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Vopak Victoria Energy Terminal

Terrestrial Flora and Fauna
Assessment

**Vopak Victoria Energy
Terminal Pty Ltd**

Reference: 522249

Revision: A

2022-12-05

Document control record

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Document control							aurecon
Report title		Terrestrial Flora and Fauna Assessment					
Document code			Project number		522249		
File path							
Client		Vopak Victoria Energy Terminal Pty Ltd					
Client contact			Client reference				
Rev	Date	Revision details/status	Author	Reviewer	Verifier (if required)	Approver	
A.1	2022-11-28	Draft	Adam Rigg Lexie Slingerland	Rob Marks	Justin Sullivan	Sharon Stewart	
A	2022-12-05	Final	Adam Rigg Lexie Slingerland	Rob Marks	Justin Sullivan	Sharon Stewart	
Current revision		A					

Approval			
Author signature		Approver signature	
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Executive summary

Aurecon Australasia Pty Ltd (Aurecon) has been engaged by Vopak Victoria Energy Terminal Pty Ltd (Vopak) to prepare a terrestrial flora and fauna report for the proposed Vopak Victoria Energy Terminal (the Project). The Project will utilise a Floating Storage Re-gasification Unit in Port Phillip Bay, approximately 19 km directly offshore from Avalon. The unit will receive LNG from import tankers and supply the gas directly into the Victorian Transmission System. This will be via a new Gas Receiving Station proposed to be located in the Western Treatment Plant (WTP), adjacent to the existing Victorian Gas Transmission System (VTS).

The purpose of the ecological assessment was to provide an assessment of the biodiversity values for the terrestrial components of the Project. This includes the following scope:

Onshore pipeline (located within WTP):

- Approximately 8.5 km extent of buried onshore gas pipeline
- Gas Receiving Station and associated buildings
- 66kV or 132kV electricity cable (either underground (preferred) or overhead)
- Substation

Onshore powerline (outside WTP, Little River to Moorabool)

- A new 132kV powerline is also required to supply power to the station and floating unit. This will require a new overhead powerline from the Moorabool Terminal Station. This assessment was primarily via desktop assessment, as the ecological values and significance within the WTP land are well understood due to ongoing management and monitoring of the values by Melbourne Water. This assessment was supported with a site visit to confirm the presence of native vegetation and habitat with the proposed impact areas for the onshore pipeline Project area and an additional site review of the new onshore powerline Project area.

The assessment identified the significance of WTP is based on the extensive network of available wetland habitats that are specifically managed to provide habitat for threatened and migratory wetland and shorebird species, Growling Grass Frog and resident waterfowl and wading birds. These values contribute significantly to the ecological character of the Port Phillip Bay (western shoreline) and Bellarine Peninsula Ramsar site (Ramsar site) which extends across the WTP land.

The onshore powerline Project area is located within a mixed rural living/agricultural area from Little River to Moorabool, north of Geelong. Although not yet subject to detailed ecological surveys as part of this investigation, the Project area is a mix of land uses and therefore contains a variety of environments, from cropped areas to land with remnant grasslands and habitat that have been subject to minimal disturbance from ongoing land management. The assessment identified the likely presence of *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) threatened ecological communities and species, notably Natural Temperate Grassland of the Victorian Volcanic Plain, Spiny Rice-flower and Golden Sun Moth.

In consideration of the highly significant nature of WTP and the significant role it plays in the provision and protection of habitat for threatened fauna and migratory bird species, early design and planning of the Project has incorporated advice from the relevant stakeholders. This has been to install the gas pipeline via boring under the shoreline and locate the shaft at least 400 m from the nearest shoreline habitat, where important migratory waders forage. The remainder of the onshore components within WTP have also been sited in the existing agricultural area of the operating facility, primarily in internal road reserves and paddocks that have limited habitat.

However, there is potential that direct impacts may occur to Growling Grass Frog habitat, notably the roadside drains within WTP that the species is known to utilise in moving between aquatic wetland habitats. Indirect impacts may also occur as a result of works, which require mitigation to manage potential impacts to important populations and habitat. Measures will be considered during further design and construction planning along with best practice environmental controls that will be implemented on site during works, including for sedimentation, hygiene, noise and light.

Based on preliminary design assumptions for a potential impact footprint, the onshore powerline Project area, the Project has the potential to remove approximately 7 ha of native vegetation, mostly comprised of Plains Grassland which has potential to meet thresholds as a EPBC Act and *Flora and Fauna Guarantee Act 1988* threatened ecological community. Based on this preliminary design potential footprint, no threatened species records were present, however Spiny Rice-flower and Golden Sun Moth records were identified within close proximity, and there is potential for impacts to these species if present.

The outcomes of this assessment have identified the following:

- Based on the current design and project development, it is not expected that the Project will trigger a referral under the *Environment Effects Act 1978* for ecological values.
- A referral under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* is required for predicted impacts to Natural Temperate Grassland of the Victorian Volcanic Plain and Growling Grass Frog, with potential impacts to Spiny Rice-flower, Golden Sun Moth, Striped Legless Lizard and potential indirect impacts within the Ramsar site.
- Impacts to native vegetation will require approval and offsets under the Greater Geelong Planning Scheme based on the *Guidelines to remove, destroy or lop native vegetation* (the Guidelines) (DELWP 2017).

The Project proposes to continue design development and investigations of the entire Project area (onshore pipeline and onshore powerline), including detailed ecological and targeted surveys, through the process for gaining approvals. Ecological data will be reviewed in relation to design to continue to identify suitable mitigation measures to further reduce impacts to the significant ecological values within the Project Area.

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1 Introduction

1.1 Project background

Aurecon Australasia Pty Ltd (Aurecon) has been engaged by Vopak Victoria Energy Terminal Pty Ltd (Vopak) to conduct terrestrial flora and fauna assessments for the Project area of the proposed Vopak Victoria Energy Terminal (the Project). The Project is proposing to develop a liquefied natural gas (LNG) import terminal in Port Phillip Bay to help secure energy supply as a part of Victoria's energy transition.

The Project will utilise a Floating Storage Re-gasification Unit (FSRU) permanently moored at an existing anchorage point in Port Phillip Bay, approximately 19 km directly offshore from Avalon. The FSRU will receive LNG from import tankers, re-gasify it and supply the gas directly into the Victorian Transmission System via a new 29 km pipeline comprising of approximately 19 km of pipe under Port Phillip Bay, 1.5 km of pipe within a trenchless shore crossing and 8.5 km of pipe buried onshore.

Before entering the Victorian Transmission System gas quality would be monitored at a Gas Receiving Station (GRS) on land adjacent to the Princes Freeway (between Point Wilson Road and English Road).

A new 132kV powerline, substation (located adjacent to the GRS) and electricity cable would supply electricity for the operation of the Project.

1.2 Purpose

The purpose of the ecological assessment was to provide an assessment of the biodiversity values for the terrestrial components of the Project. This includes:

- Approximately 8.5 km extent of buried onshore gas pipeline
- Gas Receiving Station and associated buildings
- 66kV or 132kV electricity cable (either underground (preferred) or overhead)
- Substation
- A new 132kV onshore powerline.

1.3 Project scope

This terrestrial ecological assessment identifies potential direct and indirect impacts to native vegetation and/or significant flora, fauna and ecological communities as a result of the Project.

This assessment identifies the environmental approvals that may be triggered under Commonwealth and state legislation, provides identification of any key risk areas of the Project area and recommendations for locating project infrastructure to avoid impacts.

The scope of the ecological assessment was to:

- Undertake a review of existing ecological information for the Project area, including preparation of database searches for native vegetation, flora and fauna
- Undertake an ecological field survey to determine the type, extent and quality of native vegetation and fauna habitat present in the Project area
- Identify any significant ecological values (including threatened species or communities) that have potential to occur in the Project area
- Identify the potential implications for the Project based on relevant biodiversity legislation and policy
- Provide recommendations to assist with project design and locating of project infrastructure
- Identify the need for any future targeted surveys.

1.4 Project area

The terrestrial components of the Project fall within two areas:

- Onshore pipeline, located within Melbourne Water's Western Treatment Plant (WTP) (east of the Princes Freeway)
- Onshore powerline, located outside WTP (west of the Princes Freeway), which includes a mix of privately owned rural areas, road reserve, and the Moorabool Terminal Station (located north of Geelong).

1.4.1 Onshore pipeline

The Project scope of the onshore pipeline, which falls within Melbourne Water's WTP are:

- Approximately 8.5 km extent of buried onshore gas pipeline
- Gas Receiving Station and associated buildings
- 66kV or 132kV electricity cable (either underground (preferred) or overhead or)
- Substation.

GRS and substation will be located on land adjacent to the Princes Freeway (between Point Wilson Road and English Road). The 8.5km of onshore pipeline traverses from the GRS south along English Road, then east along Beach Road to the proposed drilling pad and laydown area adjacent to Beach Road where the pipe and electricity cable would be bored under the shoreline (approximately 1.5 km) and into the marine area of Port Phillip Bay.

There are three options being considered for the onshore electricity cable pipeline (see Figure 1-1 below):

- Option 1 is an underground cable running from the pipeline construction laydown area travelling west along Beach Road, north up Chirnside Road, west along Cozen Road, north along Grills Road, west towards the substation and GRS site
- Option 2 is an underground cable running from the pipeline construction laydown area travelling from Beach Road, north along Grills Road, west towards the substation and GRS site
- Option 3 is an overhead cable that travels parallel with the high-pressure gas pipeline along Beach Road and north along English Road to the substation and GSR site.

1.4.2 Onshore powerline

The onshore powerline Project area runs from the substation along Paradise Road to the Princes Freeway, south along the Princes Freeway, northwest (within land reserved for a rail link to Avalon Airport), west along Peak School Road to west of Bacchus Marsh Road and south to Moorabool Terminal Station adjacent to an existing transmission line easement (see Figure 1-1 below).

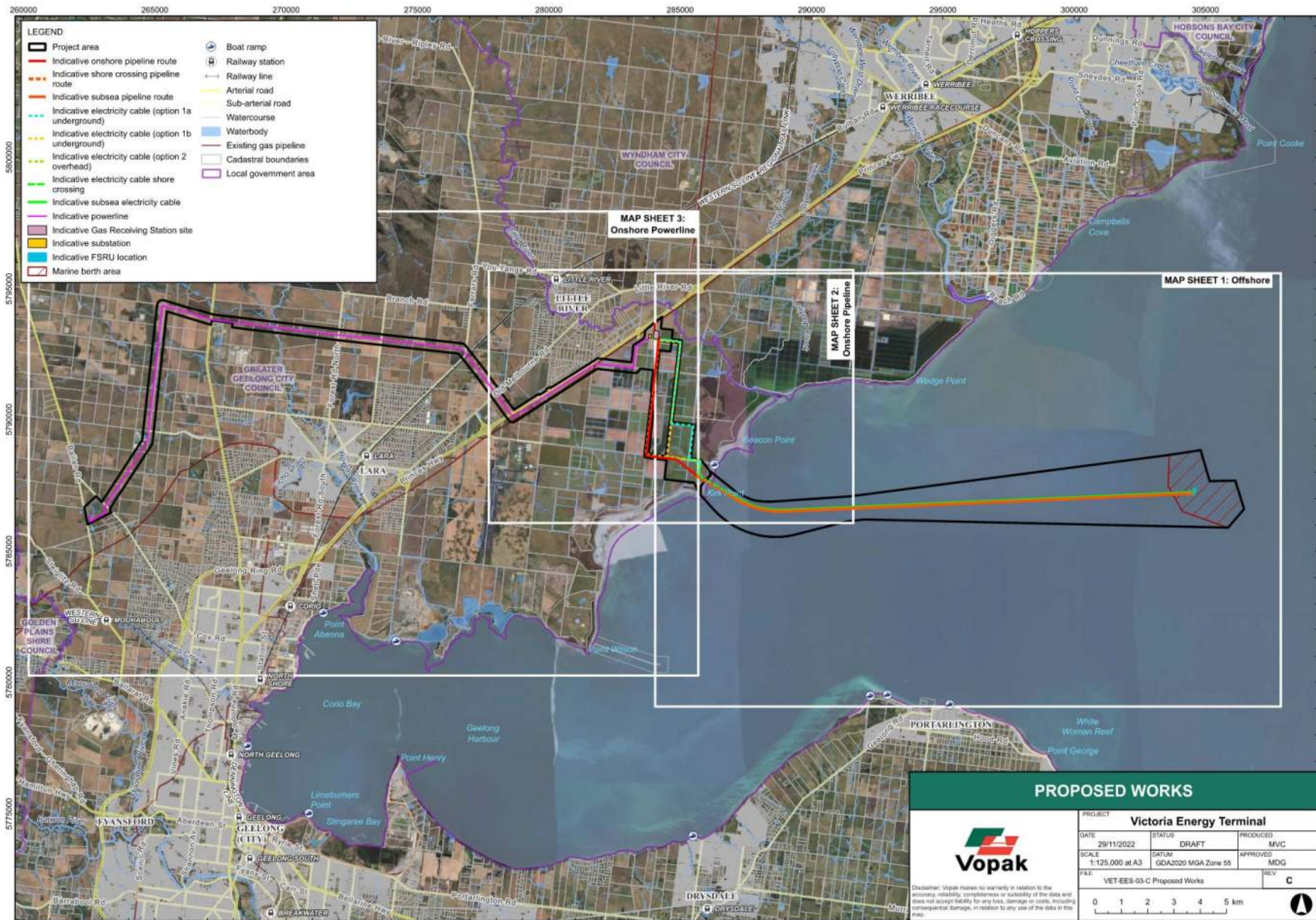


Figure 1-1 Project scope and area

1.5 Limitations and assumptions

The following limitations and assumptions are considered in the preparation of this report:

- The outcomes of this report are limited to a desktop ecological assessment undertaken for the Project area, supported by site inspections to accessible locations of the Project area only.
- Assessment of impacts and associated recommendations within this report are based on available information from government databases and reports from Melbourne Water at the time of assessment. Changes to the ecological conditions that may occur over time may alter the conclusions of the report.
- This report is limited to the scope defined in Section 1.3. Any change to the location or scope of the Project may require alterations to the findings and recommendations included in this report.
- Should further information become available regarding the conditions at the Project area, Aurecon reserves the right to review the report in the context of the additional information.

2 Methodology

2.1 Desktop assessment

This desktop assessment section within this report has been divided into two categories;

- The onshore pipeline (and associated infrastructure, including options of the electricity cable), located within WTP
- The onshore powerline, located outside the WTP (west of the Princess Freeway).

The area associated with the onshore pipeline has previously been extensively surveyed. Therefore, there is a high degree of confidence in the accuracy of environmental values identified, with existing ecological data adequate to inform this impact assessment. In contrast, the proposed onshore powerline Project area has not been consistently surveyed, and the impact assessment for this area will largely rely on field survey which is yet to be undertaken.

2.1.1 Onshore pipeline

Literature review

There is a significant amount of literature on the current state of ecological values within the onshore pipeline Project area due to previous projects, approvals and ongoing management and monitoring of the values by Melbourne Water. This includes knowledge of the current significant populations of values that contribute to the significance and character of the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site (Ramsar site), including waterfowl, migratory shorebirds and Growling Grass Frog populations.

The Project has been developed in consultation with Melbourne Water regarding the location of the onshore pipeline alignments within the WTP. Melbourne Water has supplied the Project with various reports and documents to inform the current presence and state of ecological values within WTP that are potentially relevant to the Project. This information has been used to inform ecological impacts for the Project and assess against criteria to determine obligations under relevant Commonwealth and Victorian legislation.

Reports reviewed and referenced within this report providing an overview of the significant values are as follows:

- Organ, A. 2003. *Management Plan for the Growling Grass Frog Litoria raniformis at the Western Treatment Plant, Werribee, Victoria*. Report prepared for Melbourne Water Corporation by Biosis Research Pty Ltd.
- Ecology and Heritage Partners 2021. *Growling Grass Frog Monitoring 2020/21, Western Treatment Plant, Victoria*. Report prepared for Melbourne Water by Ecology and Heritage Partners Pty Ltd.
- Melbourne Water 2021. *Western Treatment Plant 2020/21 Compliance Report for EPBC 2008/4221*. Melbourne Water.
- Menkhorst *et al.* 2021. *Monitoring waterbird populations at the Western Treatment Plant, Victoria – 2021 annual report*. Report prepared for Melbourne Water by the Arthur Rylah Institute for Environmental Research, Department of Environment, Land, Water and Planning.

2.1.2 Onshore powerline

Database search

The database search was completed for the onshore powerline Project area. The search comprised a review of current databases for information on native vegetation and threatened flora, fauna and ecological communities listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act*

1999 (EPBC Act) and Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act). The methods adopted for the database search, likelihood of occurrence and impact assessment are outlined in the following sections.

Records from the following databases were collated and reviewed for within 5 km of the onshore powerline Project area:

- Protected Matters Search Tool (PMST) of the Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW) for matters protected under the EPBC Act (DCCEEW 2022a, See Appendix A)
- The Victorian Biodiversity Atlas (VBA) (DELWP 2022a) for records of listed threatened flora and fauna species.

The following information was also reviewed for the study area as part of the desktop assessment:

- The Victorian DELWP Native Vegetation Information Management System (NVIM) (DELWP 2022b)
- NatureKit (DELWP 2022c)
- VicPlan (DELWP 2022d)
- Aerial imagery.

Likelihood of occurrence analysis for threatened flora and fauna

The likelihood of occurrence of all threatened flora and fauna species collated in the database search was considered for the onshore powerline Project area, with the following threatened species considered as part of the assessment:

- Threatened flora listed under the EPBC Act
- Threatened and/or migratory fauna listed under the EPBC Act
- Threatened flora and fauna listed under the FFG Act.

