Table 11. EVCs that were most understated in the 2005 EVC model include Lowland Forest, Heathy Woodland, Damp Heathy Woodland and Swamp Scrub which generally occurred the central part of the referral area. EVCs that were most overstated in the 2005 EVC model include Plains Grassy Forest throughout the southern part of the referral area and Lowland Forest throughout the central part of the referral area.

Scattered trees are generally not identified in the 2005 EVC model unless they occur in dense clusters. Due to the value that scattered paddock trees have in providing fauna habitat in relatively cleared landscapes, such as that observed in the northern and southern parts of the referral area, areas containing large numbers of scattered trees have been recorded. An estimated extent of scattered trees includes 2,692 ha which was generally observed in the southern part of the referral area.

The EVC verification process identified that 369 ha of vegetation was incorrectly assigned, as shown in Figure 4. These changes will be confirmed during detailed vegetation quality assessment surveys.

A summary and brief description of the EVCs encountered during the preliminary assessment is provided in Table 12.

Table 11 Summary of EVC verification - corridors, Port of Hastings and Port Anthony/BBMT

| | | Ecological Vegetation Class | Increased EVC extent (Ha) | Decreased EVC Extent (Ha) | Change in EVC extent (Ha) |
|---|---|---|---|---|---|
| Corridors | Northern | Coastal Saltmarsh | - | - | 1 |
| | | Damp Heathy Woodland | 60 | - | 27 |
| | | Damp Sands Herb-rich Woodland | 45 | - | 16 |
| | | Estuarine Wetland | - | - | 1 |
| | | Grassy Woodland | 7 | - | 1 |
| | | Heathy Woodland | 239 | - | 40 |
| | | Lowland Forest | 287 | 102 | 172 |
| | | Plains Grassy Forest | - | 17 | - |
| | | Plains Grassy Woodland | 3 | 26 | 10 |
| | | Riparian Forest | 9 | - | 43 |
| | | Sand Heathland | 2 | - | 10 |
| | | Swamp Scrub | 9 | 16 | 2 |
| | | Swampy Riparian Woodland | - | 1 | - |
| | | Valley Grassy Forest | 16 | - | 5 |
| | | **Total** | 677 | 162 | 328 |
| | | Scattered Trees | 1032 | | |
| | Western | Banksia Woodland | - | - | 3 |
| | | Coast Banksia Woodland | 10 | - | 1 |
| | | Coastal Saltmarsh | 13 | - | 10 |
| | | Damp Sands Herb-rich Woodland | 45 | 15 | 16 |
| | | Estuarine Wetland | - | 0.03 | 12 |
| | | Heathy Woodland | 61 | - | - |
| | | Lowland Forest | 198 | 57 | 79 |
| | | Plains Grassy Forest | 43 | 237 | - |

| | | Ecological Vegetation Class | Increased EVC extent (Ha) | Decreased EVC Extent (Ha) | Change in EVC extent (Ha) |
|---|---|---|---|---|---|
| | | Plains Grassy Woodland | 2 | 26 | - |
| | | Riparian Forest | 9 | - | 43 |
| | | Riparian Scrub | - | 2 | - |
| | | Swamp Scrub | 1 | 16 | 2 |
| | | Swamp Scrub/Plains Grassland Mosaic | 2 | 10 | - |
| | | Swampy Riparian Woodland | - | 1 | - |
| | | Valley Grassy Forest | 16 | - | 5 |
| | | **Total** | 400 | 364 | 171 |
| | | Scattered Trees | 779 | | |
| | Eastern | Banksia Woodland | - | - | 3 |
| | | Coast Banksia Woodland | 10 | - | 1 |
| | | Coastal Saltmarsh | 13 | - | 10 |
| | | Damp Heathy Woodland | 60 | - | 27 |
| | | Damp Sands Herb-rich Woodland | 51 | 6 | 24 |
| | | Estuarine Wetland | - | 0.03 | 12 |
| | | Heathy Woodland | 17 | - | 34 |
| | | Lowland Forest | 287 | 81 | 172 |
| | | Lowland Forest/Heathy Woodland Mosaic | - | 24 | - |
| | | Plains Grassy Forest | - | 52 | - |
| | | Plains Grassy Woodland | 2 | 26 | - |
| | | Riparian Forest | 9 | - | 43 |
| | | Riparian Scrub | 1 | 12 | 3 |
| | | Swamp Scrub | 2 | 16 | 2 |
| | | Swamp Scrub/Plains Grassland Mosaic | 2 | 20 | - |
| | | Swampy Riparian Woodland | - | 1 | - |
| | | Valley Grassy Forest | 16 | - | 5 |
| | | **Total** | 470 | 238 | 336 |

| | | Ecological Vegetation Class | Increased EVC extent (Ha) | Decreased EVC Extent (Ha) | Change in EVC extent (Ha) |
|---|---|---|---|---|---|
| | | Scattered Trees | 2507 | | |
| Ports | Hastings | Damp Sands Herb-rich Woodland | - | 18 | - |
| | | Swamp Scrub | 10 | - | - |
| | | Tall Marsh | 1 | - | - |
| | | **Total** | 11 | 18 | - |
| | Anthony/ BBMT | Scattered Trees | 179 | | |
| | | Heathy Woodland | 0.5 | - | - |
| | | **Grand Total** | 1559 | 782 | 835 |

Table 12: Summary of EVCs encountered during the preliminary assessment

| Ecological Vegetation Class (EVC) | EVC bioregional status | EVC Description | Corridor | Named Conservation areas and areas of interest within the referral area | Plates (Appendix 4) |
|---|---|---|---|---|---|
| Coast Banksia Woodland (EVC 2) | Vulnerable | Near-coastal woodland to 10 m tall associated with secondary and tertiary dunes. Dominated by Coast Banksia *Banksia integrifolia* with the occasional Rough-barked Manna Gum *Eucalyptus viminalis* ssp. *pryoriana.* Mid-storey of shrubs including Coastal Tea Tree *Leptospermum laevigatum* and Swamp Paperbark *Melaleuca ericifolia*. Native ground-cover species include Seaberry Saltbush *Rhagodia candolleana*, Kidney Weed *Dichondra repens* and scattered Spear-grasses grasses *Austrostipa* spp. | Western, eastern, northern | Jack Smith Lake, Reeves Beach | Plate 1 |
| Coastal Saltmarsh (EVC 9) | Least Concern | Occurs on coastal flats and estuaries subject to tidal flows/inundation. A treeless vegetation community dominated by halophytic (salt-tolerant) shrub and herbaceous species including Beaded Samphire *Sarcocornia quinqueflora*, Rounded Noon-flower *Disphyma crassifolium* ssp. *clavellatum*, Juncus spp., Creeping Brookweed *Samolus repens* and Australia Salt-grass *Distichlis distichophylla*. Community is synonymous with the EPBC Act-listed Subtropical and Temperate Coastal Saltmarsh community. | western, eastern, northern | Jack Smith Lake (western side of section 3)<br>Reeves Beach between primary and secondary dunes. Estuarine waterway in private land north of Reeves Beach. | Plate 2<br>Plate 20 |

| Ecological Vegetation Class (EVC) | EVC bioregional status | EVC Description | Corridor | Named Conservation areas and areas of interest within the referral area | Plates (Appendix 4) |
|---|---|---|---|---|---|
| Lowland Forest (EVC 16) | Vulnerable | Canopy generally comprises mixed Eucalypts including Messmate Stringybark *Eucalyptus obliqua*, Yertchuk *Eucalyptus consediniana* and Gippsland Peppermint *Eucalyptus croajingolensis*. Mid-storey supports a range of shrubs including Saw Banksia *Banksia serrata*, Black Sheoak *Allocasuarina littoralis* and Blackwood *Acacia melanoxylon*. Ground-cover supports a range of herbs, sedges and grasses. | western, eastern, northern | Mullungdung State Forest | Plate 6<br>Plate 15 |
| Heathy Woodland (EVC 48) | Least concern | Represented by a canopy of mixed Eucalypts and Saw Banksia atop a heathy understorey of Heath Tea-tree *Leptospermum myrsinoides*, Prickly Tea-tree *Leptospermum continentale* and Burgan *Kunzea ericoides*. Ground-layer dominated by smaller shrubs including Broom Spurge *Amperea xiphoclada* var. *xiphoclada* and Small Grass-tree *Xanthorrhoea minor* subsp. *luteola*. Ground-layer comprises a variety of herbs, sedges and grasses. | western, eastern, northern | Mullungdung State Forest, Merrimans Creek Flora Reserve, Stradbroke Flora and Fauna Reserve | Plate 5<br>Plate 11 |
| Damp Sands Herb-rich Woodland (EVC 3) | Vulnerable | Vegetation community characterised by a canopy of Rough-barked Manna Gum atop a shrubby understorey. The ground layer is generally comprised of Austral Bracken *Pteridium esculentum* and supports open habitat for a ground-layer rich in herbs, sedges and grasses. | western, eastern, | Northern section of Old Rosedale Road within Mullungdung State Forest | Plate 10 |

| Ecological Vegetation Class (EVC) | EVC bioregional status | EVC Description | Corridor | Named Conservation areas and areas of interest within the referral area | Plates (Appendix 4) |
|---|---|---|---|---|---|
| Plains Grassy Forest EVC (151) | Vulnerable | Canopy of Manna Gum and Gippsland Peppermint with a modified understorey of Cherry Ballart *Exocarpos cupressiformis*, Sweet Bursaria, Black Wattle *Acacia mearnsii*, Burgan, Spiny-headed Mat-rush and Austral Bracken.<br>Community may be synonymous with the EPBC Act listed Gippsland Red Gum (*Eucalyptus tereticornis* subsp. *mediana*) Grassy Woodland and associated Native Grassland Ecological Community. It may also be synonymous with the EPBC Act-listed Natural Damp Grassland of the South East Coastal Plain Bioregion | western, eastern, | Stringybark Lane (Plains Grassy Forest and Natural Damp Grassland Community), Darriman Bushland Reserve, Woodside cemetery | Plate 3 |
| Grassy Dry Forest (EVC 22) | Least Concern | High-quality remnant vegetation characterised by a canopy of mixed eucalypts including Messmate Stringybark, Narrow-leaf Peppermint, Gippsland Peppermint and Yellow Box *Eucalyptus melliodora* over a sparse grassy and herbaceous understorey of Weeping Grass *Microlaena stipoides*, Wallaby Grass *Rytidosperma* spp., Bidgee Widgee *Acaena Nova-zelandiae*, Climbing Saltbush *Einadia nutans* and Small St John's Wart *Hypericum gramineum*. | eastern | Darriman Bushland Reserve/Woodside H28 Bushland Reserve | Plate 14 |

| Ecological Vegetation Class (EVC) | EVC bioregional status | EVC Description | Corridor | Named Conservation areas and areas of interest within the referral area | Plates (Appendix 4) |
|---|---|---|---|---|---|
| Riparian Forest (EVC 18) | Vulnerable | Good quality Riparian Scrub spans a 30 metre-wide corridor along Warrigal Creek. Supports a canopy of Swamp Gum and Gippsland Peppermint over a tall understorey of Silver Wattle, Blackwood, Common Cassinia *Cassinia aculeata*, Burgan and Spiny-headed mat-rush | eastern | Warrigal Creek,<br>Northern end of Four Mile Creek Road | Plate 7<br>Plate 8 |
| Coastal Dune Scrub (EVC 160) | Depleted | Closed scrub on primary and secondary sand dunes subject to high levels of salt spray. Community comprised of Coast Wattle *Acacia longifolia* ssp. *sophorae*, Coast Tea-tree, Seaberry Saltbush, *Atriplex cinerea*, Bower Spinach *Tetragonia implexicoma*, Spinifex Grass Knobby Club Rush *Ficinia nodosa* with the occasional Saw Banksia | western, eastern, northern | Jack Smith Lake, Reeves Beach | Plate 19 |

| Ecological Vegetation Class (EVC) | EVC bioregional status | EVC Description | Corridor | Named Conservation areas and areas of interest within the referral area | Plates (Appendix 4) |
|---|---|---|---|---|---|
| Clay Heathland (EVC 7) / Damp Heathy Woodland (EVC 703) | Depleted<br>Vulnerable | Ecotone of Heathy Woodland and Clay Heathland. Clay Heathland defined as a woodland to 15 m tall with a canopy of Gippsland Swamp-box *Eucalyptus conspicua* and Gippsland Peppermint. Supports a heathy understorey of Prickly Teatree, Silver Wattle *Acacia mearnsii*, Scrub Sheoak *Allocasuarina paludosa*, Dagger Hakea *Hakea teretifolia* ssp, *hirsuta* and ground-cover dominated by Austral Bracken, Spiny-head Mat-rush *Lomandra longifolia* and *Lepidosperma* spp. Occasional Saw Banksia present and Monterey Pine *Pinus radiata* throughout. Heathy Woodland located on the rises and characterised by a canopy of Messmate Stringybark, Gippsland Peppermint and Saw Banksia over a heathy understorey of similar composition. | western, eastern | Private land adjoining Andersons Road/Konroad B). Smaller areas also present within Stradbroke Flora and Fauna Reserve | Plate 9 |
| Plains Grassy Woodland (EVC 55) | Endangered | Characterised by a canopy of River Red-gum *Eucalyptus camaldulensis* and Gippsland Red-gum over a modified/degraded understorey. | northern | Giffard West Road | Plate 16 |
| Riparian Scrub (EVC 191) | Vulnerable | Dense shrubland comprised of Scented Paperbark *Melaleuca squarrosa* and Prickly Tea-tree over a ground-cover of smaller shrubs, ferns and herbs. | northern, Port of Hastings | Corner of Tower Road and Anderson Track where Monkey Creek runs under the BassLink alignment.<br>Small areas within Port of Hastings | Plate 17 |

| Ecological Vegetation Class (EVC) | EVC bioregional status | EVC Description | Corridor | Named Conservation areas and areas of interest within the referral area | Plates (Appendix 4) |
|---|---|---|---|---|---|
| Swamp Scrub (EVC 53) | Endangered | Closed scrub to <10 m tall dominated by Swamp Paperbark which forms a dense thicket. | Western, eastern, northern, Port of Hastings, Port Anthony/BBMT | Inland of Jack Smith Lake. Smaller sections represented in Section 5. | Plate 18 |
| Gully Woodland (902) | Endangered | Woodland or open forest to 20 m tall. EVC characterised by a canopy of Manna Gum, Swamp Gum and Saw Banksia over a shrubby understorey. | western, eastern, northern | Junction of Monkey Creek and the South Gippsland Highway | Plate 8 |
| Estuarine Wetland (EVC 10) | Least concern | Occurs on the edges of estuarine waterbodies such as creek, rivers and lagoons with fluctuating salinity conditions. Identified at Jack Smith Lake by a large area of Swamp Paperbark fringing a lagoon. | western, eastern, northern | Jack Smith Lake, Reeves Beach | Plate 20 |
| Plains Grassland (EVC 132) *includes South Gippsland Plains Grassland 132_62) | Endangered | Synonymous with the EPBC Act listed Gippsland Red Gum (*Eucalyptus tereticornis* subsp. *mediana)* Grassy Woodland and associated Native Grassland Ecological Community<br>Synonymous with the FFG-act listed South Gippsland Plains Grassland community | western, eastern | Stringybark Lane | NA |

### 7.5. Fauna

A total of 63 fauna species were recorded during the January 21st to 24th surveys. Most species recorded were common woodland and forest species found throughout the South Gippsland region. Three listed threatened/migratory species of fauna were observed during the survey. These were:

- Lace Monitor;
- Fork-tailed Swift; and,
- White-throated Needletail.

Threatened species listed under the EPBC Act and FFG Act that are recorded from (VBA) or are predicted (PMST) to occur in the referral area are provided in Appendix 1 along with an assessment of their

likelihood. 89 bird species, 10 mammal species, 3 reptile species, 4 amphibian species, 5 fish species and 1 invertebrate species were assessed for likely unlikely, possible or rare occurrence in the referral area.

Of these 34 bird species, 9 mammal species, 3 reptile species, 3 amphibian species and three fish species were assessed as likely or having possible occurrence in the referral area. These are listed in Table 13. Those species assessed as having an unlikely or rare likelihood of occurrence are not discussed further.

Table 13. Summary of EPBC Act and FFG Act-listed species with a likely or possible likelihood of occurrence in the referral area.

| Species name | Listing status | Areas of value within the referral area |
|---|---|---|
| Australasian Bittern | EN,L,en | |
| Australian Little Bittern | L, en | Wetlands |
| Australian Shoveler | vu | Wetlands |
| Australian Painted Snipe | L, en | Wetlands |
| Baillons Crake | L, vu | Wetlands |
| Barking Owl | L, vu | Forests, woodlands |
| Black Falcon | L, vu | |
| Blue-billed Duck | L, en | |
| Caspian tern | M, L | Wetlands |
| Chestnut-rumped Heathwren | L, vu | |
| Common Greenshank | vu | Wetlands |
| Common Sandpiper | M, vu | Wetlands |
| Fork Tailed Swift | M | Aerial |
| Freckled Duck | L, en | Wetlands |
| Glossy Ibis | M | Wetlands |
| Eastern Great Egret | L | Wetlands |
| Grey Goshawk | L, vu | |
| Gull-billed tern | L | Wetlands |
| Hardhead | vu | Wetlands |
| Intermediate Egret | L, en | Wetlands |
| Lathams Snipe | M | Wetlands |
| Lewins Rail | L, vu | Wetlands |
| Little Egret | L, en | Wetlands |
| Marsh Sandpiper | M, vu | Wetlands |
| Masked Owl | L, en | Forests/woodlands |
| Musk Duck | vu | Wetlands |
| Powerful Owl | L, vu | Forests/woodlands |
| Red-necked Stint | M | Wetlands |
| Rufous Fantail | M | |
| Satin Flycatcher | M | |
| Sharp-tailed sandpiper | M | Wetlands |
| Square-tailed Kite | L, nt | |
| Swift Parrot | CR, L, en | Woodlands |
| White-bellied Sea Eagle | L, vu | Wetlands |
| White-throated Needletail | VU, M, vu | Aerial |
| Broad-toothed rat | L, en | Woodlands |
| Common Bent-wing Bat | L | Woodlands |
| Grey-headed Flying Fox | VU, L, vu | Wide ranging |
| New Holland Mouse | L, vu | Woodlands and areas of ground cover |

| Species name | Listing status | Areas of value within the referral area |
|---|---|---|
| Southern Brown bandicoot | EN, L, nt | Woodlands and areas of ground cover |
| Southern Greater Glider | VU, L, vu | Forests/woodlands |
| Spotted-tailed Quoll | EN, L, en | Forests/woodlands |
| Swamp Antechinus | Vu, L, nt | Wetlands, woodlands and areas of ground cover |
| White-footed Dunnart | L, nt | Wetlands, woodlands and areas of ground cover |
| Lace Monitor | en | |
| Swamp Skink | L, vu | Wetlands, woodlands and areas of ground cover |
| Glossy Grass Skink | vu | Grasslands, coastal scrub areas |
| Growling Grass Frog | VU, L, en | Wetlands |
| Southern Toadlet | vu | Wet areas |
| Martins Toadlet | L, cr | Wet areas |
| Australian Grayling | VU, L, vu | Streams and waterways |
| Dwarf Galaxias | Vu, L,en | Streams and waterways |
| Flinders Pygmy Perch | vu | Streams and waterways |

VBA records of threatened and migratory fauna species are shown in Figure 5.

Large areas of high-quality fauna habitat occur in a number of corridor segments, including high-quality arboreal and small mammal habitat, large forest owl habitat, and coastal heath and saltmarsh habitats. The majority of the remnant vegetation within the referral area, along with creek lines and water bodies, has the potential to provide high value resources for some threatened species.

The largest area of higher quality habitat was found in state forest along Old Rosedale Road, and to the west of the South Gippsland Highway near Giffard. These areas contained a high concentration of Hollow-bearing trees, ground habitat in the form of fallen logs, creek lines, and many fire dams along the access roads.

Other, smaller patches of good quality habitat occurred throughout the referral area. A high diversity of species not recorded within the larger remnant forest, was observed in some of these reserves.

Roadside verges within the referral area created high-quality corridors between patches of high-quality habitat, and contained habitat such as hollow-bearing trees and fallen trees and logs.

Plantations and silviculture provide limited habitat for native and threatened fauna species; however, these areas do provide resources such as food and shelter for species traversing the landscape between remnant indigenous vegetation.

Private farming properties generally provide low-quality habitat for threatened species. Rivers, creeks, farm dams and floodplains on private land have the potential to provide habitat to threatened waterbird and frog species. Most farms within the referral area have dams, and many have water bodies such as creeks and floodplains either on them, or immediately adjacent.

### 7.6. Ramsar Wetlands

Port Anthony/BBMT is located approximately 6.5 km south-west of Port Welshpool within the Corner Inlet Ramsar site. Corner Inlet is the most southerly marine embayment and tidal mudflat system of mainland Australia and is located 260 kilometres south-east of Melbourne near Yarram. It has shallow intertidal mudflats that support the world's most southerly population of white mangroves (*Avicennia marina*), as well as extensive areas of saltmarsh and seagrass. It is an important feeding and nesting area for many

waterbirds, is one of the most important areas in Victoria for migratory shorebirds and supports a range of native fish species.

The Port of Hastings encompasses land immediately north of Hastings and includes coastal habitat within the Western Port Ramsar site. This site is a large bay located 60 kilometres southeast of Melbourne. The site consists of shallow intertidal mudflats, seagrass and fringing saltmarsh and mangrove habitats that support a large number of migratory shorebirds and other waterbirds, fish and marine invertebrates. Due to its marine nature, the site provides habitat year-round and is an area of refuge for waterbirds during summer and drought. The site is listed is part of the Western Port Biosphere Reserve.

The Gippsland Lakes Ramsar site is situated approximately 30 kilometres north east of the proposed transmission route areas. This Ramsar site consists of a series of lakes and fringing wetlands. It is the largest estuarine lagoon system in Australia. The lakes are important for waterbirds, including migratory shorebirds, fish such as Black Bream (*Acanthopagrus butcheri*) and threatened species such as the nationally vulnerable Growling Grass Frog (*Litoria raniformis*).

# 8. Assessment of potential impacts

This section provides initial assessments of the potential impacts to threatened species, communities and Ramsar sites as they relate to commonwealth and state matters.

## 8.1. Commonwealth matters

The project has the potential to result in a significant impact to MNES listed under the provisions of the EPBC Act for:

- Threatened species
- Threatened ecological communities
- Migratory species
- Ramsar wetlands

Assessments against the Significant Impact Criteria are based on the existing values (listing status, database records, existing knowledge and interaction with the referral area only)/ A range of detailed and targeted surveys will be required as the project progresses to refine the assessment against the Significant Impact Criteria.

The section of this project involving coastal dune and wetland systems, as we understand it, will have no significant impacts on wetlands, shorebird habitat, or pelagic species habitat because trenchless construction methods are anticipated to be used in these areas. Small waterways and shallow bodies of water which are present within other parts of the proposed corridors may also be avoided where significant impacts might be expected by using construction methods that avoid surface excavation (see Section 4.3). These have therefore been excluded from the following impact assessments.

### *8.1.1. Threatened flora*

A summary of threatened flora species with a likely or possible likelihood of occurrence within the referral area is provided in Appendix 1. Significant flora records from the study area are mapped in Figure 5.

Threatened flora species with a likely or potential likelihood of occurrence in the referral area include:

- River Swamp Wallaby-grass
- Dwarf Kerrawang
- Matted Flax-lily
- Trailing Hop-bush
- Strzelecki Gum
- Green-striped Greenhood
- Maroon Leek-orchid
- Metallic Sun-orchid
- Spiral Sun-orchid
- Swamp Everlasting

### *River Swamp Wallaby-grass*

River Swamp Wallaby-grass is listed as Vulnerable under the EPBC Act. Its distribution extends across southern New South Wales, Victoria, South Australia, Tasmania and it is also found in New Zealand. In southern Victoria (the west Gippsland NRM region) it is known from several localities including Rosedale (rail corridor), Meeniyan, Moe and Wonthaggi. It inhabits a range of natural and man-made waterbodies including swamps, lagoons, billabongs and dams and normally occurs on moderately fertile soils that supports areas of bare ground (DEWHA, 2008)

The species is recorded within the referral area. One record exists within section 5 (south of the Hyland Highway in association with Sheepwash Creek) and two records exist at the Port of Hastings (north of Denham Road). The species was also recorded at Port of Hastings by Biosis (2015) and within the referral area in association with Estuarine Wetland, Wetland Formation and Damp Heathy Woodland EVCs (north and south of Denham Road/Whitneys Road). Biosis (2015) identify these records as important as the species is seldom recorded within the Mornington Peninsula.

There is no national recovery plan for the species and no information regarding important populations. The potential for the Project to have a significant impact on River Swamp Wallaby-grass is summarised in Table 14. In consideration of the criterion below, the Project has the potential to significantly impact upon River Swamp Wallaby-grass.

**Table 14: Significant impact criteria for River Swamp Wallaby-grass**

| Criterion | Response |
|---|---|
| Lead to a long-term decrease in the size of an important population of a species | Potential impact<br><br>There are recent records within the referral area. Records from within the referral area at the Port of Hastings may represent an important population as the species is only seldom recorded within the Mornington Peninsula (Biosis, 2015)<br><br>As a number of records are within the referral area at the Port of Hastings , there is the potential that the project would lead to a long-term decrease in the size of an important population<br><br>Targeted surveys for the species are required to confirm areas where the species is present so that impacts can be better understood, and appropriate mitigation applied to avoid impacts to River Swamp Wallaby-grass. |
| Reduce the area of occupancy of an important population | Potential impact<br><br>Preferred habitat exists within the referral area in the form of natural and man-made wetlands and waterbodies. The species is also recorded within the Port of Hastings referral area within a variety of wetland EVCs.<br><br>The area of occupancy for the species has the potential to be impacted directly through habitat/vegetation clearance and indirectly via changes to hydrology. |
| Fragment an existing important population into two or more populations | Unlikely impact<br><br>Records for River Swamp Wallaby-grass are sparse across the general area, and as such, fragmentation of the population is considered unlikely. |

| Criterion | Response |
|---|---|
| Adversely affect habitat critical to the survival of a species | Potential impact<br>No habitats within the referral area are identified on the Register of Critical Habitat. However, it should be noted that the Register currently does not include any listing for River Swamp Wallaby-grass.<br>Habitat exists for the species as demonstrated by the recent records at the Port of Hastings (Biosis, 2015). These records are located within the referral area. Preferred habitat is also modelled within the referral area in the form of wetland EVCs.<br>Habitat critical to the survival of the species has the potential be impacted through clearance of wetland EVCs and/or changes to hydrology. Additional information is required to quantify the level of impact to known and preferred habitat in order to accurately assess the likelihood of the Project having an adverse effect on habitat critical to the survival of the species. |
| Disrupt the breeding cycle of an important population | Unlikely impact<br>The Project is unlikely to impact on the breeding cycle of River Swamp Wallaby-grass. |
| Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline | Unlikely impact<br>As outlined above, The Project may result in alterations to existing and preferred habitat for River Swamp Wallaby-grass. This may occur as a result of habitat/vegetation clearance and changes to hydrology. However, these alterations are considered minor across the species range, and as such, is unlikely to result in such changes that the species is likely to decline. |
| Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat | Potential impact<br>The Project has the potential to introduce exotic grasses and weeds during land clearance activities. Invasion of remnant habitat by exotic grasses and weeds is identified as a key threat in the Conservation Advice for River Swamp Wallaby-grass. Exotic grasses and weeds may outcompete and become established in preferred habitat. This has the potential to result in the species being unable to establish or being excluded from preferred habitat.<br>Within the Port of Hastings and Port Anthony, exotic grasses and weeds are likely to be present due to previous and current land uses. This is also relevant to other parts of the referral area where historical land use includes agriculture and commercial forestry. |
| Introduce disease that may cause the species to decline, | Unlikely impact<br>There are no known diseases that might cause River Swamp Wallaby-grass to decline. |

| Criterion | Response |
|---|---|
| Interfere with the recovery of the species | Unlikely impact<br>There are no known recovery actions within the referral area and the Project is unlikely to interfere with the recovery of the species. |

### *Dwarf Kerrawang*

Dwarf Kerrawang is listed as Endangered under the EPBC Act. Its documented distribution extends from Rosedale, Victoria to the central coast of New South Wales. Recent records of the species within the referral area indicate the species range extends west of Rosedale. Habitat for the species includes ephemeral wetlands and lake margins where it grows on peaty soils in association with *Leptospermum continentale* and a ground-cover of Blady Grass *Imperata cylindrca* and sedge species, such as *Lepidosperma* spp. and Spreading Rope-rush *Empodisma minus*.

The National Recovery Plan (Carter and Walsh, 2010) lists 24 known populations in Victoria. The majority of known populations are confined to the Rosedale-Stradbroke-Providence Ponds area of central Gippsland (James, 2002). One population is recorded at the intersection of Monkey Creek/Clements Road within Giffard (Rifle Range) Flora Reserve, which intersects with sections 2, 3 and 4. The most recent population count in 2003 recorded 63 individual plants but as many as 400 plants have been recorded in previous surveys (Carter and Walsh, 2010). There are eight recent records within the referral area, all of which fall within Giffard (Rifle Range) Flora Reserve.

The potential for the Project to have a significant impact on Dwarf Kerrawang is summarised in Table 15. In consideration of the criterion below, the Project has the potential to significantly impact upon Dwarf Kerrawang.

Table 15: Significant impact criteria for Dwarf Kerrawang

| Criterion | Response |
|---|---|
| Lead to a long-term decrease in the size of a population | Potential impact<br>There are recent records of Dwarf Kerrawang within the referral area. Up to 400 individual plants have been recorded within Giffard (Rifle Range) Flora Reserve population (Carter and Walsh, 2010)<br>The Project has the potential to lead to a long-term decrease in the size of a population through direct losses (loss of individual plants and removal of preferred habitat) and indirect losses (changes to hydrology).<br>Targeted surveys are required to confirm the current population size and area of occupancy so that impacts can be quantified. Potential impacts are likely to be reduced or avoided through design and mitigation |

| Criterion | Response |
|---|---|
| Reduce the area of occupancy of the species | Potential impact<br><br>As stated above, the referral area covers Giffard (Rifle Range) Flora Reserve which contains a known population of Dwarf Kerrawang.<br><br>The Project has the potential to reduce the area occupied by the species through habitat removal, site disturbance and changes to hydrology.<br><br>Detailed surveys are required to quantify the impacts to the known population. Potential impacts are likely to be reduced or avoided through design and mitigation. |
| Fragment an existing population into two or more populations | Potential impact<br><br>In the absence of detailed surveys and a development design, there is the potential that the Project could fragment the population of Dwarf Kerrawang at Giffard (Rifle Range) Flora Reserve.<br><br>Detailed surveys are required to quantify the impacts to the known population. Potential impacts are likely to be reduced or avoided through design and mitigation. |
| Adversely affect habitat critical to the survival of a species | Potential impact<br><br>Habitat critical to the survival of Dwarf Kerawang is not stated in the National Recovery Plan. No habitats within the referral area are identified on the Register of Critical Habitat. However, it should be noted that the Register currently does not include any listing for Dwarf Kerrawang.<br><br>Modelled EVC within Giffard (Rifle Range) Flora Reserve that corresponds with the Dwarf Kerrawang area of occupation is Sedge Wetland (EVC 136). There is 165 ha of this EVC modelled across the referral area. Other preferred habitat as identified in Carter and Walsh (2010) includes ephemeral wetlands and lake margins on peaty soils.<br><br>Habitat for Dwarf Kerrawang has been depleted historically via land clearance associated with European settlement, agriculture and commercial forestry (Carter and Walsh, 2010). As a result, the species has declined across its range and populations have been severely altered from their natural state (Carter and Walsh, 2010). Removal of habitat, changes to hydrology (drying out of sites) and site disturbance are listed as major threats to the species.<br><br>The Project has the potential to impact known habitat directly through land clearance, and indirectly through changes to hydrology. This impact may constitute an adverse effect to habitat critical to the survival of Dwarf Kerrawang.<br><br>Additional information is required to quantify the level of impact to known and preferred habitat in order to accurately assess the likelihood of the Project having an adverse effect on habitat critical to the survival of the species. |

| Criterion | Response |
|---|---|
| Disrupt the breeding cycle of a population | Unlikely impact<br>The Project is unlikely to disrupt the breeding cycle of Dwarf Kerrawang. |
| Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline | Potential impact<br>As outlined above, the Project has the potential to modify, destroy, remove, isolate or decrease the availability or quality of habitat for Dwarf Kerrawang.<br>Additional information is required to quantify the level of impact to known and preferred habitat in order to accurately assess the likelihood of the Project impacting the species to the extent that the species is likely to decline. |
| Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat | Potential impact<br>The Project has the potential to introduce weeds during land clearance activities.<br>Invasion by introduced and native colonising weeds such as Burgan and Blackberry *Rubus fruiticosus* sp. agg. (listed as a Weed of National Significance) are major threats to preferred habitat (Carter and Walsh, 2010). Burgan is a rapid coloniser of disturbed sites which may alter existing conditions and prevent Dwarf Kerrawang from establishing. |
| Introduce disease that may cause the species to decline | Unlikely impact<br>There are no known diseases that may cause Dwarf Kerrawang to decline or interfere with the recovery of the species. |
| Interfere with the recovery of the species | Potential impact<br>Recovery actions undertaken within Giffard (Rifle Range) Flora Reserve are not well understood.<br>Additional information is required to determine whether the Project has the potential to interfere with the recovery actions for this population. |

### *Matted Flax-lily*

Matted Flax-lily is listed as Endangered under the EPBC Act. The species occurs in both Victoria and Tasmania. In Victoria, the species exhibits a patchy distribution that extends from the Victorian Volcanic Plains in the west of the state to the South Eastern Highlands in the east, and also includes the Victorian midlands. The species occurs in native grasslands and grassy woodlands but can also persist in degraded grasslands with a high cover of exotic species. Soil types suitable to support the species includes well-drained to wet fertile sandy loams and heavy cracking clays. There are 120 known populations across Victoria.

The National Recovery Plan (Carter, 2010a) lists a number of sites where Matted Flax-lily are found. No sites are within the referral area. The species is recorded within the referral area in sections 2,3,4 and 5. The Matted Flax-lily record within section 2 is associated with remnant grassland vegetation along

Stringybark Lane which was identified as being synonymous with the South Gippsland Plains Grassland community (Biosis, 2001).

The potential for the Project to have a significant impact on Matted Flax-lily is summarised in Table 16. In consideration of the criterion below, the Project has the potential to significantly impact upon Matted Flax-lily.