Each of these species were considered against the suitability of habitat, to determine their likelihood of occurrence in the Project area. The likelihood of a species occurring within the Project area was classified as 'Negligible', 'Low', 'Moderate' or 'High' based on the consideration of:

- The presence/absence of previous records in the search region (as returned from the database search)
- The known habitat requirements and distribution of the species
- The suitability of habitat in the Project area (based on the findings of the overview field assessment, and previous reports for the Project area).

The likelihood of occurrence of ecological communities are also considered in this report.

Details of the ranking criteria used to determine likelihood of occurrence of threatened flora and fauna within the onshore powerline Project area is provided in Table and Table respectively.

Table 2-1 Likelihood of occurrence criteria for threatened flora species

Likelihood of Occurrence	Criteria
High	<ul style="list-style-type: none"> • Recent reputable records of the species in the local vicinity (i.e., within the last 10 years) • Known resident in the area based on site observations, database records or expert advice and/or the study area contains high quality habitat
Moderate	<ul style="list-style-type: none"> • Previous reputable records of the species in the local vicinity and/or the study area contains moderate quality habitat
Low	<ul style="list-style-type: none"> • Limited previous records of the species in the local vicinity; and/or, the study area contains poor or limited habitat. May also be considered low if other environmental factors are present such as fragmented or isolated habitat
Negligible	<ul style="list-style-type: none"> • No suitable habitat and/or the study area falls outside the known species range

Table 2-2 Likelihood of occurrence criteria for threatened and migratory fauna species

Likelihood of Occurrence	Criteria
High	<ul style="list-style-type: none"> Known resident in the area based on site observations, database records or expert advice Recent reputable records (within 5 years) of the species in the local area The study area contains the species' preferred habitat
Moderate	<ul style="list-style-type: none"> The species is likely to visit the study area regularly (i.e., at least seasonally) Previous reputable records of the species in the local area The study area contains some characteristics of the species' preferred habitat
Low	<ul style="list-style-type: none"> The species is likely to visit the study area occasionally or opportunistically whilst en route to more suitable sites There are only limited or historical records of the species in the local area (>20 years old) The study area contains few or no characteristics of the species' preferred habitat
Negligible	<ul style="list-style-type: none"> No previous records of the species in the local area Previous records of the species exist in the local area but >30 years old The species may fly over the area when moving between areas of more suitable habitat Out of the known species' range No suitable habitat present within the study area Species is known to be regionally extinct

Impact assessment

Listed threatened species and ecological communities determined as having a High or Moderate likelihood of occurrence in the Project area are then considered further in regard to the level of likely impact on these values from the Project.

2.2 Field assessment

The desktop assessment was supplemented with two ecological field visits to determine the presence and conditions of habitats and vegetation communities present within the Project area, as detailed in the following sections.

2.2.1 Onshore pipeline

A field assessment was completed within the onshore pipeline Project area to support the literature review, to understand the ecological site conditions of the Project area, and how they relate to the significant populations that are present. This included the mapping of native vegetation and habitat for threatened flora species within the Project area. This site assessment was completed on 24 November 2022 by two suitably qualified ecologists.

2.2.2 Onshore powerline

A rapid field review of some publicly accessible sections of the onshore powerline Project area was completed on 5 August 2022 by two suitably qualified ecologists. This review aimed to verify that Ecological Vegetation Class (EVC) modelling was generally consistent with existing site conditions and to inform the likelihood of occurrence analysis for threatened species and threatened ecological communities. It is noted that no detailed assessments on condition, extent and/or quality of native vegetation or habitat were undertaken as part of this site visit.

3 Results

3.1 Desktop assessment

3.1.1 Onshore pipeline

Port Phillip (Western Shoreline) and Bellarine Peninsula Ramsar

The Project area is located within the Port Phillip (Western Shoreline) and Bellarine Peninsula Ramsar site (Ramsar site). The Ramsar site was nominated as a Wetland of International Importance under the Ramsar Convention in 1982. The Ramsar site is located on the western shoreline of Port Phillip Bay between the major cities of Melbourne and Geelong and on the Bellarine Peninsula. The Ramsar covers 22,652 hectares and comprises six distinct areas that include Point Cook/Cheetham, Werribee/Avalon, Point Wilson/ Limeburners Bay, Swan Bay, Mud Islands, and the Lake Connemara complex (Hale 2020).

The Ramsar site is recognised for supporting:

- International migratory shorebirds, including birds which fly as far as Russia and Alaska
- Very large numbers of waterbirds, on both its natural and artificial wetlands, with annual numbers likely to be in excess of 300,000
- 12 threatened fauna species and one threatened vegetation community
- Breeding colonies of several species
- Important habitat for over 50 fish species (DCCEEW 2019).

The Ramsar site also provides:

- Winter feeding habitat for the EPBC Act listed critically endangered Orange-bellied Parrot (*Neophema chrysogaster*)
- An important drought refuge through its wetlands for waterbirds when inland lakes and wetlands dry out (DCCEEW 2019).

The Ramsar site meets six Criterion under Group B. Sites of international importance for conserving biological diversity (see Table).

Table 3-1 Ramsar listing criteria met by the Port Phillip (Western Shoreline) and Bellarine Peninsula Ramsar (from Hale 2020).

Number	Basis	Description
Criterion 2	Species and ecological communities	A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities
Criterion 3	Species and ecological communities	A wetland should be considered internationally important if it supports populations of plant and/or animal species important for maintaining the biological diversity of a particular biogeographic region.
Criterion 4	Species and ecological communities	A wetland should be considered internationally important if it supports plant and/or animal species at a critical stage in their life cycles or provides refuge during adverse conditions.
Criterion 5	Waterbirds	A wetland should be considered internationally important if it regularly supports 20,000 or more waterbirds.
Criterion 6	Waterbirds	A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird.
Criterion 8	Fish	A wetland should be considered internationally important if it is an important source of food for fishes, spawning ground, nursery and/or migration path on which fish stocks, either within the wetland or elsewhere, depend

Western Treatment Plant

The Western Treatment Plant (WTP) is located approximately 35 kilometres southwest of Melbourne on the shore of Port Phillip Bay between Werribee South and Point Wilson. The plant currently treats over 50% of Melbourne's wastewater (Melbourne Water 2021) via a combination of lagoon-based treatments and activated sludge plants. WTP forms one component of the Ramsar site.

The sewage treatment facility was completed in 1897, with initial treatment process being via land and grass filtration until 1930, this process involved flooding paddocks with raw sewerage. The first treatment lagoon, Lake Borrie was constructed in 1936, and received raw sewage directly. A number of upgrades and expansion lagoons continued over the decades until activated sludge plants were introduced in the early 1990s. Recently, the treatment processes have been updated to mechanical treatment, which has resulted in a number of treatment lagoons being decommissioned from operations.

During 2002-2004 Melbourne Water implemented the WTP Environmental Improvement Project which included significant changes and upgrades to sewage treatment processes. Commonwealth Ministerial approval under the EPBC Act was sought and subsequently approved in December 2002 (EPBC Decision 2002/688) with a number of conditions aimed at mitigating the potential impacts to EPBC Act listed species, including regular monitoring of significant populations that contribute to the significance of the Ramsar site, including threatened waterfowl, shorebirds/waders and Growling Grass Frog populations.

A key outcome of the mitigation from the change in sewerage treatment was the use of decommissioned lagoons for conservation and the requirement for Melbourne Water to maintain water to these lagoons to ensure the maintenance of aquatic habitat. Management of these lagoons involved the allocation of recycled water to the lagoons based on a general 3-year cycle, where:

- Year 1 – Lagoons would be flooded to provide habitat for waterfowl
- Year 2 – Water would cease to be applied, water levels would drop, where fringing vegetation would grow, providing habitat for Growling Grass Frog, wading birds and some waterfowl
- Year 3 – Water levels, through evaporation, would be very low, creating habitat for wading birds and wetland and migratory shorebirds.

As a result, the habitats at WTP provide stable and consistent aquatic resources for key threatened and migratory species that contribute to the significance and ecological character of the wider Ramsar site.

A further Ministerial approval under the EPBC Act was issued in 2010 (EPBC Decision 2008/4221) to implement Melbourne Water's WTP Land Use Strategy to enable outsourcing of farm operations. This resulted in areas of land being set aside to form conservation zones. The approval had a number of conditions aimed at minimising impacts to the Straw-necked Ibis (*Threskiornis spinicollis*) and the Ramsar site.

The Project area is located within WTP Agricultural Zone managed by MPH and road reserves (Melbourne Water 2021).

Fauna and migratory species known to occur are summarised in Australasian Bittern

The Australasian Bittern (listed as Endangered under the EPBC Act and Critically Endangered under the FFG Act) require large, relatively undisturbed freshwater wetlands, where they breed in densely vegetated areas, building nests in deep cover over shallow water. This species is likely to utilise wetlands, conservation lagoons and waterways, such as Little River, with dense vegetation surrounding the wetlands. The closest potential habitat is located at Lake Borrie, approximately 50 m from the nearest point of the Project area.

Australian Fairy Tern

Australian Fairy Tern (listed as Vulnerable under the EPBC Act and Critically Endangered under the FFG Act) are found on coastal beaches, inshore and offshore islands, sheltered inlets, sewage farms, harbours, estuaries and lagoons. It favours both fresh and saline wetlands and near-coastal terrestrial wetlands, including lakes and salt-ponds. Australian Fairy tern feeds almost entirely on fish by plunging in shallow water. They fly about 3 m - 10 m above the sea surface, hovering on rapidly beating wings with bill pointing downwards.

The species is likely to utilise the shoreline habitat located adjacent to WTP, with the closest areas extending from the Lake Borrie outlet, south to the Spit Conservation Reserve. The species is also likely to forage in the managed conservation lagoons when water levels are low in the regular cycle, including Lake Borrie, Western and T-section Lagoons.

Orange-bellied parrot

Orange-bellied Parrots (listed as Critically Endangered under the EPBC Act and FFG Act) are migratory birds, breeding in Tasmania in summer and migrating to the Victorian coast in autumn, spending winter foraging for tiny seeds found in areas of coastal saltmarsh, from South Australia's Coorong National Park to Western Port Bay.

The coastal saltmarshes present in WTP are a release site of Orange-bellied Parrots Mainland Release Trial Program (the Program), delivered in partnership by the DELWP, Zoos Victoria, Moonlit Sanctuary, BirdLife Australia, Melbourne Water, Parks Victoria, Corangamite CMA, and the Tasmanian Government. The Program aims to establish flocks of released birds in suitable habitats in Victoria, attract naturally migrating Orange-bellied Parrots to those sites, and ultimately improve the over-winter survival of those natural migrants.

The Program is now in its 5th year, with Orange-bellied Parrots continuing to be identified utilising the WTP.

The Project area is located within WTP Agricultural Zone managed by MPH and road reserves (Melbourne Water 2021).

Fauna and migratory species known to occur are summarised in Table 3-2, and flora known to occur are summarised in Table 3-3. Further discussion regarding the key populations and species that are present within the onshore pipeline Project area are summarised in the sections below.

Table 3-2 Fauna and migratory species known to occur within the onshore pipeline Project area.

Common name	Scientific name	EPBC Act	FFG Act	Spatial context
AMPHIBIAN				
Growling Grass Frog	<i>Litoria raniformis</i>	Vulnerable	Vulnerable	Likely to utilise constructed roadside drains located within and adjacent to the Project area.
SHOREBIRD - AUSTRALASIAN				
Australian Pied Oystercatcher	<i>Haematopus longirostris</i>			During low tide, majority of shorebirds forage on tidal flats of WTP between Pont Wilson boat ramp (approximately 500 m south of the Project area) and 145W Outlet. During high tide shorebirds move to high tide roosts, which include conservation ponds within the WTP with suitable water levels for foraging.
Banded Lapwing	<i>Vanellus tricolor</i>			
Banded Stilt	<i>Cladorhynchus leucocephalus</i>			
Black-fronted Dotterel	<i>Euseyornis melanops</i>			
Double-banded Plover	<i>Charadrius bicinctus</i>			
Masked Lapwing	<i>Vanellus miles</i>			
Pied Stilt	<i>Himantopus leucocephalus</i>			
Red-capped Plover	<i>Charadrius ruficapillus</i>			
Red-kneed Dotterel	<i>Erythronyx cinctus</i>			
Red-necked Avocet	<i>Recurvirostra novaehollandiae</i>			
SHOREBIRD - MIGRATORY				
Bar-tailed Godwit	<i>Limosa lapponica</i>	Vulnerable Migratory	Vulnerable	During low tide, majority of shorebirds forage on tidal flats of WTP between Pont Wilson boat

Common name	Scientific name	EPBC Act	FFG Act	Spatial context
Black-tailed Godwit	<i>Limosa limosa</i>	Migratory	Critically Endangered	<p>ramp (approximately 500 m south of the Project area) and 145W Outlet.</p> <p>During high tide shorebirds move to high tide roosts, which include conservation ponds within the WTP with suitable water levels for foraging</p>
Broad-billed Sandpiper	<i>Limicola falcinellus</i>	Migratory		
Common Greenshank	<i>Tringa nebularia</i>	Migratory	Endangered	
Curlew Sandpiper	<i>Calidris ferruginea</i>	Critically Endangered Migratory	Critically Endangered	
Eastern Curlew	<i>Numenius madagascariensis</i>	Critically Endangered Migratory	Critically Endangered	
Great Knot	<i>Calidris tenuirostris</i>	Critically Endangered Migratory	Critically Endangered	
Hudsonian Godwit hybrid	<i>Limosa haemastica x</i>	Migratory		
Marsh Sandpiper	<i>Tringa stagnatilis</i>	Migratory	Endangered	
Pacific Golden Plover	<i>Pluvialis fulva</i>	Migratory	Vulnerable	
Pectoral Sandpiper	<i>Calidris melanotos</i>	Migratory		
Red Knot	<i>Calidris canutus</i>	Endangered Migratory	Endangered	
Red-necked Stint	<i>Calidris ruficollis</i>	Migratory		
Ruddy Turnstone	<i>Arenaria interpres</i>	Migratory	Endangered	
Sharp-tailed Sandpiper	<i>Calidris acuminata</i>	Migratory		
Wood Sandpiper	<i>Tringa glareola</i>	Migratory	Endangered	
WATERFOWL				
Australasian Shoveler	<i>Spatula rhynchotis</i>		Vulnerable	<p>Waterfowl are known to utilise WTP treatment area waterbodies and conservation area waterbodies. The closest waterbody likely to be utilised by waterfowl is Lake Borrie, located approximately 50 m east of the Project area (underground electricity cable option). Most of these species, particularly listed duck species, are generally restricted to permanent water.</p>
Australasian Grebe	<i>Tachybaptus novaehollandiae</i>			
Australian Shelduck	<i>Tadorna tadornoides</i>			
Australian Wood Duck	<i>Chenonetta jubata</i>			
Black Swan	<i>Cygnus atratus</i>			
Blue-billed Duck	<i>Oxyura australis</i>		Vulnerable	
Chestnut Teal	<i>Anas castanea</i>			
Eurasian Coot	<i>Fulica atra</i>			
Freckled Duck	<i>Stictonetta naevosa</i>		Endangered	
Great Crested Grebe	<i>Podiceps cristatus</i>			
Grey Teal	<i>Anas gracilis</i>			
Hardhead	<i>Aythya australis</i>		Vulnerable	

Common name	Scientific name	EPBC Act	FFG Act	Spatial context
Hoary-headed Grebe	<i>Poliiocephalus</i>			
Musk Duck	<i>Biziura lobata</i>		Vulnerable	
Pacific Black Duck	<i>Anas superciliosa</i>			
Pink-eared Duck	<i>Malacorhynchus membranaceus</i>			
LARGE WADING BIRD				
Australian Pelican	<i>Pelecanus conspicillatus</i>			<p>Currently utilise conservation ponds that comprise Lake Borrie, located approximately 50 m east of the Project area (underground electricity cable option).</p> <p>Species also known from T-section Lagoons to the south-west.</p> <p>Some species occur outside of these areas, with Straw-necked ibis regular foraging in agricultural paddocks.</p>
Australian White Ibis	<i>Threskiornis molucca</i>			
Brolga	<i>Antigone rubicunda</i>		Endangered	
Great Egret	<i>Ardea alba modesta</i>		Vulnerable	
Little Egret	<i>Egretta garzetta</i>		Endangered	
Royal Spoonbill	<i>Platalea regia</i>			
Straw-necked Ibis	<i>Threskiornis spinicollis</i>			
White-faced Heron	<i>Egretta novaehollandiae</i>			
Yellow-billed Spoonbill	<i>Platalea flavipes</i>			
FRESHWATER TERN				
Whiskered Tern	<i>Chlidonias hybrida</i>			<p>Known to utilise both treatment ponds and conservation ponds including Lake Borrie, located approximately 50 m east of the Project area (underground electricity cable option).</p>
White-winged Black Tern	<i>Chlidonias leucopterus</i>			
OTHER SPECIES UTILISING WTP				
Australian Bittern	<i>Botaurus poiciloptilus</i>	Endangered	Critically Endangered	<p>Require large, relatively undisturbed freshwater wetlands, where they breed in densely vegetated areas, building nests in deep cover over shallow water.</p> <p>Likely to utilise vegetation surrounding conservation area lagoons.</p>
Australian Fairy Tern	<i>Sternula nereis</i>	Vulnerable	Critically Endangered	<p>Fairy Terns hunt in shallow sea waters by plunge-diving beneath the surface for small fish and nest on open sand beaches, free of vegetation and from human disturbance.</p> <p>This species potentially utilising coastal areas of WTP.</p>
Orange-bellied Parrot	<i>Neophema chrysogaster</i>	Critically Endangered	Critically Endangered	<p>Likely to utilise coastal saltmarsh vegetation adjacent to the shoreline, located within the WTP conservation area at Kirks Point and Point Wilson boat ramp, and Western Lagoons which have been converted to saltmarsh vegetation by allowing tidal penetration.</p>

Table 3-3 Flora species known to occur within the onshore pipeline Project area.

Common name	Scientific name	EPBC Act	FFG Act	Spatial context
Spiny Rice-flower	<i>Pimelea spinescens</i> subsp. <i>spinescens</i>	Critically Endangered	Critically Endangered	Lake Borrie grassland located approximately 650 m northeast.

Growling Grass Frog

At WTP, Growling Grass Frog occupies a range of wetland habitats, including semi-permanent and permanent wetlands, which provide breeding habitat and an extensive network of drains and waterways enabling dispersal. These wetlands occur in close proximity to the Project area, with connecting drains intersecting with the Project area at several locations.

The WTP is considered to be of national significance for Growling Grass Frog due to the number of sub populations of the species (Organ 2003). Long term monitoring has identified that the WTP supports a very large population of Growling Grass Frog, dispersed across large areas of WTP.

Monitoring of Growling Grass Frog has been conducted annually since 2002 at various wetlands across WTP. The latest monitoring results (2020/21) identified Growling Grass Frog at 22 of the 37 sites surveyed, and up to 543 individuals were recorded (Ecology & Heritage Partners, 2021). The species was recorded at various locations surrounding the Project area both east and west, with the closest location being Paradise Road Filtration Drain, a semi-permanent constructed drain located approximately 900m east of the Project area (Ecology & Heritage Partners, 2021). This drain connects directly into drainage lines within the Project area.

Given the large number of Growling Grass Frog and the location of individuals, it is considered likely that Growling Grass Frog are utilising the large network of roadside and paddock drains located throughout the Project area.

Birds

WTP attracts internationally significant numbers of waterbirds. Waterbirds have been monitored at WTP annually for 15 years under conditions of EPBC Decision 2002/688. Waterbirds monitored annually are those which the WTP is recognised as supporting nationally significant populations, and for species which there were concerns about possible negative impacts due to sewerage upgrades for the WTP Environmental Improvement Project (Menkhorst *et al.* 2021).

Additionally, the Ecological Character Description of the Ramsar site (Hale 2020) notes that in addition to significant populations of waterfowl and migratory birds, the site also attracts regular visitors of threatened species and may be important habitat for EPBC Act listed threatened species, including Orange-bellied parrot, Australasian Bittern (*Botaurus poiciloptilus*) and Australian Fairy Tern (*Sternula nereis nereis*).

Important bird groups and species regularly monitored or recorded at WTP are discussed further below.

Australasian and Migratory Shorebirds

WTP supports several resident shorebird species and internationally significant populations of migratory species. The three most abundant migratory species identified at WTP include the Red-necked Stint (*Calidris ruficollis*), Curlew Sandpiper (*Calidris ferruginea*) and Sharp-tailed Sandpiper (*Calidris acuminata*), all which are listed as migratory under the EPBC Act. These species utilise both freshwater and intertidal wetlands.

Monitoring has identified that at low tide, shorebirds forage on tidal flats, largely between Pont Wilson boat ramp and 145W outlet. Important areas identified include 145W outlet, Lake Borrie Outlet and Beacon Point. At high tide, shorebirds move to high tide roosts, preferably to WTP conservation ponds, provided they have suitable water bodies for foraging (Menkhorst *et al.* 2021). Conservation ponds are former treatment ponds or other wetlands now managed primarily to provide waterbird habitat.

In relation to the Project area, the closest tidal flats potentially utilised by shorebirds is located at Pont Wilson boat ramp, approximately 500m east of the Project area. The closest conservation pond potentially utilised by shorebirds at high tide is Lake Borrie, which is located approximately 50 m east of the Project area (underground electricity cable option).

Waterfowl

Monitoring at WTP has identified waterfowl utilise both treatment lagoons and conservation ponds. The maximum numbers of most waterfowl species are present at the WTP in summer, with Australian Shelduck (*Tadorna tadornoides*) often reaching peak numbers in December or January, while Grey Teal (*Anas*

gracilis), Pacific Black Duck (*Anas superciliosa*) and Australasian Shoveler (*Spatula rhynchotis*) often peaking in February or March (Loyn *et al.* 2014).

Waterfowl are known to utilise WTP treatment area waterbodies (including 115E Lagoon, 145 West A Lagoon, 145 West B Lagoon, 25W Lagoon, 55E Lagoon, 85 West A Lagoon, 85 West B Lagoon, 85 West C Lagoon, Walsh's Lagoon) and conservation area waterbodies (including Lake Borrie, T Section Lagoon and Western Lagoon). The closest waterbody known to be utilised by waterfowl is Lake Borrie, located approximately 50 m east of the Project area (underground electricity cable option).

Large wading birds

Large wading birds are also monitored annually. Although not a species of conservation significance, the Straw-necked Ibis population at WTP is significant for the species and contributes to the Ramsar listing. Straw-necked Ibis numbers usually peak between December to June and leave the WTP early to mid-winter. The species utilise paddocks that contain grass at short to medium height and also utilise paddocks with crop stubble. Irrigated paddocks, terrestrial margin paddocks around the edges of wetlands and conservation lagoons are important Straw-necked Ibis foraging habitat (Menkhorst *et al.* 2021). Potential Straw-necked Ibis foraging habitat (irrigated paddocks) is present within the Project area and is likely to be utilised by Straw-necked Ibis if grass/crop stubble is at the correct height for the species. Brolga were identified breeding at T-Section Lagoon and 5 W Conservation Ponds during 2020/21 breeding season (Menkhorst *et al.* 2021).

Freshwater terns

The WTP provides important foraging habitat for terns, which take small flying invertebrates in flight within a couple of meters of the water's surface. Whiskered Tern (*Chlidonias hybrida*) numbers peak in late spring and early summer and are absent from WTP in autumn and winter. White-winged black tern (*Chlidonias leucopterus*) peak at the WTP in late summer and autumn and are absent from the WTP in winter (Menkhorst *et al.* 2021). The freshwater terns are known to utilise both treatment ponds and conservation ponds including Lake Borrie located approximately 50 m east of the Project area.

Australasian Bittern

The Australasian Bittern (listed as Endangered under the EPBC Act and Critically Endangered under the FFG Act) require large, relatively undisturbed freshwater wetlands, where they breed in densely vegetated areas, building nests in deep cover over shallow water. This species is likely to utilise wetlands, conservation lagoons and waterways, such as Little River, with dense vegetation surrounding the wetlands. The closest potential habitat is located at Lake Borrie, approximately 50 m from the nearest point of the Project area.

Australian Fairy Tern

Australian Fairy Tern (listed as Vulnerable under the EPBC Act and Critically Endangered under the FFG Act) are found on coastal beaches, inshore and offshore islands, sheltered inlets, sewage farms, harbours, estuaries and lagoons. It favours both fresh and saline wetlands and near-coastal terrestrial wetlands, including lakes and salt-ponds. Australian Fairy tern feeds almost entirely on fish by plunging in shallow water. They fly about 3 m - 10 m above the sea surface, hovering on rapidly beating wings with bill pointing downwards.

The species is likely to utilise the shoreline habitat located adjacent to WTP, with the closest areas extending from the Lake Borrie outlet, south to the Spit Conservation Reserve. The species is also likely to forage in the managed conservation lagoons when water levels are low in the regular cycle, including Lake Borrie, Western and T-section Lagoons.

Orange-bellied parrot

Orange-bellied Parrots (listed as Critically Endangered under the EPBC Act and FFG Act) are migratory birds, breeding in Tasmania in summer and migrating to the Victorian coast in autumn, spending winter

foraging for tiny seeds found in areas of coastal saltmarsh, from South Australia's Coorong National Park to Western Port Bay.

The coastal saltmarshes present in WTP are a release site of Orange-bellied Parrots Mainland Release Trial Program (the Program), delivered in partnership by the DELWP, Zoos Victoria, Moonlit Sanctuary, BirdLife Australia, Melbourne Water, Parks Victoria, Corangamite CMA, and the Tasmanian Government. The Program aims to establish flocks of released birds in suitable habitats in Victoria, attract naturally migrating Orange-bellied Parrots to those sites, and ultimately improve the over-winter survival of those natural migrants.

The Program is now in its 5th year, with Orange-bellied Parrots continuing to be identified utilising the WTP.

Threatened flora and vegetation

Native vegetation and habitat for threatened flora are limited within WTP due to historic use for sewerage treatment and as an operational farm. Modelled native vegetation is limited to small and isolated areas within the onshore pipeline Project area.

An important population of Spiny Rice-flower (*Pimelea spinescens* subsp. *spinescens*) is located within the managed Lake Borrie grasslands, located approximately 650 m northeast of the Project area.

3.1.2 Onshore powerline

Database search

The review of the relevant databases within 5 km of the onshore powerline Project area returned 21 listed threatened flora species and 43 listed threatened and/or migratory fauna species (including 39 birds, 1 mammal, 1 amphibian, 1 reptile and 1 invertebrate). Details of each of these species' habitat requirements as well as an analysis of the likelihood of occurrence in the onshore powerline Project area is provided in Appendix B and C.

The Project area lies within the Victorian Volcanic Plain and Otway Plain bioregions and falls within the Port Phillip and Westernport and Corangamite Catchment Management Authorities (CMA) and the Greater Geelong Local Government Area.

Native vegetation

Types of native vegetation that may be present within the onshore powerline section of Project area were ascertained through the database review (DELWP 2022b; DELWP 2022c). This review noted the presence of 14 modelled vegetation communities within the Project area. Those occurring within the indicative construction footprint of the onshore powerline include:

- Plains Grassland (EVC 132) (Endangered)
- Plains Grassy Woodland (EVC 55) (Endangered)
- Plains Grassy Wetland (EVC 125) (Endangered)
- Creekline Grassy Woodland (EVC 68) (Endangered).

The onshore powerline Project area consists of a fragmented patchwork of rural areas, existing powerline easement and road reserves, with patches of remnant grassland and grassy woodlands. Plains Grassland (EVC 132) is modelled to occur in isolated patches of varying size (and likely quality) throughout the Project area. Plains Grassy Woodland (EVC 55) and Creekline Grassy Woodland (EVC 68) are both modelled within the indicative construction footprint in one patch where Hovells Creek intersects Peak School Road. Plains Grassy Wetland (EVC 125) is modelled on private property north of Peak School Road.

The location of these modelled vegetation communities and areas of EVC that are modelled to occur within the indicative construction footprint are included in Appendix D.

Threatened ecological communities

Six EPBC Act listed threatened ecological communities were listed in the Protected Matters Search Tool (PMST) as potentially occurring within 5 km of the onshore powerline Project area (DCCEEW 2022a). These include:

- Grassy Eucalypt Woodland of the Victorian Volcanic Plain (Critically Endangered)
- Natural Damp Grassland of the Victorian Coastal Plains (Critically Endangered)
- Natural Temperate Grassland of the Victorian Volcanic Plain (Critically Endangered)
- Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains (Critically Endangered)
- Subtropical and Temperate Coastal Saltmarsh (Vulnerable)
- White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland (Critically Endangered).

Based on the modelled vegetation mapping, there is potential that native vegetation matching the criteria of three of the above EPBC Act listed communities occurs in proximity of the onshore powerline Project area (see Table).

Table 3-4: Potential EPBC Act and FFG Act listed threatened ecological communities occurring within the powerline Project area

Modelled EVCs	Potential associated EPBC Act listed threatened ecological communities	Potential associated FFG Act listed threatened ecological communities
Plains Grassy Woodland (EVC 55)	Grassy Eucalypt Woodland of the Victorian Volcanic Plain.	Western Basalt Plains (River Red Gum) Grassy Woodland
Plains Grassland (EVC 132) Plains Grassy Wetland (EVC 125)	Natural Damp Grassland of the Victorian Coastal Plains (Critically Endangered), however, there is minimal areas of modelled EVC that occurs within the applicable Otway Plain bioregion.	n/a
Plains Grassland (EVC 132)	Natural Temperate Grassland of the Victorian Volcanic Plain (Critically Endangered). This EVC has been modelled extensively	Western (Basalt) Plains Grassland

The three remaining communities were considered unlikely to occur as detailed below:

- Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains were not considered likely to be present due to current distribution mapping and EVC’s present not corresponding with listing requirements for this threatened community
- Subtropical and Temperate Coastal Saltmarsh is present within the 5 km search area but not within impact range of the onshore powerline Project area, with the closest possible corresponding modelled EVC over 1 km from the Project area
- White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland is unlikely to occur as it is restricted to the inland slopes of Victoria.

Threatened flora

Based on the desktop assessment, there is a moderate to high potential for the onshore powerline Project area to support 14 listed threatened flora species (see Table). Of note, Spiny Rice-flower was identified during the one-day preliminary site assessment along Peak School Road reserves within roadside exclusion zones (see Figure 3-1 below). The full list of flora species assessed for likelihood of occurrence is contained in Appendix B.

Table 3-5 Threatened flora species with a moderate to high likelihood of occurrence within 5 km of the onshore powerline Project area

Common name	Scientific name	EPBC Act	FFG Act	Likelihood of occurrence
Basalt Podolepis	<i>Podolepis linearifolia</i>	-	Endangered	Moderate - Potential habitat in modelled plains grassland patches.
Brittle Greenhood	<i>Pterostylis truncata</i>	-	Critically endangered	Moderate - Potential habitat in modelled plains grassland patches.
Buloke	<i>Allocasuarina luehmannii</i>	-	Critically endangered	Moderate – Potential habitat in modelled plains grassy woodland patches.
Button Wrinklewort	<i>Rutidosia leptorhynchoides</i>	Endangered	Endangered	Moderate - Potential habitat in modelled plains grassland patches.
Fragrant Saltbush	<i>Rhagodia parabolica</i>	-	Vulnerable	Moderate - Potential habitat in modelled plains grassland patches.
Large-headed Fireweed	<i>Senecio macrocarpus</i>	Vulnerable	Critically endangered	High - Is currently known from Geelong rail reserve within project area.
Matted Flax-lily	<i>Dianella amoena</i>	Endangered	Critically endangered	Moderate - Potential habitat in modelled plains grassland patches. Known from the nearby Geelong rail reserve, outside of the Project area.
Melbourne Yellow-gum	<i>Eucalyptus leucoxydon</i> var. <i>connata</i>	-	Endangered	Moderate - Potential habitat in modelled Plains Grassy Woodland patches.
Pale Swamp Everlasting	<i>Coronidium gunnianum</i>	-	Critically endangered	Moderate - Potential habitat in modelled plains grassland patches or patches of plains grassy wetlands.
Purple Blown-grass	<i>Lachnagrostis semibarbata</i> var. <i>semibarbata</i>	-	Endangered	Moderate - Potential habitat in modelled plains grassland patches.
Rye Beetle-grass	<i>Tripogonella loliiiformis</i>	-	Endangered	Moderate - Potential habitat in modelled plains grassland patches. Several recent recorded observations within the impact area of the onshore powerline Project area near Little River, north of Peak School Road.
Small Milkwort	<i>Comesperma polygaloides</i>	-	Critically endangered	Moderate - Potential habitat in modelled plains grassland patches. Known from the nearby Geelong rail reserve, outside of the Project area.
Small Scurf-pea	<i>Cullen parvum</i>	-	Endangered	Moderate - Potential habitat in modelled plains grassland patches.
Spiny Rice-flower	<i>Pimelea spinescens</i> subsp. <i>spinescens</i>	Critically endangered	Critically endangered	Present - this species was confirmed as occurring amongst roadside exclusion zones along Peak School Road



Figure 3-1 Spiny rice-flower recorded within an exclusion zone on Peak School Road

Threatened fauna

Based on the desktop assessment of the onshore powerline, the following species have a moderate to high potential to be present within the Project area (see Table). The full list of species assessed for likelihood of occurrence is contained in Appendix C.

It is noted that several woodland and wetland bird species have recent records in the surrounding area, and therefore, would be considered to have a moderate or high likelihood of presence. The majority of these cases are due to individuals overflying the area or moving through landscape to nearby habitats, such as You Yangs Regional Park, Serendip Sanctuary and WTP.

Woodland and wetland habitats are limited within the onshore powerline Project area. Given grasslands are the dominant vegetation type within the onshore powerline Project area (and woodland and wetland habitats are limited), the likelihood of assessment has only considered species that are likely to make regular use of the habitat, including breeding, roosting and nesting, and species that may be potentially impacted by overhead powerlines.

Table 3-6 Threatened fauna species with a moderate to high likelihood of occurrence within 5 km of the powerline.

Common name	Scientific name	EPBC Act	FFG Act	Likelihood of occurrence
Black Falcon	<i>Falco subniger</i>	-	Vulnerable	Moderate - Potential foraging area and individuals may soar above the site particularly in proximity to You Yangs.
Grey Goshawk	<i>Accipiter novaehollandiae</i>	-	Vulnerable	Moderate - Potential foraging area and individuals may soar above the site particularly in proximity to You Yangs.