Table 16: Significant impact criteria for Matted Flax-lily

| Criterion | Response |
|---|---|
| Lead to a long-term decrease in the size of a population | Potential impact<br>There are recent records within the referral area itself. Known sites are listed in the National Recovery Plan, none of which are listed within the referral area.<br>A small number of plants were recorded from Stringybark Lane (Biosis, 2001). Given the small number of plants present, disturbance to the remnant grassland vegetation within the roadside reserve could result in a significant impact to the population. |
| Reduce the area of occupancy of the species | Potential impact<br>The Project has the potential to result in the removal of remnant grassland vegetation along Stringybark Lane. The project therefore has the potential to reduce the area of occupancy of the species through habitat removal and site disturbance. Detailed surveys are required to map the extent of the population along Stringybark Lane roadside so that the potential project-related impacts are better understood. |
| Fragment an existing population into two or more populations | Potential impact<br>In the absence of detailed surveys and development design, there is the potential that the project could fragment the population of Matted Flax-lily along Stringybark Lane.<br>Detailed surveys are required to map the extent of this population. Potential impacts are likely to be avoided through design and mitigation. |

| Criterion | Response |
|---|---|
| Adversely affect habitat critical to the survival of a species | Potential impact<br><br>Habitat critical to the survival of Matted Flax-lily is not stated in the National Recovery Plan. No habitats within the referral area are identified on the Register of Critical Habitat. However, it should be noted that the Register currently does not include any listing for Matted Flax-lily.<br><br>Approximately 172 ha of Grassy Woodland EVC is modelled within the referral area. Matted Flax lily is most commonly associated with temperate grassland and grassy woodland vegetation communities which have been historically cleared or impacted as a result of European settlement. As little as 1% of the temperate grassland community remains and high-quality examples of the community are confined to roadside reserves, rail reserves and private land within Melbourne's urban growth boundary (Carter, 2010a)<br><br>Roadside reserves that support the remnant grassland community are at risk from habitat destruction and disturbance from environmental weeds and maintenance activities.<br><br>The project has the potential to impact Matted Flax-lily along Stringybark Lane through habitat clearance and destruction. Additional information is required to quality the level of impact to preferred habitat in order to accurately assess the likelihood of the project having an adverse effect on habitat critical to the survival of the species. |
| Disrupt the breeding cycle of a population | Potential impact<br><br>Matted Flax-lily flowers are buzz-pollinated by native bees (winter dormant Blue-banded Bee *Amegilla cingulata*). The National Recovery Plan identifies the need to consider the preservation of bees and their habitat as part of the recovery of the species. With only a small number of plants recorded from Stringybark Lane the loss of the pollinator has the potential to disrupt the breeding cycle of a population. |
| Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline | Potential impact<br><br>As outlined above, the Project may result in the clearance of EVCs that provide suitable habitat to the species, which therefore has the potential to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.<br><br>Additional information is required to quantify the level of impact, to known and preferred habitat in order to accurately determine the likelihood of the project impacting upon the species to the extent that the species is likely to decline. |

| Criterion | Response |
|---|---|
| Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat | Unlikely impact<br>Remnant Grassland and Grassy Woodland EVCs often contain a suite of pasture grass weeds and herb weeds that have the potential to displace native species. Roadside reserves are also prone to weed invasion if not managed appropriately (Cater, 20101). The project is unlikely to result in the establishment of common weeds, which are presumed present, but has the potential to introduce and result in the establishment of invasive species such as Serrated Tussock (*Nassella trichotoma*) and Chilean Needle-grass (*Nasella Neesiana*) which can be spread via earthmoving equipment. However, Matted Flax-lily is known to persist in degraded grasslands, so establishment of invasive grass species does not necessarily pose a direct threat to the species. |
| Introduce disease that may cause the species to decline | Unlikely impact<br>The Project is unlikely to introduce a disease that may cause Matted Flax-lily to decline |
| Interfere with the recovery of the species | Unlikely impact<br>There are no known recovery actions within the referral area and the Project is unlikely to interfere with the recovery of the species. |

### *Trailing Hop-bush*

Trailing Hop-bush is listed as Vulnerable under the EPBC Act. The species occurs in south-eastern Australia (South Australia, Victoria and New South Wales). In Victoria, it is known from south-west of the state, the Naracoorte Coastal Plain, the Victorian Volcanic Plains and the Victorian midlands, however, a population is also known from near Sale in Central Gippsland. In eastern Victoria it has been recorded in association with sedge wetland, heathy woodland and damp heathland EVCs. Two records are within the referral area in Sections 1 and 4 at the northern end of Mulungdung State Forest.

Important populations are defined in the National Recovery Plan as those *where locations are precisely known and have recent abundance information* (Carter, 2010b). No important populations are within the referral area. The closest important population is located east of Seaspray within private land at Dutson Downs. A number of records are also within the Gippsland Lakes Coastal Park located east of the referral area.

The potential for the Project to have a significant impact on Trailing Hop-bush is summarised in Table 18. In consideration of the criterion below, the Project has the potential to significantly impact upon Trailing Hop-bush.

Table 17: Significant impact criteria for Trailing Hop-bush

| Criterion | Response |
|---|---|
| Lead to a long-term decrease in the size of an important population of a species | Potential impact<br>There are records within the referral area. Important populations are listed in the National Recovery Plan, none of which are listed within the referral area.<br>Additional information is required to determine whether the population in Mullungdung State Forest is considered an important population. Pending this information, the project may have the potential to lead to the long-term decrease in the size of an important population through loss of individual plants and suitable habitat for the species.<br>Detailed surveys are required to determine the area of occupancy so that project-related impacts are better understood. |
| Reduce the area of occupancy of an important population | Potential impact<br>Records within the referral area are not associated with an important population listed in the National Recovery Plan. As stated above, additional information is required to determine the potential project-related impacts. In the absence of information, the project has the potential to reduce the area of occupancy of an important population. This may occur as a result of vegetation clearance and loss of suitable habitat for the species. |
| Fragment an existing important population into two or more populations | Potential impact<br>As outlined above, records within Mullungdung State Forest are not associated with an important population but in the absence of information the project has the potential to fragment a population. |
| Adversely affect habitat critical to the survival of a species | Unlikely impact<br>No habitats within the referral area are identified on the Register of Critical Habitat. However, it should be noted that the Register currently does not include any listing for Trailing Hop-bush.<br>Habitat critical to the survival of the species is not identified in the National Recovery Plan (Carter, 2010b). The species former widespread distribution is thought to be associated with temperate grassy woodlands and in eastern Victoria it is also known from sedge wetland, heathy woodland and damp heathland EVCs.<br>While the Project may result in the clearance of these EVCs it is unlikely to adversely affect habitat critical to the survival of Trailing Hop-bush. |
| Disrupt the breeding cycle of an important population | Unlikely impact<br>The Project is unlikely to disrupt the breeding cycle of Trailing Hop-bush |

| Criterion | Response |
|---|---|
| Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species<br>is likely to decline | Unlikely impact<br>As outlined above, the Project may result in the clearance of EVCs that provide suitable habitat to the species, but this is unlikely to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline. |
| Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable<br>species' habitat | Potential impact<br>The Project is unlikely to result in the establishment of invasive species to Grassy Woodland EVCs that are not already present. The Project may however introduce exotic weeds to high-quality Sedge Wetland, Heathy Woodland and Damp Heathland EVCs during vegetation clearance activities which may result in exotic species outcompeting Trailing Hop-bush in its preferred habitat. |
| Introduce disease that may cause the species to decline, or | Unlikely impact<br>The Project is unlikely to introduce a disease that may cause Trailing Hop-bush to decline |
| Interfere with the recovery of the species | Unlikely impact<br>There are no known recovery actions within the referral area and the Project is unlikely to interfere with the recovery of the species. |

### *Strzelecki Gum*

Strzelecki Gum is listed as Vulnerable under the EPBC Act. It is endemic to the Strzelecki Ranges in south and west Gippsland, but its range includes surrounding areas such as Neerin South, Foster, Wilsons Promontory and Yarram. Key habitat includes Herb-rich Foothill Forest and Gippsland Plains Grassy Woodland communities. The tree generally grows in deep, grey fertile loams in hilly, often wet, sites. On the periphery of the Strzelecki Ranges it is confined to watercourses or river flats on waterlogged soils. There are approximately 50 known populations across its range.

Significant populations are defined in the National Recovery Plan as those that "*contain a high number of individuals in a spatial arrangement that is not severely linear, or where there may be some recruitment, or whose condition and geographic location provide the best opportunities for restoration and conservation management*" (Carter, 2006). No significant populations occur within the referral area.

There are three records for Strzelecki Gum within the referral area in sections 2 and 5: a single record exists south of Stringybark Lane in section 2; and two records from section 5 are associated with Traralgon Creek and Sheepwash Creek.

The potential for the Project to have a significant impact on Strzelecki Gum is summarised in Table 18. In consideration of the criterion below, and in the absence of detailed information about an important population, the Project has the potential to significantly impact upon Strzelecki Gum.

Table 18: Significant impact criteria for Strzelecki Gum

| Criterion | Response |
|---|---|
| Lead to a long-term decrease in the size of an important population of a species | Potential impact<br>There are records within the referral area. While these do not correspond with a listed significant population or meet the definition of a significant population, i.e. do not contain a high number of individuals, the general lack of detailed survey work and records in the area means that other individuals may be found that correspond with this criterion. Without detailed information, there is the potential for the project to lead to the long-term decrease in the size of an important population.<br>Clearing of individual trees is likely be avoided through design and mitigation. |
| Reduce the area of occupancy of an important population | Potential impact<br>Records within the referral area are not considered an important population, however, the project has the potential to impact Herb-rich Foothill Forest and Gippsland Plains Grassy Woodland communities which may reduce the area of occupancy for the species. Whether this impacts a population is yet to be determined and detailed surveys are required to identify any areas where a population occurs. |
| Fragment an existing important population into two or more populations | Potential impact<br>As outlined above, detailed surveys are required to identify any areas where a population occurs. If a population is recorded, further consideration must be given to determine whether it meets the definition of an important population. In the absence of detailed information, there is the potential for the Project to fragment an existing population into two or more populations. |
| Adversely affect habitat critical to the survival of a species | Potential impact<br>No habitats within the referral area are identified on the Register of Critical Habitat. However, it should be noted that the Register currently does not include any listing for Strzelecki Gum.<br>Habitat critical to the survival of the species is not identified in the National Recovery Plan (Carter, 2006). The species core habitat is Herb-rich Foothill Forest and Plains Grassy Woodland EVCs.<br>The Project may result in the clearance of these EVCs which have historically been cleared during European settlement. Further removal of these EVCs may affect or impact habitat critical to the survival of Strzelecki Gum. |
| Disrupt the breeding cycle of an important population | Unlikely impact<br>The Project is unlikely to disrupt the breeding cycle of Strzelecki Gum |

| Criterion | Response |
|---|---|
| Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline | Unlikely impact<br>As outlined above, the Project may result in the clearance of EVCs that provide suitable habitat to the species, but this is unlikely to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline. |
| Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat | Unlikely impact<br>The Project is unlikely to result in the introduction of invasive species that have the potential to outcompete Strzelecki Gum in its preferred habitat |
| Introduce disease that may cause the species to decline, or | Unlikely impact<br>The Project is unlikely to introduce a disease that may cause Strzelecki Gum to decline |
| Interfere with the recovery of the species | Unlikely impact<br>There are no known recovery actions within the referral area and the Project is unlikely to interfere with the recovery of the species. As described above, clearing of individual trees is likely be avoided through design and mitigation. |

### *Green-striped Greenhood*

The Green-striped Greenhood is listed as Vulnerable under the EPBC Act. The species is endemic to Victoria and occupies a disjunct range from near Yarram in South Gippsland to Edenhope in western Victoria. Habitat predominantly includes mixed Box-Stringybark forests comprising a canopy of Messmate Stringybark, Narrow-leaf Peppermint, Mealy Stringybark *Eucalyptus cephalocarpa* and Mountain Grey-gum *Eucalyptus cypellocarpa* with a shrubby understorey often with Austral Bracken as a dominant ground-cover species.

The National Recovery Plan identifies nine known populations (Duncan, Pritchard and Coates, 2009). Mullungdung State Forest is listed as a known population and contains ~100 plants which is considered a large population at the eastern extent of its known range (Duncan, Pritchard and Coates, 2009).

There are two records within the referral area within sections 1 and 2. Both records are located in Mullungdung State Forest. Green-striped Greenhood has also been recorded during BassLink assessments (Biosis, 2001).

The potential for the Project to have a significant impact on Green-striped Greenhood is summarised in Table 19. In consideration of the criterion below, the Project has the potential to significantly impact upon Green-striped Greenhood.

Table 19: Significant impact criteria for Green-striped Greenhood

| Criterion | Response |
|---|---|
| Lead to a long-term decrease in the size of an important population of a species | Potential impact<br>There are records for Green-striped Greenhood within the referral area. Significant populations are listed in the National Recovery Plan, this includes the known population in Mullungdung State Forest.<br>The Project has the potential to lead to a long-term decrease in the size of an important population through direct losses (loss of individual plants).<br>Targeted surveys are required to confirm the current population size and area of occupancy so that impacts can be quantified. Potential impacts are likely to be reduced or avoided through design and mitigation |
| Reduce the area of occupancy of an important population | Potential impact<br>As stated above, the referral area covers Mullungdung State Forest which contains a known population of Green-striped Greenhood. The area of occupation of this population is <10 hectares (Duncan, Pritchard and Coates, 2009).<br>The Project has the potential to reduce the area occupied by the species through habitat removal and site disturbance.<br>Detailed surveys are required to quantify the impacts to the known population. Potential impacts are likely to be reduced or avoided through design and mitigation |
| Fragment an existing important population into two or more populations | Potential impact<br>In the absence of detailed surveys and a development design, there is the potential that the Project could fragment the population of Green-striped Greenhood at Mullungdung State Forest.<br>Detailed surveys are required to quantify the impacts to the known population. Potential impacts are likely to be reduced or avoided through design and mitigation. |

| Criterion | Response |
|---|---|
| Adversely affect habitat critical to the survival of a species | Potential impact<br><br>No habitats within the referral area are identified on the Register of Critical Habitat. However, it should be noted that the Register currently does not include any listing for Green-striped Greenhood.<br><br>Habitat critical to the survival of Green-striped Greenhood is not identified in the National Recovery Plan (Duncan, Pritchard and Coates, 2009).<br><br>Mullungdung State Forest supports EVCs suitable to support Green-striped Greenhood including Heathy Woodland, Lowland Forest and Damp Sands Herb-rich Woodland.<br><br>The Project has the potential to impact known habitat directly through land clearance/vegetation removal. Given the population at Mullungdung State forest is considered a large population at the eastern extent of its range, an impact to this population may constitute an adverse effect to habitat critical to the survival of Green-striped Greenhood.<br><br>Additional information is required to quantify the level of impact to known habitat in order to accurately assess the likelihood of the Project having an adverse effect on habitat critical to the survival of the species. |
| Disrupt the breeding cycle of an important population | Unlikely impact<br><br>The Project is unlikely to disrupt the breeding cycle of Green-striped Greenhood |
| Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline | Potential impact<br><br>As outlined above, the Project has the potential to modify, destroy, remove, isolate or decrease the availability or quality of habitat for an important population of Green-striped Greenhood.<br><br>Additional information is required to quantify the level of impact to known habitat in order to accurately assess the likelihood of the Project impacting the species to the extent that the species is likely to decline. |
| Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat | Potential impact<br><br>The Project has the potential to introduce exotic weeds to high-quality Heathy Woodland, Lowland Forest and Damp Sands Herb-rich Woodland EVCs during vegetation clearance activities which may result in introduced species outcompeting Green-striped Greenhood in its preferred habitat. |
| Introduce disease that may cause the species to decline, or | Unlikely impact<br><br>The Project is unlikely to introduce a disease that may cause Green-striped Greenhood to decline. |

| Criterion | Response |
|---|---|
| Interfere with the recovery of the species | Potential impact<br>Recovery actions undertaken by DELWP within Mullungdung State Forest are not well understood.<br>Additional information is required to determine whether the Project has the potential to interfere with the recovery actions for this population. |

### *Maroon Leek-orchid*

The Maroon Leek-orchid is listed as Endangered under the EPBC Act. The species is endemic to south-eastern Australia; it occurs from south-eastern South Australia to the Naracoorte Coastal Plain, South Eastern Coastal Plain and South East Corner bioregions (DEH, 2000). Core habitat includes grasslands and grassy woodland habitats on well-drained soils, but some sites are seasonally waterlogged. Seasonally waterlogged sites include those on margins of shallow freshwater marshlands.

The Maroon Leek-orchid is known from six populations in Victoria (Duncan, 2010). These populations are listed in The National Recovery Plan; the closest population to the referral area is the Yarram (Parkside airport). This is the largest population in Victoria and contains ~250 plants (Duncan, 2010). The species is also known from a population in the Gippsland Lakes Coastal Park.

There are no records from the referral area but an unidentified *Prasophyllum* species was noted in the Biosis (2001) report.

As the species is not recorded in the referral area and the project doesn't interact with any known populations, it is unlikely that the project would impact on an important population of the species.

### *Metallic Sun-orchid*

The Metallic Sun-orchid is listed as Endangered under the EPBC Act. The species has a scattered distribution that extends from the Eyre Peninsula in South Australia to Lakes Entrance in Victoria. Habitat includes mesic coastal heathlands, grasslands and woodlands and it is also recorded inland of the coast within heathlands, open forests and woodlands. The species is disturbance-dependant – it relies on disturbance to promote seedling recruitment or flowering (Coats, 2003).

The National Recovery Plan identifies eight known populations; populations known from the Gippsland region include Blond Bay State Game Reserve and Gippsland Lakes Coastal Park (Coates, Jeans and Pritchard, 2002). No known populations are within the referral area.

There is one record within the referral area within the Port of Hastings.

The potential for the Project to have a significant impact on Metallic Sun-orchid is summarised in Table 20. In consideration of the criterion below, and in the absence of detailed information, the Project has the potential to significantly impact upon Metallic Sun-orchid.

Table 20: Significant impact criteria for Metallic Sun-orchid

| Criterion | Response |
|---|---|
| Lead to a long-term decrease in the size of a population | Unlikely impact<br>There are records for Metallic Sun-orchid within the referral area (Port of Hastings). Important populations are listed in the National Recovery Plan, none of which are listed within the referral area (Coates, Jeans and Pritchard, 2002. The Project is therefore unlikely to lead to the long-term decrease in the size of an important population. |
| Reduce the area of occupancy of the species | Potential impact<br>The Project has the potential to reduce the area occupied by the species through habitat removal and site disturbance. Preferred habitat includes mesic coastal heathlands, grasslands and woodlands as well as inland heathlands, open forests and woodlands. The project therefore has the potential to reduce the area of occupancy if these habitats are cleared. |
| Fragment an existing population into two or more populations | Unlikely impact<br>As outlined above, an important population is unlikely to be present within the referral area, and consequently, fragmentation of an important population is regarded as unlikely. |
| Adversely affect habitat critical to the survival of a species | Potential impact<br>No habitats within the referral area are identified on the Register of Critical Habitat. However, it should be noted that the Register currently does not include any listing for Metallic Sun-orchid.<br>Habitat critical to the survival of the species is not identified in the National Recovery Plan (Coates, Jeans and Pritchard, 2002). The species preferred habitat is in coastal area within Coastal Heathland, Grassland and Woodland EVCs.<br>The Project may result in the clearance of these EVCs which may adversely affect habitat critical to the survival of Metallic Sun-orchid.<br>Additional information is required to quantify the level of impact to known habitat in order to accurately assess the likelihood of the Project having an adverse effect on habitat critical to the survival of the species. |
| Disrupt the breeding cycle of a population | Unlikely impact<br>The Project is unlikely to disrupt the breeding cycle of Metallic Sun-orchid |

| Criterion | Response |
|---|---|
| Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline | Potential impact<br>As outlined above, the Project may result in the clearance of EVCs that provide suitable habitat to the species, and this may modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.<br>Additional information is required to quantify the level of impact to known habitat in order to accurately assess the likelihood of the Project impacting the species to the extent that the species is likely to decline. |
| Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat | Potential<br>The National Recovery Plan lists woody weed invasion as a current and potential threat to Metallic Sun-orchid. Woody weeds may be introduced or construction activities may alter conditions that allow native woody weeds such as Burgan to become dominant in preferred habitat for Metallic Sun-orchid. |
| Introduce disease that may cause the species to decline, or | Unlikely impact<br>The Project is unlikely to introduce a disease that may cause Metallic Sun-orchid to decline. |
| Interfere with the recovery of the species | Unlikely impact<br>There are no known populations or recovery actions within the Referral area. The Project is therefore unlikely to interfere with the recovery of the species. |

### *Spiral Sun-orchid*

The Spiral Sun-orchid is listed as Vulnerable under the EPBC Act. It occurs in south-eastern Australia and the northern island of New Zealand; in Australia, its distribution extends from Kangaroo Island in South Australia to Genoa in eastern Victoria. Specific habitat requirements are not well understood but in general, it grows in heathy open forest and woodlands on well-drained soil. It is also associated with disturbed sites such as old quarries, gravel pits and roadside verges but the relationship between disturbance and persistence is not well known.

The National Recovery Plan identifies 30 known populations. Mullungdung State Forest is listed as a known population and contains two plants (Duncan, 2010). Small, isolated populations are at risk of local extinction. VBA records identify one record from the referral area at the northern end of Old Rosedale Road within Mullungdung State Forest.

The potential for the Project to have a significant impact on Spiral Sun-orchid is summarised in Table 21. In consideration on the criterion below, and in the absence of detailed information, the Project has the potential to significantly impact upon Spiral Sun-orchid.

Table 21: Significant impact criteria for Spiral Sun-orchid

| Criterion | Response |
|---|---|
| Lead to a long-term decrease in the size of an important population of a species | Potential impact<br>There are recent records of Spiral Sun-orchid within the referral area. Two plants have been recorded within Mullungdung State Forest population (Duncan, 2010). There are 886 plants known from the Victorian population and therefore the two plants recorded within Mullungdung population contribute to 0.2% of the population. The National Recovery Plan for Spiral Sun-orchid is 10 years old and therefore population numbers are not current.<br>In the absence updated population numbers within Mullungdung State Forest, targeted surveys are required to confirm the current population size and area of occupancy so that impacts can be quantified. |
| Reduce the area of occupancy of an important population | Potential impact<br>As stated above, the referral area covers Mullungdung State Forest which contains a known population of Spiral Sun-orchid. The area of occupation of this population is <1 hectare (Duncan, 2010).<br>The Project has the potential to reduce the area occupied by the species through habitat removal and site disturbance.<br>Detailed surveys are required to quantify the impacts to the known population. Potential impacts are likely to be reduced or avoided through design and mitigation |
| Fragment an existing important population into two or more populations | Potential impact<br>Low numbers of Spiral Sun-orchid are recorded, however, information regarding the current status of the population within Mullungdung State Forest is required to determine whether there is the potential for the project to fragment the existing population.<br>Detailed surveys are required to confirm the population number and the area of occupation of Spiral Sun-orchid within Mullungdung State Forest so that impacts to the population can be quantified. |

| Criterion | Response |
|---|---|
| Adversely affect habitat critical to the survival of a species | Potential impact<br>No habitats within the referral area are identified on the Register of Critical Habitat. However, it should be noted that the Register currently does not include any listing for Spiral Sun-orchid.<br>Habitat critical to the survival of Spiral Sun-orchid is not identified in the National Recovery Plan (Duncan, 2010).<br>Mullungdung State Forest supports EVCs suitable to support Spiral Sun-orchid including Heathy Woodland, Lowland Forest and Damp Sands Herb-rich Woodland. Some clearance of these EVCs may occur as a result of the Project and therefore there is the potential to affect habitat critical to the survival of Spiral Sun-orchid. |
| Disrupt the breeding cycle of an important population | Unlikely impact<br>The Project is unlikely to disrupt the breeding cycle of Spiral Sun-orchid |
| Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline | Potential impact<br>As outlined above, the Project may result in the clearance of EVCs that provide suitable habitat to the species, but this is unlikely to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.<br>Additional information is required to quantify the level of impact to known habitat in order to accurately assess the likelihood of the Project impacting the species to the extent that the species is likely to decline. |
| Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat | Potential impact<br>The National Recovery Plan lists weeds including Perennial Veldt Grass *Ehrharta calycina* and the invasive South Africa Orchid *Disa bracteata* as problem weeds in the species preferred habitat. (Duncan, 2010) The Project has the potential to introduce or spread these weeds into preferred habitat or Spiral Sun-orchid. |
| Introduce disease that may cause the species to decline, or | Unlikely impact<br>The Project is unlikely to introduce a disease that may cause Metallic Sun-orchid to decline. |
| Interfere with the recovery of the species | Potential impact<br>Recovery actions undertaken by DELWP within Mullungdung State Forest are not well understood.<br>Additional information is required to determine whether the Project has the potential to interfere with the recovery actions for this population. |

### *Swamp Everlasting*

Swamp Everlasting is listed as Vulnerable under the EPBC Act. The species is endemic to south-eastern Australia and is found widely across three states, including south eastern New South Wales through to southern Victoria and along the north-east coast of Tasmania. Within Victoria, the species has a sporadic yet widely distributed population, extending from the border of South Australia to west of Bairnsdale (VicFlora 2018).

Habitat includes wetlands, sedge swamps, lowland swamps and shallow freshwater marshes, often consisting of heavy black clay soils. The species also has the capacity to occupy areas of seasonally wet native grasslands and heath communities (Carter, O., & N. Walsh, 2011).

The National Recovery Plan identifies 35 known populations with an estimated Victorian abundance of 5,000 – 10,000 individuals. No known significant populations are located within the referral area (Carter, O., & N. Walsh, 2011). There are two records within the referral area, within the Port of Hastings.

The potential for the Project to have a significant impact on Swamp Everlasting is summarised in Table 22. In consideration of the criterion below, and in the absence of detailed information, the Project has the potential to significantly impact upon Swamp Everlasting.

**Table 22: Significant impact criteria for Swamp Everlasting**

| Criterion | Response |
|---|---|
| Lead to a long-term decrease in the size of a population | Potential impact<br>There are two records within the referral area (Port of Hastings). Important populations are listed in the National Recovery Plan, none of which are listed within the referral area.<br>Targeted surveys are required to confirm the current population size and area of occupancy so that impacts can be quantified. Potential impacts are likely to be reduced or avoided through design and mitigation |
| Reduce the area of occupancy of the species | Potential impact<br>Records within the referral area are not considered as important populations. However, it is possible that the area of occupancy of the species may be reduced through habitat removal and site disturbance. |
| Fragment an existing population into two or more populations | Unlikely impact<br>As outlined above, an important population is not known to be present within the referral area, and consequently, fragmentation of an important population is regarded as unlikely.<br>Detailed surveys are required to confirm the population number and the area of occupation of Swamp Everlasting within the Port of Hastings. Potential impacts are likely to be reduced or avoided through design and mitigation. |

| Criterion | Response |
|---|---|
| Adversely affect habitat critical to the survival of a species | Potential impact<br>No habitats within the referral area are identified on the Register of Critical Habitat. However, it should be noted that the Register currently does not include any listing for Swamp Everlasting.<br>Habitat critical to the survival of the species is not identified in the National Recovery Plan. The species preferred habitat is wetland, sedge swamps, lowland swamps and shallow freshwater marsh EVCs. A number of wetland habitats were identified by Biosis (2015) that may support habitat suitable for the species.<br>The Project may result in the clearance of these EVCs which may adversely affect habitat critical to the survival of Swamp Everlasting. |
| Disrupt the breeding cycle of a population | Unlikely impact<br>The Project is unlikely to disrupt the breeding cycle of Swamp Everlasting. |
| Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline | Unlikely impact<br>The Project may result in the clearance of EVCs that provide suitable habitat to the species, but this is unlikely to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline. |
| Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat | Unlikely impact<br>The National Recovery Plan lists weed invasion and changes to hydrology as a current and potential threat to Swamp Everlasting. The Project is unlikely to lead to further invasion of weeds beyond which are already present in preferred habitat for Swamp Everlasting. |
| Introduce disease that may cause the species to decline, or | Unlikely impact<br>The Project is unlikely to introduce a disease that may cause Swamp Everlasting to decline. |
| Interfere with the recovery of the species | Unlikely impact<br>There are only two known records of the species, and no known recovery actions within the referral area. The Project is therefore unlikely to interfere with the recovery of the species. |

### 8.1.2. Threatened fauna

Twelve non-migratory terrestrial fauna species listed under the EPBC Act as threatened were considered to have likely or possible likelihood of occurrence within the referral area based on their known range, modelling by the EPBC Protected Matters Search Tool, habitat modelling for DELWP's EnSym tool, other surveys of the area, and having regard to the presence of any known existing records in the area. Fauna species assessed as having rare occurrence or unlikely to occur were not assessed for impacts. Eleven Migratory species were assessed on the same basis, as were 31 species listed under the *Fauna and Flora Guarantee Act* or the DELWP Advisory List of Threatened Vertebrate Fauna in Victoria (see Section 8.2).

No species limited to coastal areas or offshore were assessed because construction impacts on beach, dune and coastal systems will be avoided by using methods that avoid surface excavation. This avoids impacts to these coastal species and offshore species are very unlikely to be impacted by onshore activities. EPBC Act listed threatened fauna considered here are listed below and considered in more detail under separate headings.

- Australasian Bittern (Endangered: EPBC Act and FFG Act)
- Hooded Plover (Vulnerable: EPBC Act and FFG Act)
- Swift Parrot (Critically Endangered: EPBC Act, Endangered FFG Act)
- White-throated Needletail (Vulnerable: EPBC Act and FFG Act)
- Grey-headed Flying-fox (Vulnerable: EPBC Act and FFG Act)
- Southern Brown Bandicoot (Endangered: EPBC Act and FFG Act)
- Southern Greater Glider (Vulnerable: EPBC Act and FFG Act)
- Spotted-tailed Quoll (Endangered: EPBC Act and FFG Act)
- Swamp Antechinus (Vulnerable: EPBC Act and FFG Act)
- Growling Grass Frog (Vulnerable: EPBC Act, Endangered FFG Act)
- Australian Grayling (Vulnerable: EPBC Act and FFG Act)
- Dwarf Galaxias (Vulnerable: EPBC Act, Endangered FFG Act)

Many of these species are also listed under the Victorian FFG Act. The following impact assessment is also considered to be appropriate to address this Act, particularly given that it applies to the public land elements of the referral area and possible future project footprint. This is referenced in the following section of this report that deals with state-listed matters.

Where a species is Critically Endangered or occurs across a significant proportion of the referral area, it has been systematically assessed (in table form) against the EPBC Act significant impact criteria (DoEE 2015). Where a species occurs in habitats with a limited occurrence or range within the referral area and impacts from a project like this are readily avoidable, text is provided discussing the likelihood of a significant impact.

#### *Non-Migratory Bird Species*

Eight threatened species of non-migratory birds have the potential to occur in the referral area. Impacts on them are considered below. For critically endangered species, the impacts are evaluated in detail against the MNES criteria.

Australasian Bittern (Endangered)

Whilst records occur within the referral area, there have been no records since 1981 (ALA 2020, DELWP 2020), suggesting that no significant population resides within this area. This species has no recorded breeding sites in the referral area, and habitat within the referral area is limited. Any important Australasian Bittern habitat near the coast within the referral area will be avoided by utilising construction methods that avoid surface excavation. Given the available evidence, it is unlikely that the onshore components of the project would impact on an important population of this species

Hooded Plover (Vulnerable)

The potential for Hooded Plover to be significantly impacted under the EPBC Act is unlikely. Eight records occur within the referral area and this species is present and almost certainly breeding on Ninety Mile Beach but given the use of construction methods that avoid surface excavation in this area, it is unlikely that the onshore components of the project would impact on an important population of this species.

Swift Parrot (Critically Endangered)

The potential for Swift Parrot to be significantly impacted under the EPBC Act is outlined in Table 23. From the information in this table, it is concluded that the onshore components of project will not have a significant impact on this species.

Table 23: Significant impact criteria for Swift Parrot

| Criterion | Response |
|---|---|
| Lead to a long-term decrease in the size of a population | Unlikely.<br>One historical record occurs within the referral area in South Gippsland, with two other records in the broader landscape, suggesting this species is an infrequent visitor to the region during migration. This contrasts with records in the box and gum country of the fertile central and northern Victorian foothills and plains, from which there are hundreds of records. In the referral area, the flowering eucalypts (a source of nectar and lerp), in which they also roost, are not the preferred species in Victoria. Given the available evidence, it is unlikely that the project would lead to a long-term decrease in the size or viability of an important population of this species as the habitat concerned does not support abundant preferred eucalypt feed trees. |
| Reduce the area of occupancy of the species | Unlikely.<br>As outlined above, it is unlikely that an important population occurs within the referral area. Therefore, the project is unlikely to reduce the area of occupancy of an important population. |
| Fragment an existing important population into two or more populations | Unlikely.<br>As outlined above, an important population is unlikely to be present within the referral area, and consequently, fragmentation of an important population is highly unlikely. |

| Criterion | Response |
|---|---|
| Adversely affect habitat critical to the survival of a species | Unlikely.<br>No habitats within the referral area are identified on the Register of Critical Habitat (however, it should be noted that the Register of Critical Habitat currently does not include any habitat for Swift Parrot). Given the previous responses, it is unlikely that habitat critical to the survival of the species occurs in the referral area or will be adversely affected by the project. |
| Disrupt the breeding cycle of a population | Unlikely.<br>Swift Parrot is known to breed only in eastern Tasmania. |
| Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline. | Unlikely.<br>Given the lack of abundant favoured eucalypt species and the lack of regular historical records of this species in the referral area, the project will not remove habitat to the extent that the species will decline. |
| Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat | Unlikely.<br>Invasive species harmful to this species are already present in the area. It is unlikely that the project will introduce further invasive species to the area as modern construction environmental management measures, including strict hygiene, and weed monitoring and control protocols, will be implemented during and after construction. |
| Introduce disease that may cause the species decline | Unlikely.<br>The works for this referral area are unlikely to introduce pathogens that will affect the Swift Parrot. |
| Interfere with the recovery of the species | Unlikely.<br>As outlined above, an important population is unlikely to be present within the referral area and dominant eucalypt cover does not include an abundance of the preferred feed trees of the parrot. Consequently, impacts on species recovery are unlikely. |

White-throated Needle-tail (Vulnerable: EPBC Act and FFG Act)

This species breeds in north east Asia in the northern summer and migrates to eastern Australia between October and April each year. It is predominantly aerial, foraging along wind changes and ahead of storms where aerial insect densities are highest. It is a fast-flying bird that covers great distances while foraging over a range of habitats. It occurs in higher numbers over forested habitats, presumably because insect populations are higher over such areas. Its population is considered to be above 10,000 individuals, with declines in flock sizes suggesting a decline in its population is underway, Tarburton (2014).