Common name	Scientific name	EPBC Act	FFG Act	Likelihood of occurrence
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	Vulnerable	Vulnerable	Moderate - Recent observation in the search area. Suitable habitat in the Project area along urban boundaries and wooded areas.
Growling Grass Frog	<i>Litoria raniformis</i>	Endangered	Vulnerable	Moderate - Potential habitat along Hovells Creek, including surrounding 200 m, plus other additional suitable habitat.
Golden Sun Moth	<i>Synemon plana</i>	Vulnerable	Vulnerable	High - High number of recent records within a cluster in adjacent property between Hovells Creek and Ballan Road. Generally, prefers grasslands with sufficient grass and ground cover with minimal disturbance.
Square-tailed Kite	<i>Lophoictinia isura</i>	-	Vulnerable	Moderate - Potential foraging area and individuals may soar above the site particularly in proximity to You Yangs.
Striped Legless Lizard	<i>Delma impar</i>	Vulnerable	Endangered	Moderate - Potential grassland habitats modelled to occur. Prefer sites with suitable surface rock cover and cracking basalt clays that provide habitat and refuge.
Swift Parrot	<i>Lathamus discolor</i>	Endangered	Critically Endangered	Moderate - There is potential for the species to migrate over the Project Area, particularly in proximity to You Yangs.
White-bellied Sea-eagle	<i>Haliaeetus leucogaster</i>	-	Vulnerable	Moderate - Potential foraging area and individuals may soar above the site particularly in proximity to You Yangs.

3.2 Field assessment

3.2.1 Onshore pipeline

The onshore pipeline Project area is located within the operating agricultural area of WTP, primarily internal roads. These roads are used to run cattle and machinery between paddocks and have been heavily modified. Most of the internal roads contain a well-defined road with a crushed-rock base, with exotic pasture grass dominated areas fringing the road. The exotic pasture is usually Rye-grass (*Lolium* spp.), Wheat (*Triticum aestivum*), Barley-grass (*Hordeum* spp.) or Phalaris (*Phalaris aquatica*), which is often in adjacent paddocks.

Most of the roads contain a roadside drain, that mainly contain the native Marsh Club-rush (*Bolboschoenus caldwellii*) in the submerged channel, with fringing vegetation a mix of mainly exotic species, Phalaris, Twiggy turnip (*Brassica fruticulosa*), Blanketweed (*Galenia pubescens*), Water-buttons (*Cotula coronopifolia*) and Water Couch (*Paspalum distichum*).

No patches of native vegetation, as defined under the Guidelines (DELWP 2017), were observed during the field review, as most of the vegetation was dominated by exotic pasture. A review of site conditions against the modelled extents of native vegetation noted that the model did not align with the ground conditions and no patches of native vegetation were present in areas predicted by the model (DELWP 2022b).

However, there were scattered areas of regrowth native grasses, consisting of Common Wallaby-grass (*Rytidosperma ceasptosum*), Brown-back Wallaby-grass (*R. duttonianum*) and Spear-grass (*Austrostipa bigeniculata*), located in small and limited instances. Confirmation of native vegetation meeting patch definitions will be confirmed during detailed ecology surveys of the onshore pipeline area.

Along some stretches of roads, a row of planted, mostly native, trees and shrubs are present. These include Sugar gum (*Eucalyptus cladocalyx*), Sheoak (*Casuarina glauca*) and Moonah (*Melaleuca lanceolata*). A typical photo of an internal road is shown below in Figure 3-2-2 and Figure 3-33-3.



Figure 3-2 Typical road reserve, including planted tree row, formed road, exotic pasture, weeds and roadside drain

During the survey it was noted that most of the roadside drains are suitable habitat for Growling Grass Frog, where the species is known to utilise these drains along Paradise Road (Ecology & Heritage Partners, 2021). However, not all drains were likely habitat for the species, these were mainly drains with no vegetation, including concrete-lined channels, channels degraded by stock and channels with unsuitable vegetation, primarily Blanketweed.



Figure 3-3 Roadside drain along English Road that is potential habitat for Growling Grass Frog

During the survey, approximately 10 Growling Grass Frog individuals were heard in a flooded roadside area on the south side of Beach Road. One individual was observed.

3.2.2 Onshore powerline

Preliminary site assessment

General condition

From the one-day preliminary site assessment, the general condition of the onshore powerline Project area was assessed. The preliminary site assessment identified that the Project area largely comprised of rural land on relatively small agricultural farms, with multiple landholders. The condition, based on the level of

disturbance is highly variable along the onshore powerline Project area, with some areas completely disturbed and modified to crops of wheat, and other areas with little to no pastoral improvement for grazing and still maintain native vegetation and habitat, predominately surface rock.

This is reflected in the 'patchy' nature of modelled vegetation remaining within the Project area, with large patches modelled as present within individual parcels, with significant gaps caused by ongoing land and agricultural use that does not support the persistence of native vegetation and habitat for threatened flora and fauna.

Patches of native vegetation and habitat that were viewed during the site review mainly comprised of spear-grasses (*Austrostipa* spp.), wallaby-grasses (*Rytidosperma* spp.) and Kangaroo Grass (*Themeda triandra*). These are generally restricted to isolated patches that generally appeared to align with modelled EVC patches, with areas of modified and disturbed areas between, which consist of exotic pasture, exotic grasses, including Serrated Tussock (*Nassella trichotoma*) and Chilean Needle-grass (*Nassella neesiana*) and other weeds, such as African Box-thorn (*Lycium ferocissimum*) or Artichoke Thistle (*Cynara cardunculus*).

4 Impact assessment

4.1 Proposed project impacts

As noted in Section 1, the Project includes the following, which will result in direct and indirect impacts to ecological values:

- Approximately 8.5 km extent of buried onshore gas pipeline
- Gas Receiving Station and associated buildings.
- 66kV or 132kV electricity cable (either underground (preferred) or overhead)
- Substation
- A new 132 kV powerline.

A description of the key construction activities and operations (Project stage) and their potential impact pathways to the ecological values identified in this report is provided below in Table 4-1. This forms the basis of the impact assessment to determine risks to ecological values and associated legislative implications identified in Section 5 below.

Table 4-1 Ecological impact pathways for construction and operation of project components

Project components	Activity	Potential impact	Potential significance of the impact
Gas pipeline construction	Site clearing of temporary laydown areas during construction	Vegetation loss	Laydown areas located on cleared and/or operational agricultural areas. Low likelihood of impacts to native vegetation or habitat.
		Introduction of weeds and pathogens	Low likelihood of impacts as laydown areas located on cleared and/or operational agricultural areas, where there is minimal habitat. Best practice environmental site management will be implemented during works. Of note is chytrid fungus in consideration of important Growling Grass Frog population.
	Excavating open trench of approximately 1.2 m width and 2.8 m depth	Vegetation loss	Laydown areas located on cleared and/or operational agricultural areas. Low likelihood of impacts to native vegetation or habitat.
		Barriers to dispersal for frog movement	Potentially high risk to frog movement via drainage lines if construction is completed during breeding season. Impacts likely to be temporary during and immediately following construction.
		Sedimentation into adjacent waterways and drains	Moderate risk of indirect impacts when considering the important Growling Grass Frog population and important wading bird habitat at drainage outlets. Best practice environmental site management will be implemented during works.
	Pipeline construction corridor of 30 m. The width of the construction corridor may vary to accommodate construction activities such as stockpiling or large vehicles.	Vegetation loss	Laydown areas located on cleared and/or operational agricultural areas. Low likelihood of impacts to native vegetation or habitat.
		Barriers to dispersal for growling grass frog movement	Potentially high risk to Growling Grass Frog movement via drainage lines if construction is completed during breeding season.
		Light spill due to night works	Potential impacts to significant populations of Growling Grass Frog, waterfowl and shorebirds. Night works and lighting should be minimised during works, where night works are unavoidable, best-practice lighting techniques are to be designed to minimise light spill into surrounding areas.

Project components	Activity	Potential impact	Potential significance of the impact
		Introduction of weeds and pathogens	Low likelihood of impacts as laydown areas located on cleared and/or operational agricultural areas, where there is minimal habitat. Best practice environmental site management will be implemented during works. Of note is chytrid fungus in consideration of important Growling Grass Frog population.
	Shaft and boring	Increased construction noise and vibration	Shaft sited at least 400 m from shoreline (migratory wader habitat). However, there is potential indirect impacts from noise and vibration to important populations of waterfowl, migratory shorebirds and Growling Grass Frog. The extent of the works, the impact to these values and suitable mitigation measures will be further investigated during project development.
		Disruption to significant migratory and resident bird species	Low risk from general construction works due to locating the shaft 400 m from shoreline (closest point to migratory shorebird habitat).
		Light spill - any night works planned	Potential impacts to significant populations of Growling Grass Frog, waterfowl and shorebirds. Night works and lighting should be minimised during works. Where night works are unavoidable, best-practice night lighting techniques are to be designed to minimise light spill into surrounding areas.
Gas receiving station	Site clearing of temporary laydown areas during construction	Vegetation loss from clearing of laydown areas	Low potential impact to native vegetation and threatened species habitat due to siting in operational agricultural areas. Vegetation is largely disturbed and/or modified and is currently cropped.
		Importation of weeds and pathogens	Low likelihood of impacts to vegetation and habitat due to laydown areas located on cleared and/or operational agricultural areas. Best practice environmental site management will be implemented during works.
	Noise, light and air pollution from operation of GSR	Limiting dispersal of Growling Grass Frog population	Moderate risk to Growling Grass Frog given the species utilise drainage lines which are present within the vicinity of the GRS.
		Disruption to significant migratory and resident bird species	Low risk to significant migratory and resident bird species. GSR is located away from areas utilised by these species, and is located adjacent to Princes Freeway which represents existing barriers to these species.
66kV or 132kV electricity cable (underground) (preferred)	Excavating open trench of 1 m width and up to 1.5 m depth, including 15 m construction corridor	Vegetation loss	Low risk due to siting in operational agricultural areas. Vegetation is largely disturbed and/or modified.
		Barriers to dispersal for Growling Grass Frog movement	Potentially high risk to Growling Grass Frog movement via drainage lines if construction is completed during breeding season.
		Sedimentation into adjacent waterways and drains	Moderate risk considering the important Growling Grass Frog population and important wading bird habitat at drainage outlets. Best practice environmental site management will be implemented during works.
66kV or 132kV electricity cable (overhead)	Installation and operation of overhead electricity powerlines with a maximum height of 20 m high	Vegetation loss	Laydown areas located on cleared and/or operational agricultural areas. Low likelihood of impacts to native vegetation or habitat.
		Barriers to dispersal for growling grass frog movement	Potentially high risk to growling grass frog movement via drainage lines if construction is completed during breeding season.

Project components	Activity	Potential impact	Potential significance of the impact
		Sedimentation into adjacent waterways and drains	Moderate risk considering the important growing grass frog population and important wading bird habitat at drainage outlets.
		Barriers and collision risk for birds	Potential for electricity cables to a barrier to bird movement and may be a collision risk for migratory bird species utilising WTP conservation areas and the shoreline. Design of electricity cable to consider visual identifiers for birds to identify wires.
Powerline	Site clearing of temporary laydown areas and construction access Construction corridor of 30 m, including storage and laydown areas	Vegetation and habitat loss from clearing of laydown areas and for construction access	High risk of impacts to Natural Temperate Grassland of the Victorian Volcanic Plain and habitat for threatened fauna species, particularly Golden Sun Moth. High risk of impacts to the population of Spiny Rice-flower that is known to occur along Peak School Road.
		Fragmentation of habitat	There is high risk of potentially splitting patches of Natural Temperate Grassland of the Victorian Volcanic Plain and populations of Golden Sun Moth.
		Introduction of weeds and pathogens	Potential risk of introduction or spread of weeds that are high threat to Natural Temperate Grassland of the Victorian Volcanic Plain and species that rely on grasslands, notably Golden Sun Moth and Spiny Rice-flower.
	Installation and operation of permanent powerlines with a maximum height of 40 m high	Barriers and collision risk for birds	Potential for powerline and pylons to be barriers to bird movement and may be a collision risk for migratory bird species utilising You Yangs and other surrounding. Design of powerlines to consider visual identifiers for birds to identify wires.

Based on preliminary design information, a potential impact footprint for the Project has been developed with Project stakeholders to understand a likely impact from works associated with the powerline. An impact footprint will be developed following completion of detailed ecology surveys, which will consider the presence and extent of native vegetation, threatened species and habitat. This footprint will be contained within the defined Project area for the powerline corridor, which is included in Appendix E. The proposed impacts are based on the recorded and modelled values and habitat that have been identified in this report. It should be noted that the onshore powerline Project area is primarily based on database and modelled information, where the onshore pipeline Project area is based on monitoring data and other records identified by Melbourne Water.

4.2 Potential removal of native vegetation

Clause 52.17 (Native Vegetation) of the Victorian Planning Provisions (empowered by the Victorian *Planning and Environment Act 1987*) requires that a planning permit be obtained to remove, destroy or lop native vegetation (DELWP 2017), unless exempt under Clause 52.17 of the Victoria Planning Provisions or under other legislation, such as the *Pipelines Act 2005*. However, some exemptions still require the Guidelines should be applied or considered, as appropriate, in decision making under approval processes for the removal of native vegetation that fall outside planning schemes, such as approval under the *Pipelines Act 2005*.

In accordance with the Guidelines (DELWP 2017), patches of native vegetation are classified and assessed into Ecological Vegetation Classes (EVCs) and their condition assessed to understand offset requirements. Scattered trees were not assessed as part of this desktop assessment as these are not modelled by DELWP.

Based on a preliminary Project area developed for the Project, the potential impact for each EVC is presented in Table 4-2 below. These figures are based on modelled EVC extents that have not been verified

in the field for presence or quality. As the modelled EVCs were found not to be present within the onshore pipeline Project area, there below impacts are associated with modelled vegetation within the onshore powerline Project area.

Table 4-2 Potential impact to EVC (ha) within the Project area

Ecological vegetation community	Bioregional conservation significance rating	Potential area of impact (ha)
Plains Grassy Woodland (EVC 55)	Endangered	0.013
Creekline Grassy Woodland (EVC 68)	Endangered	0.339
Plains Grassy Wetland (EVC 125)	Endangered	0.225
Plains Grassland (EVC 132)	Endangered	7.04
Total		7.312

4.3 Matters of National Environmental Significance

Matters of National Environmental Significance (MNES) are listed under the EPBC Act, which is Commonwealth legislation that protects nationally and internationally important flora, fauna, ecological communities and heritage places. Under the EPBC Act, an action that has, will have, or is likely to have, a significant impact on a MNES must be referred to the Commonwealth Minister for the Environment.

The relevant MNES for the Project identified through this assessment are considered in Table 4-3 below. The assessment of impacts is based on the Commonwealth significance impact guidelines 1.1 (DoE 2013), plus any species-specific referral or significant impact guidelines.

Within the onshore powerline Project area, ecological impacts to threatened flora and fauna are based on previous records of threatened flora and fauna within the preliminary footprint developed in conjunction with the AusNet. Currently, no previous records of threatened flora or fauna occur within the preliminary onshore powerline Project area. However, it is noted that the population of Spiny Rice-flower, confirmed during the one-day site review, is in close proximity to the Project area in several locations, and there is potential for new individuals to be present within the Project area. This will need to be confirmed by detailed and targeted surveys, which should be undertaken to coincide with the flowering time for the species (between April to August).

Table 4-3 Relevant MNES for the Project

Matter of national environmental significance	Relevant significant impact criteria or referral guidelines.	Potential project impacts	Potential for significant impact
<p>Natural Temperate Grassland of the Victorian Volcanic Plain</p>	<p>Relevant significant impact criteria assessed are (DoE 2013):</p> <ul style="list-style-type: none"> • Reduce the extent of an ecological community • Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines • Adversely affect habitat critical to the survival of an ecological 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 • Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, assisting invasive species, that are harmful to the listed ecological community, to become established • Interfere with the recovery of an ecological community. 	<p><u>Onshore pipeline:</u> Ecological community is not recorded within the onshore pipeline Project area.</p> <p><u>Onshore powerline:</u> Based on Plains Grassland EVC modelled to be present within Project area, there is a high likelihood that some of these areas qualify as the listed ecological community. However, only a portion of the least disturbed or modified areas are likely. Based on proposed Project area for the powerline, there is likely to be a maximum 7 ha loss of the community, noting that this is a conservative estimate using the EVC modelling.</p> <p>There is potential for fragmentation of patches of the community, where the onshore powerline Project area dissects patches.</p> <p>Indirect impacts, including introduction of weeds that would potentially threatened quality and integrity, are possible, however, construction hygiene controls would be implemented through works to mitigate this risk.</p>	<p>High</p> <p>In consideration of potential presence of the community within the powerline Project area, there is high likelihood of a reduction in extent and fragmentation of patches that is considered significant for the community. However, detailed surveys are required to confirm whether grassland patches meet criteria to qualify as the listed ecological community.</p>
<p>Spiny Rice-flower</p>	<p>Relevant significant impact criteria assessed are (DEWHA 2009a):</p> <ul style="list-style-type: none"> • Any fragmentation of a population • Loss of >5 individuals. 	<p><u>Onshore pipeline:</u> Spiny Rice-flower was not recorded or known to occur within the proposed Project Area. A significant population is present within Lake Borrie grasslands, approximately 300 m from the Project Area (power cable along Grills Road). Habitat is not considered to be present within the onshore pipeline Project area.</p> <p><u>Onshore powerline:</u> The species is known to occur within Peak School Road, estimated to be around 40-50 individuals (DELWP 2022a). This population is considered potentially important for the species. The current onshore powerline Project area avoids the known locations of the species and previous records.</p> <p>To date, no targeted surveys have occurred in adjacent areas, and there are potentially additional individuals present in suitable habitat within the Project area.</p>	<p>Moderate</p> <p>Due to the known presence of the species within close proximity to the onshore powerline Project area, there is moderate potential for loss of at least five individuals, which would constitute a significant impact.</p>

Matter of national environmental significance	Relevant significant impact criteria or referral guidelines.	Potential project impacts	Potential for significant impact
Striped Legless Lizard	<p>Relevant referral guidelines assessed are (DSEWPC 2011):</p> <ul style="list-style-type: none"> If an important population is detected during survey: <ul style="list-style-type: none"> any fragmentation, loss or long-term modification of habitat that may result in the population becoming non-viable or that may restrict breeding, dispersal or recruitment. If an important population is not detected, but the Project area occurs in Natural Temperate Grassland of the Victorian Volcanic Plain: <ul style="list-style-type: none"> Removal or modification of 0.5 hectares or more of known habitat, or habitat that has a moderate to high potential to support the species. Significant change to management regime in habitat that supports or has high potential to support an important population. Introduction of threats, such as introduced predators or weeds, which may impact on or spread to an important population. Limiting dispersal between populations or habitat patches, such as through removal of a vegetated corridor or creation of a physical barrier. Changes in soil structure and terrestrial cover (such as removal of rocks and/or fallen timber) in habitat supporting an important population. 	<p><u>Onshore pipeline:</u> There is minimal habitat present within the onshore pipeline Project area, with no recent records. Some habitat maybe present at Lake Borrie grasslands located 650 m from the Project area. However, no habitat is present within the Project Area and species is not considered to be impacted by the works within the onshore pipeline Project area.</p> <p><u>Onshore powerline:</u> No targeted surveys have been completed for the species, however, there is potential grassland habitat within the Project area. This generally coincides with modelled grassland. However, further refinement of habitat is to be completed once access is available within private land.</p>	<p>Moderate</p> <p>There are no predicted impacts to the species within the onshore pipeline Project area.</p> <p>There is potential for a significant impact to the species along the onshore powerline Project area. However, this needs to be confirmed through surveys and if habitat is found to contain a population of the species. Works within the onshore powerline Project area may result in loss of habitat and fragmentation of a population if present.</p> <p>It should be noted that the criteria here are referral criteria, and not specifically significant impact criteria. However, based on the proposed impacts to greater than 0.5 ha of potential habitat for the species. It is considered that a referral is required.</p>
Golden Sun Moth	<p>Relevant significant impact criteria assessed are (DEWHA 2009c):</p> <ul style="list-style-type: none"> For large or contiguous habitat areas (>10 ha), habitat loss, degradation or fragmentation of >0.5 ha For small or fragmented habitat areas (<10 ha), any habitat loss, degradation or fragmentation Fragmentation of a population through the introduction of a barrier to dispersal. 	<p><u>Onshore pipeline:</u> Community is not recorded within the onshore pipeline Project area.</p> <p><u>Onshore powerline:</u> No targeted surveys have been completed for the species, however, there are concentrations of recent records in property along Peak School Road.</p>	<p>Moderate</p> <p>There are no predicted impacts to the species within the onshore pipeline Project area.</p> <p>There is potential for a significant impact to the species within the onshore powerline Project area. However, this needs to be confirmed through surveys. If habitat is found to contain a population of the species, works within the onshore powerline Project area may result in loss of habitat and fragmentation of a population is present.</p>

Matter of national environmental significance	Relevant significant impact criteria or referral guidelines.	Potential project impacts	Potential for significant impact
Growling Grass Frog	<p>Relevant significant impact criteria assessed are (DEWHA 2009b):</p> <ul style="list-style-type: none"> • Habitat degradation in an area supporting an important population: <ul style="list-style-type: none"> • Permanent removal or degradation of terrestrial habitat (for example between ponds, drainage lines or other temporary/permanent habitat), that results in the loss of dispersal or overwintering opportunities for an important population. • Alteration of aquatic vegetation diversity or structure that leads to a decrease in habitat quality. • Alteration to wetland hydrology, diversity and structure (for example any changes to timing, duration or frequency of flood events) that leads to a decrease in habitat quality. • Introduction of predatory fish and/or disease agents. 	<p><u>Onshore pipeline:</u> A significant population is present within the onshore pipeline Project area and the species is known to use roadside drains within the Project area.</p> <p>The construction corridor for the gas pipe and the 66kV or 132kV electricity cable include the roadside drains. There is potential for disruption of movement of the species during breeding season, and for indirect impacts, including sedimentation into the aquatic habitat and introduction of pathogens, particularly Chytrid fungus.</p> <p><u>Onshore powerline:</u> Habitat is limited to Hovells Creek. Further targeted surveys are required to determine whether the species utilises this waterway.</p>	<p>Moderate</p> <p>There is potential for direct impacts to drains that the species utilise to move between wetlands. This may prevent movement of the species during breeding season between wetlands, although this is limited to during construction works only. Drain habitat will be reinstated following works.</p> <p>Environmental management controls will be required to be implemented to minimise impacts to Growling Grass Frog habitat.</p>

Matter of national environmental significance	Relevant significant impact criteria or referral guidelines.	Potential project impacts	Potential for significant impact
<p>Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site</p>	<p>An action is likely to have a significant impact on the ecological character of a declared Ramsar wetland if there is a real chance or possibility that it will result in (DoE 2013):</p> <ul style="list-style-type: none"> • Areas of the wetland being destroyed or substantially modified • A substantial and measurable change in the hydrological regime of the wetland, for example, a substantial change to the volume, timing, duration and frequency of ground and surface water flows to and within the wetland • The habitat or lifecycle of native species, including invertebrate fauna and fish species, dependent upon the wetland being seriously affected • A substantial and measurable change in the water quality of the wetland – for example, a substantial change in the level of salinity, pollutants, or nutrients in the wetland, or water temperature, which may adversely impact on biodiversity, ecological integrity, social amenity or human health, or • An invasive species that is harmful to the ecological character of the wetland being established (or an existing invasive species being spread) in the wetland. 	<p><u>Onshore pipeline:</u></p> <p>Works within the identified Ramsar site are contained within the mapped extent of the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site.</p> <p>The location of the works within the Ramsar site has been specifically located within the modified agricultural area of the Project area to avoid direct impacts to important populations and their habitats. The area chosen for works is within the defined agricultural area with a small portion of an underground electricity cable route option located near Lake Borrie along Chirnside Road.</p> <p>The shaft for the gas pipeline has also been located within modified area that is currently grazed. The shaft location has been sited 413 m from the shoreline habitat to further minimise potential disruption and indirect impacts to important shorebird populations.</p> <p>Best practice environmental management will also be implemented during works to mitigate potential risks associated with indirect impacts, particularly invasive pest plants and disease pathogens that would risk harm to important populations that make up the ecological character of the Ramsar site, notably Growling Grass Frog and Straw-necked Ibis, which forage and move through the terrestrial margins and agricultural areas of the Project area.</p> <p>There is also potential disruption of bird species that contribute to the character of the Ramsar site, see Table 3-2. These populations maybe disrupted by construction activities. However, as the Project area is in an operating farm and sewerage treatment plant, where machinery noise and traffic are regular, this impact is not considered to be significant. Regardless, construction activities should be the minimum extent necessary, including minimising noise, etc, by turning off machinery and equipment when not in use.</p> <p><u>Onshore powerline:</u></p> <p>No Ramsar sites are located within the onshore powerline Project area.</p>	<p>Low.</p> <p>As the works have been designed and sited to avoid direct impacts to wetlands and provide suitable buffers to minimise indirect impacts, the impacts to the Ramsar site are not expected to be significant.</p> <p>The proposed trenchless shore crossing will be drilled or tunnelled from a shaft approximately 430 m inland from the closest shoreline point, south of Pont Wilson boat ramp, to extent to the floating facility approximately 1.1 km offshore.</p> <p>The permanent GRS has been sited near the boundary of the Project area with the Princes Freeway, approximately 2 km from the nearest point to Lake Borrie (closest permanent freshwater wetland), and approximately 5 km to the nearest shoreline.</p> <p>Potential impacts that may increase sedimentation and cause downstream impacts to significant wetlands and habitat will be mitigated and managed through best practice environmental management.</p>

Matter of national environmental significance	Relevant significant impact criteria or referral guidelines.	Potential project impacts	Potential for significant impact
Threatened bird species (critically endangered and endangered)	<p>An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will (DoE 2013):</p> <ul style="list-style-type: none"> • lead to a long-term decrease in the size of a population • reduce the area of occupancy of the species • fragment an existing population into two or more populations • adversely affect habitat critical to the survival of a species • 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 • result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat • introduce disease that may cause the species to decline, or • interfere with the recovery of the species. 	<p><u>Onshore pipeline:</u></p> <p>Six species of birds listed as critically endangered or endangered are known to be utilising habitat within the onshore pipeline Project area: Australian Bittern, Curlew Sandpiper, Eastern Curlew, Great Knot, Orange-bellied parrot and Red Knot.</p> <p>Australasian Bittern, Curlew Sandpiper, Eastern Curlew, Great Knot and Red Knot are known to utilise wetlands and waterways and occur in margins with suitable cover. Habitat for the species will not be impacted and threat from indirect impacts is considered low.</p> <p>Orange-bellied Parrot migrates from Tasmania in the warmer months, foraging in saltmarsh within the onshore pipeline Project area. Saltmarshes are being avoided by the Project, and indirect impacts are being minimised through siting the works through the agricultural areas of the Project area. Further mitigation measures for potential indirect impacts will be investigated and considered during project development, including noise mitigation.</p> <p><u>Onshore powerline:</u></p> <p>The Swift Parrot has a number of past records around You Yangs Regional Park. Based on modelled vegetation the species is not predicted to have any significant or important habitat loss that would impact the species. However, the erection of powerlines may present an obstacle or collision risk for the species.</p>	<p>Low.</p> <p>Habitats within the onshore pipeline Project area that are suitable for critically endangered and endangered species are being avoided by the Project. Indirect impacts will also be managed during works and further mitigation measures for aspects such as noise will be further developed during the Project design.</p> <p>Impacts to Swift Parrot are limited to the presence of the powerlines. Although generally a greater risk to larger birds, such as raptors, there is potential collision risk for the species when migrating.</p>

Matter of national environmental significance	Relevant significant impact criteria or referral guidelines.	Potential project impacts	Potential for significant impact
<p>Threatened bird species (vulnerable)</p>	<p>An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will (DoE 2013):</p> <ul style="list-style-type: none"> • lead to a long-term decrease in the size of an important population of a species • reduce the area of occupancy of an important population • fragment an existing important population into two or more populations • adversely affect habitat critical to the survival of a species • disrupt the breeding cycle of an important population • modify, destroy, remove or 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 <p>introduce disease that may cause the species to decline, or</p> <ul style="list-style-type: none"> • interfere substantially with the recovery of the species. 	<p><u>Onshore pipeline:</u></p> <p>Two species, Australian Fairy Tern and Bar-tailed Godwit are listed as Vulnerable and known to occur within the onshore pipeline Project area.</p> <p>Both species are primarily waders that are most likely to occupy the shoreline and littoral zone between Pont Wilson boat ramp south to the Spit Nature Conservation Reserve.</p> <p>Through the siting of the Project, direct impacts to these species' habitats are being avoided. Indirect impacts, including sedimentation, will be mitigated during works.</p> <p><u>Onshore powerline:</u></p> <p>No vulnerable bird species with a moderate to high likelihood of occurrence is likely to be utilising the onshore powerline Project area.</p>	<p>Low.</p> <p>Shoreline and other wading habitats within the onshore pipeline Project area that are suitable for the Australian Fairy Tern and Bar-tailed Godwit are being avoided by the Project. Indirect impacts will also be managed during works.</p>

Matter of national environmental significance	Relevant significant impact criteria or referral guidelines.	Potential project impacts	Potential for significant impact
Listed migratory species (wetland birds)	<p>An action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will (DoE 2013):</p> <ul style="list-style-type: none"> 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 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 seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species. 	<p><u>Onshore pipeline:</u></p> <p>A number of listed migratory bird species frequent areas within the WTP, including Bar-tailed Godwit, Black-tailed Godwit, Broad-billed Sandpiper, Common Greenshank, Curlew Sandpiper, Eastern Curlew, Great Knot, Hudsonian Godwit hybrid, Marsh Sandpiper, Pacific Golden Plover, Pectoral Sandpiper, Red Knot, Red-necked Stint, Ruddy Turnstone, Sharp-tailed Sandpiper and Wood Sandpiper.</p> <p>Monitoring has identified that at low tide, shorebirds forage on tidal flats, largely between Point Wilson boat ramp and north-east along the shoreline to the 145W outlet, with important areas identified as 145W outlet, Lake Borrie outlet and Beacon Point.</p> <p>At high tide, shorebirds move to high tide roosts, preferably to WTP conservation ponds, provided they have suitable water bodies for foraging.</p> <p><u>Onshore powerline:</u></p> <p>No listed migratory species with a moderate to high likelihood of occurrence is likely to be utilising the onshore powerline Project area.</p>	<p>Low.</p> <p>Although habitats adjacent to the onshore pipeline Project area are likely to be important habitat and contain significant proportions of important populations, these habitats are not being impacted by works. The pipeline, power cable and GRS are being sited on operating agricultural areas and within the surrounding road network. The shaft for pipe boring has been located 400 m from the closest shoreline point and gas pipe is located over 500 m west of Lake Borrie to minimise the disruption to these important populations and habitat. It is noted that one option for an underground electricity cable does occur in close proximity to Lake Borrie, along Chirnside Road.</p> <p>There is potential for indirect impacts to these populations during construction. Although the site is part of an operating sewage plant, with Avalon Airport adjacent to the site, consideration of construction noise is required to minimise potential disruption. Based on siting of Project, the disruption is unlikely to be significant. However, impact of noise needs to be investigated and appropriate mitigation designed with respect to migratory species.</p>

4.4 Ministerial guidelines for referral of a project under the Environment Effects Act

The *Ministerial Guidelines for Assessment of Environmental Effects under the Environment Effects Act 1978* (DSE 2006) outlines the triggers for referral of a project to the Victorian Minister for Planning who will determine if an Environment Effects Statement (EES) is required. Relevant ecological and wetland triggers are assessed in Table 4-4.

Table 4-4 Assessment against ecological criteria of referral guidelines

EE Act Referral Trigger	Comment
INDIVIDUAL CRITERIA	
<p>Potential clearing of more than 10 ha of native vegetation from an area that:</p> <ul style="list-style-type: none"> • Is an Endangered EVC (DNRE, 2002, Appendix 2) • Is of Very High conservation significance (DNRE, 2002, Appendix 3) 	<p>Criterion not predicted to be met</p> <p><u>Onshore pipeline:</u> The field survey did not observe native vegetation patches or scattered trees within the onshore pipeline Project area. Works here are not predicted to contribute to this criterion.</p> <p><u>Onshore powerline:</u> No detailed mapping of native vegetation has occurred to date. Using modelled EVCs, it is expected that up to approximately 7.3 ha of native vegetation that is of an endangered EVC will be impacted by the construction of the powerline. The majority of which is Plains Grassland EVC, considered endangered in the bioregion. It is currently expected (utilising modelled EVC data) that this criterion is unlikely to be met.</p>
<p>Potential loss of a significant proportion of known remaining habitat or population of a threatened species within Victoria</p>	<p>Unlikely to be met</p> <p><u>Onshore pipeline:</u> Although there are several important populations of threatened species utilising the WTP, the Project has been sited within the working agricultural areas, and 400 m from important shoreline habitat to avoid direct impacts to these populations and their habitats, and to minimise indirect impacts. There is, however, potential for direct impacts to the Growling Grass Frog, which is known to use roadside drains that occur along English Road and Grills Road, which are located within the onshore pipeline Project area and intersect with Paradise Road and other drains. However, the impact will be during construction and will be temporary, limited to short periods (1-2 days) where intersecting the gas pipeline. For English and Grills Road, the works will not impact the drains, but will occur adjacent to the construction corridor.</p> <p><u>Onshore powerline:</u> No targeted surveys have been completed within the onshore powerline Project area. It is not expected that a significant portion of species remaining in Victoria, or habitat will occur within the onshore powerline Project area. Spiny Rice-flower is known to occur on Peak School Road. There are 40-50 records identified during the database search which are considered to be present. However, this is estimated to be approximately 0.17% of the remaining population (30,000 – 50,000) in Victoria, based on population estimates (DSE 2008), however, these estimates are likely to be outdated and numbers are likely to be greater. Although the current numbers of the population have not been confirmed, it is not expected that the impacts from the Project will be a significant portion of the remaining population. There are numerous recent records of Golden Sun Moth on Peak School Road, east of the prison. However, the population is potentially around 20-30 individuals, which is not considered to be a significant portion of the remaining population in Victoria. Current population estimates in Victoria are unknown, however, the area of occurrence for the species is considered to be 1596 km² (DAWE 2021). Assuming the modelled plains grassland is suitable habitat for the species, this is considered to be only a very small portion of remaining habitat for the species, estimated as <0.000% of remaining habitat.</p>