It was observed during surveys but is almost entirely aerial in Australia. This species would forage over the referral area but populations would not be significantly impacted by any of the onshore project activities. The impacts on this species under the EPBC Act are outlined in Table 24. Considering the findings in this table, it is concluded that the onshore components of the project will not cause a significant impact to the White-throated Needletail.

Table 24: Significant impact criteria for White-throated Needletail

| Criterion | Response |
|---|---|
| Lead to a long-term decrease in the size of an important population of a species | Unlikely<br>This species moves quickly across great distances while foraging in eastern Australia during the non-breeding season and is not tied exclusively to one area. Identifying where an important population occurs is therefore difficult. Given the scale at which it uses the landscape, no one place is likely to support exclusively an important population. |
| Reduce the area of occupancy of an important population | Unlikely<br>The project will not reduce the area of occupancy of this wide-ranging species. |
| Fragment an existing important population into two or more populations | Unlikely<br>The species moves across all habitat, including farmland and urban areas so the project will not lead to fragmentation of a population. |
| Adversely affect habitat critical to the survival of a species | Unlikely<br>The referral area is unlikely to represent habitat critical to the survival of the species. If the western alignment is chosen, it will result in a reduction in available forested habitat for the species in this part of its range but this is unlikely to be habitat critical to its survival. |
| Disrupt the breeding cycle of an important population | Unlikely<br>The species breeds in north east Asia, so its breeding cycle will not be disrupted by this project. |
| Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline | Unlikely<br>The wide-ranging behaviour of this species makes it highly unlikely that the project will affect habitat to the extent that the species is likely to decline. |
| Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat | Unlikely<br>The species forages over a range of modified environments and forages aerially. Therefore, invasive species are unlikely to represent a significant threat to it. |

| Criterion | Response |
|---|---|
| Introduce disease that may cause the species to decline, | Unlikely<br>The project will not expose this species to an increased risk of disease. |
| Interfere with the recovery of the species | Unlikely<br>The project will not interfere with the recovery of this species. |

### *Mammal Species*

Seven threatened species of terrestrial mammal have the potential to occur in the referral area, and are assessed below against the MNES criteria.

Grey-headed Flying-fox (Vulnerable)

A number of records of this species occur within the referral area, both in South Gippsland and at Hastings. Day roost camps have been recorded at Traralgon and Woodside (DoEE 2020). This indicates that this species is a visitor to the region during optimal seasons. The species has not been recorded breeding in the referral area. Habitat within this area is includes flowering feed trees. Given the widespread distribution of this species and the lack of large camps in South Gippsland, it is unlikely that the referral area supports an important population, with individuals present likely passing through between larger, more distant camps, such as those in Melbourne and Mallacoota. Given the available evidence, it is unlikely that the project would impact an important population of this species. Given the significant impact criteria for vulnerable species rest on impacts on important populations, it is unlikely that the onshore components of the project will lead to a significant impact on the Grey-headed Flying-Fox.

Southern Brown Bandicoot (Endangered)

The potential for Southern Brown Bandicoot to be significantly impacted under the EPBC Act is outlined in Table 25. Given the findings in this table, it is concluded that the onshore components of the project have the potential for a significant impact on the Southern Brown Bandicoot.

Table 25: Significant impact criteria for Southern Brown Bandicoot

| Criterion | Response |
|---|---|
| Lead to a long-term decrease in the size of a population | Potential<br>A number of records occur within the referral area, including Hastings Port, or within the 5km buffer of the proposed development footprint, however no records occur since 1977 suggesting this species is unlikely to occur. This species' habitat within the referral area is limited. Given the available evidence, it is unlikely that the project would lead to a long-term decrease in the size or viability of an important population of this species but species-specific surveys are recommended to potential ascertain impacts. |

| Criterion | Response |
|---|---|
| Reduce the area of occupancy of the species | Potential<br>While the project has the potential to impact habitat suitable for Southern Brown Bandicoot, the lack of recent records within the referral area for this species suggest no important population. As outlined above, it is unlikely that an important population occurs within the referral area. While it is possible that the area of occupancy of the species may be reduced through clearance of habitat that supports the species, it is unlikely to reduce the area of occupancy for an important population but species-specific surveys are recommended to potential ascertain impacts. |
| Fragment an existing important population into two or more populations | Potential<br>As outlined above, an important population is unlikely to be present within the referral area, and consequently, fragmentation of an important population is regarded as unlikely but widening open areas may have an impact and species-specific surveys are recommended to potential ascertain impacts. |
| Adversely affect habitat critical to the survival of a species | Unlikely.<br>No habitats within the referral area are identified on the Register of Critical Habitat (however, it should be noted that the Register of Critical Habitat currently does not include any listing for Southern Brown Bandicoot). Given the above, it is unlikely that habitat critical to the survival of the species will be adversely affected, however, it must be reiterated that management of any habitat for threatened species, post 2020 bushfire events, is an important step to conservation of this species into the future. |
| Disrupt the breeding cycle of a population | Unlikely.<br>Southern Brown Bandicoot is not known to breed in the area. As outlined above, an important population is unlikely to be present within the referral area. |
| Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline | Unlikely.<br>While it is unlikely that the project will impact on the quality of habitat to the extent of species decline, it is recommended that further surveys be conducted to ascertain presence/absence of this species, and if foraging resources within the referral area are being utilised seasonally to mitigate post-fire impacts from within their range. |
| Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat | Unlikely.<br>Invasive species harmful to this species are already present in the area. It is unlikely that the project will introduce further invasive species to the area. |

| Criterion | Response |
|---|---|
| Introduce disease that may cause the species decline | Unlikely.<br>The works for this referral area are unlikely to introduce pathogens that will affect the Southern Brown Bandicoot. |
| Interfere with the recovery of the species | Unlikely.<br>As outlined above, an important population is unlikely to be present within the referral area, and consequently, impact on species recovery is regarded as unlikely. |

Southern Greater Glider (Vulnerable)

The potential for Southern Greater Glider to be significantly impacted under the EPBC Act is outlined in Table 26. Given the findings in this table it is concluded that the onshore components of the project have the potential for a significant impact on this species.

Table 26: Significant impact criteria for Southern Greater Glider

| Criterion | Response |
|---|---|
| Lead to a long-term decrease in the size of an important population of a species | Potential<br>Greater Gliders utilise old growth hollow-bearing trees as daily roosting habitat and for nesting and breeding. This species' habitat within the referral area is of high quality in some areas. A number of records occur within the referral area, with the most recent records being from 2007 (ALA 2020). This species' range has severely contracted in recent years due to extreme weather and fire events associated with climate change (Smith and Smith 2019), and the population previously found in this region may no longer exist. Until its continued presence in the referral area is confirmed, and a preferred alignment is chosen, there remains a possibility that removal of forest habitat for the transmission assets could lead to a long-term decrease in the size of an important population. Further studies are recommended to establish presence/absence of an important population of Greater Glider in the referral area. |
| Reduce the area of occupancy of an important population | Potential<br>The project has the potential to impact habitat suitable for Southern Greater Glider, despite the lack of recent records. As outlined above, it is possible that an important population remains within the referral area. While it is possible that the area of occupancy of the species may be reduced through clearance of habitat that supports the species, this cannot be confirmed without further investigation. |

| Criterion | Response |
|---|---|
| Fragment an existing important population into two or more populations | Potential<br>As outlined above, it is possible that an important population remains in the area. Widening of cleared areas may have impacts on Greater Gliders so species-specific surveys are recommended in forested areas affected by any preferred project alignment. |
| Adversely affect habitat critical to the survival of a species | Potential<br>No habitats within the referral area are identified on the Register of Critical Habitat (however, it should be noted that the Register of Critical Habitat currently does not include any listing for Southern Greater Glider). Widening of cleared areas may have impacts on Greater Gliders as they are not capable of dispersing beyond treed vegetation across gaps greater than about 100 metres. Species-specific surveys have therefore been recommended. |
| Disrupt the breeding cycle of a population | Unlikely.<br>Southern Greater Glider is known historically to breed in the area. As outlined above, targeted surveys are recommended to ascertain presence/absence of this species and its status in potentially affected forest habitats. |
| Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline | Unlikely.<br>While it is unlikely that the project will impact on the quality of habitat to the extent of species decline, given the extent of forested habitat in the region, it is recommended that further surveys be conducted to ascertain presence/absence of this species to confirm if this is indeed the case. |
| Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat | Unlikely.<br>Invasive species harmful to this species are already present in the area. It is unlikely that the project will introduce further invasive species to the area. |
| Introduce disease that may cause the species decline | Unlikely.<br>The works for this referral area are unlikely to introduce pathogens that will affect the Southern Greater Glider. |
| Interfere with the recovery of the species | Potential.<br>As outlined above, an important population may occur in the referral area but this requires confirmation through targeted surveys of forest habitats affected by the project. If a cleared corridor through forested habitat is required then impacts on species recovery may occur through a combination of reduced habitat extent and fragmentation. |

Spotted-tailed Quoll (Endangered)

The potential for Spotted-tailed Quoll to be significantly impacted under the EPBC Act is outlined in

Table 27. Given the findings in this table it is concluded that the onshore components of the project have the potential for a significant impact on this species.

Table 27: Significant impact criteria for Spotted-tailed Quoll

| Criterion | Response |
|---|---|
| Lead to a long-term decrease in the size of a population | Potential<br>This species' habitat within the referral area is of high quality, but limited, as quolls generally have large core home ranges (approximately 128 hectares for males). Two records occur within the referral area, or within the 5km buffer of the proposed development footprint, however no records have been documented since 1985, suggesting this species is unlikely to occur. Until its continued presence in the referral area is confirmed, and a preferred alignment is chosen, there remains a possibility that removal of forest habitat for the transmission assets could lead to a long-term decrease in the size of an important population. Further studies are recommended to establish presence/absence of an important population of Spotted-tailed Quoll. |
| Reduce the area of occupancy of the species | Potential<br>Until its continued presence in the referral area is confirmed, and a preferred alignment is chosen, there remains a possibility that the area of occupancy for an important population may be reduced. |
| Fragment an existing important population into two or more populations | Potential<br>As outlined above, an important population is unlikely to be present within the referral area, and consequently, fragmentation of an important population is regarded as unlikely. Widening of cleared areas may impact smaller mammal populations by exposing animals to predation. Further studies are recommended to establish presence/absence of an important population of Spotted-tailed Quoll. |
| Adversely affect habitat critical to the survival of a species | Unlikely.<br>No habitats within the referral area are identified on the Register of Critical Habitat (however, it should be noted that the Register of Critical Habitat currently does not include any listing for Spotted-tailed Quoll). Given the above, it is unlikely that habitat critical to the survival of the species will be adversely affected. |

| Criterion | Response |
|---|---|
| Disrupt the breeding cycle of a population | Potential.<br>Spotted-tailed Quoll is historically known to breed in the area. As outlined above, targeted surveys are recommended to ascertain presence/absence of this species. |
| Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline | Unlikely.<br>While it is unlikely that the project will impact on the quality of habitat to the extent of species declines, it is recommended that further surveys be conducted to ascertain the status of this species in the affected area. |
| Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat | Unlikely.<br>Invasive species harmful to this species are already present in the area. It is unlikely that the project will introduce further invasive species to the area. |
| Introduce disease that may cause the species decline | Unlikely.<br>The works for this referral area are unlikely to introduce pathogens that will affect the Spotted-tailed Quoll. |
| Interfere with the recovery of the species | Potential.<br>As outlined above, until its status in the referral area is confirmed, and a preferred alignment is chosen, there remains a possibility that removal of forest habitat for the transmission assets could lead to interference with the recovery of this species. |

Swamp Antechinus (Vulnerable)

A number of records of Swamp Antechinus occur within the referral area, however no records have been recorded since 1990. Notably, all records within the PMST search area are from offshore islands, suggesting this species is unlikely to occur. Given the available evidence, it is unlikely that the species occurs in the on-shore referral area. Therefore, a significant impact on this species is not expected. Recommended further surveys for other mammals may find this species, in which case a more detailed assessment would be required.

### *Frog Species*

One threatened species of frog has the potential to occur in the referral area, and are assessed against the MNES criteria below.

Growling Grass Frog (Vulnerable)

The potential for Growling Grass Frog to be significantly impacted under the EPBC Act is outlined in Table 28. Given the findings in this table it is concluded that the onshore components of the project have the potential for a significant impact on this species.

Table 28: Significant impact criteria for Growling Grass Frog

| Criterion | Response |
|---|---|
| Lead to a long-term decrease in the size of an important population of a species | Potential<br>Several records occur within the referral area, or within the 5km buffer of the proposed development footprint (ALA 2020, DELWP 2020), however no records occur since 1977. This species' habitat within the referral area is limited. Given the available evidence, it is unlikely that the project would lead to a long-term decrease in the size or viability of an important population of this species. Further surveys to determine presence/absence of this species are recommended. |
| Reduce the area of occupancy of an important population | Potential<br>While the project has the potential to impact habitat suitable for Growling Grass Frog, the lack of recent records within the referral area for this species suggest no important population. Based on the distribution, location of good quality sites and the likely extent of project-related impacts, a significant impact to this community is not anticipated. However, as potential remains given the extent of the referral area, field investigations to ascertain its occurrence and quality may be needed, depending on the preferred project footprint. By utilising construction methods that avoid surface excavation in aquatic habitats, this impact may be mitigated and managed. As outlined above, it is unlikely that an important population occurs within the referral area, but surveys are recommended to confirm this. |
| Fragment an existing important population into two or more populations | Unlikely.<br>Given the behaviour of these frogs, none of the project activities are likely to cause fragmentation of an important population, if one exists. |
| Adversely affect habitat critical to the survival of a species | Unlikely.<br>No habitats within the referral area are identified on the Register of Critical Habitat (however, it should be noted that the Register of Critical Habitat currently does not include any listing for Growling Grass Frog). Given the above, it is unlikely that habitat critical to the survival of the species will be adversely affected. |
| Disrupt the breeding cycle of a population | Unlikely<br>If an important population occurs in the area any wetland that supports the species should be avoided in detailed design of the project. |
| Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline | Unlikely<br>If an important population occurs in the area any wetland that supports the species should be avoided in detailed design of the project. |

| Criterion | Response |
|---|---|
| Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat | Unlikely<br>No new invasive species are likely to be introduced to the referral area as a consequence of its construction and operation. Therefore, no impact from this source is anticipated. |
| Introduce disease that may cause the species to decline | Potential<br>Chytrid fungus is a key threatening process for amphibians worldwide. Works related to this project may introduce this fungal disease into waterways (Rohr *et al.* 2010), without mitigation and management measures. |
| Interfere with the recovery of the species | Unlikely<br>This part of the species' original range has not been targeted for recovery efforts so the project will not interfere with its recovery. |

### *Fish Species*

Two threatened species of Fish have the potential to occur in the referral area, and are assessed against the MNES criteria below.

Australian Grayling (Vulnerable)

Several records of this fish occur within the referral area, or within the 5km buffer of the proposed development footprint (ALA 2020, DELWP 2020) but no records occur after 1981. That said, fish surveys in this region have not been published for some time. Records of this species occur in the faster-flowing waterways of the referral area ultimately connected to the sea, allowing this diadromous species to migrate between freshwater and marine environments, a requirement of successful reproduction. There is potential for clearing of vegetation on some waterways in this part of the referral area to affect the habitat of this species. This is evaluated further in Table 29. Based on the findings in this table, there is potential for the onshore components of this project to have a significant impact on the Australian Grayling.

Table 29: Significant impact criteria for Australian Grayling

| Criterion | Response |
|---|---|
| Lead to a long-term decrease in the size of an important population of a species | Unlikely.<br>Several records occur within the referral area, or within the 5km buffer of the proposed development footprint (ALA 2020, DELWP 2020a) but no records occur after 1981. This species' habitat within the referral area is limited to faster-flowing waterways. Given the available evidence, it is unlikely that the project would lead to a long-term decrease in the size or viability of an important population of this species. If suitable habitat is found surveys are recommended. |
| Reduce the area of occupancy of an important population | Potential<br>While the project has the potential to impact habitat suitable for Australian Grayling, the lack of recent records within the referral area for this species suggest no important population. Based on the distribution, location of good quality sites and the likely extent of project-related impacts, a significant impact to this community is not anticipated. However, as potential remains given the extent of the referral area, field investigations to ascertain its occurrence and quality may be needed, depending on the preferred project footprint. By utilising construction methods that avoid surface excavation in aquatic habitats, this impact may be mitigated and managed. As outlined above, it is unlikely that an important population occurs within the referral area, but surveys are recommended to confirm this. |
| Fragment an existing important population into two or more populations | Unlikely.<br>As outlined above, an important population is unlikely to be present within the referral area, and consequently, fragmentation of an important population is regarded as unlikely. |
| Adversely affect habitat critical to the survival of a species | Unlikely.<br>No habitats within the referral area are identified on the Register of Critical Habitat (however, it should be noted that the Register of Critical Habitat currently does not include any listing for Australian Grayling). Given the above, it is unlikely that habitat critical to the survival of the species will be adversely affected. |
| Disrupt the breeding cycle of a population | Unlikely<br>The scale of project impacts is unlikely to alter waterway habitats to the extent that the breeding cycle is disrupted. |
| Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline | Unlikely<br>The scale of the project relative to the waterways affected will not modify habitats to the extent that the waterway would be so different that a decline in the numbers would ensue. |

| Criterion | Response |
|---|---|
| Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat | Unlikely<br>The project is unlikely to result in an invasive aquatic species invading waterways inhabited by this species. |
| Introduce disease that may cause the species to decline | Unlikely<br>The project is unlikely to result in disease establishing in waterways inhabited by this species. |
| Interfere with the recovery of the species | Unlikely<br>The scale of project impacts is unlikely to interfere with the persistence or recovery of the species. |

Dwarf Galaxias (Vulnerable)

The potential for Dwarf Galaxias to be significantly impacted under the EPBC Act is outlined in Table 30. Given the findings in this table it is concluded that the onshore components of the project have the potential for a significant impact on this species.

Table 30: Significant impact criteria for Dwarf Galaxia

| Criterion | Response |
|---|---|
| Lead to a long-term decrease in the size of an important population of a species | Potential<br>Several records occur within the referral area, or within the 5km buffer of the proposed development footprint (ALA 2020, DELWP 2020), including as recently as 2013. This species' habitat within the referral area is limited. Given the available evidence, it is unlikely that the project would lead to a long-term decrease in the size or viability of an important population of this species, but surveys should be undertaken to ascertain the current status of the species in potentially suitable habitats. |
| Reduce the area of occupancy of an important population | Unlikely.<br>While the project has the potential to impact habitat suitable for Dwarf Galaxia, by utilising construction methods that avoid surface excavation, this impact may be mitigated and managed. |

| Criterion | Response |
|---|---|
| Fragment an existing important population into two or more populations | Unlikely.<br>The current proposed use of construction methods that avoid surface excavation means that fragmentation of an important population is regarded as unlikely. |
| Adversely affect habitat critical to the survival of a species | Unlikely.<br>No habitats within the referral area are identified on the Register of Critical Habitat (however, it should be noted that the Register of Critical Habitat currently does not include any listing for Dwarf Galaxia). Given the above, it is unlikely that habitat critical to the survival of the species will be adversely affected. |
| Disrupt the breeding cycle of a population | Unlikely<br>The scale of project impacts is unlikely to alter waterway and wetland habitats to the extent that the breeding cycle is disrupted. |
| Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline | Unlikely<br>The scale of the project relative to the waterways and wetlands affected will not modify habitats to the extent that the waterway would be so different that a decline in the numbers would ensue. |
| Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat | Unlikely<br>The project is unlikely to result in an invasive aquatic species invading waterways and wetlands inhabited by this species. |
| Introduce disease that may cause the species to decline | Unlikely<br>The project is unlikely to result in disease establishing in waterways and wetlands inhabited by this species. |
| Interfere with the recovery of the species | Unlikely<br>The scale of project impacts is unlikely to interfere with the persistence or recovery of the species. |

### *Insects*

No threatened insect species are documented to occur within the referral area.

*Migratory bird species*

Black-faced Monarch

The Black-faced Monarch migrates from northern Australia and New Guinea to south eastern Australia in spring and summer. It prefers densely forested moist gullies supporting cool temperate rainforest. Although it occurs in the Strzelecki Ranges, it is confined to the western part of this region and does not occur in the referral area (DELWP 2020; AAL 2020). Therefore, the project will not have a significant impact on this species.

Fork-tailed Swift

This species was recorded on site during initial surveys, and is expected to occur within the referral area. Fork-tailed swift is a primarily aerial species, and is unlikely to be impacted by the development of this project. The risk to the population of this widespread and common migratory species from above ground transmission infrastructure collision is considered minimal. No significant impacts on this species are anticipated from the project.

Glossy Ibis

The Glossy Ibis is a nomadic waterbird in Australia that breeds on inland wetlands during and after floods. During droughts it moves to permanent, drought-refuge wetlands in coastal regions. Records in the referral area occur near the Gippsland Lakes and in the coastal wetlands behind Ninety Mile Beach (DELWP 2020; ALA 2020).

The potential for Glossy Ibis to be significantly impacted under the EPBC Act is outlined in Table 32. Given the findings in this table it is concluded that the onshore components of the project will not have a significant impact on this species.

Table 31: Significant impact criteria for Glossy Ibis.

| Criterion | Response |
|---|---|
| Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species | Unlikely<br>This species occurs occasionally during droughts in coastal south eastern Australia. Records in the referral area are from the coastal wetlands. The smaller coastal wetlands near the project corridors are unlikely to support significant numbers that represent an important population. Furthermore, these habitats will not be affected given the use of construction methods that avoid surface excavation in the coastal region. Modifications to these habitats are unlikely to result from the construction and operation of the project. |
| Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species, or | Unlikely<br>No invasive species will benefit from any of the actions associated with this project. |

| Criterion | Response |
|---|---|
| Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species. | Unlikely<br>The protection of coastal wetlands from significant impacts will ensure that these habitats will continue to act as a drought refuge for small number of this species. |

Latham's Snipe

The Latham's Snipe occurs in freshwater wetlands with dense vegetative cover, where it roosts during the day. At night, it forages over a wider range of habitats, including pasture and wetlands. South Gippsland and the Gippsland Lakes represent a stronghold for this species (DELWP 2020; ALA 2020). Any wetlands within the referral area potentially support this species. Coastal wetlands will be avoided through the use of construction methods that avoid surface excavation. Other wetlands are likely to be avoidable through the use of construction methods that avoid surface excavation. As the low sedge vegetation this species prefers will not be altered for the above ground transmission infrastructure, significant impacts on habitats are not anticipated.

Impacts on this species based on the EPBC Act significance criteria are summarised in Table 33. Given the findings in this table it is concluded that the onshore components of the project will not have a significant impact on this species.

Table 32: Significant impact criteria for Latham's Snipe

| Criterion | Response |
|---|---|
| Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species | Unlikely<br>This project as proposed would not affect any wetland habitats. Coastal wetlands will be avoided through the use of construction methods that avoid surface excavation while wetlands are readily avoided through the sensitive placement of infrastructure. Vegetation modification in these wetlands will not be required. For these reasons, significant impacts on this species from habitat modification are highly 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, or | Unlikely<br>No invasive species will affect wetlands in the referral area to the extent that the species will be adversely affected. |

| Criterion | Response |
|---|---|
| Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species. | Unlikely<br>This project as proposed would not affect any wetland habitats therefore disruption to the species non-breeding habitats will not occur. Temporary construction related disturbance will pass and the species will return to affected habitats after works cease. |

Marsh Sandpiper, Red-necked Stint, Sharp-tailed Sandpiper

These migratory shorebird species are confined to open, muddy and shallow waters in wetlands. No large wetlands likely to support this species occur in the referral area, except near the coastal dune complex associated with the Ninety Mile Beach. As these habitats will be avoided through the use of construction methods that avoid surface excavation, significant impacts on these habitats and, therefore, this species are not anticipated.

Caspian Tern

This large tern occurs in small numbers over marine and occasionally inland lake habitats. No large wetlands likely to support this species occur in the referral area, except near the coastal dune complex associated with the Ninety Mile Beach. As these habitats will be avoided through the use of construction methods that avoid surface excavation, significant impacts on these habitats, and therefore on this species, are not anticipated.

Rufous Fantail

Rufous Fantail is widespread in the moist, forested gullies of eastern and central Victoria in spring and summer. There are numerous records in the referral area (DELWP 2020; ALA 2020).

The potential for Rufous Fantail to be significantly impacted under the EPBC Act is outlined in Table 34. Given the findings in this table it is concluded that the onshore components of the project will not have a significant impact on this species.

Table 33: Significant impact criteria for Rufous Fantail

| Criterion | Response |
|---|---|
| Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species | Unlikely<br>None of the activities associated with this project are likely to substantially modify, destroy or isolate an area of important habitat for this mobile species. Clearance and maintenance of forest vegetation for the transmission assets will reduce slightly the area of habitat available to it but the small proportion of habitat affected will not lead to significant impacts on the species local and regional population. |

| Criterion | Response |
|---|---|
| Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species, or | Unlikely<br>No additional invasive species harmful to this species will be introduced to its habitats as a result of this proposed project. |
| Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species. | Unlikely<br>None of the activities associated with this project would disrupt the lifecycle of a significant population of this species. |

Satin Flycatcher

The Satin Flycatcher occurs in the canopy of taller, moister forests in eastern Australia in the spring and summer breeding season. This species occurs commonly in the western part of the referral area, where forest cover is more extensive (DELWP 2020; ALA 2020).

The potential for Satin Flycatcher to be significantly impacted under the EPBC Act is outlined in Table 34. Based on the findings in this table, the onshore components of the project will not have a significant impact on this species.

Table 34: Significant impact criteria for Satin Flycatcher

| Criterion | Response |
|---|---|
| Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species | Unlikely<br>None of the activities associated with this project are likely to substantially modify, destroy or isolate an area of important habitat for this mobile species. Clearance and maintenance of forest vegetation for the transmission assets will reduce slightly the area of habitat available to it but the small proportion of habitat affected will not lead to significant impacts on the species local and regional population. |
| Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species, or | Unlikely<br>No additional invasive species harmful to this species will be introduced to its habitats as a result of this proposed project. |
| Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species. | Unlikely<br>None of the activities associated with this project would disrupt the lifecycle of a significant population of this species. |

### 8.1.3. Threatened ecological communities

The EPBC Act Protected Matters Search Tool lists four threatened ecological communities as having the potential to occur within the referral area. These communities include:

- Assemblages of species associated with open-coast salt-wedge estuaries of western and central Victoria ecological community (Endangered)
- Gippsland Red Gum (*Eucalyptus tereticornis* subsp. *mediana*) Grassy Woodland and Associated Native Grassland (Critically Endangered)
- Natural Damp Grassland of the Victorian Coastal Plains (Critically Endangered)
- Subtropical and Temperate Coastal Saltmarsh (Vulnerable)

Vulnerable ecological communities are not considered maters of national environmental significance. Although its presence is recorded here, no assessment of impacts is required.

One additional threatened ecological community was recorded at the Port of Hastings by Biosis (2015) within the referral area. This community is:

- Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains.

*Gippsland Red Gum (Eucalyptus tereticornis subsp. mediana) Grassy Woodland and Associated Native Grassland*

The Gippsland Red Gum (*Eucalyptus tereticornis* subsp. *mediana*) Grassy Woodland and Associated Native Grassland is a Critically Endangered ecological community listed under the EPBC Act. The community occurs in two forms:

- Grassy woodland

This is the most common form of the ecological community and comprises of a tree canopy dominated Gippsland Red Gum (*Eucalyptus tereticornis* subsp. *mediana*) that has a projective foliage cover of more than 5%. Ground cover consists of native tussock grasses and grass-like plants interspersed with a variety of wildflowers such as daisies, lilies and orchids.

- Grassland

Grassland remnants of the community as per the above description but lacking a canopy overstorey. Grassland forms are thought to have naturally occurred but have been extensively cleared during European settlement. Remaining grasslands are therefore likely to be the understorey remnants of the Grassy Woodland community but have been subject to clearing of canopy trees (DEWHA, 2010).

The Gippsland Red Gum Grassy Woodland and Associated Native Grassland community was once widespread throughout the central Gippsland Plain but due to extensive clearing it is estimated that only 5% of the natural distribution remains. Further, what remnants do remain largely consist of small, discrete and isolated patches. These patches can be found from the west of Morwell to as far east as Swan Reach. Six sites containing 'good quality example' of both the grassy woodland and native grassland forms of the community are identified by the National Recovery Plan (DEWHA, 2010).

Section 5 of the referral area occurs within the north western extent of the mapped distribution. None of the known 'good quality example' sites fall within the referral area. A patch of Plains Grassy Woodland EVC containing *E. tereticornis* subsp. *Mediana* was recorded within northern corridor on Giffard West Road. Plains Grassy Woodland is considered to be synonymous with the Gippsland Red Gum (*Eucalyptus tereticornis* subsp. *mediana*) Grassy Woodland and Associated Grassland ecological community. The patch of Plains Grassy Woodland recorded was limited in quality as it contained only the overstorey

component of the community. A review of the ecological community thresholds would be required to determine if this community is considered the meet the condition criteria for this ecological community. Other occurrences of Plains Grassy Woodland EVC may occur within proximity to Giffard West Road and will be determined during detailed vegetation surveys.

The potential for the Project to have a significant impact on Gippsland Red Gum (*Eucalyptus tereticornis* subsp. *mediana*) Grassy Woodland and Associated Grassland is summarised in Table 35. Based on the community distribution, location of good quality sites and the likely extent of project-related impacts, a significant impact to this community is not anticipated. However, as potential remains given the extent of the referral area, field investigations to ascertain its occurrence and quality may be needed, depending on the preferred project footprint.

Table 35: Significant impact criteria for Gippsland Red Gum (*Eucalyptus tereticornis* subsp. *mediana*) Grassy Woodland and Associated Native Grassland

| Criterion | Response |
|---|---|
| Reduce the extent of an ecological community | Potential<br>The project has the potential to cause a small reduction in community extent. Depending on the project option chosen, this impact may not occur at all. More detailed field investigations are required to ascertain the extent to which this community will be affected. |
| Fragment or increase fragmentation of an ecological community, for example by clearing for roads for transmission infrastructure | Unlikely<br>This community already occurs in a highly fragmented state in the referral area. No known 'good quality' examples of this community were identified in the referral area. Remnants of the community that remain are likely to be fragmented already and, if impacted, losses to the community are unlikely to impact community distribution at a landscape scale. |
| Adversely affect habitat critical for the survival of an ecological community | Unlikely<br>Where the referral area interacts with the community distribution, no known sites of good quality have been identified. Remnants are likely to consist of small, low quality patches not considered critical to the survival of the community. More detailed field investigations of the preferred project footprint will test this conclusion. |
| Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns | Unlikely<br>No impacts to surface, groundwater or other abiotic factors are anticipated in the area where this community occurs. |

| Criterion | Response |
|---|---|
| Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting | Potential<br>Where the referral area interacts with the community distribution, no known sites of good quality have been identified. Remnants are likely to consists of small, low quality patches. Field surveys of the preferred project footprint would confirm if this potential was real. |
| Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to: assisting invasive species, that are harmful to the listed ecological community, to become established, or causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community, or | Unlikely<br>No mechanism for the mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community are foreseen. |
| Interfere with the recovery of an ecological community. | Unlikely<br>Where the referral area interacts with the community distribution, no known sites of good quality have been identified. Remnants are likely to consists of small, low quality patches unsuitable for restoration and recovery. Field investigations of the preferred project footprint will confirm if this is so. |

*Subtropical and temperate coastal Saltmarsh*

The Subtropical and Temperate Coastal Saltmarsh ecological community is listed as Vulnerable under the EPBC Act. The community comprises of an assemblage of salt-tolerant grasses, herbs sedges, rushes and shrubs within intertidal environments (DSEWPaC, 2013a).

The community occurs within a relatively narrow margin of the Australian coastline, within the subtropical and temperate climatic zones south of the South-east Queensland IBRA bioregion (DSEWPaC, 2013a). Remnants of the community occur from Shark Bay to western Australia to the coast of Northern NSW. The community also occurs in isolated areas of Tasmania's northern and southern coast and fringing islands in the Bass Straight (DSEWPaC, 2013b).

Impacts to the community have potential to occur where the referral area interacts with the coast. The community occurs within areas subject to regular or intermittent tidal influence and is typically restricted to the upper intertidal environment. Sections of the referral area where this applies are the southern-

most extents of Section 1, section 2 and section 3 as well as the Port of Hastings and Port Anthony/BBMT Beach terminal areas.

Given the proposed use of underground boring methods to install the electrical cable within the coastal margin, a significant impact to the community as a result of the project is considered unlikely. The significant impact guidelines provide criteria to assess impacts to threatened ecological communities listed as endangered and critically endangered. No such guidance is provided for vulnerable communities as they are classed as Matters of National Environmental Significance and thus assessment of community impacts (as a result of the project) against specific criteria is not required.

### *Natural Damp Grassland of the Victorian Coastal Plain*

Natural Damp Grassland of the Victorian Coastal Plains is listed as Critically Endangered under the EPBC Act. The form of the grassland community ranges from closed tussocks grassland to open grassy woodland with a sparse canopy of woody species (DoE, 2015a). EVCs synonymous with this community include Brackish Grassland (EVC 934) and Plains Grassland (EVC 132). Where the community occurs in dry environments, Kangaroo grass (*Themeda trianda*) is usually dominant, however, where it occurs in low lying areas and along drainage lines, Common Tussock Grass (*Poa labillardierei*) becomes the dominant tussock-grass. The community supports a range of graminoids, sedges, rushes and herbs and where it occurs on brackish sites a range of halophytic species also occur (DoE, 2015a).

The community occurs in the South East Coastal Plain IBRA bioregion and most occurrences are confined to the Gippsland Plain subregion. Some remnants are also represented in the Otway Plain subregion. In the Gippsland Plain subregion, the community is well-known from the area between Yarram and Giffard; here, the community has been studied at grassland sites such as Alberton Cemetery, Parkside Aerodrome, Woodside Cemetery, Darriman Bushland Reserve and roadside patches along Stringybark Lane near Jack Smith Lake (DoE, 2015a). The listing advice also notes that a brackish site that once bordered Jack Smith Lake is now considered to be extinct (DoE, 2015a).

The community in South Gippsland generally occupies wetter sites and supports a canopy of Swamp Gum, Manna Gum, Narrow-leaf Peppermint or Coast Grey Box (*Eucalyptus bosistoana*) rather than Gippsland Red Gum. This difference in dominant canopy tree distinguishes the community from the Gippsland Red Gum Grassy Woodland and Associated Native Grassland community located further north and east in Gippsland.

Sections 1-4 fall within the known range of this listed community. Section 5 may also interact with the community at the eastern extent of its range. Two known sites where the community occurs are within the referral area – Darriman Bushland Reserve and Woodside Cemetery.

Part of the ecological community is also listed under the FFG Act as the Plains Grassland (South Gippsland) Community.