EE Act Referral Trigger	Comment
<p>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'</p>	<p>Unlikely to be met</p> <p><u>Onshore pipeline:</u> The works have been designed and sited to avoid direct impacts to wetlands and habitats that provide habitat for threatened, wetland and migratory waterfowl and shorebirds that make up the ecological character of the Port Phillip Bay (western shoreline) and Bellarine Peninsula Ramsar site.</p> <p>However, there is potential for direct impacts to some habitat for two species that contribute to the ecological character of the Ramsar site, being Straw-necked Ibis, that forage in terrestrial margins and Growling Grass Frog that utilise drains through the Project area. These species are likely to have some small and temporary direct impact to their habitat during construction. However, this impact is not considered to alter the long-term character of the wetland.</p> <p>Potential impacts that may increase sedimentation and cause downstream impacts to significant wetlands and habitat will be mitigated through best practice environmental management to reduce potential harm.</p> <p><u>Onshore powerline:</u> The onshore powerline Project area is outside of the Ramsar site.</p>
COMBINATION CRITERIA	
<p>Potential clearing of 10 ha or more of native vegetation, unless authorised under an approved Forest Management Plan or Fire Protection Plan.</p>	<p>Criterion not predicted to be met</p> <p><u>Onshore pipeline:</u> No impacts to native vegetation are expected within the onshore pipeline Project area.</p> <p><u>Onshore powerline:</u> As above, based on modelled EVC it is not expected that this criterion is triggered. Current predicted impacts to all native vegetation is below the 10 ha referral trigger.</p>
<p>Potential loss of a significant area of a listed ecological community</p>	<p>Potentially met</p> <p><u>Onshore pipeline:</u> No impacts to listed ecological communities is expected within the onshore pipeline Project area.</p> <p><u>Onshore powerline:</u> As noted previously, although no detailed surveys of the onshore powerline Project area have been completed, there is potential for modelled EVC to be consistent with threatened ecological communities. Particularly, the Western (Basalt) Plains Grassland community, which is synonymous with Plains Grassland EVC, is likely to be present. A total of 7.04 ha of the community is modelled, the loss of which may be considered significant.</p>
<p>Potential loss of a genetically important population of an endangered or threatened species</p>	<p>Unlikely to be met</p> <p><u>Onshore pipeline:</u> Although there are several important populations of threatened species utilising WTP, the Project has been sited to avoid direct impacts to wetlands and habitats and important populations of threatened species.</p> <p>There is, however, potential for direct impacts to the Growling Grass Frog, which is potentially an important population for the species, given the size of the population. The species is known to use roadside drains that occur along English Road and Grills Road, which are located within the Project area and intersect with Paradise Road drain. However, the impact will be during construction and will be temporary, limited to short periods (1-2 days) where intersecting the gas pipeline. For English and Grills Road, the works will not impact the drains, but will occur adjacent to the construction corridor.</p> <p><u>Onshore powerline:</u> Currently, it is not expected that a genetically important population of an endangered or threatened species will be lost within the onshore powerline Project area.</p> <p>Spiny Rice-flower is known to occur on Peak School Road; however, the population is unlikely to be genetically important, it is a relatively large population for the species. There are several records identified during the database search which are considered to be present that may be impacted. However, this is a small portion of the population present and the whole population will not be lost.</p> <p>There are numerous recent records of Golden Sun Moth on Peak School Road, east of the prison. However, the population is potentially around 20-30 individuals, which is not considered to be genetically important.</p> <p>Targeted surveys are proposed within the onshore powerline Project area to confirm the presence and significance of threatened species populations.</p>

EE Act Referral Trigger	Comment
Potential loss of critical habitat	<p>Unlikely to be met</p> <p><u>Onshore pipeline:</u> Currently no critical habitat has been declared under the FFG Act. However, it is noted that the onshore pipeline Project area is part of the Ramsar listed site, due to presence and availability of habitat.</p> <p>Although there are several important populations of threatened species utilising WTP that rely on wetland habitats and the foraging opportunities present within and adjacent to WTP, habitats that are potentially critical are being avoided by the Project, being siting the Project within operating agricultural areas.</p> <p><u>Onshore powerline:</u> Although no targeted surveys have been completed within the onshore powerline Project area, it is not expected that critical habitat occurs. There is potential for threatened species to be present, however, due to the habitat limited to road reserves and modified agricultural areas, the habitat is unlikely to be considered to be critical.</p>
Potential significant effects on habitat values of a wetland supporting migratory bird species	<p>Unlikely to be met</p> <p><u>Onshore pipeline:</u> Although there are several important populations of threatened species utilising WTP, the gas alignment for the Project has been sited within the working agricultural areas and 400 m from the important shoreline habitat and 250 m from the nearest wetland (Lake Borrie) to avoid direct impacts to these populations and their habitats and minimise indirect impacts.</p> <p>Indirect impacts to wetlands supporting migratory birds, such as sedimentation, will be managed through best practice environmental management during works.</p> <p><u>Onshore powerline:</u> No impacts to wetlands will occur within the onshore powerline Project area.</p>

Based on the criteria assessed above, it is not currently expected that the Project will be required to be referred based on ecological impacts. This is due to the effort in siting the works within the operational agricultural areas of WTP, largely avoiding direct impacts to significant habitats and migratory and wetland birds. The location of works and siting of the pipe boring shaft 400 m from the shoreline and 250 m from Lake Borrie also allows the Project to manage potential indirect impacts, including disruption and sedimentation.

Further detailed assessments are required along the onshore powerline Project area to confirm the extent of native vegetation and threatened communities and the presence of populations of threatened flora and fauna. However, based on the desktop data, it is not likely that a loss of a significant portion or an important population is present within the onshore powerline Project area. There is potential that impacts to the listed ecological community, Western (Basalt) Plains Grassland community, may be considered significant, which would result in the criterion being met. However, as this is only one of a combination criteria, the current assessment is that a referral for ecological values is not triggered.

5 Environmental legislative requirements

5.1 *Environment Protection and Biodiversity Conservation Act 1999*

The EPBC Act is Commonwealth legislation that provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places, termed Matters of National Environmental Significance (MNES). Under the EPBC Act, an action that has, will have, or is likely to have, a significant impact on a MNES must be referred to the Commonwealth Minister for the Environment and Water. The Minister will then determine whether the proposed action requires formal assessment and approval under the EPBC Act.

Based on the impact assessment above, the Project is required to be referred under the EPBC Act due to likely or potentially significant impacts to the following MNES:

- Potential loss of Natural Temperate Grassland of the Victorian Volcanic Plain, based on modelled presence of Plains Grassland (EVC 132), resulting in a reduction in extent and fragmentation of the community
- Moderate likelihood of impacts to Spiny Rice-flower
- Potential impacts to a population of Golden Sun Moth (based on several recent records near Peak School Road)
- Potential barriers to movement of the Growling Grass Frog population within the onshore pipeline Project area
- Potential impacts to habitat for Striped Legless Lizard (based on modelled patches of Plains Grassland, EVC 132)
- Potential indirect impacts to the Port Phillip Bay (western shoreline) and the Bellarine Peninsula Ramsar site.

Further surveys are required to confirm the presence and extent of MNES, including the extent of Natural Temperate Grassland of the Victorian Volcanic Plain and habitat for threatened species and targeted surveys for threatened flora and fauna. The surveys will also confirm the presence and likelihood of other MNES with potential to be present in the Project area.

Once the detailed and targeted surveys are complete, the current assessment of significance for MNES will be reviewed, and if required, updated.

Overall, there is potential for these MNES to be present and impacts potentially significant. If the Project is considered likely to result in a significant impact to a MNES, the Project will require assessment under the Act. The assessment pathway will be determined by the Department of Climate Change, Energy, the Environment and Water (DCCEEW), this will depend on the number of MNES, complexity and significance of the potential impact and whether construction and operational activities and controls are well understood.

5.2 *Environment Effects Act 1978*

The EE Act provides for the assessment of actions that are capable of having a significant effect on the environment. A project is required to be referred to the Victorian Minister for Planning for a decision on whether an Environment Effects Statement (EES) is required, if the project meets criteria listed in the *Ministerial guidelines for assessment of environmental effects under the Environment Effects Act 1978* (DSE 2006) (Ministerial Guidelines).

Based on the current assessment against the Ministerial Guidelines for ecology-based criteria, the Project is not considered to trigger a referral under the Act. However, other non-ecological criterion for the Project may be met and a referral may be warranted.

Additional surveys are required to confirm the presence and extent native vegetation, threatened ecological communities and threatened flora and fauna communities and/or habitat.

5.3 *Flora and Fauna Guarantee Act 1988*

The FFG Act is the key piece of Victorian legislation for the conservation of threatened species and communities and for the management of potentially threatening processes. Under the FFG Act a permit is required from the Department of Environment, Land, Water and Planning (DELWP) to take (kill, injure, disturb or collect) threatened or protected flora species from public land. Road reserves, rail reserves and the WTP are considered to be Public Land under the Act.

The following FFG Act listed threatened values are known/have the potential to occur in the Project area:

- Spiny Rice-flower
- Western (Basalt) Plains Grassland community
- Potential Golden Sun Moth population and habitat
- Habitat for Growling Grass Frog
- Potential habitat for Striped Legless Lizard
- Potential habitat for other FFG Act listed threatened flora species, including Large-headed Fireweed, Basalt Podolepis and Rye-Beetle-grass
- Potential habitat for FFG Act listed protected flora.

5.4 *Planning and Environment Act 1987*

5.4.1 Guidelines

In Victoria, a permit is required to remove, destroy or lop native vegetation under Clause 52.17 (Native vegetation) of the Victoria Planning Provisions (VPP) empowered by the Victorian *Planning and Environment Act 1987*. These provisions are outlined in various guidelines discussed below.

It is noted that although nothing in a planning scheme under the *Planning and Environment Act 1987* requires a permit under the Act for vegetation removal for the purpose of the pipeline, the Guidelines should be applied or considered, as appropriate, in decision making under approval processes for the removal of native vegetation that fall outside planning schemes, such as approval under the *Pipelines Act 2005*.

In December 2017, the Victorian State Government released a set of reforms to regulate the approval and conditions associated with vegetation clearing via the Guidelines (DELWP 2017). The Guidelines are an incorporated document in all Victorian Planning Schemes and are applied alongside other requirements of the planning scheme when an application for a permit to remove native vegetation is considered by the responsible authority.

Any application will need to consider the application requirements stated in the Guidelines. As the application pathway is likely to be a Detailed pathway, the application requirements are:

- Confirmation of assessment pathway (confirmed via Native vegetation removal report obtained from DELWP)
- Site based condition assessment of native vegetation
- Avoid and minimise statement
- Offset Statement.

Once the impact for the Project is confirmed, the assessment pathway and offset requirements will need to be confirmed. Avoid and minimise is a process that is implemented through the whole of Project life cycle. Avoid and minimise actions and recommendations are provided below.

Avoid and minimise

During the early development of the Project within the onshore pipeline Project area, the Project has engaged with Melbourne Water and relevant stakeholders regarding the works in relation to sensitive wetlands and habitats, such as the shoreline. The following was agreed to be incorporated into the Project design to avoid direct impact to habitats for important populations of threatened and migratory species:

- Boring the high-pressure gas pipeline beneath the littoral zone and shoreline
- Siting the entry/receival shaft for the underground bore of the high-pressure gas pipeline 400 m from the shoreline habitat that provides habitat for migratory shorebirds
- Align high-pressure gas pipeline open trenching sections along road reserves within operating agricultural area of the onshore pipeline Project area
- Siting the gas receiving station near the boundary with the Princes Highway, that is well away from key ecological areas such as the shoreline, outlets and conservation lagoons (including Lake Borrie) within the Ramsar site.

Within the onshore powerline Project area, avoidance and minimisation of ecological impacts will likely occur following detailed surveys and confirmation of extent and location of habitat and threatened species. The following values should be prioritised for avoidance and minimisation to reduce overall impacts:

- Patches of grassland that are assessed as being consistent with Natural Temperate Grassland of the Victorian Volcanic Plain listed ecological community
- Locations of threatened flora species
- Threatened fauna species habitat
- Patches of high-quality native vegetation
- Any large-trees located within the Project area.

The installation of the onshore powerline was also noted to result in a potential collision risk to avifauna through operation of the facility. It is recommended that features or designs be considered in the installation of any overhead powerlines to make them as visible as possible to birds that may fly through the powerlines to access habitats particularly near the You Yangs.

6 Conclusion and recommendations

The Project is in varying phases of design development and occurs in the well-understood environment of the onshore pipeline Project area. Scope outside of the onshore pipeline Project area is less refined and in an environment that has not been as extensively studied. This is due to Vopak being cognisant of the highly significant nature of WTP and the significant role it plays in the provision and protection of habitat for threatened fauna and migratory bird species.

Design has therefore progressed within the onshore pipeline Project area and has included early considerations of ecological values to the design and layout of the Project and proposed construction methodologies. This was primarily early consultation with stakeholders at WTP to identify suitable buffer distances to known key habitat areas for migratory shorebirds and wetland birds that contribute to the significance of the site and listing under the Ramsar convention.

Through early consultation, a minimum distance of 400 m from the shoreline was identified to site the entry/receival shaft for the gas pipeline bore. The intent is to avoid and be well clear of key habitat areas, site all physical disturbance within the operating agricultural area and minimise indirect impacts and disruption to key bird populations. The Project is aiming to reduce any potential harm to these values to have minimal impact to their use of habitat, and therefore not have a significant impact to these important bird populations.

However, at this stage of design, there is potential that direct impacts are required to Growling Grass Frog habitat, notably the roadside drains within the onshore pipeline Project area that the species is known to utilise in moving between aquatic wetland habitats, including nearby Lake Borrie, Western Lagoons and T-section Lagoons.

During design development, the Project will review all direct and indirect impact pathways to further refine mitigation measures for important and threatened species. Additional measures will be considered during further design and construction planning along with best practice environmental controls that will be implemented on site during works. These include controls for sedimentation, hygiene, noise and light.

The onshore powerline Project area is currently in earlier stages of development in comparison to the scope within the onshore pipeline Project area. Consultation is ongoing with AusNet to define the requirements for the design. Based on preliminary design assumptions, a construction footprint has been developed to inform potential ecological impacts included in this report. For the purposes of this report, the construction footprint has not been reviewed or refined in consideration of ecological impacts. The impacts presented here are indicative to inform a preliminary impact assessment of the onshore powerline Project area. It is expected that through design development and subject to detailed ecological field surveys, the construction footprint will be refined to further avoid and minimise impacts to listed threatened flora, fauna and ecological communities listed under the EPBC Act and FFG Act.

Based on the current knowledge of the onshore pipeline and onshore powerline Project areas, the Project is likely to impact MNES within the onshore powerline Project area (refer to Table 4-3). These impacts currently result in the Project triggering a referral under the EPBC Act. The Project is currently not expected to meet criteria to require a referral under the EE Act (refer to Table 4-4).

The Project proposes to continue design development and investigations within the entire Project area (onshore pipeline and onshore powerline), including detailed ecological and targeted surveys, through the process for gaining approvals under both Acts. Ecological data will be reviewed in relation to design to continue to identify suitable mitigation measures to further reduce impacts to the significant ecological values within the Project area.

Mitigation measures will be additional to standard best practice construction methods to be implemented to minimise indirect impacts. The following are recommended, but may be further refined:

- Implement sediment controls along roadside drains and any location where there is potential for sediments to enter waterways, drains or wetlands
- Fencing the construction areas, particularly if works are occurring within Growling Grass Frog breeding season (October to March)
- Not leaving any trenches open overnight

- Noise mitigation, including minimising construction noise and turning off machinery and vehicles when not in use. The extent of the impact and suitable mitigation measures will be investigated through project development
- Minimising works during the evening and where night works are unavoidable, designing best-practice night lighting techniques to minimise light spill into surrounding areas
- Rehabilitation of construction areas to return habitat to previous condition.

6.1 Next steps

The following next steps are proposed to inform the ecological impacts and mitigation measures for the Project:

- Undertake detailed ecological surveys within the onshore powerline Project area, including targeted surveys where required and in accordance with the relevant published survey guidelines
- Confirm impacts to ecological values within the onshore powerline Project area. This should include avoidance and minimisation of impacts to Plains Grassland (EVC 132), particularly where identified to meet listed threatened community under either the EPBC Act or FFG Act, and where any records of threatened species are present
- Submit referral to DCCEEW for determination of whether the Project should be assessed under the EPBC Act as a controlled action.

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Appendix A – Protected Matters Search Tool



EPBC Act Protected Matters Report

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

Report created: 26-Oct-2022

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar)	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	6
Listed Threatened Species:	75
Listed Migratory Species:	64

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

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 Lands:	21
Commonwealth Heritage Places:	1
Listed Marine Species:	78
Whales and Other Cetaceans:	7
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	4
Regional Forest Agreements:	1
Nationally Important Wetlands:	1
EPBC Act Referrals:	43
Key Ecological Features (Marine):	None
Biologically Important Areas:	6
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

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

Ramsar Site Name	Proximity	Buffer Status
Port Phillip Bay (Western Shoreline) and Bellarine Peninsula	Within Ramsar site	In feature area

Listed Threatened Ecological Communities [\[Resource Information \]](#)

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

Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Grassy Eucalypt Woodland of the Victorian Volcanic Plain	Critically Endangered	Community known to occur within area	In feature area
Natural Damp Grassland of the Victorian Coastal Plains	Critically Endangered	Community may occur within area	In feature area
Natural Temperate Grassland of the Victorian Volcanic Plain	Critically Endangered	Community likely to occur within area	In feature area
Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains	Critically Endangered	Community likely to occur within area	In feature area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area	In buffer area only
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species [\[Resource Information \]](#)

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Number is the current name ID.

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area	In feature area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat known to occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Migration route known to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pedionomus torquatus Plains-wanderer [906]	Critically Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pterodroma leucoptera leucoptera Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area	In feature area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat known to occur within area	In feature area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche bulleri platei Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area	In feature area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Thinornis cucullatus cucullatus Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat known to occur within area	In feature area
FISH			
Galaxiella pusilla Eastern Dwarf Galaxias, Dwarf Galaxias [56790]	Vulnerable	Species or species habitat may occur within area	In feature area
Nannoperca obscura Yarra Pygmy Perch [26177]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Prototroctes maraena Australian Grayling [26179]	Vulnerable	Species or species habitat known to occur within area	In feature area
Seriolella brama Blue Warehou [69374]	Conservation Dependent	Species or species habitat known to occur within area	In feature area
Thunnus maccoyii Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area
FROG			
Litoria raniformis Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat known to occur within area	In feature area
INSECT			
Synemon plana Golden Sun Moth [25234]	Vulnerable	Species or species habitat known to occur within area	In feature area
MAMMAL			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Antechinus minimus maritimus Swamp Antechinus (mainland) [83086]	Vulnerable	Species or species habitat may occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat may occur within area	In buffer area only
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area	In feature area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
PLANT			
Amphibromus fluitans River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat known to occur within area	In feature area
Caladenia pumila Dwarf Spider-orchid [4155]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Dianella amoena Matted Flax-lily [64886]	Endangered	Species or species habitat known to occur within area	In feature area
Diuris basaltica Small Golden Moths Orchid, Early Golden Moths [64654]	Endangered	Species or species habitat may occur within area	In feature area
Diuris fragrantissima Sunshine Diuris, Fragrant Doubletail, White Diuris [21243]	Endangered	Species or species habitat may occur within area	In feature area
Dodonaea procumbens Trailing Hop-bush [12149]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Glycine latrobeana Clover Glycine, Purple Clover [13910]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Lachnagrostis adamsonii Adamson's Blown-grass, Adamson's Blowngrass [76211]	Endangered	Species or species habitat known to occur within area	In feature area
Lepidium aschersonii Spiny Pepper-cress [10976]	Vulnerable	Species or species habitat may occur within area	In feature area
Lepidium hyssopifolium Basalt Pepper-cress, Peppercress, Rubble Pepper-cress, Pepperweed [16542]	Endangered	Species or species habitat likely to occur within area	In feature area
Leucochrysum albicans subsp. tricolor Hoary Sunray, Grassland Paper-daisy [89104]	Endangered	Species or species habitat likely to occur within area	In feature area
Pimelea spinescens subsp. spinescens Plains Rice-flower, Spiny Rice-flower, Prickly Pimelea [21980]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pterostylis chlorogramma Green-striped Greenhood [56510]	Vulnerable	Species or species habitat may occur within area	In feature area
Pterostylis cucullata Leafy Greenhood [15459]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Rutidosis leptorhynchoides Button Wrinklewort [67251]	Endangered	Species or species habitat known to occur within area	In feature area
Senecio macrocarpus Large-fruit Fireweed, Large-fruit Groundsel [16333]	Vulnerable	Species or species habitat known to occur within area	In feature area
Senecio psilocarpus Swamp Fireweed, Smooth-fruited Groundsel [64976]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thelymitra epipactoides Metallic Sun-orchid [11896]	Endangered	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Xerochrysum palustre Swamp Everlasting, Swamp Paper Daisy [76215]	Vulnerable	Species or species habitat may occur within area	In feature area
REPTILE			
Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In feature area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area	In feature area
Delma impar Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In feature area
Tympanocryptis pinguicolla Victorian Grassland Earless Dragon [66727]	Endangered	Species or species habitat known to occur within area	In feature area
SHARK			
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Galeorhinus galeus School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area	In buffer area only
Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area	In feature area

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area	In feature area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area	In feature area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Migratory Marine Species			
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In feature area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In feature area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area	In feature area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In feature area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area	In feature area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat may occur within area	In feature area
Migratory Terrestrial Species			
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat may occur within area	In buffer area only
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Arenaria interpres Ruddy Turnstone [872]		Roosting known to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Roosting known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area	In feature area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area	In feature area
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area	In feature area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area	In feature area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area	In feature area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area	In feature area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area	In feature area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Limosa limosa Black-tailed Godwit [845]		Roosting known to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In feature area
Phalaropus lobatus Red-necked Phalarope [838]		Roosting known to occur within area	In feature area
Philomachus pugnax Ruff (Reeve) [850]		Roosting known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area	In feature area
Pluvialis squatarola Grey Plover [865]		Roosting known to occur within area	In feature area
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area	In feature area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area	In feature area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area	In feature area
Xenus cinereus Terek Sandpiper [59300]		Roosting known to occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands

[\[Resource Information \]](#)

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

Commonwealth Land Name	State	Buffer Status
Defence		
Defence - AVALON AIRFIELD [21411]	VIC	In buffer area only
Defence - AVALON AIRFIELD [21412]	VIC	In buffer area only
Defence - AVALON AIRFIELD [21410]	VIC	In buffer area only
Defence - AVALON AIRFIELD [21399]	VIC	In buffer area only
Defence - AVALON AIRFIELD [21398]	VIC	In buffer area only
Defence - AVALON AIRFIELD [21397]	VIC	In buffer area only
Defence - AVALON AIRFIELD [21402]	VIC	In buffer area only
Defence - AVALON AIRFIELD [21405]	VIC	In buffer area only

Commonwealth Land Name	State	Buffer Status
Defence - AVALON AIRFIELD [21404]	VIC	In buffer area only
Defence - AVALON AIRFIELD [21407]	VIC	In buffer area only
Defence - AVALON AIRFIELD [21406]	VIC	In buffer area only
Defence - AVALON AIRFIELD [21409]	VIC	In buffer area only
Defence - AVALON AIRFIELD [21408]	VIC	In buffer area only
Defence - AVALON AIRFIELD [21401]	VIC	In buffer area only
Defence - AVALON AIRFIELD [21403]	VIC	In buffer area only
Defence - AVALON AIRFIELD [21400]	VIC	In buffer area only
Defence - POINT WILSON EXPLOSIVES AREA [21439]	VIC	In buffer area only
Defence - POINT WILSON EXPLOSIVES AREA [21444]	VIC	In buffer area only
Defence - POINT WILSON EXPLOSIVES AREA [21442]	VIC	In buffer area only
Defence - POINT WILSON EXPLOSIVES AREA [21441]	VIC	In buffer area only
Defence - POINT WILSON EXPLOSIVES AREA [21440]	VIC	In buffer area only

Commonwealth Heritage Places [\[Resource Information \]](#)

Name	State	Status	Buffer Status
Natural			
Point Wilson Defence Natural Area	VIC	Listed place	In buffer area only

Listed Marine Species [\[Resource Information \]](#)

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Anous stolidus			
Common Noddy [825]		Species or species habitat likely to occur within area	In feature area
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]		Species or species habitat may occur within area	In feature area
Arenaria interpres Ruddy Turnstone [872]		Roosting known to occur within area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Roosting known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area overfly marine area	In feature area
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area overfly marine area	In feature area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area	In feature area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area overfly marine area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In feature area
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area overfly marine area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area	In feature area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area overfly marine area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Limosa limosa Black-tailed Godwit [845]		Roosting known to occur within area overfly marine area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat may occur within area overfly marine area	In buffer area only
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Migration route known to occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]		Species or species habitat known to occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area	In feature area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding known to occur within area	In buffer area only
Pachyptila turtur Fairy Prion [1066]		Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In feature area
Phalaropus lobatus Red-necked Phalarope [838]		Roosting known to occur within area	In feature area
Philomachus pugnax Ruff (Reeve) [850]		Roosting known to occur within area overfly marine area	In feature area
Phoebastria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area	In feature area
Pluvialis squatarola Grey Plover [865]		Roosting known to occur within area overfly marine area	In feature area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area overfly marine area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Species or species habitat may occur within area	In feature area
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Stiltia isabella Australian Pratincole [818]		Roosting known to occur within area overfly marine area	In feature area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche bulleri platei as Thalassarche sp. nov. Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area	In feature area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area	In feature area
Thinornis cucullatus cucullatus as Thinornis rubricollis rubricollis Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting known to occur within area	In feature area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area overfly marine area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area overfly marine area	In feature area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area	In feature area
Xenus cinereus Terek Sandpiper [59300]		Roosting known to occur within area overfly marine area	In feature area
Mammal			
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In feature area
Arctocephalus pusillus Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat may occur within area	In feature area
Reptile			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In feature area

Whales and Other Cetaceans [Resource Information]

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

Extra Information

State and Territory Reserves [\[Resource Information \]](#)

Protected Area Name	Reserve Type	State	Buffer Status
Freshwater Swamp, Little River W.R	Nature Conservation Reserve	VIC	In buffer area only
Serendip Wetlands Education Facility	Natural Features Reserve	VIC	In buffer area only
The Spit W.R.	Nature Conservation Reserve	VIC	In feature area
Western Grasslands N.C.R.	Natural Features Reserve	VIC	In buffer area only

Regional Forest Agreements [\[Resource Information \]](#)

Note that all areas with completed RFAs have been included.

RFA Name	State	Buffer Status
West Victoria RFA	Victoria	In feature area

Nationally Important Wetlands [\[Resource Information \]](#)

Wetland Name	State	Buffer Status
Werribee-Avalon Area	VIC	In feature area

EPBC Act Referrals [\[Resource Information \]](#)

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Residential Development, 100 Ballan Road, Bell Post Hill	2022/09305		Referral Decision	In buffer area only
Residential Development, 35-55 Ballan Road Batesford	2022/09286		Referral Decision	In buffer area only
Residential Development, 60 Avonlea Road	2022/09307		Referral Decision	In buffer area only

Controlled action

Basalt Quarry Extension (Mountainview Quarry)	2004/1329	Controlled Action	Completed	In feature area
Changes in land use at the Western Treatment Plant Werribee, Victoria	2008/4221	Controlled Action	Post-Approval	In feature area
Extension of Mountain View basalt quarry by 490 hectares (Stage 2)	2004/1590	Controlled Action	Post-Approval	In buffer area only
Geelong Salt Fields Urban Renewal Project	2012/6630	Controlled Action	Assessment Approach	In buffer area only
Manzeene village residential/commercial subdivision and assoc	2013/6771	Controlled Action	Post-Approval	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
infrastructure, VIC				
Melbourne Geelong Interconnection Pipeline Project	2010/5380	Controlled Action	Post-Approval	In feature area
Mosquito Control	2005/2132	Controlled Action	Post-Approval	In buffer area only
Motocross Track and Associated Infrastructure	2009/4956	Controlled Action	Completed	In buffer area only
To develop a new High Security Unit (HSU) adjacent to HM Barwon Prison, Victoria	2014/7274	Controlled Action	Post-Approval	In buffer area only
Victorian Big Battery	2020/8614	Controlled Action	Final PD	In feature area
Viva Energy Gas Terminal Project	2020/8838	Controlled Action	Assessment Approach	In buffer area only
Werribee Stone Extraction Project	2010/5347	Controlled Action	Post-Approval	In buffer area only
Western Treatment Plant Environment Improvement Project (post Effluent Reuse Stage 2)	2002/688	Controlled Action	Post-Approval	In feature area
Youth Justice Redevelopment Project, Cherry Creek, 10 kms south west of Werribee, VIC.	2017/8049	Controlled Action	Post-Approval	In buffer area only
Not controlled action				
Bulban Road Upgrades, Lollypop Creek to Edgars Road, Mambourin	2021/9073	Not Controlled Action	Completed	In buffer area only
Conversion of the North Western Victoria rail system from broad gauge to standar	2002/657	Not Controlled Action	Completed	In buffer area only
Effluent Reuse Stage 2	2001/273	Not Controlled Action	Completed	In buffer area only
Expansion and upgrade of Biogas Utilisation Facilities at the Western Treatment	2005/2183	Not Controlled Action	Completed	In feature area
Extension of Mountain View basalt quarry by 113 hectares (stage one)	2004/1591	Not Controlled Action	Completed	In feature area
Geelong Bypass Sections 1 & 2	2005/2097	Not Controlled Action	Completed	In feature area
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Power Station	2001/239	Not Controlled Action	Completed	In feature area
Regional Fast Rail Project - Geelong Country Works Package	2002/577	Not Controlled Action	Completed	In feature area
Removal of Sludge to Produce Dried Biosolids, Western Treatment Plant	2002/890	Not Controlled Action	Completed	In buffer area only
Sludge handling and biosolids management - Western Treatment Plant	2006/2620	Not Controlled Action	Completed	In feature area
Wastewater Treatment System Upgrade	2004/1420	Not Controlled Action	Completed	In feature area
WTP Effluent Discharge Improvement Works (Multiple Outlets), Werribee, Vic	2015/7619	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				
205W Sludge Drying Pan Refurbishment, Melbourne Water Western Treatment Plant, Vic	2013/6939	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Corio Bay Channel Safety Adjustment Program	2011/6208	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Gas Pipeline	2006/3093	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Geelong Bypass Section 3	2005/2099	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Rail Upgrades at Geelong Port Project	2010/5363	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Regional Fibre Optic Project (RFOP)	2003/913	Not Controlled Action (Particular	Post-Approval	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (particular manner)				
		Manner)		
Trial Growing Mullet in Western Treatment Plant Sewage Ponds	2009/4812	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Western Lagoon Saltmarsh Restoration, Western Treatment Plant, Werribee, VIC	2009/4831	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Western Treatment Plant Stage 1 Augmentation, Werribee, Vic	2014/7313	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Referral decision				
Construction of Haulage Road	2009/4747	Referral Decision	Completed	In buffer area only
Creamery Road PSP Area Geelong West Property Development	2021/8939	Referral Decision	Referral Publication	In buffer area only
Biologically Important Areas				
Scientific Name		Behaviour	Presence	Buffer Status
Seabirds				
Ardena tenuirostris Short-tailed Shearwater [82652]		Foraging	Known to occur	In feature area
Morus serrator Australasian Gannet [1020]		Foraging	Known to occur	In feature area
Pelagodroma marina White-faced Storm-petrel [1016]		Foraging	Known to occur	In feature area
Pelecanoides urinatrix Common Diving-petrel [1018]		Foraging	Known to occur	In feature area
Thalassarche cauta cauta Shy Albatross [82345]		Foraging likely	Likely to occur	In feature area
Whales				
Eubalaena australis Southern Right Whale [40]		Known core range	Known to occur	In feature area

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

Please feel free to provide feedback via the [Contact Us](#) page.

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Appendix B – Likelihood of occurrence of threatened flora in the onshore powerline Project area

Common Name	Scientific Name	EPBC Act	FFG Act	Habitat Preference	Number of records within 5 km of the onshore powerline Project area	Most recent record within 5km	Likelihood of occurrence within the onshore powerline Project area
Adamson's Blown-grass	<i>Lachnagrostis adamsonii</i>	E	E	Occurs in and around saline depressions on the Volcanic Plain where it has been recorded from Portalington west almost to the South Australian border.	9	27/05/2002	Low - Occurs sparsely throughout the Volcanic plains. Observations in the search area.
Austral Tobacco	<i>Nicotiana suaveolens</i>		E	Widespread in Victoria, particularly in drier inland areas and rocky places.	13	3/11/2012	Low - Observed within the search area. Large amount of potential habitat.
Basalt Podolepis	<i>Podolepis linearifolia</i>		E	Usually grows on heavy clay soils in grasslands but also recorded for grassy woodlands, open forests and around swamps.	16	28/10/2011	Moderate - Potential habitat in modelled plains grassland patches.
Basalt Sun-orchid	<i>Thelymitra gregaria</i>		CR	Victorian endemic. Found in tussock grasslands amongst red-brown basalt derived loamy soil.	2	23/11/2010	Low - Two observations within the past 15 years. Suitable habitat in the area as per vegetation modelling, in the form of remnant and modified grasslands.
Brittle Greenhood	<i>Pterostylis truncata</i>		CR	Restricted to south central Victoria, within 100 km of Melbourne, in basalt plains grasslands and woodlands or granite outcrops, on well-drained soils.	483	4/05/2014	Moderate - Potential habitat in modelled plains grassland patches.
Buloke	<i>Allocasuarina luehmannii</i>		CR		5	26/05/2003	Moderate – Potential habitat in modelled plains grassy woodland patches.
Button Wrinklewort	<i>Rutidosia leptorhynchoides</i>	E	E	Confined to basaltic grasslands between Rokewood and Melbourne where it is endangered due to loss of habitat.	29	11/05/2011	Moderate - Potential habitat in modelled plains grassland patches.

Common Name	Scientific Name	EPBC Act	FFG Act	Habitat Preference	Number of records within 5 km of the onshore powerline Project area	Most recent record within 5km	Likelihood of occurrence within the onshore powerline Project area
Fragrant Saltbush	<i>Rhagodia parabolica</i>		V	In Victoria occurs on a few steep rocky slopes and broad ridges between Sunbury and Geelong (e.g. Jacksons Creek, Long Forest, Werribee Gorge, Steiglitz, Buckleys Falls on the Barwon River), but locally rather common, and in mallee at a few scattered locations in the northwest.	6	18/09/2018	Moderate - Potential habitat in modelled plains grassland patches.
Giant Honey-myrtle	<i>Melaleuca armillaris subsp. armillaris</i>		E	Mainly confined to near-coastal sandy heaths, scrubs slightly raised above saltmarsh, riparian scrubs, rocky coastlines and foothill outcrops eastwards from about Marlo. Occurrences to the west are naturalized from cultivated stock.	3	16/08/2018	Low – Likely to be a planted specimen, as the species was regularly planted amenity tree in this region.
Large-headed Fireweed	<i>Senecio macrocarpus</i>	V	CR	In Victoria largely confined to remnant Kangaroo Grass grasslands on loamy clay soils derived from basalt from near Melbourne west to Skipton area. Also known from auriferous ground near Stawell.	56	28/10/2011	High - Is currently known from Geelong rail reserve within Project area.
Matted Flax-lily	<i>Dianella amoena</i>	E	CR	Lowland grasslands, grassy woodlands, valley grassy forest and creeklines of herb-rich woodlands.	22	16/02/2014	Moderate - Potential habitat in modelled plains grassland patches.
Melbourne Yellow-gum	<i>Eucalyptus leucoxylon subsp. connata</i>		E	The main concentration is in the Brisbane Ranges between Bacchus March and Geelong, where it grows on skeletal soils. Also grows on skeletal soils at Long Forest between Bacchus Marsh and Melton, and at Studley Park at Kew (in Melbourne) where it grows on soil derived from Silurian sandstone.	3	8/11/2017	Moderate - Potential habitat in modelled Plains Grassy Woodland patches.
Metallic Sun-orchid	<i>Thelymitra epipactoides</i>	E	E	Grows mostly in coastal heathland, grassland and woodland, but extending further inland into similar habitats in the western part of its range. Substrates may be moist or dry sandy soils.	0	N/A	Low - No records in the search area but potential habitat for this species to persist in remnant grasslands and open wooded areas.