The potential for the Project to have a significant impact on Natural Damp Grassland of the Victorian Coastal Plain is summarised in Table 36. Based on a preliminary assessment, the project has the potential to have a significant impact on the community. Detailed vegetation surveys are required to determine areas where this community occurs and where these sites occur, a review of the condition thresholds will be undertaken to determine if this vegetation meets the community definition.

Table 36: Significant impact criteria for Natural Damp Grassland of the Victorian Coastal Plain

| Criterion | Response |
|---|---|
| Reduce the extent of an ecological community | Potential<br>Although occurrences of this ecological community are known to occur within the referral area, the extent and current condition of these occurrences is unknown.<br>There is potential to reduce or avoid loss of this ecological community through design and mitigation, however, further work is required to understand the extent of this ecological community within the referral area and the potential project-related impacts. |
| Fragment or increase or increase fragmentation of an ecological community, for example by clearing for roads or transmission infrastructure | Potential<br>The project has potential to increase community fragmentation. There is potential to reduce or avoid fragmentation of this ecological community through design and mitigation, however, further work is required to understand the extent of this ecological community within the referral area and the potential project-related impacts. |
| Adversely affect habitat critical for the survival of an ecological community | Potential<br>Detailed vegetation mapping and design needed to further inform assessment against this criterion. |
| modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns | Potential<br>The community naturally occurs on damp and waterlogged soils and therefore any impacts to surface, groundwater or other abiotic factors that occur as a result of the project may have a significant impact on the community.<br>further work is required to understand the extent of this ecological community within the referral area and the potential project-related impacts. |
| Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting | Potential<br>As mentioned above, impacts are difficult to ascertain at this early stage and further work is required to understand the extent of this ecological community within the referral area and the potential project-related impacts. An updated assessment against the significant impact criteria will be undertaken following detailed surveys. |

*Assemblage of species associated with open-coast salty-wedge estuaries of the western and central Victorian ecological community*

Assemblages of species associated with open-coast salt wedge estuaries of western and central Victoria ecological community is listed as endangered under the EPBC Act. The community relates to the unique assemblage of native plants and micro-organisms associated with the salt-wedge coastal estuary systems of western and central Victoria (DoE, 2017). These systems are highly dynamic and generally consist of

shallow and narrow lagoons within estuaries with intermittent mouth openings. Waters are often highly stratified, with heavy saline waters forming a wedge beneath the fresh river water. The mixing zone of these two layers causes the surface waters to become progressively more saline with proximity to the estuary mouth (DoE, 2017).

The community is known from 25 estuaries from as far west as the Victorian - South Australian border to the township of McLoughlin's Beach in south Gippsland. Wilsons Promontory is at the community's southernmost extent (DoE, 2018). None of the 25 estuaries occur within the referral area or directly interface with the Port of Hastings or BBMT areas. The eastern most extent of the community is 5 km west of the southernmost extent of the eastern and western corridor. Identification of the community in the referral area would thus require an extension of the community range. It is considered unlikely that the community exists beyond its current known extent as there are no watercourses with intermittently open entrances to the sea. Most saline wetlands along this coast are saline through groundwater seepage.

The potential for the Project to have a significant impact on open-coast salt wedge estuaries of western and central Victoria ecological community is summarised in Table 37. Based on this preliminary assessment, the Project it is unlikely to have any direct impacts on the community and a significant impact is considered unlikely. The project, however, should be cognisant of the potential for indirect impacts on the community through mechanisms such as ground disturbance and sedimentation of waterways (with potential to interact with the community).

Table 37: Significant impact criteria for Assemblages of species associated with open-coast salt wedge estuaries of western and central Victoria ecological community

| Criterion | Response |
|---|---|
| Reduce the extent of an ecological community | Unlikely<br>The community will not be directly impacted by the project. The project occurs outside of the community's known range. Indirect impacts are unlikely and no mechanism to reduce the community extent is likely to be triggered by the project. |
| Fragment or increase or increase fragmentation of an ecological community, for example by clearing for roads or transmission infrastructure. | Unlikely<br>The referral area does not occur within the community's known range. |
| Adversely affect habitat critical for the survival of an ecological community | Unlikely<br>No direct impacts are foreseen. The referral area is outside the community's known extent. |

| Criterion | Response |
|---|---|
| Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns | Potential<br>Impacts to ground and surface water that has potential to interact with the community are possible. Surface and groundwater modelling and best practice surface water management protocols should be adopted by the project to ensure no indirect impacts occur. |
| Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting | Unlikely<br>No direct impacts are anticipated, and indirect impacts were they to occur are likely to be of a minor consequence. |

### *Seasonal Herbaceous Wetlands (freshwater) of the Temperate Lowland Plains*

Seasonal Herbaceous Wetlands (freshwater) of the Temperate Lowland Plains is a threatened ecological community listed as critically endangered under the EPBC Act. The community is characterised as temporary freshwater wetlands that are inundated on a seasonal basis following spring and winter rainfall. Diversity and vegetation composition is highly variable but there are a number of key diagnostic features that define the community. These features include:

- Located within the temperate zone of mainland Australia,
- Occurs on fertile poorly draining clay soils
- Fills only in response to rainfall. No riverine or tidal influence.
- Trees and shrubs are absent or if present are sparse (less than 10%).
- Dominated by a ground layer of native wetland graminoids and or forbs.
- Salinity is fresh to slightly brackish and is typically no greater than 1000 mg/L.
- Salinity can be up to 3000 mg/L as wetlands dry (DSEWPac, 2012a).

The community occurs in isolated patches in western South Australia, Victoria and southern NSW. Distribution is most densely mapped in inland western Victoria though the community is also mapped as occurring in north central Victoria, and coastal areas such as in proximity to Geelong and Seaford. The community extends as far east as Bairnsdale; however, it is not mapped as occurring in the referral area (DSEWPac, 2012b).

The community was not identified by the PMST. However, the community was identified during an assessment of the Port of Hastings (Biosis 2015). On this basis, the community has been considered by this assessment as it was recorded at the Port of Hastings within the referral area. Field survey of this site will assess these areas against the community's key characteristics.

The potential for the Project to have a significant impact on Seasonal Herbaceous Wetlands (freshwater) of the Temperate Lowland Plains ecological community is summarised in Table 38. If present, significant impact to the community is possible, depending on the project footprint. The community was mapped as occurring in small, discrete patches south of Denham Road/Whitneys Road.

Table 38: Significant impact criteria for Assemblages of species associated with Seasonal Herbaceous Wetlands (freshwater) of the Temperate Lowland Plains.

| Criterion | Response |
|---|---|
| Reduce the extent of an ecological community | Potential<br>The community was identified in proximity to the Port of Hastings. The community, if present, occurs in small discrete patches. Potential impacts are likely to be reduced or avoided through design and mitigation. |
| Fragment or increase or increase fragmentation of an ecological community, for example by clearing for roads or transmission infrastructure | Potential<br>The community, if present, occurs in small discrete patches with no core areas identified. |
| Adversely affect habitat critical for the survival of an ecological community | Unlikely<br>The community was identified in proximity to the Port of Hastings and if present only occurs in small isolated patches. Given their extent, these patches are unlikely to be critical to the conservation of the community. |
| Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns | Potential<br>Impacts to surface, groundwater or other abiotic factors are difficult to determine at this early stage. The community is directly supported by rainfall and would be expected to have a small, discrete catchment area. |
| Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting | Potential<br>As mentioned above, impacts are difficult to ascertain at this early stage and further work is required to understand the extent of this ecological community within the referral area and the potential project-related impacts. An updated assessment against the significant impact criteria will be undertaken following detailed surveys. |

### *8.1.4. Wetlands of International Significance (Ramsar sites)*

Three wetlands of international significance (Ramsar sites) relevant to the project are identified by the PMST search:

- Port Anthony/BBMT referral area is within the Corner Inlet Ramsar site

- Port of Hastings referral area is within the Western Port Ramsar site
- Corridor options are within 10 km of the Gippsland Lakes Ramsar site, but not within a catchment which drains to the wetland.

A detailed assessment against the ecological character of the Ramsar sites has not been undertaken at this stage but will form part of the detailed assessment once the project progresses

Port Anthony/BBMT is within the Corner Inlet Ramsar site. At BBMT structural improvements to a quay wall may be required, however it is anticipated that these works would be undertaken from the landside area and therefore not affect the wetlands. There is potential for impacts on shorebird roosting areas from construction and increased activity in landside port areas and this will be assessed in detail later in the project. Runoff from newly developed landside port areas has the potential, without best practice stormwater management, to affect the quality of water in adjacent parts of the Corner Inlet Ramsar site.

The Port of Hastings encompasses land immediately north of Hastings and includes coastal habitat within Western Port Ramsar site. The Western Port Ramsar Site may require some minor works in the water in the immediate vicinity of the existing disturbed jetty area, where construction and operational environmental management measures can be adopted to avoid detrimental effects. No direct impacts on coastal areas supporting seabirds and migratory shorebirds are proposed. There is potential for disturbance of seabird and shorebirds in nearby roosting areas. There are also potential for impacts on small mammals, reptiles and amphibians. Runoff from newly developed landside port areas has the potential, without best practice stormwater management, to affect the quality of water in adjacent parts of the Western Port Ramsar site.

The Gippsland Lakes Ramsar site is situated approximately 10 kilometres from the proposed transmission route areas. No potential impacts are likely from the project on the Gippsland Lakes Ramsar site due to its distance from any component of the project.

## 8.2. Victorian matters

### *8.2.1. Environment Effects Act 1978*

This section of the report assesses the impacts on state-listed species and threatened communities, and addresses these in the context of the *Ministerial Guidelines for Assessment of Environment Effects under the Environment Effects Act 1978* (DSE 2006) – the 'EES Referral Guidelines'. These set out the criteria to determine whether a project should be referred to the state Minister for Planning under the *Environment Effects Act 1978*. The Minister then determines if an EES is required for the project.

These criteria cover the individual potential environmental effects and a combination of two or more potential environmental effects that need to be considered. A preliminary assessment of the project against the individual and combined potential environmental effects is presented in Table 39.

Table 39: Assessment of the impacts in the referral area against the EES Referral Guidelines Referral Criteria

| Referral Criteria | Referral criterion met? | Justification |
|---|---|---|
| **Individual Criteria** | | |
| Potential clearing of 10 ha or more of native vegetation from an area that:<br>a) is of an Ecological Vegetation Class identified as endangered by the Department of Sustainability and Environment (in accordance with Appendix 2 of Victoria's Native Vegetation Management Framework); (and is not authorised under an approved Forest Management Plan or Fire Protection Plan) or | Potential | **Endangered Ecological Vegetation Class**<br>Seven ecological vegetation classes with a bioregional conservation significance of Endangered occur within the study area. These communities and their total extent within the referral area, as represented by DELWP's 2005 EVC model, include:<br>▪ Grassy Woodland (78 ha)<br>▪ Creekline Herb-rich Woodland (153 ha)<br>▪ Floodplain Riparian Woodland (19 ha)<br>▪ Swampy Riparian Woodland (31 ha)<br>▪ Plains Grassy Woodland (196 ha)<br>▪ Swamp Scrub (184 ha)<br>▪ Swamp Scrub/ Plains Grassland Mosaic (67 ha), and;<br>▪ Damp Forest (48 ha)<br>Although the 2005 EVC model is a valuable tool for identifying the likely type and current extent of native vegetation within the referral area, there is a level of inaccuracy with the mapping that was observed during field assessments. Key issues are represented in Table 11.<br>The primary impact on native vegetation will be due to the clearing required to facilitate the construction of the onshore transmission assets.<br><br>The actual amount of native vegetation to be cleared will be determined once the design is refined, applying the principles of avoiding and minimising vegetation loss to the extent practicable. It is expected that the construction footprint will be less than 100 metres wide and consideration would be given to modifying construction techniques in any highly sensitive locations to minimise effects on vegetation. A full assessment of the impacts on native vegetation and a determination of the associated vegetation offset requirements will be undertaken once the design is further progressed. Native vegetation losses would need to be offset in accordance with DELWP requirements<br><br>**Forest Management Plan or Fire Protection Plan**<br>Any vegetation loss associated with the Project will not be authorised under an approved Forest Management Plan or Fire Protection Plan. |

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| Potential clearing of 10 ha or more of native vegetation from an area that:<br>b) is, or is likely to be, of very high conservation significance (as defined in accordance with Appendix 3 of Victoria's Native Vegetation Management Framework) (and is not authorised under an approved Forest Management Plan or Fire Protection Plan) | Potential | **Very high conservation significance vegetation in accordance with Appendix 3 of Victoria's Native Vegetation Management Framework**<br>Very high conservation significance vegetation in accordance with Appendix 3 of Victoria's Native Vegetation Management Framework is considered to be native vegetation that has a bioregional conservation significance of Endangered, Vulnerable and Rare and habitat score of 0.4-1, 0.5-1 and 0.6-1 respectively; or, represents the best 50% of habitat for threatened species in a Victorian bioregion; or, include the following:<br>▪ Ramsar Sites<br>▪ East Asian-Australasian Shorebird Site Network sites<br>▪ other wetlands of international significance for migratory waterbirds<br>▪ areas identified as providing refuges (e.g. during drought) for threatened species<br>**Very high conservation significance vegetation**<br>DELWP's 2005 EVC modelled mapping indicates 29,723 hectares of native vegetation with a bioregional conservation significance of Endangered, Vulnerable and Rare within the referral area. In general, the condition of native vegetation throughout the referral area is considered to be moderate to high, therefore it is likely that greater than 10 hectares of Endangered, Vulnerable and Rare vegetation with a habitat score of 0.4-1 occurs within the referral area. Whether this will be removed will not be known until a preferred project footprint is chosen and further assessment undertaken.<br>**Best 50% of habitat for threatened flora and fauna species within the Gippsland Plain bioregion**<br>Given the extent of nature conservation reserves that occur within the referral area, along with the extent of high to moderate quality flora and fauna habitat in other public and private land throughout the referral area, it is likely that the area represents the best 50% of habitat for some threatened flora and fauna species within the Gippsland Plain bioregion. The flora and fauna species considered likely or possible within the referral area are identified in Appendix 1 (flora) and Appendix 2 (fauna). A justification of why the referral area does or does not represents the best 50% of their habitat within the Gippsland Plain bioregion is listed below.<br><br>Flora:<br>▪ Dwarf Kerrawang: Although the species has recently been recorded in the study area, within Victoria the species has historically been recorded in the Gippsland Lakes hinterland, from Blond Bay State Game Reserve near Bairnsdale westwards to the Providence Ponds Flora and Fauna Reserve, which is outside of the referral area (DSE 2003). Given that the referral area includes both Holey Plains State Park and Giffard (Rifle Range) Flora Reserve, referral area is considered to potentially represents the best 50% of habitat for the species in the Gippsland Plain bioregion.<br>▪ Matted Flax-lily: Historical agricultural land uses within the referral area have likely reducing suitable habitat for the species compared to other parts of the bioregion. Additionally, a large population of the species has recently been recorded on Commonwealth land within metropolitan Melbourne in the Gippsland Plain bioregion which mostly likely represents some of the best habitat for the species in the bioregion. Regardless of this, it is acknowledged that habitat for the species throughout southern and central Victoria is far greater than previously thought and a recent record of the species occurs within the referral area. Therefore, a conservative approach has been taken and the referral area is considered to potentially represents the best 50% of habitat for the species in the Gippsland Plain bioregion.<br>▪ Trailing Hop-bush: The species was recorded at Duston Downs in 2009 approximately 27 km from the eastern corridor. Suitable habitat for the species includes low-lying, often winter-wet areas in sedge wetland, heathy woodland and damp heathland in eastern Victoria (DSE 2010). Given the extent of high – |

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| | | moderate quality habitat for this species within private and public land throughout the referral area is considered likely to represents the best 50% of habitat for the species in the Gippsland Plain bioregion.<br>▪ Strzelecki Gum: The species has recently been recorded in the referral area and its distribution largely exists on the western margin of the referral area and further west, (north to Neerim South, south to Foster, east to Woodside – Yarram area, and west to Western Port Bay – Bass River area). The referral area is considered to potentially represents the best 50% of habitat for the species in the Gippsland Plain bioregion.<br>▪ Green-striped Greenhood: The referral area occurs on the eastern extent of the species distribution with ~100 plants being recorded within the Mullungdung State Forest. The Mullungdung State Forest populations is one of the largest known populations of the species; therefore, the referral area is considered likely to represents the best 50% of habitat for the species in the Gippsland Plain bioregion.<br>▪ Maroon Leek Orchid: The maroon leek-orchid is typically associated with grasslands and grassy woodlands and its distribution extends from south-eastern South Australia (Naracoorte Coastal Plain) to the south-eastern corner bioregion in Victoria. As a large population is known from nearby Yarram and the Gippsland Lakes the referral area may represent the best 50% of habitat for the species in the bioregion.<br>▪ Metallic Sun-orchid: The metallic sun-orchid is found primarily in mesic coastal heathlands, grasslands and woodlands, but may also be found in drier inland heathlands, open forests and woodlands (Backhouse & Jeanes 1995). The metallic sun-orchid occurs across south-eastern Australia from the Eyre Peninsula (in South Australia) to East Gippsland west of Bairnsdale (Victoria). Due to the broad distribution of the species and large extent of suitable habitat for the species within the Gippsland Plain bioregion, the referral area is not considered to represent the best 50% of habitat for the species in the bioregion.<br>▪ Spiral Sun-orchid: The Spiral Sun-orchid occurs in Australia and New Zealand. In Australia, the species is widely but sporadically distributed in Victoria and South Australia, from Genoa in East Gippsland (Vic) to Kangaroo Island (SA). The species occurs in the Victorian Midlands, South East Coastal Plain, South East Corner, Naracoorte Coastal Plain and Kanmantoo IBRA bioregions. Although the species has recently been recorded in the investigation area, due to the broad distribution of the species and large extent of suitable habitat for the species within the Gippsland Plain bioregion, the referral area is not considered to represent the best 50% of habitat for the species in the bioregion.<br>▪ Swamp Everlasting: The species is endemic to south-eastern Australia and is found widely across three states, including south eastern New South Wales through to southern Victoria and along the north-east coast of Tasmania. Within Victoria, the species has a sporadic yet widely distributed population. Habitat includes wetlands, sedge swamps, lowland swamps and shallow freshwater marshes, often consisting of heavy black clay soils. To the broad distribution of the species and large extent of suitable habitat for the species within the Gippsland Plain bioregion, the referral area is not considered to represent the best 50% of habitat for the species in the bioregion.<br>▪ Winter Sun-Orchid is endemic to Victoria where it is known from five populations, the most well- known of which are located at Mt Richmond National Park and Lower Glenelg National Park (Coates, 2002). It can occur in woodlands, heathlands and heathy woodlands on well-drained soils. One record is known from the referral area within the Callignee State Forest. Due to the limited survey effort and lack of records, the referral area is not considered to represent the best 50% of habitat for the species in the bioregion.<br><br>**Fauna** |

| Referral Criteria | Referral criterion met? | Justification |
|---|---|---|
| | | Detailed fauna surveys have not yet been undertaken. The database review identified 34 fauna species listed as threatened under the FFG Act that are considered possible or likely to occur within the referral area. This list includes 20 birds, nine mammals, two amphibians, one reptile and two fish.<br><br>An assessment was undertaken to determine which FFG-listed fauna species had the highest proportion of habitat within the referral area according to DELWP habitat importance modelling and so have greater potential to be impacted by the Project. For these species, it was assumed based on the modelling that the referral area supported habitat considered to be in the best 50% of the species' habitat. These species were determined to be:<br>▪ Martins Toadlet<br>▪ Southern Toadlet<br>▪ New Holland Mouse<br>▪ Dwarf Galaxias<br>▪ Grey Goshawk<br>▪ Swamp Skink<br>▪ Chestnut-rumped Heathwren.<br>Potential impacts on FFG-listed fauna species are also most likely to arise from the clearing of vegetation for construction of the transmission assets where that vegetation provides habitat for those species. Targeted surveys are planned for threatened species that are possible or likely to occur in the referral area and this will assist with the identification of habitats. It is likely that impacts to high value habitats could be avoided or minimised through preferred corridor selection and detailed design of the onshore transmission assets.<br>**Other wetlands of international significance for migratory waterbirds**<br>The two wetlands of international significance for migratory waterbirds within the referral area include Western Port Ramsar site and Corner Inlet Ramsar site which are described above, and significant impacts are considered to be unlikely.<br>**Areas identified as providing refuges (e.g. during drought) for threatened species**<br>Once the full extent and species impact of the 2020 East Gippsland bushfire is known, an assessment of the referral area's role in providing species refuge will be determined as part of further assessments.<br>**Forest Management Plan or Fire Protection Plan**<br>Any vegetation loss associated with the Project will not be part of an approved Forest Management Plan or Fire Protection Plan. |

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| Potential long-term loss of a significant proportion (e.g. 1 to 5 percent depending on the conservation status of the species) of known remaining habitat or population of a threatened species within Victoria | Potential | An EnSym report has been produced based total loss of modelled native vegetation within a 500m buffer of the centreline of each corridor and the two Port locations. The EnSym tool analyses the impact to Species Important Habitat as modelled by DELWP as a result of vegetation loss. In this instance we have used the DELWP 2005 EVC model. To better understand the potential impacts a very broad Ensym report designed to cover all potential options of habitat loss resulting from the Project was used. Note that only one of the options will be used and that corridor will likely be 100m. The EnSym tool and the Species Important Habitat model has been used as a proxy to understand the Potential long-term loss of a significant proportion (e.g. 1 to 5%) of known remaining habitat or population of a threatened species within Victoria that has been considered likely or expected to occur within the referral area. Figures listed in the parentheses below represent the percentage of Species Important Habitat that would be lost if all modelled vegetation within the referral area was lost, a clearly conservative assessment. These species include;<br>**Flora**<br>▪ Dwarf Kerrawang (2.5794),<br>▪ Matted Flax-lily (0.396),<br>▪ Trailing Hop-bush (0.0509),<br>▪ Strzelecki Gum (0.0179),<br>▪ Green-striped Greenhood (0.9117),<br>▪ Maroon-leek Orchid (0.428)<br>▪ Metallic Sun-orchid (0),<br>▪ Swamp Everlasting (0.0386), and;<br>▪ Spiral Sun-orchid (0.1766)<br>▪ Winter Sun-orchid (0.0376)<br>**Fauna**<br>An assessment was undertaken to determine which FFG-listed fauna species had the highest proportion of habitat within the referral area according to DELWP habitat importance modelling and so have greater potential to be impacted by the Project. For these species, the referral area may represent part of the best 50% of habitat for these species. These species were determined to be:<br>▪ Martins Toadlet<br>▪ Southern Toadlet<br>▪ New Holland Mouse<br>▪ Dwarf Galaxias<br>▪ Grey Goshawk<br>▪ Swamp Skink<br>▪ Chestnut-rumped Heathwren.<br>Potential impacts on FFG-listed fauna species are also most likely to arise from the clearing of vegetation for construction of the transmission assets where that vegetation provides habitat for those species. Targeted surveys are planned for threatened species that are possible or likely to occur in the referral area and this will assist with the identification of habitats.<br>It is likely that potential long-term loss of a significant proportion could be avoided or minimised through preferred corridor selection and detailed design of the onshore transmission assets. The significance of residual impacts on FFG-listed fauna will be subject to future assessment. |

| Referral Criteria | Referral criterion met? | Justification |
|---|---|---|
| Potential long-term change to the ecological character of a wetland listed under the Ramsar Convention or in 'A Directory of Important Wetlands in Australia' | Unlikely | **Ramsar Sites**<br>Western Port Ramsar wetland:<br>The referral area at Port of Hastings overlaps with a small area of the Western Port Ramsar wetland. The wetland is an international and nationally important wetland for migratory birds.. The Ramsar site has a wide variety of habitat types, ranging from deep channels, seagrass flats, intertidal mudflats, extensive mangrove thickets and saltmarsh vegetation. The white mangrove communities within Western Port are the most well-developed and extensive in Victoria, and are the only large communities situated so far from the Equator. Threatened plant species that are found within the Ramsar site include dense leek-orchid, creeping rush, and tiny arrow grass (DAWE 2019a).<br>Western Port is one of the three most important areas for waders in Victoria and the site supports numerous migratory species listed under international migratory bird conservation agreements. High numbers of eastern curlew, whimbrel, bar-tailed godwit, grey-tailed tattler, greenshank and Terek sandpiper have been recorded at the site. Nationally threatened species that utilise Western Port include the orange-bellied parrot, swift parrot, helmeted honeyeater, little tern, southern right whale, and humpback whale. The site supports the globally threatened fairy tern which is listed as vulnerable on the IUCN Red List of Threatened Species (DAWE 2019a).<br>Corner Inlet:<br>The mainland coast and several sandy islands are covered with mangroves, saltmarshes, sandy beaches and very extensive intertidal mudflats. The area contains the only extensive bed of the Broad-leafed Seagrass in Victoria (DAWE 2019b).<br>Corner Inlet supports more than 390 species of marine invertebrates and 390 species of native flora. The Ramsar site also has a high diversity of bird species with thirty-two wader species recorded. Corner Inlet provides extensive tidal flats that are exposed at low tide, which are important feeding areas for waders. It is estimated that nearly 50 per cent of the overwintering migratory waders in Victoria occur in Corner Inlet (DAWE 2019b).<br>The Western Port Ramsar Site may require some minor works in the water in the immediate vicinity of the existing disturbed jetty area, where construction and operational environmental management measures can be adopted to avoid detrimental effects and significant impacts on these sites are unlikely. Similar to construction for the onshore transmission assets, works at the port sites would be undertaken in accordance with a CEMP established to monitor and control potential impacts of the works.<br>The BBMT and Port Anthony section of the referral area overlaps with a small part of the Corner Inlet Ramsar Site. At BBMT structural improvements or a quay wall may be required however it is anticipated that these works would be undertaken from the landside area and therefore not affect the wetlands.. Similar to construction for the onshore transmission assets, works at the port sites would be undertaken in accordance with a CEMP established to monitor and control potential impacts of the works.<br>Gippsland Lakes<br>The nationally threatened species utilising the Gippsland Lakes Ramsar site include the Growling Grass Frog, Australian Grayling and Swift Parrot (DAWE 2019b).<br>The referral area is located within 10 km of the Gippsland Lakes Ramsar site. The proposed project is not considered likely to impact on the Gippsland Lakes Ramsar site. |

| Referral Criteria | Referral criterion met? | Justification |
|---|---|---|
| **Combined criteria.**<br><br>**A combination of two or more of the following types of potential effects on the environment that might be of regional or State significance, and therefore warrant referral of a project, are:** | | |
| Potential clearing of 10 ha or more of native vegetation, unless authorised under an approved Forest Management Plan or Fire Protection Plan | Potential | The DELWP 2005 EVC model indicates that 15,021 hectares of native vegetation occurs within the referral area. The actual amount of native vegetation to be cleared will be determined once the design is refined, applying the principles of avoiding and minimising vegetation loss to the extent practicable. It is expected that the construction footprint will be less than 100 metres wide (of which some areas are anticipated to contain native vegetation) and consideration would be given to modifying construction techniques in any highly sensitive locations to minimise effects on vegetation. A full assessment of the impacts on native vegetation and a determination of the associated vegetation offset requirements will be undertaken once the design is further progressed. |

| Referral Criteria | Referral criterion met? | Justification |
|---|---|---|
| - potential loss of a significant area of a listed ecological community; or | Potential | The following FFG Act listed communities have a potential to occur within the referral area based on the name on of the community, land form, geographical location and dominant species included in the community description.<br>• Central Gippsland Plains Grassland Community<br>• Forest Red Gum Grassy Woodland Community<br>• Herb-rich Plains Grassy Wetland (West Gippsland) Community<br>• Plains Grassland (South Gippsland) Community<br>A review of past reports, as well as the FFG Act community descriptions, has identified that Plains Grassland (South Gippsland), Forest Red Gum Grassy Woodland and Herb-rich Plains Grassy Wetland (West Gippsland) are either known to occur or are considered likely to occur within the referral area.<br>A single occurrence of secondary Forest Red Gum Grassy Woodland Community was observed within the referral area on Giffard Road in the southern extent of the northern corridor. This patch of woodland was characterised by a remnant stand of Forest Red Gum *Eucalyptus tereticornis* but lacked a mid or understory strata, and as such is not considered to meet the community description. It is likely that occurrences of the community occur on private land adjacent to Giffard Road, Giffard and therefore, the community is considered likely to occur within the referral area.<br>Herb-rich Plains Grassy Wetland (West Gippsland) Community has been described as being present within the Port of Hastings component of the referral area in Biosis (2015).<br>The Plains Grassland (South Gippsland) Community is described in the community description as occurring in the Yarram region between Seaspray and Welshpool. Additionally, the community has been described as occurring in the Darriman Bushland Reserve, Woodside Cemetery and roadside patches along Stringybark Lane which traverses the western and eastern corridors. Therefore, the occurrence of this community within the referral area is considered likely.<br>It in unknown at this stage whether a significant area of the above communities could be affected by the project and this will be assessed in more detail as part of further studies. The actual amount of native vegetation to be cleared will be determined once the design is refined, applying the principles of avoiding and minimising vegetation loss to the extent practicable. |
| - potential loss of a genetically important population of an endangered or threatened species (listed or nominated for listing), including as a result of loss or fragmentation of habitats; or | Unlikely | A review of the FFG Act listed flora and fauna species considered likely or expected to occur within the referral area has determined that none of these species are likely to lose a genetically important population either through direct impact or as a result of habitat fragmentation. Fauna habitats with the potential to support FFG Act listed threatened species (Southern Brown Bandicoot, Southern Greater Glider, Spotted-tailed Quoll) may be affected, depending on the final corridor chosen. Further surveys are required to ascertain if unique populations are to be affected. Removal of treed habitat has the potential to affect the genetically unique, although not threatened, local Koala population, The avoidance of wetland habitats by adopting construction methods that avoid surface excavation will ensure impacts on threatened species in these habitats are not impacted significantly. |

| Referral Criteria | Referral criterion met? | Justification |
|---|---|---|
| - potential loss of critical habitat; | Potential | No critical flora habitats have been listed under the FFG Act.<br>It is possible that critical habitat for some species of listed threatened fauna (see above) and the local Koala population may be affected, depending on the final corridor chosen. |
| - potential significant effects on habitat values of a wetland supporting migratory bird species | Unlikely | Several wetlands which support habitat values for migratory bird species are located within or directly adjacent to the referral area including estuarine wetlands located behind the primary dunes at McGauran's Beach and Reeves Beach as well the Corner Inlet Ramsar site, Western Port Ramsar site and the Gippsland Lakes Ramsar site (within 10 km). Generally, the distance between these sites and the works areas are sufficient to avoid potential significant impacts. The Western Port Ramsar sight may require some works in the water in the immediate vicinity of the existing disturbed jetty area where modern construction and operational environmental management measures can be adopted to avoid detrimental effects.<br>The use of construction methods that avoid surface excavation in wetland habitats make it unlikely that the project will result in significant effects on wetlands supporting migratory bird species. |

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| Potential extensive or major effects on the health or biodiversity of aquatic, estuarine or marine ecosystems, over the long term | Potential | **Aquatic ecosystems**<br>The three transmission corridor options are located within an area that contains around 20 waterways from within the Latrobe River and South Gippsland catchments. The main waterways within the area are Merriman Creek which starts near Balook and flows more than 80 kilometres to the coast at Seaspray and Bruthen Creek which originates near Carrajong Lower and reaches its estuary around 30 kilometres away near Mcloughlins Beach. The Bruthen Creek sub-catchment is linked to the Corner Inlet Ramsar site. The remainder of the named waterways are tributaries of the Latrobe River, Merriman Creek or Bruthen Creek or smaller streams.<br>Waterways:<br>- South Gippsland Catchment<br>o Merriman Creek<br>o Monkey Creek<br>o Little Monkey Creek<br>o Long Creek<br>o Bayliss Gully<br>o Morris Creek<br>o Warrigal Creek<br>o Hoddinott Creek<br>o Bruthen Creek<br>o Toms Cap Creek<br>o Reedy Creek<br>- Latrobe River Catchment<br>o Waterhole Creek<br>o Traralgon Creek<br>o Flynns Creek<br>o Bennetts Creek<br>o Plough Creek<br>o Boyds Creek<br>o Sheepwash Creek<br>o Blind Joe Creek<br>- Bunyip River Catchment<br>o Olivers Creek<br><br>Potential impacts that could occur to waterways resulting from this project include reduced water quality via releases of sediment or contaminant such as hydrocarbon, temporarily reduced flows, localised bed and bank scour post-construction via altered creek morphology; and localised loss of streamside and instream vegetation and habitat.<br>Provided that construction techniques and environmental mitigations measures are unknown at this stage, it is considered likely that above listed impacts to waterways may occur.<br>**Estuarine ecosystems**<br>The southern extent of the on-shore corridors within the referral area interact with estuarine systems. Within the northern corridor, this includes an estuarine wetland positioned between the primary and secondary dune system and the Jack Smith Lake Wildlife Reserve located to the west of the northern corridor. At the southernmost extent, western and eastern corridors merge and intersect with an un-named waterway |

| Referral Criteria | Referral criterion met? | Justification |
|---|---|---|
| | | as well as an inter-dune estuarine wetland. This waterway is considered to be tidal or saline as a result of groundwater interaction.<br>Biosis (2015) identifies Coastal Saltmarsh EVC as occurring within the Port of Hastings referral area which would most likely be influenced by tidal or saline groundwater processes.<br>The wetlands influenced by either tidal or saline groundwater located within the coastal landforms of the western, eastern and northern corridors support extensive areas of Coastal Saltmarsh and Estuarine Wetland EVC's bordered by Swamp Scrub, Heathy Woodland and Coastal Dune Scrub EVC above their waterline.<br>The Project has committed to Horizontal Direction Drilling construction methods to traverse the coastal dune and wetland systems within the referral area that relate to the on-shore corridors. Therefore, it is unlikely that these systems will be impacted by the Project.<br>The likely impact to ecosystems at Port of Hastings that are influenced by either tidal or saline groundwater is unknown at this stage of the Project.<br>**Marine ecosystems**<br>Marine environments are encountered within each of the corridors at Mc Guaran's Beach and Reeves Beach, as well as the Ports including BBMT, Port Anthony and Port of Hastings.<br>Items relating to marine ecosystems will be addressed in the marine ecology technical report being authored by RPS.<br>**Conclusion**<br>It is considered that the project may have negative effects on the health or biodiversity of aquatic and estuarine ecosystems over the long term, however any effects are likely to be localised in their extent and impact and will not represent an extensive or major impact. |

### 8.2.2. Flora and Fauna Guarantee Act Threatened Species

#### Listed flora

The following nine threatened flora species listed under the provisions of the FFG Act were identified through the VBA and through a very broad Ensym report designed to cover all potential options that was used as a very conservative measure. These were identified as likely or potential to occur in the referral area.

- Dwarf Kerrawang *Commersonia prostrata*
- Matted Flax-lily *Dianella amoena*
- Strzelecki Gum *Eucalyptus strzeleckii*
- Maroon-Leek orchid *Prasophyllum frenchii*
- Green-striped Greenhood *Pterostylis chlorogramma*
- Metallic Sun-orchid *Thelymitra epipactoides*
- Spiral Sun-orchid *Thelymitra matthewsii*
- Swamp Everlasting *Xerochrysum palustre*
- Winter Sun-orchid *Thelymitra hiemalis*

#### Listed communities

Three ecological communities listed under the FFG Act are either known to occur or are considered likely to occur within the referral area. These are described below.

Plains Grassland (South Gippsland) Community. The Plains Grassland (South Gippsland) Community is described in the community description as occurring in the Yarram region between Seaspray and Welshpool. Additionally, the community has been described as occurring in the Darriman Bushland Reserve, Woodside Cemetery and roadside patches along Stringybark Lane which traverses the western and eastern corridors.

Forest Red Gum Grassy Woodland Community. A single occurrence of a modified Forest Red Gum Grassy Woodland Community was observed within the referral area on Giffard Road in the southern extent of the northern corridor. This patch of woodland was characterised by a remnant stand of Forest Red Gum *Eucalyptus tereticornis* but lacked the mid-storey and understorey components of the community. It is likely that occurrences of the community occur on private land adjacent to Giffard Road, Giffard and therefore, the community is considered likely to occur within the referral area.

Herb-rich Plains Grassy Wetland (West Gippsland) Community. This community was recorded within the Port of Hastings by Biosis (2015). It is therefore likely that this community is present within the Port of Hastings referral area.

#### Listed Fauna

The following list of Fauna and Flora Guarantee Act Listed fauna and other threatened fauna was identified through the Victorian Biodiversity Atlas and a very broad Ensym report designed to cover all potential options and assessed as Likely to occur or Potential to occur within the referral area, not including coastal wetlands or beaches. Twenty-six species were identified as FFG Listed or listed as endangered, critically endangered or vulnerable on the DELWP Advisory List.

- Australian Little Bittern (FFG L DELWP En)

- Australian Shoveler (DELWP Vu)
- Baillons Crake (FFG L DELWP Vu)
- Barking Owl (FFG L DELWP En)
- Black Falcon (FFG L DELWP Vu)
- Blue Billed Duck (FFG L DELWP En)
- Chestnut-rumped Heath Wren (FFG L DELWP Vu)
- Common Greenshank (DELWP Vu)
- Freckled Duck (FFG L DELWP En)
- Eastern Great Egret (FFG L DELWP Vu)
- Grey Goshawk (FFG L DELWP Vu)
- Gull-billed Tern (L)
- Hardhead (DELWP Vu)
- Intermediate Egret (FFG L DELWP En)
- Lewin's Rail (FFG L DELWP Vu)
- Little Egret (FFG L DELWP En)
- Masked Owl (FFG L DELWP En)
- Musk Duck (DELWP Vu)
- Powerful Owl (FFG L DELWP Vu)
- Square Tailed Kite (FFG L DELWP Nt)
- White Bellied Sea Eagle (FFG L DELWP Vu)
- Broad-toothed Rat (FFG L DELWP en)
- Common Bentwing Bat (FFG L)
- New Holland Mouse (FFG L DELWP Vu)
- White-footed Dunnart (FFG L DELWP Nt)
- Swamp Skink (FFG L DELWP Vu)
- Glossy Grass Skink (DELWP Vu)
- Lace Monitor (DELWP En)
- Southern Toadlet (DELWP Vu)
- Martins Toadlet (FFG L DELWP Cr)
- Flinders Pygmy Perch (DELWP Vu)

For each of these species, an estimate has been made of the percentage of DELWP-modelled habitat in Victoria that occurs in the referral area. This has enabled the identification of one species for which more than 1% of the state modelled habitat occurs in the referral area: Martin's Toadlet. It is this species for which the project may represent an impact of greater concern.

Other fauna species for which more than 0.1% of the state modelled habitat occurs are:

- New Holland Mouse (0.4934)
- Southern Toadlet (0.4880)
- Dwarf Galaxias (0.3961)
- Grey Goshawk (0.1496)
- Swamp Skink (0.1135)
- Chestnut-rumped Heathwren (0.1021)

*Threatening processes*

The following processes that have been listed as potentially threatening processes in accordance with Section 10 of the FFG Act may be exacerbated by the Project:

- *Alteration to the natural flow of rivers and streams*: Around 20 waterways were identified by the database searches completed as part of the preliminary flora and fauna assessment. The three transmission corridor options are located within an area that contains around 20 waterways from within the Latrobe River and South Gippsland catchments. The main waterways within the area are Merriman Creek which starts near Balook and flows more than 80 kilometres to the coast at Seaspray and Bruthen Creek which originates near Carrajong Lower and reaches its estuary around 30 kilometres away near McLoughlins Beach. The Bruthen Creek sub-catchment is linked to the Corner Inlet Ramsar site. The remainder of the named waterways are tributaries of the Latrobe River, Merriman Creek or Bruthen Creek or smaller streams.
- While a preferred transmission corridor hasn't been selected, it is likely that a number of these waterways would be crossed by the Project. Potential impacts could include removal of habitat, sedimentation, reduced water quality and disturbance of water flows. Any effects on waterway flows and water quality would be expected to be temporary and of short duration.
- Input of petroleum and related products into waterways through spills or blowout during drilling.
- *Degradation of native riparian vegetation along Victorian rivers and streams*. As mentioned above, there are waterways and waterway segments identified within the referral area and therefore there is the potential for the degradation of native riparian vegetation along Victorian rivers and streams to be incurred during construction. Design and mitigation are likely to avoid and minimise these impacts to ecological values along riparian corridors.
- *Habitat fragmentation as a threatening process for fauna in Victoria.* As there is likely to be removal of native vegetation for the onshore transmission assets, there is potential for fragmentation of habitats to impact threatened fauna species relying on vegetation within the referral area. Such cleared areas can expose small mammals in particular to predation and can attract predators, including introduced predators. As the design progresses, there is likely to be a minimisation of vegetation removal, however the potential for habitat fragmentation won't be determined until a preferred transmission alignment is selected.
- *Increase in sediment input into Victorian rivers and streams due to human activities.* Design and mitigation are likely to avoid and minimise impacts to Victorian rivers and streams – this includes proposed trenchless methods under important ecological values along riparian corridors. Best-practice construction activities will be adopted throughout the Project and implemented in accordance with the Project Construction Environmental Management Plan (CEMP). The CEMP will identify key waterway segments where runoff and sedimentation may result in down-stream impacts to significant waterways and aquatic fauna. This is particularly important in consideration of the three

Ramsar sites relevant to the Project including Corner Inlet and Western Port. Strict sediment control measures will be adopted where these values and potential impacts to these values are identified.

- *Invasion of native vegetation by 'environmental weeds'*. The Project has the potential to introduce 'environmental weeds' during construction. This includes introducing exotic weeds to areas of high-quality vegetation where weeds are a minor component of the community and also facilitating invasion by native environmental weeds such as Burgan *Kunzea ericoide*s by removing structural components of the vegetation community that allow it to become prolific. Best-practice construction activities and procedures for reducing the introduction and spread of environmental weeds will be addressed in the Project CEMP.
- *Loss of hollow-bearing trees from Victorian forests*. Hollow-bearing trees are present within conservation reserves that intersect the referral area. They are also present in remnant roadside vegetation and are likely to be represented in scattered remnant and patches of trees on private land. Detailed tree surveys will be completed as the Project progresses and once a preferred corridor is selected. Ensuring hollow-bearing trees are identified and avoided will be a priority during the early design and development process. This is a high priority action in consideration of the loss of habitat for threatened flora as a result of the 2020 bushfires in east Gippsland.
- *The spread of* Phytophthora cinnamomi *from infected sites into parks and reserves, including roadsides under the control of a state or local government authority. Phytophthora cinnamomi* (cinnamon fungus) was observed during the preliminary assessment within Merriman Creek Flora reserve and Mullungdung State Forest. There is therefore the potential for this to spread to other parks and reserves during vegetation clearance and construction activities. Best-practice methods and procedures for reducing the introduction and spread of cinnamon fungus during construction will be addressed in the Project CEMP. Material and fill for the Project will be sourced from a reputable clean-waste company to reduce the instance of cinnamon fungus-infected gravel and material being introduced to sites.
- *Wetland loss and degradation as a result of change in water regime, dredging, draining, filling and grazing*. Potential impacts to waterbodies and wetlands will be identified and addressed as the Project progresses and once a corridor is selected. No dredging is being proposed. Design and mitigation are likely to avoid and minimise impacts to wetlands and waterbodies at the early stages of design and development.

# 9. Management and mitigation

The Project will implement a range of management and mitigation measures, to reduce its impacts on ecological values to as low as reasonably practicable.

The Project would be constructed and operated under an environmental management system. A CEMP would be prepared and implemented for all project components and would include directions on how the Project is constructed to minimise its impacts. Similarly, an operational environmental management plan (OEMP) would be prepared and implemented for the operational phase of the Project to minimise potential impacts.

While the design of the Project is evolving based on investigations into technical feasibility and commercial viability and will continue to be refined in response to information gathered regarding potential environmental and social impacts, measures will be implemented, as applicable. These include, but are not limited to:

## 9.1. Native vegetation

The Project will avoid and minimise its impact on ecological values as far as reasonably practicable through measures such as asset siting, Project design and construction management (e.g. via Construction Environment Management Plan (CEMP)).

Low impact construction measures such as those that don't involve surface excavation, will be used to avoid impacts on high-quality habitats including, creeks, rivers, salt marsh and wetlands that occur within the transmission corridors wherever practicable.

The Project will avoid clearance of native vegetation, where possible and clearance activities will only be undertaken with the appropriate approvals in place.

The Project will offset unavoidable Project-associated vegetation loss and follow all regulatory requirements including obtaining native vegetation offsets as required by regulators for clearance of remnant native vegetation

The Project will preserve or reinstate pre-existing environmental values and / or land uses as much as reasonably practicable. It will limit the disturbance to the approved Project footprint and minimise disturbance within the Project footprint to the extent reasonably practicable.

## 9.2. Fauna

The Project will avoid or minimise physical negative impacts on fauna as far as reasonably practicable by designing routes to avoid impacts on high quality habitats and as mentioned above, by using construction measures wherever practicable that don't involve surface excavation, These methods will be used to avoid impacts on high-quality habitats including, creeks, rivers, salt marsh and wetlands that occur within the transmission corridors.

Impacts on wildlife will also be reduced by implementing speed restrictions for on-site traffic and if required, undertaking fauna salvage and translocation in compliance with requirements of the *Wildlife Act 1975.*

Additionally, it is recognised that while koalas are not listed, the Strzelecki population of koalas is of high significance for its inherent genetic diversity. For this reason, impacts on koala habitat will be avoided wherever practicable. Habitat, including plantations, will be mapped and avoided wherever practicable. The Victorian Koala Management Strategy 2004 will be used as a guide to further assessment. Before any clearing of vegetation koala surveys will be undertaken to avoid any animal welfare issues.

### 9.3. Weeds and Pests

The Project will prevent introduction and spread of weeds, pest fauna and known diseases. It will limit surface disturbance and vegetation clearing to the minimum required. The Project will develop and implement robust weed management and monitoring procedures, in order to avoid the spread of high threat environmental weeds. The Project will develop and implement procedures to eradicate or manage pest fauna within the Project site, as well as develop and implement procedures to prevent the spread of pathogens such as Cinnamon Fungus (*Phytophthora cinnamomi*) by soil, gravel or equipment transported to the site.

### 9.4. Bushfire considerations

The impacts of the 2019/2020 bushfires in Queensland, New South Wales, Victoria and South Australia, have destroyed significant areas of habitat, and populations of some species are predicted to have declined significantly. Impacts may be more significant to a proportion of habitat than previously would have been the case.

# 10. Conclusion

Key ecological considerations that relate to the Project are as follows:

- Potential impacts to four EPBC-Act-listed ecological communities including:
  - Gippsland Red Gum (Eucalyptus tereticornis subsp. mediana) Grassy Woodland and Associated Native Grassland
  - Subtropical and Temperate Coastal Saltmarsh,
  - Natural Damp Grasslands of the Victorian Coastal Plain
  - Seasonal Herbaceous Wetlands (freshwater) of the Temperate Lowland Plains
- Potential impacts to nine EPBC Act-listed flora species including:
  - River Swamp Wallaby-grass (*Amphibromus fluitans*)
  - Dwarf Kerrawang (*Commersonia prosrata*)
  - Green-striped Greenhood (*Pterostylis chlorogramma*)
  - Matted Flax-lily (*Dianella amoena*)
  - Strzelecki Gum (*Eucalyptus strzeleckii*)
  - Trailing Hop-bush (*Dodonaea procumbens*)
  - Metallic Sun-orchid (*Thelymitra epipactoides*)
  - Spiral Sun-orchid (*Thelymitra matthewsii)*
  - Swamp Everlasting (*Xerochrysum palustre*)
- Potential impact to one flora species in addition to the foregoing EPBC Act-listed flora species:
  - Winter Sun-orchid
- Potential impacts to two Wetlands of International Significance (Ramsar sites) including:
  - Corner Inlet
  - Western Port
- Potential impacts to eight Ecological Vegetation Classes (EVCs) with an Endangered bioregional conservation status. These EVCs include:
  - Grassy Woodland,
  - Creekline Herb-rich Woodland,
  - Floodplain Riparian Woodland,
  - Swampy Riparian Woodland,
  - Plains Grassy Woodland,
  - Swamp Scrub,
  - Swamp Scrub/ Plains Grassland Mosaic; and,
  - Damp Forest

- Potential to impact habitat that represents the best 50% of habitat for the following species:
  - Dwarf Kerrawang
  - Trailing Hop-bush
  - Green-striped Greenhood
  - Maroon Leek-orchid
- Potential to impact three FFG-listed ecological communities:
  - Forest Red Gum Grassy Woodland Community
  - Herb-rich Plains Grassy Wetland (West Gippsland) Community
  - The Plains Grassland (South Gippsland) Community
- Potential to impact 20 named waterways
- Potential to impact on seven EPBC Listed fauna species:
  - Southern Brown Bandicoot
  - Southern Greater Glider
  - Spotted-tailed Quoll
  - Swamp Antechinus[2]
  - Growling Grass Frog
  - Australian Grayling
  - Dwarf Galaxias
- Potential to impact on seven FFG Listed Species in addition to the foregoing EPBC Act-listed fauna species:
  - Martins Toadlet
  - Southern Toadlet
  - Swamp Skink
  - New Holland Mouse
  - Dwarf Galaxias
  - Grey Goshawk
  - Chestnut-rumped Heathwren

[2] Note there have been no records of this species in the referral area since 1990 but fauna surveys for other mammals may detect it, in which case a revised assessment would be required.

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# Appendices

## Appendix 1: Likelihood of occurrence of flora in the referral area

| Scientific Name | Common Name | Conservation Status | | | Habitat | Source | Number of records | Record #, (Year) | Likelihood of occurrence | Recorded in VBA (X) / Predicted by PMST (P) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPBC | FFG | DELWP | | | | | | 1 | 2 | 3 | 4 | 5 | Port of Hasting | Port of Anthony |
| *Acacia rostriformis* | Bacchus Marsh Wattle | | L | vu | Confined to the Bacchus Marsh are where it occurs on low hilly areas and in Eucalypt woodland. | VBA | 1 | 2011 | **Rare to occur.** No suitable habitat and likely to be an error in VBA data. | | | | | | X | |
| *Allocasuarina luehmannii* | Buloke | | L | en | Usually found growing in woodland with Grey Box on a range of on non-calcareous soils types, mainly sandy loams. It is usually found on lower parts of the landscape mainly north and west of the Great Dividing Range and within the Murray-Darling Basin. | VBA | 7 | 2011 | **Rare to occur.** No suitable habitat and likely to be an error in VBA data. | X | | X | X | X | X | |
| *Amphibromus fluitans* | River Swamp Wallaby-grass | VU | | | Inhabits both natural and man-made water-bodies, including swamps, lagoons, billabongs and dams. | PMST, VBA | 3 | 2013 | **Likely to occur.** *Habitat exists and records from within the corridor study area* Recorded at Port of Hastings (Biosis, 2015). | P | P | P | P | P, X | P, X | P |
| *Argyrotegium nitidulum* | Shining Cudweed | VU | | r | Found in Alpine environments - extremely localised on the Bogong High Plains and occasionally found in other Alpine area (Mt Cope and Mt Nelse) and the Snowy Range | VBA | 1 | 2008 | **Rare to occur.** No suitable habitat and likely to be an error in VBA data. | X | | | | | | |
| *Brachyscome gracilis subsp. gracilis* | Dookie Daisy | | L | vu | Rare in Victoria, where it is confined to sandy to clay loams, or shallow, rocky soils in open Eucalypt woodlands and forests in the north and north-east. | VBA | 1 | 1987 | **Rare to occur.** No suitable habitat and likely to be an error in VBA data. | | | | X | | | |

| Scientific Name | Common Name | Conservation Status | | | Habitat | Source | Number of records | Record #, (Year) | Likelihood of occurrence | Recorded in VBA (X) / Predicted by PMST (P) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPBC | FFG | DELWP | | | | | | 1 | 2 | 3 | 4 | 5 | Port of Hasting | Port of Anthony |
| *Caladenia orientalis* | Eastern Spider-orchid | EN | L | en | Coastal heathlands and heathy woodlands between the Mornington Peninsula and Yarram, on well-drained soil | PMST | | | **Unlikely to occur** Habitat exists. Records exist in Wilsons Prom and west of Wilsons Prom but no records within the corridor study area.. Habitat modelled. Refer to % habitat value affected. | P | P | P | P | P | P | P |
| *Caladenia tessellata* | Thick-lip Spider-orchid | VU | | vu | Apparently confined to eastern Victoria near-coastal heathy woodlands to open forests on well-drained sandy soils. | PMST, VBA | 1 | 1975 | **Unlikely to occur.** Habitat exists. One record >30 years old. | P, X | P | P | P | P | | P |
| *Commersonia prostrata* | Dwarf Kerrawang | EN | L | en | Confined to swampy land and lake margins in the Rosedale-Stradbroke-Providence Ponds area | PMST, VBA | 8 | 2010 | **Likely to occur** Habitat exists and records from within the corridor study area. **.** Habitat modelled. Refer to % habitat value affected. | P | P, X | P, X | P, X | P | | P |
| *Corymbia maculata* | Spotted Gum | | | vu | Suited to temperate to tropical areas but will grow satisfactorily in drier climates if water is available. It adapts to a wide range of soils provided they are not waterlogged. Isolated population believed to exist in East Gippsland. | VBA | 1 | 2008 | No suitable habitat and species outside it's natural range - likely to be planted. **Rare to occur.** | | | | | | X | |
| *Cullen patens* | Spreading Scurf-pea | | L | en | Only known from the far north-west of Victoria | VBA | 1 | 2006 | **Rare to occur.** No suitable habitat and likely to be an error in VBA data. | X | | | | | | |
| *Cullen tenax* | Tough Scurf-pea | | L | en | Generally grows in drier areas in grassland and grassy woodland on heavier soils. | VBA | 1 | 1987 | **Rare to occur.** No suitable habitat and likely to be an error in VBA data. | | | | | | X | |

| Scientific Name | Common Name | Conservation Status | | | Habitat | Source | Number of records | Record #, (Year) | Likelihood of occurrence | Recorded in VBA (X) / Predicted by PMST (P) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPBC | FFG | DELWP | | | | | | 1 | 2 | 3 | 4 | 5 | Port of Hasting | Port of Anthony |
| *Dianella amoena* | Matted Flax-lily | EN | L | en | Largely confined to drier grassy woodland and grassland communities south of the Dividing Range and now much depleted through its range. | PMST, VBA | 3 | 2006 | **Possible to occur** Habitat exists and records from within the corridor. study area .Recorded by Biosis 2001.Habitat modelled. Refer to % habitat value affected | P | P, X | P, X | P, X | P, X | P | P |
| *Dodonaea procumbens* | Trailing Hop-bush | VU | | vu | Low-lying and wet areas in woodland, low open forests, heathland and grasslands, on sands and clays. | PMST, VBA | 2 | 1978 | **Possible to occur** Habitat exists and records from within the corridor study area. Important population exists east of Seaspray. Habitat modelled. Refer to % habitat value affected. | X | P | P | P | | | P |
| *Eucalyptus alligatrix subsp. limaensis* | Lima Stringybark | EN | L | en | Restricted to the Lima and Swanpool districts of north-eastern Victoria | VBA | 1 | 1999 | **Rare to occur.** No suitable habitat and species outside it's natural range - likely to be planted. | | | | | | X | |
| *Eucalyptus leucoxylon subsp. bellarinensis* | Bellarine Yellow-gum | | L | en | Occurs in exposed coastal areas on the Bellarine Penninsula near Ocean Grove and Torquay, on heavy clay soils. | VBA | 1 | 2010 | **Rare to occur**. No suitable habitat and species outside it's natural range - likely to be planted. | | | | | X | | |
| *Eucalyptus strzeleckii* | Strzelecki Gum | VU | L | vu | Largely restricted to the western section of the Strzelecki Range, from Neerim South in the north, south to Foster, and a few isolated records from the Otway Ranges. Favours ridges, slopes and streambanks and deep fertile soils. | PMST, VBA | 3 | 2008 | **Possible to occur.** Habitat exists and records from within the corridor study area. Habitat modelled. Refer to % habitat value affected | P | P,X | P | P | P, X | | P |

| Scientific Name | Common Name | Conservation Status | | | Habitat | Source | Number of records | Record #, (Year) | Likelihood of occurrence | Recorded in VBA (X) / Predicted by PMST (P) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPBC | FFG | DELWP | | | | | | 1 | 2 | 3 | 4 | 5 | Port of Hasting | Port of Anthony |
| *Glycine latrobeana* | Clover Glycine | VU | L | vu | Endemic in Victoria and sporadically dispersed. Grows mainly in grasslands and grassy woodlands. Native grasslands, dry sclerophyll forests, woodlands and low open woodlands with a grassy ground layer | PMST, VBA | 1 | 1981 | **Unlikely to occur.** Habitat exists. Record >30 years old. | P | P, X | P | P | P | P | P |
| *Grevillea celata* | Colquhoun Grevillea | VU | L | vu | Only known from the Colquhuon state Forest east of Bruthen. Grows in dry sclerophyll forest on red siliceous or pale granitic sands. | VBA | 1 | 2010 | **Rare to occur.** No suitable habitat and species outside it's normal distribution range - likely to be planted. | | | | | | X | |
| *Grevillea infecunda* | Anglesea Grevillea | VU | L | vu | Victorian endemic and confined to the Anglesea region. Grows in dry sclerophyll forest or woodland on sandy or gravelly soils | VBA | 3 | 2006 | **Rare to occur.** No suitable habitat and species outside it's natural range - likely to be planted. | | | | | X | X | |
| *Hibbertia humifusa subsp. debilis* | Dergholm Guinea-flower | VU | L | vu | Only record for the species is in Dergholm area | VBA | 1 | 2004 | **Rare to occur.** No suitable habitat and likely to be an error in VBA data. | | | X | | | | |
| *Leptorhynchos elongatus* | Lanky Buttons | | | en | Largely confined to the eastern uplands (Benambra, to Corryong) with rare populations found further west (e.g. near Castlemaine). | VBA | 1 | 1994 | **Rare to occur.** No suitable habitat. Records are outside normal distribution range and may be an error in VBA data. | | X | X | X | | | |
| *Leucochrysum albicans subsp. tricolor* | White Sunray | EN | L | en | Very rare in Victoria and now confined to remnant grasslands on the Victorian Volcanic Plains. Collections from Alpine areas are hybrids. | VBA | 1 | 2010 | **Rare to occur.** No suitable habitat and records are outside normal distribution range (Victorian Volcanic Plains). Records likely to be an error in VBA data. | X | | | X | X | | |

| Scientific Name | Common Name | Conservation Status | | | Habitat | Source | Number of records | Record #, (Year) | Likelihood of occurrence | Recorded in VBA (X) / Predicted by PMST (P) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPBC | FFG | DELWP | | | | | | 1 | 2 | 3 | 4 | 5 | Port of Hasting | Port of Anthony |
| *Melaleuca halmaturorum subsp. halmaturorum* | Salt Paperbark | | L | vu | In Victoria, found in the north-west of the state where it is found on fringes of salt lakes | VBA | 1 | 2012 | **Rare to occur.** No suitable habitat and likely to be an error in VBA data. | X | | | X | X | | |
| *Myoporum floribundum* | Slender Myoporum | | L | en | Very rare in Victoria and confined to rocky, lightly forested slopes in rainshadow areas of the Snowy River catchment | VBA | 1 | 1990 | **Rare to occur.** No suitable habitat and species outside it's normal distribution range - likely to be planted. | | | | | | X | |
| *Nematolepis squamea subsp. retusa* | Harsh Nematolepis | VU | L | vu | Rare in Victoria. Only known from Cliffline scribs above 1200 m in the upper Macalister and Wonnangatta River catchments. | VBA | 1 | 1973 | **Rare to occur.** No suitable habitat. Species known only from cliffline scrub. Records likely to be a VBA error. | | X | X | X | | | |
| *Pimelea spinescens subsp. pubiflora* | Wimmera Rice-flower | CR | L | en | Occurs in grassland or open shrubland, on loamy soils. | VBA | 1 | 2005 | **Rare to occur.** No suitable habitat and species outside it's normal distribution range - likely to an error in VBA data. | X | | | X | X | | |
| *Pimelea spinescens subsp. spinescens* | Spiny Rice-flower | CR | L | en | Grows in grassland, open shrubland and occasionally woodland, often on basalt-derived soils. Mostly west of Melbourne (to near Horsham), but extending as far north as Echuca. | VBA | 2 | 2009 | **Rare to occur.** No suitable habitat and species outside it's normal distribution range - likely to an error in VBA data. | | | | | | X | |
| *Prasophyllum frenchii* | Maroon Leek-orchid | EN | L | en | Grasslands, grassy woodlands and heaths. Predominantly in or near coastal swamps. Rarely occupies sites more than 10 km inland. | PMST | | | **Possible to occur.** Habitat exists but no records within the corridor study area. Unconfirmed Prasophyllum specimen recorded by Biosis (2001). | P | P | P | P | P | P | P |

| Scientific Name | Common Name | Conservation Status | | | Habitat | Source | Number of records | Record #, (Year) | Likelihood of occurrence | Recorded in VBA (X) / Predicted by PMST (P) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPBC | FFG | DELWP | | | | | | 1 | 2 | 3 | 4 | 5 | Port of Hasting | Port of Anthony |
| *Prasophyllum litorale* | Coastal Leek-orchid | | L | vu | Localised to the west of Portland where it occurs in coastal scrub and heath on sandhills or headlands. Previously confused with *Prasophullum frenchii*. | VBA | 1 | 2015 | **Rare to occur.** No suitable habitat. Records likely to be an error in VBA data. | | | | | | X | |
| *Prasophyllum spicatum* | Dense Leek-orchid | VU | | en | Grows in coastal heath and sandhills. | PMST | | | **Unlikely to occur.**. Habitat exists but no record from within the corridor study area | P | P | P | P | P | P | P |
| *Prostanthera galbraithiae* | Wellington Mint-bush | VU | L | vu | Gippsland endemic. Grows in heathy open-forest usually on gravelly sand | PMST | | | **Unlikely to occur.** Habitat exists but no record from within the corridor study area. Records exist north of the investigation area within Holey Plains State Park. Habitat modelled. Refer to % habitat value affected | P | P | P | P | P | | P |
| *Pterostylis chlorogramma* | Green-striped Greenhood | VU | L | vu | Grows in moist areas of heathy and shrubby forest, on well-drained soils. | PMST, VBA | 2 | 2008 | **Likely to occur**Habitat exists and records from within the corridor study area . Recorded by Biosis (2001).. Habitat modelled. Refer to % habitat value affected | P, X | P, X | P | P | P | P | P |
| *Pterostylis cucullata* | Leafy Greenhood | VU | L | vu | Widely distributed but disjunct, mostly occurring in coastal areas, rarely inland. Recent records from volcanic soils.Coastal populations occur on stabilised sand dunes under open to closed scrub of Coast Tea-tree or Moonah | PMST | | | **Unlikely to occur** Habitat exists but considered rare in coastal areas. . | P | P | P | P | P | | P |
| *Pterostylis tenuissima* | Swamp Greenhood | VU | | vu | Generally found in south-west Victoria but disjunct eastern occurrences occur at Wilsons Promontory and possibly Cape Schanck where it grows in black peat/mud under a dense cover of Leptospermum lanigerum | PMST | 0 | | **Unlikely to occur.** Habitat exists but species known from small population in Wilsons Promontory. | P | P | P | P | P | | P |

| Scientific Name | Common Name | Conservation Status | | | Habitat | Source | Number of records | Record #, (Year) | Likelihood of occurrence | Recorded in VBA (X) / Predicted by PMST (P) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPBC | FFG | DELWP | | | | | | 1 | 2 | 3 | 4 | 5 | Port of Hasting | Port of Anthony |
| *Ptilotus erubescens* | Hairy Tails | | L | vu | Found in grassland and woodland communities in northern and western Victoria | VBA | 1 | 2000 | **Rare to occur.** No suitable habitat. Records likely to be an error in VBA data. | | | | | X | | |
| *Rutidosis leptorrhynchoides* | Button Wrinklewort | EN | L | en | Confined to basaltic grasslands. In Victoria known distribution is between Rokewood and Melbourne. | VBA | 1 | 2008 | **Rare to occur**. No suitable habitat. Records likely to be an error in VBA data. | | | | | | X | |
| *Senecio psilocarpus* | Swamp Fireweed | VU | | vu | Herb-rich, winter-wet swamps throughout the south of the State, west from Sale, growing on volcanic clays or peaty soils. | PMST | | | **Unlikely to occur** Habitat exists but considered unlikely within the investigation area due to incorrect soil type. | P | P | P | P | P | | P |
| *Swainsona reticulata* | Kneed Swainson-pea | | L | vu | Species restricted to far north-west Victoria where it grows on alluvial flats in grassland and grassy woodland. | VBA | 1 | 2011 | **Rare to occur.** No suitable habitat. Records likely to be an error in VBA data. | | | X | | | | |
| *Swainsona sericea* | Silky Swainson-pea | | L | vu | Occurs on semi-arid lowland grasslands and grassy woodland, on sparsely vegetated, acidic, sodic, and well drained red clay rises. | VBA | 1 | 2002 | **Rare to occur.** No suitable habitat. Records likely to be an error in VBA data. | | | | | X | | |
| *Thelymitra epipactoides* | Metallic Sun-orchid | EN | L | en | Small colonies in mainly coastal areas on fertile loams, but also inland in scrubby heaths, grasland and woodlands or near swampy depressions. | PMST, VBA | 1 | 2015 | **Possible to occurr**Habitat exists and records from within the corridor study area . Records also within Gippsland Lakes Coastal Park (Golden Beach). | P | P | P | P | P | X | P |
| *Thelymitra matthewsii* | Spiral Sun-orchid | VU | L | vu | Common and widespread in various habitats, from watercourses to scrubby woodlands, in sand, gravel and clay soils | PMST, VBA | 1 | 1997 | **Possible to occur.** Habitat exists and records from within the corridor study area Habitat modelled. Refer to % habitat value affected | P | P, X | P, X | P, X | P | P | P |

| Scientific Name | Common Name | Conservation Status | | | Habitat | Source | Number of records | Record #, (Year) | Likelihood of occurrence | Recorded in VBA (X) / Predicted by PMST (P) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPBC | FFG | DELWP | | | | | | 1 | 2 | 3 | 4 | 5 | Port of Hasting | Port of Anthony |
| *Xerochrysum palustre* | Swamp Everlasting | VU | L | vu | Sedge-rich lowland swamps and wetlands, usually on black cracking clay soils | PMST, VBA | 2 | 2009 | **Possible to occur.** Habitat exists but unsuitable soil type across majority of investigation area. Record from Port of Hastings potentially a VBA data error. | P | P | P | P | P | P, X | P |

E = endangered in Australia; e = endangered in Victoria; R = rare in Australia; r = rare in Victoria;

V = vulnerable in Australia; v = vulnerable in Victoria; K = poorly known in Australia; k = poorly known in Victoria;

L = listed under the FFG Act; P = protected under the FFG Act.

## Appendix 2: Likelihood of occurrence of fauna in the referral area.

Note: Shaded rows represent fauna species likely to or with potential to occur in the referral area that are assessed in detail in Sections 10 and 11.

| Common Name | Scientific name | EPBC-Threatened | EPBC-Migratory | FFG | DELWP | * Number of records | Date of last record | Likelihood of occurrence | Recorded in VBA (X)/Predicted by EPBC PMST and Ensym (P) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Corridor | | | | |
| | | | | | | | | | 1 | 2 | 3 | 4 | 5 |
| *Birds* | | | | | | | | | | | | | |
| Australasian Bittern | *Botaurus poiciloptilus* | EN | | L | en | 2 | 1/07/1981 | Habitat exists and records from within the corridor study area . **Likely to occur.** | P | P | P | X | X |
| Australian Little Bittern | Ixobrychus dubius | | | L | en | | | Habitat exists and recorded within broader landscape (Jack Smith Lake). **Likely to occur.** | P | P | P | | |
| Australasian Shoveler | *Spatula rhynchotis* | | | | vu | 11 | 9/01/2017 | Habitat exists and records from within the corridor study area. . **Likely to occur.** | | | X | X | |
| Australian Painted-snipe | *Rostratula australis* | EN | | L | cr | None | N/A | Rarely reported in Gippsland (Emison et al. 1987). **Rare to occur** in limited habitat. | P | P | P | P | P |
| Baillons Crake | *Porzana pusilla* | | | L | vu | None | N/A | Habitat present, **Possible to occur** | | | | | |
| Barking Owl | Ninox connivens | | | L | en | | | Records within corridor (Biosis) **Likely to occur** | P | P | P | P | |
| Bar-tailed Godwit | *Limosa lapponica* | VU | M (Bonn A2H, ROKAMBA, JAMBA, CAMBA) | | | None | N/A | Habitat exists. **Likely to occur. Only on coastal dune and coastal wetland systems** | P | | P | P | |
| Black-browed Albatross | *Thalassarche melanophris* | VU | M (Bonn A2SR) | | vu | 1 | 1/01/1977 | Habitat exists offshore and records from within the corridor study area. . **See RPS Report** | P | | X | P | |
| Black-faced Monarch | *Monarcha melanopsis* | | M (Bonn A2H) | | | None | N/A | In Victoria, usually found east of Bairnsdale. Occasional records from Strzelecki Ranges and further west (Emison et al. 1987). **Rare to occur** | P | P | P | P | P |

| Common Name | Scientific name | EPBC-Threatened | EPBC-Migratory | FFG | DELWP | * Number of records | Date of last record | Likelihood of occurrence | Recorded in VBA (X)/Predicted by EPBC PMST and Ensym (P) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Corridor | | | | |
| | | | | | | | | | 1 | 2 | 3 | 4 | 5 |
| Black Falcon | Falco subniger | | | L | vu | | | Recorded from within the corridor study area. . **Likely to occur** | P | P | P | P | P |
| Black-tailed Godwit | *Limosa limosa* | | M (Bonn A2H, ROKAMBA, JAMBA, CAMBA) | | vu | None | N/A | Habitat exists but limited. **Possible to occur Only on coastal dune and coastal wetland systems.** | P | | P | | |
| Blue Petrel | *Halobaena caerulea* | VU | | | | None | N/A | Habitat exists **offshore,. see RPS Report** | P | | P | P | |
| Blue-billed Duck | *Oxyura australis* | | | L | en | 2 | 19/06/1979 | Habitat exists and records from within the corridor study area. **Likely to occur.** | | | X | X | |
| Buller's Albatross | *Thalassarche bulleri* | VU | M (Bonn A2S) | L | | None | N/A | Habitat exists offshore, **see RPS Report** | P | | P | P | |
| Campbell Albatross | *Thalassarche impavida* | VU | | | | None | N/A | Habitat exists offshore, **see RPS Report** | P | | P | P | |
| Caspian Tern | *Hydroprogne caspia* | | M (JAMBA) | L | nt | 3 | 19/10/2005 | Habitat exists and records from within the corridor study area. **Likely to occur.** | | | X | X | |
| Chestnut-rumped Heathwren | *Calamanthus pyrrhopygius* | | | L | vu | 8 | 24/11/1990 | Habitat exists and records from within the corridor study area. **Likely to occur.** | | X | X | X | X |
| Common Greenshank | *Tringa nebularia* | | | | vu | 1 | 19/06/1979 | Habitat exists and records from within the corridor study area. **Likely to occur.** | | P | | X | P |
| Common Sandpiper | *Actitis hypoleucos* | | M (Bonn A2H, ROKAMBA, JAMBA, CAMBA) | | vu | None | N/A | Habitat (tidal sandy beach) does not occur **Unikely to occur.** | P | P | P | P | P |
| Crested Tern | *Thalasseus bergii* | | M (JAMBA) | | | 1 | 1/01/1977 | Habitat exists and records from within the corridor study area. **Likely to occur. Only on** | | | X | | |

| Common Name | Scientific name | EPBC-Threatened | EPBC-Migratory | FFG | DELWP | * Number of records | Date of last record | Likelihood of occurrence | Recorded in VBA (X)/Predicted by EPBC PMST and Ensym (P) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Corridor | | | | |
| | | | | | | | | | 1 | 2 | 3 | 4 | 5 |
| | | | | | | | | **coastal dune and coastal wetland systems** | | | | | |
| Curlew Sandpiper | *Calidris ferruginea* | CR | M (Bonn A2H, ROKAMBA, JAMBA, CAMBA) | | en | 3 | 26/07/1980 | Habitat exists and records from within the corridor study area. . **Likely to occur. Only on coastal dune and coastal wetland systems** | P | P | X | X | P |
| Double-banded Plover | *Charadrius bicinctus* | | M (Bonn A2H) | | | 4 | 26/07/1980 | Habitat exists and records from within the corridor study area. **Likely to occur. Only on coastal dune and coastal wetland systems** | P | | X | X | |
| Eastern Curlew | *Numenius madagascariensis* | CR | M (Bonn A1, ROKAMBA, JAMBA, CAMBA) | | vu | 1 | 1/01/1977 | Habitat exists and records from within the corridor study area. **Likely to occur. Only on coastal dune and coastal wetland systems** | P | P | X | P | P |
| Elegant parrot | Neophema elegans | | | | vu | | | One record east of Phillip Island in Victoria **Rare to occur** | | | | | |
| Fairy Prion | *Pachyptila turtur* | | | | vu | None | N/A | Habitat exists offshore, **see RPS Report** | P | | P | | |
| Fairy Tern | *Sternula nereis* | VU | | L | en | None | N/A | Habitat exists. **Likely to occur along shoreline. Only on coastal dune and coastal wetland systems** | P | | P | P | |
| Flesh-footed Shearwater | *Puffinus carneipes* | | M (JAMBA) | | | None | N/A | Habitat exists offshore, **see RPS Report** | P | | P | P | |
| Fork-tailed Swift | *Apus pacificus* | | M (CAMBA, ROKAMBA, JAMBA) | | | 1 | 5/04/2001 | Habitat exists and records from within the corridor study area. . Recorded during field assessment. **Likely to occur.** | P | P | P | P | X |
| Freckled Duck | Stictonetta naevosa | | | L | en | | | Habitat exists and records from within the corridor study area. . **Likely to occur.** | P | P | P | P | P |

| Common Name | Scientific name | EPBC-Threatened | EPBC-Migratory | FFG | DELWP | * Number of records | Date of last record | Likelihood of occurrence | Recorded in VBA (X)/Predicted by EPBC PMST and Ensym (P) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Corridor | | | | |
| | | | | | | | | | 1 | 2 | 3 | 4 | 5 |
| Glossy Ibis | *Plegadis falcinellus* | | M (Bonn A2S) | | nt | 2 | 17/10/2001 | Habitat exists and records from within the corridor study area. . **Likely to occur.** | | | X | | X |
| Gould's Petrel | *Pterodroma leucoptera* | EN | | | | None | N/A | Habitat exists offshore, **see RPS Report** | P | | P | P | |
| Eastern Great Egret | *Ardea alba modesta* | | | L | vu | 11 | 1/07/2001 | Habitat exists and records from within the corridor study area. **Likely to occur.** | | | | X | X |
| Great Knot | *Calidris tenuirostris* | CR | M (Bonn A2H, ROKAMBA, JAMBA, CAMBA) | L | en | None | N/A | Habitat exists. **Likely to occur along shoreline. Only on coastal dune and coastal wetland systems** | P | | P | | |
| Greater Sand Plover | *Charadrius leschenaultii* | VU | M (Bonn A2H, ROKAMBA, JAMBA, CAMBA) | | cr | None | N/A | Habitat exists. Species is now rare throughout Victoria. **Potential to occur along shoreline. Only on coastal dune and coastal wetland systems** | P | | P | | |
| Grey Goshawk | *Accipiter novaehollandiae* | | | L | vu | 1 | 15/01/1999 | Habitat exists and records from within the corridor study area. **Likely to occur.** | | | | | X |
| Grey Plover | *Pluvialis squatarola* | | M (Bonn A2H, ROKAMBA, JAMBA, CAMBA) | | en | None | N/A | Habitat exists. **Rare to occur Only on coastal dune and coastal wetland systems** | P | | P | | |
| Grey-headed Albatross | *Thalassarche chrysostoma* | EN | M (Bonn A2S) | L | vu | None | N/A | Habitat exists offshore, **see RPS Report** | P | | P | P | |
| Grey-tailed Tattler | *Tringa brevipes* | | M (Bonn A2H, ROKAMBA, JAMBA, CAMBA) | L | cr | None | N/A | Habitat exists. Species is now rare throughout Victoria. **Potential to occur along shoreline. Only on coastal dune and coastal wetland systems** | P | | P | | |

| Common Name | Scientific name | EPBC-Threatened | EPBC-Migratory | FFG | DELWP | * Number of records | Date of last record | Likelihood of occurrence | Recorded in VBA (X)/Predicted by EPBC PMST and Ensym (P) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Corridor | | | | |
| | | | | | | | | | 1 | 2 | 3 | 4 | 5 |
| Ground Parrot | Pezoporus wallicus | | | L | en | | | Habitat exists within the corridor study area. Records in the broader landscape**. Rare to occur** | P | P | P | | |
| Gull-billed Tern | Gelochelidon nilotica affinus | | | L | | | | Habitat exists and records from within the corridor study area. **Likely to occur.** | P | P | P | | |
| Hardhead | *Aythya australis* | | | | vu | 17 | 1/07/2001 | Habitat exists and records from within the corridor study area. **Likely to occur.** | | | X | X | X |
| Hooded Plover | *Thinornis cucullatus* | VU | | L | vu | 1 | 11/05/2007 | Habitat exists and records from within the corridor study area. **Likely to occur. Only on coastal dune and coastal wetland systems** | P | P | P | X | |
| Intermediate Egret | *Ardea intermedia* | | | L | en | None | | Habitat exists **Possible to occur** | | | | | |
| King Quail | *Synoicus chinensis* | | | L | en | | | No records in broader landscape. **Rare to occur** | | | | | |
| Latham's Snipe | *Gallinago hardwickii* | | M (Bonn A2H, ROKAMBA, JAMBA, CAMBA) | | nt | 7 | 12/11/2017 | Habitat exists and records from within the corridor study area. **Likely to occur.** | P | P | P | X | X |
| Lesser Sand Plover | *Charadrius mongolus* | EN | M (Bonn A2H, ROKAMBA, JAMBA, CAMBA) | | cr | None | N/A | Habitat exists. Species is now rare throughout Victoria. **Possible to occur. Only on coastal dune and coastal wetland systems** | P | | P | | |
| Lewin's Rail | *Lewinia pectoralis* | | | L | vu | 1 | 1/12/1977 | Habitat exists and records from within the corridor study area. . **Likely to occur.** | | | | | X |
| Little Curlew | *Numenius minutus* | | M (Bonn A2H, ROKAMBA | | | None | N/A | Intermittent in very small numbers in Victoria, mostly to the western plains. **Unlikely to occur.** | P | | P | | |

| Common Name | Scientific name | EPBC-Threatened | EPBC-Migratory | FFG | DELWP | * Number of records | Date of last record | Likelihood of occurrence | Recorded in VBA (X)/Predicted by EPBC PMST and Ensym (P) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Corridor | | | | |
| | | | | | | | | | 1 | 2 | 3 | 4 | 5 |
| | | | , JAMBA, CAMBA) | | | | | | | | | | |
| Little Egret | *Egretta garzetta* | | | L | en | 3 | 2/07/2001 | Habitat exists and records from within the corridor study area. **Likely to occur.** | | | | X | X |
| Little Tern | *Sternula albifrons* | | M (Bonn A2S, ROKAMBA, JAMBA, CAMBA) | L | vu | 1 | 1/01/1977 | Habitat exists and records from within the corridor study area. **Likely to occur. Only on coastal dune and coastal wetland systems** | P | | X | | |
| Marsh Sandpiper | *Tringa stagnatilis* | | M (Bonn A2H, ROKAMBA, JAMBA, CAMBA) | | vu | 1 | 26/07/1980 | Habitat exists and records from within the corridor study area. . **Likely to occur.** | P | | P | X | |
| Masked Owl | Tyto novaehollandiae | | | L | en | | | Habitat exists and recorded within broader landscape. **Possible to occur** | P | P | P | P | |
| Musk Duck | *Biziura lobata* | | | | vu | 7 | 19/07/1981 | Habitat exists and records from within the corridor study area. . **Likely to occur.** | | | X | X | X |
| New Zealand Wandering Albatross | *Diomedea antipodensis* | VU | | | | None | N/A | Habitat exists offshore, **see RPS Report** | P | | P | | |
| Northern Giant-Petrel | *Macronectes halli* | VU | M (Bonn A2S) | L | nt | None | N/A | Habitat exists offshore, **see RPS Report** | P | | P | P | |
| Northern Royal Albatross | *Diomedea sanfordi* | EN | | | | None | N/A | Habitat exists offshore, **see RPS Report** | P | | P | P | |
| Orange-bellied Parrot | *Neophema chrysogaster* | CR | | L | cr | 2 | 11/10/1983 | Habitat exists and records from within the corridor study area. Species is now is very low numbers in the wild (<50) and rarely occurs east of Port Phillip. **Unlikely to occur** | P | | X | X | |

| Common Name | Scientific name | EPBC-Threatened | EPBC-Migratory | FFG | DELWP | * Number of records | Date of last record | Likelihood of occurrence | Recorded in VBA (X)/Predicted by EPBC PMST and Ensym (P) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Corridor | | | | |
| | | | | | | | | | 1 | 2 | 3 | 4 | 5 |
| | | | | | | | | **regularly. Only on coastal dune and coastal wetland systems** | | | | | |
| Oriental Plover | *Charadrius veredus* | | M (Bonn A2H, ROKAMBA, JAMBA) | | | None | N/A | Habitat exists but intermittent visitor to Victoria. **Possible to occur along shoreline. Only on coastal dune and coastal wetland systems** | | | P | | |
| Osprey | *Pandion cristatus* | | M (Bonn A2S) | | | None | N/A | Habitat exists but intermittent visitor to Victoria. **Possible occurrence along shoreline. Only on coastal dune and coastal wetland systems** | P | P | P | P | P |
| Pacific Golden Plover | *Pluvialis fulva* | | M (Bonn A2H, ROKAMBA, JAMBA, CAMBA) | | vu | 3 | 19/06/1979 | Habitat exists and records from within the corridor study area. **Likely to occur. Only on coastal dune and coastal wetland systems** | P | | X | X | |
| Painted Honeyeater | *Grantiella picta* | VU | | L | vu | None | N/A | Habitat exists and records from within the corridor study area. **Rare to occur.** | P | P | P | P | P |
| Pectoral Sandpiper | *Calidris melanotos* | | M (Bonn A2H, ROKAMBA, JAMBA) | | nt | None | N/A | Habitat exists but only a small number visit Victoria. **Rare to occur along shoreline. Only on coastal dune and coastal wetland systems** | P | P | P | P | P |
| Powerful Owl | *Ninox strenua* | | | L | vu | 8 | 18/06/2014 | Habitat exists and records from within the corridor study area. **Likely to occur.** | | X | X | X | X |
| Red Knot | *Calidris canutus* | EN | M (Bonn A2H, ROKAMBA, JAMBA, CAMBA) | | en | None | N/A | Habitat exists and records from within the corridor study area. **Likely to occur along shoreline. Only on coastal dune and coastal wetland systems.** | P | | P | P | |

| Common Name | Scientific name | EPBC-Threatened | EPBC-Migratory | FFG | DELWP | * Number of records | Date of last record | Likelihood of occurrence | Recorded in VBA (X)/Predicted by EPBC PMST and Ensym (P) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Corridor | | | | |
| | | | | | | | | | 1 | 2 | 3 | 4 | 5 |
| Red-necked Stint | *Calidris ruficollis* | | M (Bonn A2H, ROKAMBA, JAMBA, CAMBA) | | | 3 | 26/07/1980 | Habitat exists and records from within the corridor study area. . **Likely to occur.** | P | | X | X | |
| Regent Honeyeater | *Anthochaera phrygia* | CR | | L | cr | None | N/A | Habitat exists. Species is now is very low numbers in the wild and although rarely occurs in south Gippsland it was recently tracked to the area by satellite (Australian BirdLife magazine, 2019). **Rare to occur** | P | P | P | P | P |
| Ruddy Turnstone | *Arenaria interpres* | | M (Bonn A2H, ROKAMBA, JAMBA, CAMBA) | | vu | 2 | 1/01/1977 | Habitat exists and records from within the corridor study area. **Likely to occur. Only on coastal dune and coastal wetland systems** | P | | X | | |
| Ruff | *Philomachus pugnax* | | M (Bonn A2H, ROKAMBA, JAMBA, CAMBA) | | | None | N/A | Habitat exists. **Unlikely to occur** | P | | P | | |
| Rufous Fantail | *Rhipidura rufifrons* | | M (Bonn A2H) | | | 18 | 20/01/2000 | Habitat exists and records from within the corridor study area. **Likely to occur.** | P | P | P | P | X |
| Salvin's Albatross | *Thalassarche salvini* | VU | | | | None | N/A | Habitat exists offshore, **see RPS Report** | P | | P | P | |
| Sanderling | *Calidris alba* | | M (Bonn A2H, ROKAMBA, JAMBA, CAMBA) | | nt | None | N/A | Habitat exists. **Likely to occur along shoreline. Only on coastal dune and coastal wetland systems** | P | | P | | |
| Satin Flycatcher | *Myiagra cyanoleuca* | | M (Bonn A2H) | | | 2 | 1/11/1980 | Habitat exists and records from within the corridor study area. **Likely to occur.** | P | P | P | P | X |

| Common Name | Scientific name | EPBC-Threatened | EPBC-Migratory | FFG | DELWP | * Number of records | Date of last record | Likelihood of occurrence | Recorded in VBA (X)/Predicted by EPBC PMST and Ensym (P) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Corridor | | | | |
| | | | | | | | | | 1 | 2 | 3 | 4 | 5 |
| Sharp-tailed Sandpiper | *Calidris acuminata* | | M (Bonn A2H, ROKAMBA, JAMBA, CAMBA) | | | 3 | 14/10/1978 | Habitat exists and records from within the corridor study area. **Likely to occur.** | P | P | X | X | P |
| Short-tailed Shearwater | *Puffinus tenuirostris* | | M (JAMBA, CAMBA) | | | 2 | 11/01/1978 | Habitat exists offshore and records from within the corridor study area. , **see RPS Report** | | | X | X | |
| Shy Albatross | *Thalassarche cauta* | VU | | L | vu | 1 | 1/01/1977 | Habitat exists offshore and records from within the corridor study area. , **see RPS Report** | P | | X | P | |
| Sooty Albatross | *Phoebetria fusca* | VU | M (Bonn A2S) | L | | None | N/A | Habitat exists offshore, **see RPS Report.** | P | | P | P | |
| Sooty Owl | Tyto tenebrisca | | | L | vu | None | N/A | No records nearby, but suitable habitat exists within the corridor study area. **Rare to occur** | P | P | P | P | |
| Sooty Shearwater | *Puffinus grisea* | | M (JAMBA) | | | None | N/A | Habitat exists offshore, **see RPS Report**. | P | | P | P | |
| Southern Giant-Petrel | *Macronectes giganteus* | EN | M (Bonn A2S) | L | vu | None | N/A | Habitat exists offshore, **see RPS Report**. | P | | P | P | |
| Southern Royal Albatross | *Diomedea epomophora* | VU | | L | vu | None | N/A | Habitat exists offshore, **see RPS Report** | P | | P | P | |
| Square-tailed Kite | *Lophoictinia isura* | | | L | nt | | | Recorded in broader landscape. Potential visitor. **Possible to occur** | P | P | P | P | P |
| Swift Parrot | *Lathamus discolor* | CR | | L | en | None | N/A | Habitat exists. **Possible to occur** as least occasionally. | P | P | P | P | P |
| Terek Sandpiper | *Xenus cinereus* | | M (Bonn A2H, ROKAMBA, JAMBA, CAMBA) | L | en | None | N/A | Habitat exists. **Possible to occur. Only on coastal dune and coastal wetland systems** | P | | P | | |

| Common Name | Scientific name | EPBC-Threatened | EPBC-Migratory | FFG | DELWP | * Number of records | Date of last record | Likelihood of occurrence | Recorded in VBA (X)/Predicted by EPBC PMST and Ensym (P) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Corridor | | | | |
| | | | | | | | | | 1 | 2 | 3 | 4 | 5 |
| Wandering Albatross | *Diomedea exulans* | VU | M (Bonn A2S) | L | en | None | N/A | Habitat exists**,** offshore, **see RPS Report** | P | | P | P | |
| Whimbrel | *Numenius phaeopus* | | M (Bonn A2H, ROKAMBA, JAMBA, CAMBA) | | vu | None | N/A | Habitat exists. **Possible to occur along shoreline. Only on coastal dune and coastal wetland systems** | P | | P | | |
| White-bellied Sea-Eagle | *Haliaeetus leucogaster* | | | L | vu | 6 | 16/04/2003 | Habitat exists and records from within the corridor study area. . **Likely to occur.** | | X | X | X | |
| White-throated Needletail | *Hirundapus caudacutus* | VU | M (CAMBA, ROKAMBA, JAMBA) | | vu | 37 | 9/02/2019 | Habitat exists and records from within the corridor study area. Recorded during field assessment. **Likely to occur.** | P | X | X | X | X |
| Wood Sandpiper | *Tringa glareola* | | M (Bonn A2H, ROKAMBA, JAMBA, CAMBA) | | vu | None | N/A | Habitat exists**. Rare to occur** | P | | P | | |
| Yellow Wagtail | *Motacilla flava* | | M (CAMBA, JAMBA, ROKAMBA) | | | None | N/A | Habitat exists and records from within the corridor study area. . **Rare to occur** | P | P | P | P | P |
| *Mammals* | | | | | | | | | | | | | |
| Broad-toothed Rat | *Mastacomys fuscus mordicus* | | | L | en | None | N/A | Habitat exists. **Likely to occur.** | P | P | | | P |
| Common Bentwing Bat | Miniopterus schreibersii | | | L | | | | Habitat exists. Not recorded within referral area or nearby. **Possible to occur** | P | P | P | P | P |
| Grey-headed Flying-fox | *Pteropus poliocephalus* | VU | | L | vu | None | N/A | Habitat exists. **Likely to occur.** | P | P | P | P | P |
| Long-nosed Potoroo | *Potorous tridactylus trisulcatus* | VU | | L | nt | None | N/A | Habitat exists. **Rare to occur** | P | P | | | P |

| Common Name | Scientific name | EPBC-Threatened | EPBC-Migratory | FFG | DELWP | * Number of records | Date of last record | Likelihood of occurrence | Recorded in VBA (X)/Predicted by EPBC PMST and Ensym (P) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Corridor | | | | |
| | | | | | | | | | 1 | 2 | 3 | 4 | 5 |
| New Holland Mouse | *Pseudomys novaehollandiae* | | | L | vu | 2 | 21/09/1975 | Habitat exists and records from within the corridor study area. **Likely to occur.** | | X | | | |
| Southern Brown Bandicoot | *Isoodon obesulus obesulus* | EN | | L | nt | None | N/A | **Likely to occur at Port of Hastings** | | | | | P |
| Southern Greater Glider | *Petauroides volans* | VU | | L | vu | 2 | 17/05/1981 | Habitat exists and records from within the corridor study area. . **Likely to occur.** | P | P | P | | X |
| Spotted-tailed Quoll | *Dasyurus maculatus maculatus* | EN | | L | en | 1 | 1/01/1975 | Habitat exists and records from within the corridor study area. **Possible to occur** | P | P | P | P | X |
| Swamp Antechinus | *Antechinus minimus maritimus* | VU | | L | nt | None | N/A | Habitat exists. **Possible to occur.** | P | | P | P | |
| White-footed Dunnart | *Sminthopsis leucopus* | | | L | nt | 4 | 1/06/1977 | Habitat exists and records from within the corridor study area. **Possible to occur.** | | | | | X |
| *Reptiles* | | | | | | | | | | | | | |
| Lace Monitor | *Varanus varius* | | | | en | 18 | 30/10/2017 | Habitat exists and records from within the corridor study area. Recorded during field assessment. **Likely to occur.** | | X | X | X | |
| Swamp Skink | *Lissolepis coventryi* | | | L | vu | 1 | 1/05/1977 | Habitat exists and records from within the corridor study area. **Likely to occur.** | | X | | | |
| Glossy Grass Skink | Pseudemoia rawlinsoni | | | | vu | | | Suitable habitat exists and recorded close to referral area. **Likely to occur.** | P | P | P | P | P |
| *Frogs* | | | | | | | | | | | | | |
| Green and Golden Bell Frog | *Litoria aurea* | VU | | | vu | None | N/A | Not recorded in the referral area or close to the referral area **Unlikely to occur.** | | | | | |

| Common Name | Scientific name | EPBC-Threatened | EPBC-Migratory | FFG | DELWP | * Number of records | Date of last record | Likelihood of occurrence | Recorded in VBA (X)/Predicted by EPBC PMST and Ensym (P) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Corridor | | | | |
| | | | | | | | | | 1 | 2 | 3 | 4 | 5 |
| Growling Grass Frog | *Litoria raniformis* | VU | | L | en | 2 | 19/04/1977 | Habitat exists and records from within the corridor study area. **Likely to occur at Port of Hastings** | P | P | X | P | X |
| Southern Toadlet | *Pseudophryne semimarmorata* | | | | vu | 53 | 27/03/2015 | Habitat exists and records from within the corridor study area. **Likely to occur.** | | X | X | X | X |
| Martins Toadlet | Uperoleia martini | | | L | cr | | | Habitat exists and records from within the corridor study area. (Biosis) **Likely to occur.** | P | P | P | P | P |
| *Fish* | | | | | | | | | | | | | |
| Australian Grayling | *Prototroctes maraena* | VU | | L | vu | None | N/A | Habitat exists. **Possible occurrence** | P | P | P | P | P |
| Dwarf Galaxias | *Galaxiella pusilla* | VU | | L | en | 2 | 5/10/2012 | Habitat exists and records from within the corridor study area. **Likely to occur.** | P | P | P | P | X |
| Flinders Pygmy Perch | Nannoperca australis | | | | vu | 2 | 15/12/1987 | Habitat exists and records from within the corridor study area. **Likely to occur.** | | X | | | X |
| Yarra Pygmy Perch | Nannoperca obscura | VU | | L | vu | | | No records west of suburban Melbourne **Unlikely to occur.** | | | | | |
| Mudfish | Neochanna cleaveri | | | L | cr | | | Not recorded in within corridors or broader landscape. **Unlikely to occur.** | | | | | |
| *Invertebrates* | | | | | | | | | | | | | |
| Golden Sun Moth | *Synemon plana* | CR | | L | cr | None | N/A | Habitat exists. In recent years, rarely if ever seen south-east of Melbourne. **Rare to occur.** | P | P | P | P | P |

E = endangered in Australia; e = endangered in Victoria; R = rare in Australia; r = rare in Victoria;

V = vulnerable in Australia; v = vulnerable in Victoria; K = poorly known in Australia; k = poorly known in Victoria;

L = listed under the FFG Act; P = protected under the FFG Act.

## Appendix 3: EPBC Act Protected Matters Search Tool results

Australian Government
Department of the Environment and Energy

# 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.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

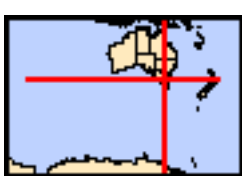
Report created: 28/01/20 11:43:31




This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

Coordinates

Buffer: 5.0Km



# Summary

## Matters of National Environmental 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: | 2 |
| Great Barrier Reef Marine Park: | None |
| Commonwealth Marine Area: | 1 |
| Listed Threatened Ecological Communities: | 4 |
| Listed Threatened Species: | 78 |
| Listed Migratory Species: | 70 |

## 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 http://www.environment.gov.au/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 Land: | 1 |
| Commonwealth Heritage Places: | None |
| Listed Marine Species: | 113 |
| Whales and Other Cetaceans: | 14 |
| Critical Habitats: | None |
| Commonwealth Reserves Terrestrial: | None |
| Australian Marine Parks: | 1 |

## Extra Information

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

| | |
|---|---|
| State and Territory Reserves: | 107 |
| Regional Forest Agreements: | 1 |
| Invasive Species: | 42 |
| Nationally Important Wetlands: | 2 |
| Key Ecological Features (Marine) | None |

# Details

## Matters of National Environmental Significance

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

| Name | Proximity |
|---|---|
| Corner inlet | Within Ramsar site |
| Gippsland lakes | Within 10km of Ramsar |

### 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 the Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area. Generally the Commonwealth Marine Area stretches from three nautical miles to two hundred nautical miles from the coast.

| Name |
|---|
| EEZ and Territorial Sea |

### Marine Regions [ Resource Information ]

If you are planning to undertake action in an area in or close to the Commonwealth Marine Area, and a marine bioregional plan has been prepared for the Commonwealth Marine Area in that area, the marine bioregional plan may inform your decision as to whether to refer your proposed action under the EPBC Act.

| Name |
|---|
| South-east |

### 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.

| Name | Status | Type of Presence |
|---|---|---|
| Assemblages of species associated with open-coast salt-wedge estuaries of western and central Victoria ecological community | Endangered | Community likely to occur within area |
| Gippsland Red Gum (Eucalyptus tereticornis subsp. mediana) Grassy Woodland and Associated Native Grassland | Critically Endangered | Community likely to occur within area |
| Natural Damp Grassland of the Victorian Coastal Plains | Critically Endangered | Community likely to occur within area |
| Subtropical and Temperate Coastal Saltmarsh | Vulnerable | Community likely to occur within area |

### Listed Threatened Species [ Resource Information ]

| Name | Status | Type of Presence |
|---|---|---|
| Birds | | |
| Anthochaera phrygia<br>Regent Honeyeater [82338] | Critically Endangered | Foraging, feeding or related behaviour likely to occur within area |
| Botaurus poiciloptilus<br>Australasian Bittern [1001] | Endangered | Species or species habitat known to occur within area |
| Calidris canutus<br>Red Knot, Knot [855] | Endangered | Species or species habitat known to occur within area |
| Calidris ferruginea<br>Curlew Sandpiper [856] | Critically Endangered | Species or species habitat known to occur within area |

| Name | Status | Type of Presence |
|---|---|---|
| Calidris tenuirostris<br>Great Knot [862] | Critically Endangered | Roosting known to occur within area |
| Charadrius leschenaultii<br>Greater Sand Plover, Large Sand Plover [877] | Vulnerable | Roosting known to occur within area |
| Charadrius mongolus<br>Lesser Sand Plover, Mongolian Plover [879] | Endangered | Roosting known to occur within area |
| Diomedea antipodensis<br>Antipodean Albatross [64458] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Diomedea antipodensis  gibsoni<br>Gibson's Albatross [82270] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Diomedea epomophora<br>Southern Royal Albatross [89221] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Diomedea exulans<br>Wandering Albatross [89223] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Diomedea sanfordi<br>Northern Royal Albatross [64456] | Endangered | Foraging, feeding or related behaviour likely to occur within area |
| Fregetta grallaria  grallaria<br>White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438] | Vulnerable | Species or species habitat likely to occur within area |
| Grantiella picta<br>Painted Honeyeater [470] | Vulnerable | Species or species habitat may occur within area |
| Halobaena caerulea<br>Blue Petrel [1059] | Vulnerable | Species or species habitat may occur within area |
| Hirundapus caudacutus<br>White-throated Needletail [682] | Vulnerable | Species or species habitat known to occur within area |
| Lathamus discolor<br>Swift Parrot [744] | Critically Endangered | Species or species habitat known to occur within area |
| Limosa lapponica  baueri<br>Bar-tailed Godwit (baueri), Western Alaskan Bar-tailed Godwit [86380] | Vulnerable | Species or species habitat may occur within area |
| Limosa lapponica  menzbieri<br>Northern Siberian Bar-tailed Godwit, Bar-tailed Godwit (menzbieri) [86432] | Critically Endangered | Species or species habitat may occur within area |
| Macronectes giganteus<br>Southern Giant-Petrel, Southern Giant Petrel [1060] | Endangered | Species or species habitat may occur within area |
| Macronectes halli<br>Northern Giant Petrel [1061] | Vulnerable | Species or species habitat may occur within area |
| Neophema chrysogaster<br>Orange-bellied Parrot [747] | Critically Endangered | Species or species habitat known to occur within area |
| Numenius madagascariensis<br>Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat known to occur within area |

| Name | Status | Type of Presence |
|---|---|---|
| Pachyptila turtur subantarctica<br>Fairy Prion (southern) [64445] | Vulnerable | Species or species habitat known to occur within area |
| Phoebetria fusca<br>Sooty Albatross [1075] | Vulnerable | Species or species habitat likely to occur within area |
| Pterodroma leucoptera leucoptera<br>Gould's Petrel, Australian Gould's Petrel [26033] | Endangered | Species or species habitat may occur within area |
| Rostratula australis<br>Australian Painted Snipe [77037] | Endangered | Species or species habitat likely to occur within area |
| Sternula nereis nereis<br>Australian Fairy Tern [82950] | Vulnerable | Species or species habitat known to occur within area |
| Thalassarche bulleri<br>Buller's Albatross, Pacific Albatross [64460] | Vulnerable | Species or species habitat may occur within area |
| Thalassarche bulleri platei<br>Northern Buller's Albatross, Pacific Albatross [82273] | Vulnerable | Species or species habitat may occur within area |
| Thalassarche cauta cauta<br>Shy Albatross [82345] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche cauta steadi<br>White-capped Albatross [82344] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche chrysostoma<br>Grey-headed Albatross [66491] | Endangered | Species or species habitat may occur within area |
| Thalassarche impavida<br>Campbell Albatross, Campbell Black-browed Albatross [64459] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche melanophris<br>Black-browed Albatross [66472] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche salvini<br>Salvin's Albatross [64463] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Thinornis rubricollis rubricollis<br>Hooded Plover (eastern) [66726] | Vulnerable | Species or species habitat known to occur within area |
| **Fish** | | |
| Galaxiella pusilla<br>Eastern Dwarf Galaxias, Dwarf Galaxias [56790] | Vulnerable | Species or species habitat known to occur within area |
| Prototroctes maraena<br>Australian Grayling [26179] | Vulnerable | Species or species habitat known to occur within area |
| **Frogs** | | |
| Litoria aurea<br>Green and Golden Bell Frog [1870] | Vulnerable | Species or species habitat may occur within area |
| Litoria raniformis<br>Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog [1828] | Vulnerable | Species or species habitat known to occur |

| Name | Status | Type of Presence within area |
|---|---|---|
| **Insects** | | |
| [Synemon plana](#)<br>Golden Sun Moth [25234] | Critically Endangered | Species or species habitat may occur within area |
| **Mammals** | | |
| [Antechinus minimus  maritimus](#)<br>Swamp Antechinus (mainland) [83086] | Vulnerable | Species or species habitat known to occur within area |
| [Balaenoptera borealis](#)<br>Sei Whale [34] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| [Balaenoptera musculus](#)<br>Blue Whale [36] | Endangered | Species or species habitat likely to occur within area |
| [Balaenoptera physalus](#)<br>Fin Whale [37] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| [Dasyurus maculatus  maculatus (SE mainland population)](#)<br>Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184] | Endangered | Species or species habitat known to occur within area |
| [Eubalaena australis](#)<br>Southern Right Whale [40] | Endangered | Species or species habitat known to occur within area |
| [Isoodon obesulus  obesulus](#)<br>Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (south-eastern) [68050] | Endangered | Species or species habitat known to occur within area |
| [Mastacomys fuscus  mordicus](#)<br>Broad-toothed Rat (mainland), Tooarrana [87617] | Vulnerable | Species or species habitat known to occur within area |
| [Megaptera novaeangliae](#)<br>Humpback Whale [38] | Vulnerable | Species or species habitat known to occur within area |
| [Petauroides volans](#)<br>Greater Glider [254] | Vulnerable | Species or species habitat known to occur within area |
| [Potorous tridactylus  tridactylus](#)<br>Long-nosed Potoroo (SE Mainland) [66645] | Vulnerable | Species or species habitat known to occur within area |
| [Pseudomys novaehollandiae](#)<br>New Holland Mouse, Pookila [96] | Vulnerable | Species or species habitat may occur within area |
| [Pteropus poliocephalus](#)<br>Grey-headed Flying-fox [186] | Vulnerable | Foraging, feeding or related behaviour may occur within area |
| **Plants** | | |
| [Amphibromus fluitans](#)<br>River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215] | Vulnerable | Species or species habitat known to occur within area |
| [Caladenia orientalis](#)<br>Eastern Spider Orchid [83410] | Endangered | Species or species habitat likely to occur within area |
| [Caladenia tessellata](#)<br>Thick-lipped Spider-orchid, Daddy Long-legs [2119] | Vulnerable | Species or species habitat known to occur within area |

| Name | Status | Type of Presence |
|---|---|---|
| Commersonia prostrata<br>Dwarf Kerrawang [87152] | Endangered | Species or species habitat known to occur within area |
| Dianella amoena<br>Matted Flax-lily [64886] | Endangered | Species or species habitat known to occur within area |
| Dodonaea procumbens<br>Trailing Hop-bush [12149] | Vulnerable | Species or species habitat likely to occur within area |
| Eucalyptus strzeleckii<br>Strzelecki Gum [55400] | Vulnerable | Species or species habitat known to occur within area |
| Glycine latrobeana<br>Clover Glycine, Purple Clover [13910] | Vulnerable | Species or species habitat likely to occur within area |
| Prasophyllum frenchii<br>Maroon Leek-orchid, Slaty Leek-orchid, Stout Leek-orchid, French's Leek-orchid, Swamp Leek-orchid [9704] | Endangered | Species or species habitat likely to occur within area |
| Prasophyllum spicatum<br>Dense Leek-orchid [55146] | Vulnerable | Species or species habitat likely to occur within area |
| Prostanthera galbraithiae<br>Wellington Mintbush [64959] | Vulnerable | Species or species habitat known to occur within area |
| Pterostylis chlorogramma<br>Green-striped Greenhood [56510] | Vulnerable | Species or species habitat known to occur within area |
| Pterostylis cucullata<br>Leafy Greenhood [15459] | Vulnerable | Species or species habitat likely to occur within area |
| Pterostylis tenuissima<br>Swamp Greenhood, Dainty Swamp Orchid [13139] | Vulnerable | Species or species habitat known to occur within area |
| Senecio psilocarpus<br>Swamp Fireweed, Smooth-fruited Groundsel [64976] | Vulnerable | Species or species habitat likely to occur within area |
| Thelymitra epipactoides<br>Metallic Sun-orchid [11896] | Endangered | Species or species habitat may occur within area |
| Thelymitra matthewsii<br>Spiral Sun-orchid [4168] | Vulnerable | Species or species habitat likely to occur within area |
| Xerochrysum palustre<br>Swamp Everlasting, Swamp Paper Daisy [76215] | Vulnerable | Species or species habitat known to occur within area |
| Reptiles | | |
| Caretta caretta<br>Loggerhead Turtle [1763] | Endangered | Foraging, feeding or related behaviour known to occur within area |
| Chelonia mydas<br>Green Turtle [1765] | Vulnerable | Foraging, feeding or related behaviour known to occur within area |
| Dermochelys coriacea<br>Leatherback Turtle, Leathery Turtle, Luth [1768] | Endangered | Foraging, feeding or related behaviour known to occur within area |

| Name | Status | Type of Presence |
|---|---|---|
| Sharks | | |
| Carcharodon carcharias | | |
| White Shark, Great White Shark [64470] | Vulnerable | Breeding known to occur within area |
| Rhincodon typus | | |
| Whale Shark [66680] | Vulnerable | Species or species habitat may occur within area |

## Listed Migratory Species [ Resource Information ]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

| Name | Threatened | Type of Presence |
|---|---|---|
| Migratory Marine Birds | | |
| Apus pacificus | | |
| Fork-tailed Swift [678] | | Species or species habitat likely to occur within area |
| Ardenna carneipes | | |
| Flesh-footed Shearwater, Fleshy-footed Shearwater [82404] | | Foraging, feeding or related behaviour likely to occur within area |
| Ardenna grisea | | |
| Sooty Shearwater [82651] | | Species or species habitat may occur within area |
| Ardenna tenuirostris | | |
| Short-tailed Shearwater [82652] | | Breeding known to occur within area |
| Diomedea antipodensis | | |
| Antipodean Albatross [64458] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Diomedea epomophora | | |
| Southern Royal Albatross [89221] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Diomedea exulans | | |
| Wandering Albatross [89223] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Diomedea sanfordi | | |
| Northern Royal Albatross [64456] | Endangered | Foraging, feeding or related behaviour likely to occur within area |
| Macronectes giganteus | | |
| Southern Giant-Petrel, Southern Giant Petrel [1060] | Endangered | Species or species habitat may occur within area |
| Macronectes halli | | |
| Northern Giant Petrel [1061] | Vulnerable | Species or species habitat may occur within area |
| Phoebetria fusca | | |
| Sooty Albatross [1075] | Vulnerable | Species or species habitat likely to occur within area |
| Sternula albifrons | | |
| Little Tern [82849] | | Species or species habitat may occur within area |
| Thalassarche bulleri | | |
| Buller's Albatross, Pacific Albatross [64460] | Vulnerable | Species or species habitat may occur within area |
| Thalassarche cauta | | |
| Shy Albatross [89224] | Vulnerable* | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche chrysostoma | | |
| Grey-headed Albatross [66491] | Endangered | Species or species habitat may occur within area |

| Name | Threatened | Type of Presence |
|---|---|---|
| Thalassarche impavida | | |
| Campbell Albatross, Campbell Black-browed Albatross [64459] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche melanophris | | |
| Black-browed Albatross [66472] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche salvini | | |
| Salvin's Albatross [64463] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche steadi | | |
| White-capped Albatross [64462] | Vulnerable* | Foraging, feeding or related behaviour likely to occur within area |
| **Migratory Marine Species** | | |
| Balaena glacialis australis | | |
| Southern Right Whale [75529] | Endangered* | Species or species habitat known to occur within area |
| Balaenoptera borealis | | |
| Sei Whale [34] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Balaenoptera musculus | | |
| Blue Whale [36] | Endangered | Species or species habitat likely to occur within area |
| Balaenoptera physalus | | |
| Fin Whale [37] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Caperea marginata | | |
| Pygmy Right Whale [39] | | Foraging, feeding or related behaviour may occur within area |
| Carcharodon carcharias | | |
| White Shark, Great White Shark [64470] | Vulnerable | Breeding known to occur within area |
| Caretta caretta | | |
| Loggerhead Turtle [1763] | Endangered | Foraging, feeding or related behaviour known to occur within area |
| Chelonia mydas | | |
| Green Turtle [1765] | Vulnerable | Foraging, feeding or related behaviour known to occur within area |
| Dermochelys coriacea | | |
| Leatherback Turtle, Leathery Turtle, Luth [1768] | Endangered | Foraging, feeding or related behaviour known to occur within area |
| Isurus oxyrinchus | | |
| Shortfin Mako, Mako Shark [79073] | | Species or species habitat likely to occur within area |
| Lagenorhynchus obscurus | | |
| Dusky Dolphin [43] | | Species or species habitat may occur within area |
| Lamna nasus | | |
| Porbeagle, Mackerel Shark [83288] | | Species or species habitat likely to occur within area |
| Megaptera novaeangliae | | |
| Humpback Whale [38] | Vulnerable | Species or species habitat known to occur within area |
| Orcinus orca | | |
| Killer Whale, Orca [46] | | Species or species habitat likely to occur within area |

| Name | Threatened | Type of Presence |
|---|---|---|
| Rhincodon typus<br>Whale Shark [66680] | Vulnerable | Species or species habitat may occur within area |
| **Migratory Terrestrial Species** | | |
| Hirundapus caudacutus<br>White-throated Needletail [682] | Vulnerable | Species or species habitat known to occur within area |
| Monarcha melanopsis<br>Black-faced Monarch [609] | | Species or species habitat known to occur within area |
| Motacilla flava<br>Yellow Wagtail [644] | | Species or species habitat may occur within area |
| Myiagra cyanoleuca<br>Satin Flycatcher [612] | | Breeding known to occur within area |
| Rhipidura rufifrons<br>Rufous Fantail [592] | | Species or species habitat known to occur within area |
| **Migratory Wetlands Species** | | |
| Actitis hypoleucos<br>Common Sandpiper [59309] | | Species or species habitat known to occur within area |
| Arenaria interpres<br>Ruddy Turnstone [872] | | Roosting known to occur within area |
| Calidris acuminata<br>Sharp-tailed Sandpiper [874] | | Roosting known to occur within area |
| Calidris alba<br>Sanderling [875] | | Roosting known to occur within area |
| Calidris canutus<br>Red Knot, Knot [855] | Endangered | Species or species habitat known to occur within area |
| Calidris ferruginea<br>Curlew Sandpiper [856] | Critically Endangered | Species or species habitat known to occur within area |
| Calidris melanotos<br>Pectoral Sandpiper [858] | | Species or species habitat known to occur within area |
| Calidris ruficollis<br>Red-necked Stint [860] | | Roosting known to occur within area |
| Calidris tenuirostris<br>Great Knot [862] | Critically Endangered | Roosting known to occur within area |
| Charadrius bicinctus<br>Double-banded Plover [895] | | Roosting known to occur within area |
| Charadrius leschenaultii<br>Greater Sand Plover, Large Sand Plover [877] | Vulnerable | Roosting known to occur within area |
| Charadrius mongolus<br>Lesser Sand Plover, Mongolian Plover [879] | Endangered | Roosting known to occur within area |
| Charadrius veredus<br>Oriental Plover, Oriental Dotterel [882] | | Species or species habitat known to occur within area |
| Gallinago hardwickii<br>Latham's Snipe, Japanese Snipe [863] | | Roosting may occur within area |

| Name | Threatened | Type of Presence |
|---|---|---|
| Gallinago megala<br>Swinhoe's Snipe [864] | | Roosting likely to occur within area |
| Gallinago stenura<br>Pin-tailed Snipe [841] | | Roosting likely to occur within area |
| Limosa lapponica<br>Bar-tailed Godwit [844] | | Species or species habitat known to occur within area |
| Limosa limosa<br>Black-tailed Godwit [845] | | Roosting known to occur within area |
| Numenius madagascariensis<br>Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat known to occur within area |
| Numenius minutus<br>Little Curlew, Little Whimbrel [848] | | Roosting likely to occur within area |
| Numenius phaeopus<br>Whimbrel [849] | | Roosting known to occur within area |
| Pandion haliaetus<br>Osprey [952] | | Species or species habitat known to occur within area |
| Philomachus pugnax<br>Ruff (Reeve) [850] | | Roosting known to occur within area |
| Pluvialis fulva<br>Pacific Golden Plover [25545] | | Roosting known to occur within area |
| Pluvialis squatarola<br>Grey Plover [865] | | Roosting known to occur within area |
| Thalasseus bergii<br>Crested Tern [83000] | | Breeding known to occur within area |
| Tringa brevipes<br>Grey-tailed Tattler [851] | | Roosting known to occur within area |
| Tringa glareola<br>Wood Sandpiper [829] | | Roosting known to occur within area |
| Tringa nebularia<br>Common Greenshank, Greenshank [832] | | Species or species habitat known to occur within area |
| Tringa stagnatilis<br>Marsh Sandpiper, Little Greenshank [833] | | Roosting known to occur within area |
| Xenus cinereus<br>Terek Sandpiper [59300] | | Roosting known to occur within area |

## Other Matters Protected by the EPBC Act

### Commonwealth Land [ 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.

| Name |
|---|
| Commonwealth Land - |

### Listed Marine Species [ Resource Information ]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

| Name | Threatened | Type of Presence |
|---|---|---|

| Name | Threatened | Type of Presence |
|---|---|---|
| Birds | | |
| Actitis hypoleucos<br>Common Sandpiper [59309] | | Species or species habitat known to occur within area |
| Apus pacificus<br>Fork-tailed Swift [678] | | Species or species habitat likely to occur within area |
| Ardea alba<br>Great Egret, White Egret [59541] | | Breeding known to occur within area |
| Ardea ibis<br>Cattle Egret [59542] | | Species or species habitat may occur within area |
| Arenaria interpres<br>Ruddy Turnstone [872] | | Roosting known to occur within area |
| Calidris acuminata<br>Sharp-tailed Sandpiper [874] | | Roosting known to occur within area |
| Calidris alba<br>Sanderling [875] | | Roosting known to occur within area |
| Calidris canutus<br>Red Knot, Knot [855] | Endangered | Species or species habitat known to occur within area |
| Calidris ferruginea<br>Curlew Sandpiper [856] | Critically Endangered | Species or species habitat known to occur within area |
| Calidris melanotos<br>Pectoral Sandpiper [858] | | Species or species habitat known to occur within area |
| Calidris ruficollis<br>Red-necked Stint [860] | | Roosting known to occur within area |
| Calidris tenuirostris<br>Great Knot [862] | Critically Endangered | Roosting known to occur within area |
| Catharacta skua<br>Great Skua [59472] | | Species or species habitat may occur within area |
| Charadrius bicinctus<br>Double-banded Plover [895] | | Roosting known to occur within area |
| Charadrius leschenaultii<br>Greater Sand Plover, Large Sand Plover [877] | Vulnerable | Roosting known to occur within area |
| Charadrius mongolus<br>Lesser Sand Plover, Mongolian Plover [879] | Endangered | Roosting known to occur within area |
| Charadrius ruficapillus<br>Red-capped Plover [881] | | Roosting known to occur within area |
| Charadrius veredus<br>Oriental Plover, Oriental Dotterel [882] | | Species or species habitat known to occur within area |
| Diomedea antipodensis<br>Antipodean Albatross [64458] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Diomedea epomophora<br>Southern Royal Albatross [89221] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |

| Name | Threatened | Type of Presence |
|---|---|---|
| Diomedea exulans<br>Wandering Albatross [89223] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Diomedea gibsoni<br>Gibson's Albatross [64466] | Vulnerable* | Foraging, feeding or related behaviour likely to occur within area |
| Diomedea sanfordi<br>Northern Royal Albatross [64456] | Endangered | Foraging, feeding or related behaviour likely to occur within area |
| Eudyptula minor<br>Little Penguin [1085] | | Breeding known to occur within area |
| Gallinago hardwickii<br>Latham's Snipe, Japanese Snipe [863] | | Roosting may occur within area |
| Gallinago megala<br>Swinhoe's Snipe [864] | | Roosting likely to occur within area |
| Gallinago stenura<br>Pin-tailed Snipe [841] | | Roosting likely to occur within area |
| Haliaeetus leucogaster<br>White-bellied Sea-Eagle [943] | | Breeding known to occur within area |
| Halobaena caerulea<br>Blue Petrel [1059] | Vulnerable | Species or species habitat may occur within area |
| Heteroscelus brevipes<br>Grey-tailed Tattler [59311] | | Roosting known to occur within area |
| Himantopus himantopus<br>Pied Stilt, Black-winged Stilt [870] | | Roosting known to occur within area |
| Hirundapus caudacutus<br>White-throated Needletail [682] | Vulnerable | Species or species habitat known to occur within area |
| Larus novaehollandiae<br>Silver Gull [810] | | Breeding known to occur within area |
| Larus pacificus<br>Pacific Gull [811] | | Breeding known to occur within area |
| Lathamus discolor<br>Swift Parrot [744] | Critically Endangered | Species or species habitat known to occur within area |
| Limosa lapponica<br>Bar-tailed Godwit [844] | | Species or species habitat known to occur within area |
| Limosa limosa<br>Black-tailed Godwit [845] | | Roosting known to occur within area |
| Macronectes giganteus<br>Southern Giant-Petrel, Southern Giant Petrel [1060] | Endangered | Species or species habitat may occur within area |
| Macronectes halli<br>Northern Giant Petrel [1061] | Vulnerable | Species or species habitat may occur within area |
| Merops ornatus<br>Rainbow Bee-eater [670] | | Species or species habitat may occur within area |
| Monarcha melanopsis<br>Black-faced Monarch [609] | | Species or species habitat known to occur |

| Name | Threatened | Type of Presence within area |
|---|---|---|
| Motacilla flava<br>Yellow Wagtail [644] | | Species or species habitat may occur within area |
| Myiagra cyanoleuca<br>Satin Flycatcher [612] | | Breeding known to occur within area |
| Neophema chrysogaster<br>Orange-bellied Parrot [747] | Critically Endangered | Species or species habitat known to occur within area |
| Numenius madagascariensis<br>Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat known to occur within area |
| Numenius minutus<br>Little Curlew, Little Whimbrel [848] | | Roosting likely to occur within area |
| Numenius phaeopus<br>Whimbrel [849] | | Roosting known to occur within area |
| Pachyptila turtur<br>Fairy Prion [1066] | | Species or species habitat known to occur within area |
| Pandion haliaetus<br>Osprey [952] | | Species or species habitat known to occur within area |
| Pelecanoides urinatrix<br>Common Diving-Petrel [1018] | | Breeding known to occur within area |
| Phalacrocorax fuscescens<br>Black-faced Cormorant [59660] | | Breeding known to occur within area |
| Philomachus pugnax<br>Ruff (Reeve) [850] | | Roosting known to occur within area |
| Phoebetria fusca<br>Sooty Albatross [1075] | Vulnerable | Species or species habitat likely to occur within area |
| Pluvialis fulva<br>Pacific Golden Plover [25545] | | Roosting known to occur within area |
| Pluvialis squatarola<br>Grey Plover [865] | | Roosting known to occur within area |
| Puffinus carneipes<br>Flesh-footed Shearwater, Fleshy-footed Shearwater [1043] | | Foraging, feeding or related behaviour likely to occur within area |
| Puffinus griseus<br>Sooty Shearwater [1024] | | Species or species habitat may occur within area |
| Puffinus tenuirostris<br>Short-tailed Shearwater [1029] | | Breeding known to occur within area |
| Recurvirostra novaehollandiae<br>Red-necked Avocet [871] | | Roosting known to occur within area |
| Rhipidura rufifrons<br>Rufous Fantail [592] | | Species or species habitat known to occur within area |
| Rostratula benghalensis (sensu lato)<br>Painted Snipe [889] | Endangered* | Species or species habitat likely to occur within area |

| Name | Threatened | Type of Presence |
|---|---|---|
| Sterna albifrons<br>Little Tern [813] | | Species or species habitat may occur within area |
| Sterna bergii<br>Crested Tern [816] | | Breeding known to occur within area |
| Sterna fuscata<br>Sooty Tern [794] | | Breeding known to occur within area |
| Sterna nereis<br>Fairy Tern [796] | | Breeding known to occur within area |
| Thalassarche bulleri<br>Buller's Albatross, Pacific Albatross [64460] | Vulnerable | Species or species habitat may occur within area |
| Thalassarche cauta<br>Shy Albatross [89224] | Vulnerable* | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche chrysostoma<br>Grey-headed Albatross [66491] | Endangered | Species or species habitat may occur within area |
| Thalassarche impavida<br>Campbell Albatross, Campbell Black-browed Albatross [64459] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche melanophris<br>Black-browed Albatross [66472] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche salvini<br>Salvin's Albatross [64463] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche sp. nov.<br>Pacific Albatross [66511] | Vulnerable* | Species or species habitat may occur within area |
| Thalassarche steadi<br>White-capped Albatross [64462] | Vulnerable* | Foraging, feeding or related behaviour likely to occur within area |
| Thinornis rubricollis<br>Hooded Plover [59510] | | Species or species habitat known to occur within area |
| Thinornis rubricollis  rubricollis<br>Hooded Plover (eastern) [66726] | Vulnerable | Species or species habitat known to occur within area |
| Tringa glareola<br>Wood Sandpiper [829] | | Roosting known to occur within area |
| Tringa nebularia<br>Common Greenshank, Greenshank [832] | | Species or species habitat known to occur within area |
| Tringa stagnatilis<br>Marsh Sandpiper, Little Greenshank [833] | | Roosting known to occur within area |
| Xenus cinereus<br>Terek Sandpiper [59300] | | Roosting known to occur within area |
| Fish | | |
| Heraldia nocturna<br>Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227] | | Species or species habitat may occur within area |
| Hippocampus abdominalis<br>Big-belly Seahorse, Eastern Potbelly Seahorse, | | Species or species |

| Name | Threatened | Type of Presence |
| --- | --- | --- |
| New Zealand Potbelly Seahorse [66233] | | habitat may occur within area |
| Hippocampus breviceps<br>Short-head Seahorse, Short-snouted Seahorse [66235] | | Species or species habitat may occur within area |
| Hippocampus minotaur<br>Bullneck Seahorse [66705] | | Species or species habitat may occur within area |
| Histiogamphelus briggsii<br>Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242] | | Species or species habitat may occur within area |
| Histiogamphelus cristatus<br>Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243] | | Species or species habitat may occur within area |
| Hypselognathus rostratus<br>Knifesnout Pipefish, Knife-snouted Pipefish [66245] | | Species or species habitat may occur within area |
| Kaupus costatus<br>Deepbody Pipefish, Deep-bodied Pipefish [66246] | | Species or species habitat may occur within area |
| Kimblaeus bassensis<br>Trawl Pipefish, Bass Strait Pipefish [66247] | | Species or species habitat may occur within area |
| Leptoichthys fistularius<br>Brushtail Pipefish [66248] | | Species or species habitat may occur within area |
| Lissocampus caudalis<br>Australian Smooth Pipefish, Smooth Pipefish [66249] | | Species or species habitat may occur within area |
| Lissocampus runa<br>Javelin Pipefish [66251] | | Species or species habitat may occur within area |
| Maroubra perserrata<br>Sawtooth Pipefish [66252] | | Species or species habitat may occur within area |
| Mitotichthys semistriatus<br>Halfbanded Pipefish [66261] | | Species or species habitat may occur within area |
| Mitotichthys tuckeri<br>Tucker's Pipefish [66262] | | Species or species habitat may occur within area |
| Notiocampus ruber<br>Red Pipefish [66265] | | Species or species habitat may occur within area |
| Phycodurus eques<br>Leafy Seadragon [66267] | | Species or species habitat may occur within area |
| Phyllopteryx taeniolatus<br>Common Seadragon, Weedy Seadragon [66268] | | Species or species habitat may occur within area |
| Pugnaso curtirostris<br>Pugnose Pipefish, Pug-nosed Pipefish [66269] | | Species or species habitat may occur within area |
| Solegnathus robustus<br>Robust Pipehorse, Robust Spiny Pipehorse [66274] | | Species or species habitat may occur within |

| Name | Threatened | Type of Presence |
|---|---|---|
| | | area |
| [Solegnathus spinosissimus](#)<br>Spiny Pipehorse, Australian Spiny Pipehorse [66275] | | Species or species habitat may occur within area |
| [Stigmatopora argus](#)<br>Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276] | | Species or species habitat may occur within area |
| [Stigmatopora nigra](#)<br>Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277] | | Species or species habitat may occur within area |
| [Stipecampus cristatus](#)<br>Ringback Pipefish, Ring-backed Pipefish [66278] | | Species or species habitat may occur within area |
| [Syngnathoides biaculeatus](#)<br>Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279] | | Species or species habitat may occur within area |
| [Urocampus carinirostris](#)<br>Hairy Pipefish [66282] | | Species or species habitat may occur within area |
| [Vanacampus margaritifer](#)<br>Mother-of-pearl Pipefish [66283] | | Species or species habitat may occur within area |
| [Vanacampus phillipi](#)<br>Port Phillip Pipefish [66284] | | Species or species habitat may occur within area |
| [Vanacampus poecilolaemus](#)<br>Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285] | | Species or species habitat may occur within area |
| Mammals | | |
| [Arctocephalus forsteri](#)<br>Long-nosed Fur-seal, New Zealand Fur-seal [20] | | Species or species habitat may occur within area |
| [Arctocephalus pusillus](#)<br>Australian Fur-seal, Australo-African Fur-seal [21] | | Species or species habitat likely to occur within area |
| Reptiles | | |
| [Caretta caretta](#)<br>Loggerhead Turtle [1763] | Endangered | Foraging, feeding or related behaviour known to occur within area |
| [Chelonia mydas](#)<br>Green Turtle [1765] | Vulnerable | Foraging, feeding or related behaviour known to occur within area |
| [Dermochelys coriacea](#)<br>Leatherback Turtle, Leathery Turtle, Luth [1768] | Endangered | Foraging, feeding or related behaviour known to occur within area |

## Whales and other Cetaceans [ Resource Information ]

| Name | Status | Type of Presence |
|---|---|---|
| Mammals | | |
| [Balaenoptera acutorostrata](#)<br>Minke Whale [33] | | Species or species habitat may occur within area |
| [Balaenoptera borealis](#)<br>Sei Whale [34] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |

| Name | Status | Type of Presence |
|---|---|---|
| Balaenoptera musculus<br>Blue Whale [36] | Endangered | Species or species habitat likely to occur within area |
| Balaenoptera physalus<br>Fin Whale [37] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Caperea marginata<br>Pygmy Right Whale [39] | | Foraging, feeding or related behaviour may occur within area |
| Delphinus delphis<br>Common Dophin, Short-beaked Common Dolphin [60] | | Species or species habitat may occur within area |
| Eubalaena australis<br>Southern Right Whale [40] | Endangered | Species or species habitat known to occur within area |
| Grampus griseus<br>Risso's Dolphin, Grampus [64] | | Species or species habitat may occur within area |
| Lagenorhynchus obscurus<br>Dusky Dolphin [43] | | Species or species habitat may occur within area |
| Megaptera novaeangliae<br>Humpback Whale [38] | Vulnerable | Species or species habitat known to occur within area |
| Orcinus orca<br>Killer Whale, Orca [46] | | Species or species habitat likely to occur within area |
| Pseudorca crassidens<br>False Killer Whale [48] | | Species or species habitat likely to occur within area |
| Tursiops aduncus<br>Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418] | | Species or species habitat likely to occur within area |
| Tursiops truncatus s. str.<br>Bottlenose Dolphin [68417] | | Species or species habitat may occur within area |

| Australian Marine Parks | [ Resource Information ] |
|---|---|
| Name | Label |
| Beagle | Multiple Use Zone (IUCN VI) |

## Extra Information

| State and Territory Reserves | [ Resource Information ] |
|---|---|
| Name | State |
| Agnes Falls S.R. | VIC |
| Binginwarri H15 B.R | VIC |
| Binginwarri H18 B.R | VIC |
| Binginwarri H19 B.R | VIC |
| Binginwarri H43 B.R | VIC |
| Bruthen Creek SS.R. | VIC |
| Bruthen F.R | VIC |
| Budgeree B.R. | VIC |
| Callignee B.R | VIC |
| Callignee W.R | VIC |
| Carrajung H23 B.R | VIC |
| Carrajung H34 B.R | VIC |
| Cooks Gully F.R | VIC |
| Darriman H29 B.R | VIC |

| Name | State |
|---|---|
| Darriman H33 B.R | VIC |
| Devon B.R. | VIC |
| Entrance Point | VIC |
| Fresh-water Swamp, Woodside Beach W.R | VIC |
| Giffard (Rifle Range) F.R. | VIC |
| Giffard H30 B.R | VIC |
| Giffard H31 B.R | VIC |
| Gormandale F.R | VIC |
| Greig Creek SS.R. | VIC |
| Holey Plains | VIC |
| Jack River SS.R. | VIC |
| Jack Smith Lake W.R | VIC |
| Kangaroo Swamp N.C.R. | VIC |
| Lake Denison W.R | VIC |
| Macks Creek | VIC |
| Merrimans Creek F.R. | VIC |
| Morwell | VIC |
| Mount Vereker Creek | VIC |
| Mullungdung | VIC |
| Mullungdung F.F.R | VIC |
| Seal Islands W.R. | VIC |
| Southern Wilsons Promontory | VIC |
| Stradbroke F.F.R. | VIC |
| Tarra River SS.R. | VIC |
| Tarra Tarra B.R | VIC |
| Tarra-Bulga | VIC |
| Toms Cap S.R. | VIC |
| Toora H37 B.R | VIC |
| Toora H41 B.R | VIC |
| Traralgon Creek (Yerang Park) F.R. | VIC |
| Traralgon South F.F.R. | VIC |
| Traralgon South F.R | VIC |
| Unnamed C0017 | VIC |
| Unnamed C0077 | VIC |
| Unnamed C0108 | VIC |
| Unnamed C0109 | VIC |
| Unnamed C0110 | VIC |
| Unnamed C0111 | VIC |
| Unnamed C0112 | VIC |
| Unnamed C0186 | VIC |
| Unnamed C0261 | VIC |
| Unnamed C0301 | VIC |
| Unnamed C0406 | VIC |
| Unnamed C0460 | VIC |
| Unnamed C0532 | VIC |
| Unnamed C0609 | VIC |
| Unnamed C0691 | VIC |
| Unnamed C0709 | VIC |
| Unnamed C0781 | VIC |
| Unnamed C0782 | VIC |
| Unnamed C0805 | VIC |
| Unnamed C0822 | VIC |
| Unnamed C0838 | VIC |
| Unnamed C0870 | VIC |
| Unnamed C0877 | VIC |
| Unnamed C1083 | VIC |
| Unnamed C1138 | VIC |
| Unnamed C1185 | VIC |
| Unnamed C1222 | VIC |
| Unnamed C1254 | VIC |
| Unnamed C1258 | VIC |
| Unnamed C1362 | VIC |
| Unnamed C1389 | VIC |
| Unnamed C1398 | VIC |
| Unnamed C1484 | VIC |
| Unnamed C1622 | VIC |

| Name | State |
|---|---|
| Unnamed C1648 | VIC |
| Unnamed C1688 | VIC |
| Unnamed C1692 | VIC |
| Unnamed C1694 | VIC |
| Unnamed C1734 | VIC |
| Unnamed C1893 | VIC |
| Unnamed P0155 | VIC |
| Unnamed P0267 | VIC |
| Vereker Creek | VIC |
| Warrigal Creek SS.R. | VIC |
| Welshpool H16 B.R | VIC |
| Welshpool H17 B.R | VIC |
| Willung B.R | VIC |
| Willung South B.R. | VIC |
| Wilsons Promontory | VIC |
| Wilsons Promontory | VIC |
| Wilsons Promontory Islands | VIC |
| Won Wron F.R | VIC |
| Won Wron H21 B.R | VIC |
| Won Wron H22 B.R | VIC |
| Woodside F.R | VIC |
| Woodside H25 B.R | VIC |
| Woodside H26 B.R. | VIC |
| Woodside H27 B.R | VIC |
| Woodside H28 B.R | VIC |
| Woranga B.R | VIC |
| Yinnar B.R | VIC |

## Regional Forest Agreements [ Resource Information ]

Note that all areas with completed RFAs have been included.

| Name | State |
|---|---|
| Gippsland RFA | Victoria |

## Invasive Species [ Resource Information ]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

| Name | Status | Type of Presence |
|---|---|---|
| Birds | | |
| Acridotheres tristis<br>Common Myna, Indian Myna [387] | | Species or species habitat likely to occur within area |
| Alauda arvensis<br>Skylark [656] | | Species or species habitat likely to occur within area |
| Anas platyrhynchos<br>Mallard [974] | | Species or species habitat likely to occur within area |
| Carduelis carduelis<br>European Goldfinch [403] | | Species or species habitat likely to occur within area |
| Carduelis chloris<br>European Greenfinch [404] | | Species or species habitat likely to occur within area |
| Columba livia<br>Rock Pigeon, Rock Dove, Domestic Pigeon [803] | | Species or species habitat likely to occur within area |
| Passer domesticus<br>House Sparrow [405] | | Species or species habitat likely to occur within area |

| Name | Status | Type of Presence |
|---|---|---|
| Passer montanus<br>Eurasian Tree Sparrow [406] | | Species or species habitat likely to occur within area |
| Pycnonotus jocosus<br>Red-whiskered Bulbul [631] | | Species or species habitat likely to occur within area |
| Streptopelia chinensis<br>Spotted Turtle-Dove [780] | | Species or species habitat likely to occur within area |
| Sturnus vulgaris<br>Common Starling [389] | | Species or species habitat likely to occur within area |
| Turdus merula<br>Common Blackbird, Eurasian Blackbird [596] | | Species or species habitat likely to occur within area |
| Turdus philomelos<br>Song Thrush [597] | | Species or species habitat likely to occur within area |
| **Mammals** | | |
| Bos taurus<br>Domestic Cattle [16] | | Species or species habitat likely to occur within area |
| Canis lupus familiaris<br>Domestic Dog [82654] | | Species or species habitat likely to occur within area |
| Capra hircus<br>Goat [2] | | Species or species habitat likely to occur within area |
| Felis catus<br>Cat, House Cat, Domestic Cat [19] | | Species or species habitat likely to occur within area |
| Feral deer<br>Feral deer species in Australia [85733] | | Species or species habitat likely to occur within area |
| Lepus capensis<br>Brown Hare [127] | | Species or species habitat likely to occur within area |
| Mus musculus<br>House Mouse [120] | | Species or species habitat likely to occur within area |
| Oryctolagus cuniculus<br>Rabbit, European Rabbit [128] | | Species or species habitat likely to occur within area |
| Rattus norvegicus<br>Brown Rat, Norway Rat [83] | | Species or species habitat likely to occur within area |
| Rattus rattus<br>Black Rat, Ship Rat [84] | | Species or species habitat likely to occur within area |
| Sus scrofa<br>Pig [6] | | Species or species habitat likely to occur within area |
| Vulpes vulpes<br>Red Fox, Fox [18] | | Species or species habitat likely to occur within area |

| Name | Status | Type of Presence |
|---|---|---|
| Plants | | |
| Asparagus asparagoides<br>Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473] | | Species or species habitat likely to occur within area |
| Asparagus scandens<br>Asparagus Fern, Climbing Asparagus Fern [23255] | | Species or species habitat likely to occur within area |
| Carrichtera annua<br>Ward's Weed [9511] | | Species or species habitat may occur within area |
| Chrysanthemoides monilifera<br>Bitou Bush, Boneseed [18983] | | Species or species habitat may occur within area |
| Chrysanthemoides monilifera subsp. monilifera<br>Boneseed [16905] | | Species or species habitat likely to occur within area |
| Cytisus scoparius<br>Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934] | | Species or species habitat likely to occur within area |
| Genista linifolia<br>Flax-leaved Broom, Mediterranean Broom, Flax Broom [2800] | | Species or species habitat likely to occur within area |
| Genista monspessulana<br>Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126] | | Species or species habitat likely to occur within area |
| Genista sp. X Genista monspessulana<br>Broom [67538] | | Species or species habitat may occur within area |
| Lycium ferocissimum<br>African Boxthorn, Boxthorn [19235] | | Species or species habitat likely to occur within area |
| Nassella neesiana<br>Chilean Needle grass [67699] | | Species or species habitat likely to occur within area |
| Nassella trichotoma<br>Serrated Tussock, Yass River Tussock, Yass Tussock, Nassella Tussock (NZ) [18884] | | Species or species habitat likely to occur within area |
| Olea europaea<br>Olive, Common Olive [9160] | | Species or species habitat may occur within area |
| Opuntia spp.<br>Prickly Pears [82753] | | Species or species habitat likely to occur within area |
| Rubus fruticosus aggregate<br>Blackberry, European Blackberry [68406] | | Species or species habitat likely to occur within area |
| Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii<br>Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497] | | Species or species habitat likely to occur within area |
| Ulex europaeus<br>Gorse, Furze [7693] | | Species or species habitat likely to occur within area |

| Nationally Important Wetlands | [ Resource Information ] |
|---|---|
| Name | State |
| Corner Inlet | VIC |

| Name | State |
| --- | --- |
| Jack Smith Lake State Game Reserve | VIC |

# Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

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.

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

Where very little information is available for 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 reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

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

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

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

# Coordinates

-38.27981 146.37696,-38.27981 147.1048,-39.0561 147.1048,-39.0561 146.37696,-38.27981 146.37696

# 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.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

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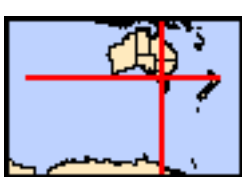
Coordinates
Buffer: 5.0Km



# Summary

## Matters of National Environmental 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: | 1 |
| Great Barrier Reef Marine Park: | None |
| Commonwealth Marine Area: | None |
| Listed Threatened Ecological Communities: | 2 |
| Listed Threatened Species: | 62 |
| Listed Migratory Species: | 60 |

## 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 http://www.environment.gov.au/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 Land: | None |
| Commonwealth Heritage Places: | None |
| Listed Marine Species: | 71 |
| Whales and Other Cetaceans: | 7 |
| Critical Habitats: | None |
| Commonwealth Reserves Terrestrial: | None |
| Australian Marine Parks: | None |

## Extra Information

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

| | |
|---|---|
| State and Territory Reserves: | 4 |
| Regional Forest Agreements: | None |
| Invasive Species: | 47 |
| Nationally Important Wetlands: | 1 |
| Key Ecological Features (Marine) | None |

# Details

## Matters of National Environmental Significance

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

| Name | Proximity |
|---|---|
| Western port | Within Ramsar site |

### 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.

| Name | Status | Type of Presence |
|---|---|---|
| Natural Damp Grassland of the Victorian Coastal Plains | Critically Endangered | Community may occur within area |
| Subtropical and Temperate Coastal Saltmarsh | Vulnerable | Community likely to occur within area |

### Listed Threatened Species [ Resource Information ]

| Name | Status | Type of Presence |
|---|---|---|
| Birds | | |
| Anthochaera phrygia<br>Regent Honeyeater [82338] | Critically Endangered | Species or species habitat likely to occur within area |
| Botaurus poiciloptilus<br>Australasian Bittern [1001] | Endangered | Species or species habitat known to occur within area |
| Calidris canutus<br>Red Knot, Knot [855] | Endangered | Species or species habitat known to occur within area |
| Calidris ferruginea<br>Curlew Sandpiper [856] | Critically Endangered | Species or species habitat known to occur within area |
| Calidris tenuirostris<br>Great Knot [862] | Critically Endangered | Roosting known to occur within area |
| Charadrius leschenaultii<br>Greater Sand Plover, Large Sand Plover [877] | Vulnerable | Roosting known to occur within area |
| Charadrius mongolus<br>Lesser Sand Plover, Mongolian Plover [879] | Endangered | Roosting known to occur within area |
| Diomedea antipodensis<br>Antipodean Albatross [64458] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Diomedea antipodensis  gibsoni<br>Gibson's Albatross [82270] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Diomedea epomophora<br>Southern Royal Albatross [89221] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |

| Name | Status | Type of Presence |
|---|---|---|
| Diomedea exulans<br>Wandering Albatross [89223] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Diomedea sanfordi<br>Northern Royal Albatross [64456] | Endangered | Foraging, feeding or related behaviour likely to occur within area |
| Fregetta grallaria  grallaria<br>White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438] | Vulnerable | Species or species habitat likely to occur within area |
| Grantiella picta<br>Painted Honeyeater [470] | Vulnerable | Species or species habitat likely to occur within area |
| Hirundapus caudacutus<br>White-throated Needletail [682] | Vulnerable | Species or species habitat known to occur within area |
| Lathamus discolor<br>Swift Parrot [744] | Critically Endangered | Species or species habitat known to occur within area |
| Limosa lapponica  baueri<br>Bar-tailed Godwit (baueri), Western Alaskan Bar-tailed Godwit [86380] | Vulnerable | Species or species habitat known to occur within area |
| Limosa lapponica  menzbieri<br>Northern Siberian Bar-tailed Godwit, Bar-tailed Godwit (menzbieri) [86432] | Critically Endangered | Species or species habitat may occur within area |
| Macronectes giganteus<br>Southern Giant-Petrel, Southern Giant Petrel [1060] | Endangered | Species or species habitat may occur within area |
| Macronectes halli<br>Northern Giant Petrel [1061] | Vulnerable | Species or species habitat may occur within area |
| Neophema chrysogaster<br>Orange-bellied Parrot [747] | Critically Endangered | Migration route likely to occur within area |
| Numenius madagascariensis<br>Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat known to occur within area |
| Pachyptila turtur  subantarctica<br>Fairy Prion (southern) [64445] | Vulnerable | Species or species habitat known to occur within area |
| Phoebetria fusca<br>Sooty Albatross [1075] | Vulnerable | Species or species habitat likely to occur within area |
| Pterodroma leucoptera  leucoptera<br>Gould's Petrel, Australian Gould's Petrel [26033] | Endangered | Species or species habitat may occur within area |
| Rostratula australis<br>Australian Painted Snipe [77037] | Endangered | Species or species habitat likely to occur within area |
| Sternula nereis  nereis<br>Australian Fairy Tern [82950] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche bulleri<br>Buller's Albatross, Pacific Albatross [64460] | Vulnerable | Species or species habitat may occur within area |
| Thalassarche bulleri  platei<br>Northern Buller's Albatross, Pacific Albatross | Vulnerable | Species or species |

| Name | Status | Type of Presence |
|---|---|---|
| [82273] | | habitat may occur within area |
| Thalassarche cauta  cauta | | |
| Shy Albatross [82345] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche cauta  steadi | | |
| White-capped Albatross [82344] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche chrysostoma | | |
| Grey-headed Albatross [66491] | Endangered | Species or species habitat may occur within area |
| Thalassarche impavida | | |
| Campbell Albatross, Campbell Black-browed Albatross [64459] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche melanophris | | |
| Black-browed Albatross [66472] | Vulnerable | Species or species habitat may occur within area |
| Thalassarche salvini | | |
| Salvin's Albatross [64463] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Thinornis rubricollis  rubricollis | | |
| Hooded Plover (eastern) [66726] | Vulnerable | Species or species habitat likely to occur within area |
| Fish | | |
| Galaxiella pusilla | | |
| Eastern Dwarf Galaxias, Dwarf Galaxias [56790] | Vulnerable | Species or species habitat known to occur within area |
| Prototroctes maraena | | |
| Australian Grayling [26179] | Vulnerable | Species or species habitat likely to occur within area |
| Frogs | | |
| Litoria raniformis | | |
| Growling Grass Frog, Southern Bell Frog,  Green and Golden Frog, Warty Swamp Frog [1828] | Vulnerable | Species or species habitat known to occur within area |
| Insects | | |
| Synemon plana | | |
| Golden Sun Moth [25234] | Critically Endangered | Species or species habitat may occur within area |
| Mammals | | |
| Antechinus minimus  maritimus | | |
| Swamp Antechinus (mainland) [83086] | Vulnerable | Species or species habitat likely to occur within area |
| Dasyurus maculatus  maculatus (SE mainland population) | | |
| Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184] | Endangered | Species or species habitat may occur within area |
| Eubalaena australis | | |
| Southern Right Whale [40] | Endangered | Species or species habitat known to occur within area |
| Isoodon obesulus  obesulus | | |
| Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (south-eastern) [68050] | Endangered | Species or species habitat known to occur within area |
| Megaptera novaeangliae | | |
| Humpback Whale [38] | Vulnerable | Species or species habitat may occur within area |
| Petauroides volans | | |
| Greater Glider [254] | Vulnerable | Species or species habitat may occur within |

| Name | Status | Type of Presence |
|---|---|---|
| | | area |
| Potorous tridactylus  tridactylus<br>Long-nosed Potoroo (SE Mainland) [66645] | Vulnerable | Species or species habitat likely to occur within area |
| Pteropus poliocephalus<br>Grey-headed Flying-fox [186] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| **Plants** | | |
| Amphibromus fluitans<br>River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215] | Vulnerable | Species or species habitat likely to occur within area |
| Caladenia orientalis<br>Eastern Spider Orchid [83410] | Endangered | Species or species habitat may occur within area |
| Dianella amoena<br>Matted Flax-lily [64886] | Endangered | Species or species habitat may occur within area |
| Glycine latrobeana<br>Clover Glycine, Purple Clover [13910] | Vulnerable | Species or species habitat likely to occur within area |
| Prasophyllum frenchii<br>Maroon Leek-orchid, Slaty Leek-orchid, Stout Leek-orchid, French's Leek-orchid, Swamp Leek-orchid [9704] | Endangered | Species or species habitat likely to occur within area |
| Prasophyllum spicatum<br>Dense Leek-orchid [55146] | Vulnerable | Species or species habitat likely to occur within area |
| Pterostylis chlorogramma<br>Green-striped Greenhood [56510] | Vulnerable | Species or species habitat likely to occur within area |
| Pterostylis cucullata<br>Leafy Greenhood [15459] | Vulnerable | Species or species habitat may occur within area |
| Senecio psilocarpus<br>Swamp Fireweed, Smooth-fruited Groundsel [64976] | Vulnerable | Species or species habitat likely to occur within area |
| Xerochrysum palustre<br>Swamp Everlasting, Swamp Paper Daisy [76215] | Vulnerable | Species or species habitat likely to occur within area |
| **Reptiles** | | |
| Caretta caretta<br>Loggerhead Turtle [1763] | Endangered | Species or species habitat known to occur within area |
| Chelonia mydas<br>Green Turtle [1765] | Vulnerable | Foraging, feeding or related behaviour known to occur within area |
| Dermochelys coriacea<br>Leatherback Turtle, Leathery Turtle, Luth [1768] | Endangered | Species or species habitat known to occur within area |
| **Sharks** | | |
| Carcharodon carcharias<br>White Shark, Great White Shark [64470] | Vulnerable | Foraging, feeding or related behaviour known to occur within area |

**Listed Migratory Species** [ Resource Information ]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

| Name | Threatened | Type of Presence |
|---|---|---|

| Name | Threatened | Type of Presence |
|---|---|---|
| Migratory Marine Birds | | |
| Apus pacificus<br>Fork-tailed Swift [678] | | Species or species habitat likely to occur within area |
| Ardenna carneipes<br>Flesh-footed Shearwater, Fleshy-footed Shearwater [82404] | | Foraging, feeding or related behaviour likely to occur within area |
| Ardenna grisea<br>Sooty Shearwater [82651] | | Species or species habitat may occur within area |
| Diomedea antipodensis<br>Antipodean Albatross [64458] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Diomedea epomophora<br>Southern Royal Albatross [89221] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Diomedea exulans<br>Wandering Albatross [89223] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Diomedea sanfordi<br>Northern Royal Albatross [64456] | Endangered | Foraging, feeding or related behaviour likely to occur within area |
| Macronectes giganteus<br>Southern Giant-Petrel, Southern Giant Petrel [1060] | Endangered | Species or species habitat may occur within area |
| Macronectes halli<br>Northern Giant Petrel [1061] | Vulnerable | Species or species habitat may occur within area |
| Phoebetria fusca<br>Sooty Albatross [1075] | Vulnerable | Species or species habitat likely to occur within area |
| Sternula albifrons<br>Little Tern [82849] | | Species or species habitat may occur within area |
| Thalassarche bulleri<br>Buller's Albatross, Pacific Albatross [64460] | Vulnerable | Species or species habitat may occur within area |
| Thalassarche cauta<br>Shy Albatross [89224] | Vulnerable* | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche chrysostoma<br>Grey-headed Albatross [66491] | Endangered | Species or species habitat may occur within area |
| Thalassarche impavida<br>Campbell Albatross, Campbell Black-browed Albatross [64459] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche melanophris<br>Black-browed Albatross [66472] | Vulnerable | Species or species habitat may occur within area |
| Thalassarche salvini<br>Salvin's Albatross [64463] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche steadi<br>White-capped Albatross [64462] | Vulnerable* | Foraging, feeding or related behaviour likely to occur within area |

| Name | Threatened | Type of Presence |
|---|---|---|
| Migratory Marine Species | | |
| Balaena glacialis  australis<br>Southern Right Whale [75529] | Endangered* | Species or species habitat known to occur within area |
| Caperea marginata<br>Pygmy Right Whale [39] | | Foraging, feeding or related behaviour may occur within area |
| Carcharodon carcharias<br>White Shark, Great White Shark [64470] | Vulnerable | Foraging, feeding or related behaviour known to occur within area |
| Caretta caretta<br>Loggerhead Turtle [1763] | Endangered | Species or species habitat known to occur within area |
| Chelonia mydas<br>Green Turtle [1765] | Vulnerable | Foraging, feeding or related behaviour known to occur within area |
| Dermochelys coriacea<br>Leatherback Turtle, Leathery Turtle, Luth [1768] | Endangered | Species or species habitat known to occur within area |
| Lagenorhynchus obscurus<br>Dusky Dolphin [43] | | Species or species habitat may occur within area |
| Lamna nasus<br>Porbeagle, Mackerel Shark [83288] | | Species or species habitat likely to occur within area |
| Megaptera novaeangliae<br>Humpback Whale [38] | Vulnerable | Species or species habitat may occur within area |
| Migratory Terrestrial Species | | |
| Hirundapus caudacutus<br>White-throated Needletail [682] | Vulnerable | Species or species habitat known to occur within area |
| Monarcha melanopsis<br>Black-faced Monarch [609] | | Species or species habitat likely to occur within area |
| Motacilla flava<br>Yellow Wagtail [644] | | Species or species habitat may occur within area |
| Myiagra cyanoleuca<br>Satin Flycatcher [612] | | Breeding known to occur within area |
| Rhipidura rufifrons<br>Rufous Fantail [592] | | Species or species habitat known to occur within area |
| Migratory Wetlands Species | | |
| Actitis hypoleucos<br>Common Sandpiper [59309] | | Species or species habitat known to occur within area |
| Arenaria interpres<br>Ruddy Turnstone [872] | | Roosting known to occur within area |
| Calidris acuminata<br>Sharp-tailed Sandpiper [874] | | Roosting known to occur within area |
| Calidris canutus<br>Red Knot, Knot [855] | Endangered | Species or species habitat known to occur within area |

| Name | Threatened | Type of Presence |
|---|---|---|
| Calidris ferruginea<br>Curlew Sandpiper [856] | Critically Endangered | Species or species habitat known to occur within area |
| Calidris melanotos<br>Pectoral Sandpiper [858] | | Species or species habitat likely to occur within area |
| Calidris ruficollis<br>Red-necked Stint [860] | | Roosting known to occur within area |
| Calidris tenuirostris<br>Great Knot [862] | Critically Endangered | Roosting known to occur within area |
| Charadrius bicinctus<br>Double-banded Plover [895] | | Roosting known to occur within area |
| Charadrius leschenaultii<br>Greater Sand Plover, Large Sand Plover [877] | Vulnerable | Roosting known to occur within area |
| Charadrius mongolus<br>Lesser Sand Plover, Mongolian Plover [879] | Endangered | Roosting known to occur within area |
| Gallinago hardwickii<br>Latham's Snipe, Japanese Snipe [863] | | Roosting may occur within area |
| Gallinago megala<br>Swinhoe's Snipe [864] | | Roosting likely to occur within area |
| Gallinago stenura<br>Pin-tailed Snipe [841] | | Roosting likely to occur within area |
| Limicola falcinellus<br>Broad-billed Sandpiper [842] | | Roosting known to occur within area |
| Limosa lapponica<br>Bar-tailed Godwit [844] | | Species or species habitat known to occur within area |
| Numenius madagascariensis<br>Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat known to occur within area |
| Numenius minutus<br>Little Curlew, Little Whimbrel [848] | | Roosting likely to occur within area |
| Numenius phaeopus<br>Whimbrel [849] | | Roosting known to occur within area |
| Pandion haliaetus<br>Osprey [952] | | Species or species habitat may occur within area |
| Pluvialis fulva<br>Pacific Golden Plover [25545] | | Roosting known to occur within area |
| Pluvialis squatarola<br>Grey Plover [865] | | Roosting known to occur within area |
| Tringa brevipes<br>Grey-tailed Tattler [851] | | Roosting known to occur within area |
| Tringa glareola<br>Wood Sandpiper [829] | | Roosting known to occur within area |
| Tringa incana<br>Wandering Tattler [831] | | Roosting known to occur within area |
| Tringa nebularia<br>Common Greenshank, Greenshank [832] | | Species or species habitat known to occur within area |

| Name | Threatened | Type of Presence |
|---|---|---|
| Tringa stagnatilis | | |
| Marsh Sandpiper, Little Greenshank [833] | | Roosting known to occur within area |
| Xenus cinereus | | |
| Terek Sandpiper [59300] | | Roosting known to occur within area |

## Other Matters Protected by the EPBC Act

| Listed Marine Species | | [ Resource Information ] |
|---|---|---|
| * Species is listed under a different scientific name on the EPBC Act - Threatened Species list. | | |
| Name | Threatened | Type of Presence |
| Birds | | |
| Actitis hypoleucos | | |
| Common Sandpiper [59309] | | Species or species habitat known to occur within area |
| Apus pacificus | | |
| Fork-tailed Swift [678] | | Species or species habitat likely to occur within area |
| Ardea alba | | |
| Great Egret, White Egret [59541] | | Species or species habitat known to occur within area |
| Ardea ibis | | |
| Cattle Egret [59542] | | Species or species habitat may occur within area |
| Arenaria interpres | | |
| Ruddy Turnstone [872] | | Roosting known to occur within area |
| Calidris acuminata | | |
| Sharp-tailed Sandpiper [874] | | Roosting known to occur within area |
| Calidris canutus | | |
| Red Knot, Knot [855] | Endangered | Species or species habitat known to occur within area |
| Calidris ferruginea | | |
| Curlew Sandpiper [856] | Critically Endangered | Species or species habitat known to occur within area |
| Calidris melanotos | | |
| Pectoral Sandpiper [858] | | Species or species habitat likely to occur within area |
| Calidris ruficollis | | |
| Red-necked Stint [860] | | Roosting known to occur within area |
| Calidris tenuirostris | | |
| Great Knot [862] | Critically Endangered | Roosting known to occur within area |

| Name | Threatened | Type of Presence |
|---|---|---|
| Charadrius bicinctus<br>Double-banded Plover [895] | | Roosting known to occur within area |
| Charadrius leschenaultii<br>Greater Sand Plover, Large Sand Plover [877] | Vulnerable | Roosting known to occur within area |
| Charadrius mongolus<br>Lesser Sand Plover, Mongolian Plover [879] | Endangered | Roosting known to occur within area |
| Charadrius ruficapillus<br>Red-capped Plover [881] | | Roosting known to occur within area |
| Chrysococcyx osculans<br>Black-eared Cuckoo [705] | | Species or species habitat likely to occur within area |
| Diomedea antipodensis<br>Antipodean Albatross [64458] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Diomedea epomophora<br>Southern Royal Albatross [89221] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Diomedea exulans<br>Wandering Albatross [89223] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Diomedea gibsoni<br>Gibson's Albatross [64466] | Vulnerable* | Foraging, feeding or related behaviour likely to occur within area |
| Diomedea sanfordi<br>Northern Royal Albatross [64456] | Endangered | Foraging, feeding or related behaviour likely to occur within area |
| Gallinago hardwickii<br>Latham's Snipe, Japanese Snipe [863] | | Roosting may occur within area |
| Gallinago megala<br>Swinhoe's Snipe [864] | | Roosting likely to occur within area |
| Gallinago stenura<br>Pin-tailed Snipe [841] | | Roosting likely to occur within area |
| Haliaeetus leucogaster<br>White-bellied Sea-Eagle [943] | | Species or species habitat known to occur within area |
| Heteroscelus brevipes<br>Grey-tailed Tattler [59311] | | Roosting known to occur within area |
| Heteroscelus incanus<br>Wandering Tattler [59547] | | Roosting known to occur within area |
| Himantopus himantopus<br>Pied Stilt, Black-winged Stilt [870] | | Roosting known to occur within area |
| Hirundapus caudacutus<br>White-throated Needletail [682] | Vulnerable | Species or species habitat known to occur within area |
| Lathamus discolor<br>Swift Parrot [744] | Critically Endangered | Species or species habitat known to occur within area |
| Limicola falcinellus<br>Broad-billed Sandpiper [842] | | Roosting known to occur within area |
| Limosa lapponica<br>Bar-tailed Godwit [844] | | Species or species habitat known to occur within area |

| Name | Threatened | Type of Presence |
|---|---|---|
| Macronectes giganteus<br>Southern Giant-Petrel, Southern Giant Petrel [1060] | Endangered | Species or species habitat may occur within area |
| Macronectes halli<br>Northern Giant Petrel [1061] | Vulnerable | Species or species habitat may occur within area |
| Merops ornatus<br>Rainbow Bee-eater [670] | | Species or species habitat may occur within area |
| Monarcha melanopsis<br>Black-faced Monarch [609] | | Species or species habitat likely to occur within area |
| Motacilla flava<br>Yellow Wagtail [644] | | Species or species habitat may occur within area |
| Myiagra cyanoleuca<br>Satin Flycatcher [612] | | Breeding known to occur within area |
| Neophema chrysogaster<br>Orange-bellied Parrot [747] | Critically Endangered | Migration route likely to occur within area |
| Numenius madagascariensis<br>Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat known to occur within area |
| Numenius minutus<br>Little Curlew, Little Whimbrel [848] | | Roosting likely to occur within area |
| Numenius phaeopus<br>Whimbrel [849] | | Roosting known to occur within area |
| Pachyptila turtur<br>Fairy Prion [1066] | | Species or species habitat known to occur within area |
| Pandion haliaetus<br>Osprey [952] | | Species or species habitat may occur within area |
| Phoebetria fusca<br>Sooty Albatross [1075] | Vulnerable | Species or species habitat likely to occur within area |
| Pluvialis fulva<br>Pacific Golden Plover [25545] | | Roosting known to occur within area |
| Pluvialis squatarola<br>Grey Plover [865] | | Roosting known to occur within area |
| Puffinus carneipes<br>Flesh-footed Shearwater, Fleshy-footed Shearwater [1043] | | Foraging, feeding or related behaviour likely to occur within area |
| Puffinus griseus<br>Sooty Shearwater [1024] | | Species or species habitat may occur within area |
| Recurvirostra novaehollandiae<br>Red-necked Avocet [871] | | Roosting known to occur within area |
| Rhipidura rufifrons<br>Rufous Fantail [592] | | Species or species habitat known to occur within area |
| Rostratula benghalensis (sensu lato)<br>Painted Snipe [889] | Endangered* | Species or species habitat likely to occur within area |

| Name | Threatened | Type of Presence |
|---|---|---|
| Sterna albifrons<br>Little Tern [813] | | Species or species habitat may occur within area |
| Thalassarche bulleri<br>Buller's Albatross, Pacific Albatross [64460] | Vulnerable | Species or species habitat may occur within area |
| Thalassarche cauta<br>Shy Albatross [89224] | Vulnerable* | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche chrysostoma<br>Grey-headed Albatross [66491] | Endangered | Species or species habitat may occur within area |
| Thalassarche impavida<br>Campbell Albatross, Campbell Black-browed Albatross [64459] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche melanophris<br>Black-browed Albatross [66472] | Vulnerable | Species or species habitat may occur within area |
| Thalassarche salvini<br>Salvin's Albatross [64463] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche sp. nov.<br>Pacific Albatross [66511] | Vulnerable* | Species or species habitat may occur within area |
| Thalassarche steadi<br>White-capped Albatross [64462] | Vulnerable* | Foraging, feeding or related behaviour likely to occur within area |
| Thinornis rubricollis rubricollis<br>Hooded Plover (eastern) [66726] | Vulnerable | Species or species habitat likely to occur within area |
| Tringa glareola<br>Wood Sandpiper [829] | | Roosting known to occur within area |
| Tringa nebularia<br>Common Greenshank, Greenshank [832] | | Species or species habitat known to occur within area |
| Tringa stagnatilis<br>Marsh Sandpiper, Little Greenshank [833] | | Roosting known to occur within area |
| Xenus cinereus<br>Terek Sandpiper [59300] | | Roosting known to occur within area |
| Mammals | | |
| Arctocephalus forsteri<br>Long-nosed Fur-seal, New Zealand Fur-seal [20] | | Species or species habitat may occur within area |
| Arctocephalus pusillus<br>Australian Fur-seal, Australo-African Fur-seal [21] | | Species or species habitat likely to occur within area |
| Reptiles | | |
| Caretta caretta<br>Loggerhead Turtle [1763] | Endangered | Species or species habitat known to occur within area |
| Chelonia mydas<br>Green Turtle [1765] | Vulnerable | Foraging, feeding or related behaviour known to occur within area |
| Dermochelys coriacea<br>Leatherback Turtle, Leathery Turtle, Luth [1768] | Endangered | Species or species |

| Name | Threatened | Type of Presence |
|---|---|---|
| | | habitat known to occur within area |

## Whales and other Cetaceans [ Resource Information ]

| Name | Status | Type of Presence |
|---|---|---|
| Mammals | | |
| Caperea marginata<br>Pygmy Right Whale [39] | | Foraging, feeding or related behaviour may occur within area |
| Delphinus delphis<br>Common Dophin, Short-beaked Common Dolphin [60] | | Species or species habitat may occur within area |
| Eubalaena australis<br>Southern Right Whale [40] | Endangered | Species or species habitat known to occur within area |
| Lagenorhynchus obscurus<br>Dusky Dolphin [43] | | Species or species habitat may occur within area |
| Megaptera novaeangliae<br>Humpback Whale [38] | Vulnerable | Species or species habitat may occur within area |
| Tursiops aduncus<br>Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418] | | Species or species habitat likely to occur within area |
| Tursiops truncatus s. str.<br>Bottlenose Dolphin [68417] | | Species or species habitat may occur within area |

# Extra Information

## State and Territory Reserves [ Resource Information ]

| Name | State |
|---|---|
| North Western Port N.C.R. | VIC |
| Olivers Creek B.R. | VIC |
| Unnamed C0456 | VIC |
| Warrengine Creek SS.R. | VIC |

## Invasive Species [ Resource Information ]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

| Name | Status | Type of Presence |
|---|---|---|
| Birds | | |
| Acridotheres tristis<br>Common Myna, Indian Myna [387] | | Species or species habitat likely to occur within area |
| Alauda arvensis<br>Skylark [656] | | Species or species habitat likely to occur within area |
| Anas platyrhynchos<br>Mallard [974] | | Species or species habitat likely to occur within area |
| Carduelis carduelis<br>European Goldfinch [403] | | Species or species habitat likely to occur within area |

| Name | Status | Type of Presence |
|---|---|---|
| Carduelis chloris<br>European Greenfinch [404] | | Species or species habitat likely to occur within area |
| Columba livia<br>Rock Pigeon, Rock Dove, Domestic Pigeon [803] | | Species or species habitat likely to occur within area |
| Passer domesticus<br>House Sparrow [405] | | Species or species habitat likely to occur within area |
| Passer montanus<br>Eurasian Tree Sparrow [406] | | Species or species habitat likely to occur within area |
| Pycnonotus jocosus<br>Red-whiskered Bulbul [631] | | Species or species habitat likely to occur within area |
| Streptopelia chinensis<br>Spotted Turtle-Dove [780] | | Species or species habitat likely to occur within area |
| Sturnus vulgaris<br>Common Starling [389] | | Species or species habitat likely to occur within area |
| Turdus merula<br>Common Blackbird, Eurasian Blackbird [596] | | Species or species habitat likely to occur within area |
| Turdus philomelos<br>Song Thrush [597] | | Species or species habitat likely to occur within area |
| **Mammals** | | |
| Bos taurus<br>Domestic Cattle [16] | | Species or species habitat likely to occur within area |
| Canis lupus familiaris<br>Domestic Dog [82654] | | Species or species habitat likely to occur within area |
| Capra hircus<br>Goat [2] | | Species or species habitat likely to occur within area |
| Felis catus<br>Cat, House Cat, Domestic Cat [19] | | Species or species habitat likely to occur within area |
| Lepus capensis<br>Brown Hare [127] | | Species or species habitat likely to occur within area |
| Mus musculus<br>House Mouse [120] | | Species or species habitat likely to occur within area |
| Oryctolagus cuniculus<br>Rabbit, European Rabbit [128] | | Species or species habitat likely to occur within area |
| Rattus norvegicus<br>Brown Rat, Norway Rat [83] | | Species or species habitat likely to occur within area |
| Rattus rattus<br>Black Rat, Ship Rat [84] | | Species or species habitat likely to occur within area |

| Name | Status | Type of Presence |
|---|---|---|
| Sus scrofa<br>Pig [6] | | Species or species habitat likely to occur within area |
| Vulpes vulpes<br>Red Fox, Fox [18] | | Species or species habitat likely to occur within area |
| **Plants** | | |
| Alternanthera philoxeroides<br>Alligator Weed [11620] | | Species or species habitat likely to occur within area |
| Anredera cordifolia<br>Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643] | | Species or species habitat likely to occur within area |
| Asparagus aethiopicus<br>Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425] | | Species or species habitat likely to occur within area |
| Asparagus asparagoides<br>Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473] | | Species or species habitat likely to occur within area |
| Asparagus scandens<br>Asparagus Fern, Climbing Asparagus Fern [23255] | | Species or species habitat likely to occur within area |
| Austrocylindropuntia spp.<br>Prickly Pears [85132] | | Species or species habitat likely to occur within area |
| Carrichtera annua<br>Ward's Weed [9511] | | Species or species habitat may occur within area |
| Chrysanthemoides monilifera<br>Bitou Bush, Boneseed [18983] | | Species or species habitat may occur within area |
| Chrysanthemoides monilifera subsp. monilifera<br>Boneseed [16905] | | Species or species habitat likely to occur within area |
| Chrysanthemoides monilifera subsp. rotundata<br>Bitou Bush [16332] | | Species or species habitat likely to occur within area |
| Cytisus scoparius<br>Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934] | | Species or species habitat likely to occur within area |
| Eichhornia crassipes<br>Water Hyacinth, Water Orchid, Nile Lily [13466] | | Species or species habitat likely to occur within area |
| Genista linifolia<br>Flax-leaved Broom, Mediterranean Broom, Flax Broom [2800] | | Species or species habitat likely to occur within area |
| Genista monspessulana<br>Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126] | | Species or species habitat likely to occur within area |
| Genista sp. X Genista monspessulana<br>Broom [67538] | | Species or species habitat may occur within area |
| Lycium ferocissimum<br>African Boxthorn, Boxthorn [19235] | | Species or species habitat likely to occur within area |

| Name | Status | Type of Presence |
|---|---|---|
| Nassella neesiana<br>Chilean Needle grass [67699] | | Species or species habitat likely to occur within area |
| Nassella trichotoma<br>Serrated Tussock, Yass River Tussock, Yass Tussock, Nassella Tussock (NZ) [18884] | | Species or species habitat likely to occur within area |
| Olea europaea<br>Olive, Common Olive [9160] | | Species or species habitat may occur within area |
| Rubus fruticosus aggregate<br>Blackberry, European Blackberry [68406] | | Species or species habitat likely to occur within area |
| Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii<br>Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497] | | Species or species habitat likely to occur within area |
| Senecio madagascariensis<br>Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624] | | Species or species habitat likely to occur within area |
| Ulex europaeus<br>Gorse, Furze [7693] | | Species or species habitat likely to occur within area |

| Nationally Important Wetlands | [ Resource Information ] |
|---|---|
| Name | State |
| Western Port | VIC |

# Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

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.

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

Where very little information is available for 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 reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

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

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

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

# Coordinates

-38.272464 145.225881,-38.272397 145.226053,-38.275698 145.224594,-38.279135 145.222448,-38.28439 145.221332,-38.290655 145.22056,-38.289982 145.227769,-38.290655 145.228027,-38.289106 145.230859,-38.289847 145.231203,-38.291598 145.228027,-38.292137 145.228027,-38.294832 145.228113,-38.294899 145.227598,-38.292474 145.227598,-38.293754 145.225452,-38.297526 145.225538,-38.297728 145.221246,-38.293619 145.22056,-38.285468 145.18803,-38.272397 145.189575,-38.272464 145.225881

# Acknowledgements

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

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

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

Please feel free to provide feedback via the Contact Us page.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## Appendix 4: Photographs of native vegetation in the referral area from the preliminary assessment

Plate 1: Coastal Banksia Woodland – Reeves Beach (section 1 and 2)

Plate 2: Coast Saltmarsh – Reeves Beach (section 1 and 2)

Plate 3: Remnant Plains Grassy Woodland – Section 5

Plate 4: Remnant understorey vegetation underneath the existing Basslink corridor (Section 5)

Plate 5: Heathy Woodland – Merriman Creek Flora and Fauna Reserve

Plate 6: High-quality remnant Lowland Forest (Section 4)

Plate 7: Remnant Riparian Woodland regrowth underneath the existing Basslink alignment (Section 4)

Plate 8: Gully Woodland – Monkey Creek (Section 4)

Plate 9: Damp Heathy Woodland – Stradbroke Flora and Fauna Reserve (Section 4)

Plate 10: Damp Sands Herb-rich Woodland – northern end of Old Rosedale Road

Plate 11: Heathy Woodland – Old Rosedale Road (Section 1)

Plate 12: High-quality Lowland Forest – Old Rosedale Road (Section 1)

Plate 13: Grassy Woodland – southern end of Old Rosedale Road (Section 1)

Plate 14: Grassy Dry Forest – Darriman Bushland Reserve

Plate 15: Lowland Forest – South Gippsland Highway

Plate 16: Plains Grassy Woodland – Giffard West Road (Section 3)

Plate 17: Riparian Scrub (Section 3)

Plate 18: Swamp Scrub (Section 3)

Plate 19: Coastal Dune Scrub – Jack Smith Lake (Section 3)

Plate 20: Coastal complex – Coastal Saltmarsh, estuarine wetland and Swamp Scrub – Jack Smith Lake (Section 3)