Common Name	Scientific Name	EPBC Act	FFG Act	Habitat Preference	Number of records within 5 km of the onshore powerline Project area	Most recent record within 5km	Likelihood of occurrence within the onshore powerline Project area
Pale Swamp Everlasting	<i>Coronidium gunnianum</i>		CR	Widespread throughout the state of Victoria, except for the north-west and the alpine and adjacent mountainous areas, and usually at low elevations (under c. 100 m) where mostly in grasslands and riverine Eucalyptus camaldulensis woodland on soils that are prone to inundation.	1	13/03/1904	Moderate - Potential habitat in modelled plains grassland patches or patches of plains grassy wetlands.
Purple Blown-grass	<i>Lachnagrostis semibarbata</i> var. <i>semibarbata</i>		E	Scattered from near Melbourne to the South Australian border, mainly in grassland, occasionally woodland communities in somewhat saline depressions of the volcanic plain, but also known from seasonal, slightly brackish swampy sites east of Melbourne.	1	1/11/2010	Moderate - Potential habitat in modelled plains grassland patches.
Rye Beetle-grass	<i>Tripogonella loliformis</i>		E	An uncommon grass of scattered occurrence through drier areas of the state (e.g. Mt Arapiles, basalt plains just west of Melbourne). Usually occurring on shallow soils overlying rock.	26	23/11/2010	Moderate - Potential habitat in modelled plains grassland patches. Several recent recorded observations within onshore powerline Project area near Little River, north of Peak School Road.
Small Milkwort	<i>Comesperma polygaloides</i>		CR	Occasional on heavier soils (clays, alluvium) supporting grassland and grassy woodland communities in central and south-western areas.	26	22/12/2011	Moderate - Potential habitat in modelled plains grassland patches.
Small Scurf-pea	<i>Cullen parvum</i>		E	Very rare in Victoria where the species is known from a few localities in north-central and south-central areas, and western suburbs of Melbourne, where it grows mainly in grassland or grassy woodland, often on basalt-derived soils.	3	23/11/2010	Moderate - Potential habitat in modelled plains grassland patches.
Snowy Mint-bush	<i>Prostanthera nivea</i> var. <i>nivea</i>		V	Restricted to granite outcrop shrubland. Found through the You Yangs, Barwon Heads and Lerderderg Gorge areas.	11	3/11/2012	Low - Species known to occur in adjacent You Yangs, however, most of the Project area is within basalt plains, which is not preferred habitat type.

Common Name	Scientific Name	EPBC Act	FFG Act	Habitat Preference	Number of records within 5 km of the onshore powerline Project area	Most recent record within 5km	Likelihood of occurrence within the onshore powerline Project area
Spiny Rice-flower	<i>Pimelea spinescens subsp. spinescens</i>	CR	CR	Endemic in Victoria. 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.	540	4/08/2021	Present - this species was confirmed as occurring amongst roadside exclusion zones along Peak School Road
Spotted Gum	<i>Corymbia maculata</i>		V	Only known in Victoria from the Mottle Range, south of Buchan.	1	18/09/2018	Low - One observation, though recent. Species not thought to persist in this area.

Appendix C – Likelihood of occurrence for threatened and migratory fauna in the onshore powerline Project area

Common Name	Scientific Name	EPBC Act	FFG Act	Habitat Preference	Number of records within 5 km of the onshore powerline Project area	Most recent record within 5km	Likelihood of occurrence within the onshore powerline Project area
AMPHIBIANS							
Growling Grass Frog	<i>Litoria raniformis</i>	VU	VU	Persists in waterways and other aquatic habitats in the greater Melbourne region. Key habitat features for the species includes submerged vegetation for egg-laying, rocks and logs for basking, permanent freshwater lagoons for breeding and cracks, as well as debris and dense vegetation for refuge.	170	21/02/2019	Moderate - Potential habitat along Hovells Creek, including surrounding 200 m, plus other additional suitable habitat.
BIRDS							
Australasian Bittern	<i>Botaurus poiciloptilus</i>	M / E	CR	Frequents reedbeds, and other vegetation in water such as cumbungi, lignum and sedges.	18	25/04/2018	Low - Migratory species. Recent records in the search area. Little suitable habitat in the Project area.
Australasian Shoveler	<i>Spatula rhynchotis</i>		VU	Found in all kinds of wetlands, preferring large undisturbed heavily vegetated freshwater swamps. It is also found on open waters and occasionally along the coast.	2139	31/07/2019	Low - Large number of recent observations in the search region. However, there is no suitable habitat within the Project area, limited to outer coastal boundaries of the buffer area >1km from onshore powerline Project area.
Australian Painted-snipe	<i>Rostratula australis</i>	E	CR	Inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. Also use inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains.	5	12/01/2012	Low - Observation records in the search area. Little suitable habitat in the Project area.
Bar-tailed Godwit	<i>Limosa lapponica</i>	M / VU	VU	Coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays	25	5/02/2016	Low - Migratory species. Recent records in the search buffer area. Little to no suitable habitat in the search area, unlikely to habit areas within 500m of onshore powerline Project area.

Common Name	Scientific Name	EPBC Act	FFG Act	Habitat Preference	Number of records within 5 km of the onshore powerline Project area	Most recent record within 5km	Likelihood of occurrence within the onshore powerline Project area
Black Falcon	<i>Falco subniger</i>		CR	Found along tree-lined watercourses and in isolated woodlands, mainly in arid and semi-arid areas. It roosts in trees at night and often on power poles by day	121	24/07/2019	Moderate - Potential foraging area and individuals may soar above the site particularly in proximity to You Yangs.
Black-tailed Godwit	<i>Limosa limosa</i>	M	CR	Inhabit estuarine mudflats, beaches and mangroves. They are common in coastal areas around Australia and are often seen in large flocks and in the company of other waders.	82	9/06/2019	Low - Large number of recent observations in the search region. Little to no suitable habitat within 500m of the onshore powerline Project area, limited to coastal boundary of search buffer area.
Blue-billed Duck	<i>Oxyura australis</i>		VU	Almost wholly aquatic. Non-breeding flocks congregate on large, deep open freshwater dams and lakes in autumn.	1705	31/07/2019	Low - Large number of recent observations in the search buffer region. Little to no suitable habitat within 500m of the onshore powerline Project area, records confined to sewage treatment and wetlands regions within the search area.
Brolga	<i>Antigone rubicunda</i>		E	In Victoria, Brolga occur in the south-west, the Northern Plains and adjacent parts of the Murray River. Habitat includes large open wetlands and grassy plains.	224	8/07/2020	Low - Large number of recent observations in the search region with some records <500m from onshore powerline Project area. More likely to frequent coastal boundary of search area, however, may congregate further inland in wet conditions.
Caspian Tern	<i>Hydroprogne caspia</i>		VU	Widespread around the Australian coastline, and also occur inland along major rivers, especially in the Murray–Darling and Lake Eyre drainage basins.	14	17/12/2018	Low - A number of recent observations in the search region. Little to no suitable habitat within 500m of the onshore powerline Project area, likely limited to coastal and wetlands regions within the project area.
Common Greenshank	<i>Tringa nebularia</i>	M	E	Found in a wide variety of inland wetlands and sheltered coastal habitats of varying salinity, typically with large mudflats and saltmarsh, mangroves or seagrass.	240	31/03/2019	Low - A number of recent observations in the search region. Little to no suitable habitat within 500m of the onshore powerline Project area, likely limited to coastal and wetlands regions within the Project area.
Common Sandpiper	<i>Actitis hypoleucos</i>	M	VU	Utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats.	4	3/12/2006	Low - Migratory species. Observations within the search area. Little to no suitable habitat within 500m of onshore powerline Project area.

Common Name	Scientific Name	EPBC Act	FFG Act	Habitat Preference	Number of records within 5 km of the onshore powerline Project area	Most recent record within 5km	Likelihood of occurrence within the onshore powerline Project area
Curlew Sandpiper	<i>Calidris ferruginea</i>	M / CR	CR	Intertidal mudflats in sheltered coastal areas. Non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms.	332	15/05/2019	Low - Large number of observations within the search area, limited to coastal boundaries 1km+ from the onshore powerline Project area. Modelling suggests suitable habitat confined to along the coastal regions and WTP.
Diamond Firetail	<i>Stagonopleura guttata</i>		VU	Found in open grassy woodland, heath and farmland or grassland with scattered trees	169	1/10/2016	High - Large number of recent observations in the search region. Suitable habitat within grassland and wetlands regions within the Project area.
Eastern Great Egret	<i>Ardea alba modesta</i>		VU	Distributed across mainland Australia and preferring permanent shallow waters, including damp or flooded grasslands, wetland habitat, rivers, lakes and estuarine mudflats.	177	31/07/2019	Moderate - Large number of recent observations in the search region. Suitable habitat within grassland regions in proximity to onshore powerline Project area when inundated.
Fairy Tern	<i>Sternula nereis</i>	VU	CR	Nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation.	123	31/07/2019	Low - Large number of observations within the search area. Modelling suggests suitable habitat limited to along the coastal regions and WTP.
Freckled Duck	<i>Stictonetta naevosa</i>		E	Prefers permanent fresh water swamps and creeks with heavy growth of cumbungi (bullrushes), lignum or tea-tree.	805	13/06/2019	Low - Large number of observations within the search area. Modelling suggests suitable habitat limited to along the coastal regions and WTP.
Great Knot	<i>Calidris tenuirostris</i>	M / CR	CR	Prefers sheltered coastal habitats, with large intertidal mudflats or sandflats	8	1/01/2017	Low - Migratory species. Limited observations in the search area, with suitable habitat along the WTP, and none within onshore powerline Project area.
Grey Goshawk	<i>Accipiter novaehollandiae</i>		E	Occurs in coastal areas in northern and eastern Australia, found in most forest types, especially tall, closed forests, including rainforests.	8	31/10/2018	Moderate - Potential foraging area and individuals may soar above the site particularly in proximity to You Yangs.
Hardhead	<i>Aythya australis</i>		VU	Found in freshwater swamps and wetlands and occasionally in sheltered estuaries. Preferring deep, fresh open water and densely vegetated wetlands for breeding.	2492	31/07/2019	Low - Large number of observations within the search area with little of those within 500m of onshore powerline Project area. Little suitable habitat available.

Common Name	Scientific Name	EPBC Act	FFG Act	Habitat Preference	Number of records within 5 km of the onshore powerline Project area	Most recent record within 5km	Likelihood of occurrence within the onshore powerline Project area
Hooded Robin	<i>Melanodryas cucullata</i>		VU	Found in lightly timbered woodland, mainly dominated by acacia and/or eucalypts.	28	18/03/2016	Moderate - Observed within the search area. Suitable habitat in small portions of the onshore powerline Project area as suggested by modelling.
Lewin's Rail	<i>Lewinia pectoralis</i>		VU	Freshwater to saline wetlands, either permanent or ephemeral.	21	30/04/2019	Low - Few recent observations. Little suitable habitat is present within 500m of onshore powerline Project area as suggested by vegetation modelling.
Little Eagle	<i>Hieraaetus morphnoides</i>		E	Seen over woodland and forested lands and open country, extending into the arid zone. It tends to avoid rainforest and heavy forest.	320	8/12/2016	High - Large number of observations and suitable habitat suggested by vegetation modelling.
Little Egret	<i>Egretta garzetta</i>		E	Tidal mudflats, saltwater and freshwater wetlands, and mangroves.	181	12/07/2019	Moderate - Large number of observations within the search area with little of those within 500m of onshore powerline Project area. Little suitable habitat available.
Little Tern	<i>Sternula albifrons</i>	M	CR	Mainly coastal, being found on beaches, sheltered inlets, estuaries, lakes, sewage farms, lagoons, river mouths and deltas.	67	12/07/2019	Low - Migratory species. Limited observations in the search area, with little or no suitable habitat within 500m of the onshore powerline Project area.
Magpie Goose	<i>Anseranas semipalmata</i>		VU	Widespread in northern Australia, where they may congregate in huge flocks. Was once also widespread in southern Australia but disappeared from the region largely due to drainage of breeding wetlands. Attempts to reintroduce Magpie Geese back into southern have had varied success.	934	11/07/2019	Low - A number of recent observations in the search region. Little to no suitable habitat within 500m of the onshore powerline Project area, likely limited to coastal and wetlands regions within the onshore pipeline Project area.
Marsh Sandpiper	<i>Tringa stagnatilis</i>	M	E	Commonly seen singly, or in small to large flocks in fresh or brackish (slightly salty) wetlands such as rivers, water meadows, sewage farms, drains, lagoons and swamps.	103	17/02/2019	Low - A number of recent observations in the search region. Little to no suitable habitat within 500m of the onshore powerline Project area, likely limited to coastal and wetlands regions within the onshore pipeline Project area.

Common Name	Scientific Name	EPBC Act	FFG Act	Habitat Preference	Number of records within 5 km of the onshore powerline Project area	Most recent record within 5km	Likelihood of occurrence within the onshore powerline Project area
Musk Duck	<i>Biziura lobata</i>		VU	Aquatic habitats. Broadly ranging throughout Australia.	2039	31/07/2019	Low - A number of recent observations in the search region. Little to no suitable habitat within 500m of the onshore powerline Project area, likely limited to coastal and wetlands regions within the onshore pipeline Project area.
Orange-bellied Parrot	<i>Neophema chrysogaster</i>	CR	CR	Almost exclusively in coastal and sub-coastal areas, preferring peninsulas and islands. Saltmarshes, littoral (shore) heathlands and low scrublands are preferred habitats as well as grassy areas, which can include golf courses. Present in Victoria in March to November. They breed in forests on the west coast of Tasmania.	44	19/03/2002	Low - Rare migratory species. No observations within the search area but suitable habitat exists, and species is known to frequent portions of the WTP.
Pacific Golden Plover	<i>Pluvialis fulva</i>	M	VU	Inhabits coastal habitats, though it occasionally occurs around inland wetlands.	24	31/01/2019	Low - Migratory species. A number of recent observations in the search region. Little to no suitable habitat within 500m of the onshore powerline Project area, likely limited to coastal and wetlands regions within the onshore pipeline Project area.
Painted Honeyeater	<i>Grantiella picta</i>	VU	VU	Found in dry open forests and woodlands and is strongly associated with mistletoe.	8	19/10/2015	Moderate - Observed within the search area. Suitable habitat in the area as suggested by modelling.
Red Knot	<i>Calidris canutus</i>	M / E	E	Intertidal mudflats, sandflats and sandy beaches of sheltered coasts	41	22/04/2019	Low - Migratory species. A number of recent observations in the search region. Little to no suitable habitat within 500m of the onshore powerline Project area, likely limited to coastal and wetlands regions within the onshore pipeline Project area.
Ruddy Turnstone	<i>Arenaria interpres</i>	M	E	The Ruddy Turnstone is found singly or in small groups along the coastline and only occasionally inland. They are mainly found on exposed rocks or reefs, often with shallow pools, and on beaches.	31	31/01/2019	Low - Migratory species. A number of recent observations in the search region. Little to no suitable habitat within 500m of the onshore powerline Project area, likely limited to coastal and wetlands regions within the onshore pipeline Project area.

Common Name	Scientific Name	EPBC Act	FFG Act	Habitat Preference	Number of records within 5 km of the onshore powerline Project area	Most recent record within 5km	Likelihood of occurrence within the onshore powerline Project area
Speckled Warbler	<i>Pyrrholaemus sagittatus</i>		E	Lives in a wide range of Eucalyptus dominated communities that have a grassy understorey, often on rocky ridges or in gullies.	66	4/04/2019	High - Suitable habitat present from modelling. Recent records in the search region.
Square-tailed Kite	<i>Lophoictinia isura</i>		VU	The species mainly inhabits open eucalypt forests and woodlands, often where there is a broken canopy, but it also ranges into nearby open habitats.	1	2/12/2018	Moderate - Potential foraging area and individuals may soar above the site particularly in proximity to You Yangs.
Swift Parrot	<i>Lathamus discolor</i>	CR	CR	Breeds in Tasmania and overwinters in Victoria. Found in dry sclerophyll forests and woodlands, suburban parks and gardens where it feeds on the nectar of flowering eucalypts, namely Grey, Red Ironbark, Mugga Ironbark, Yellow Gum and White Box. Also feed on lerp psyllids amongst Red Gum.	93	5/05/2019	Moderate - There is potential for the species to migrate over the Project Area, particularly in proximity to You Yangs.
Terek Sandpiper	<i>Xenus cinereus</i>	M	E	Found on the coast in mangrove swamps, tidal mudflats and the seashore.	11	14/04/2017	Low - Migratory species. A number of recent observations in the search region. Little to no suitable habitat within 500m of the onshore powerline Project area, likely limited to coastal and wetlands regions within the onshore pipeline Project area.
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>		E	Distributed along the coastline of mainland Australia, also extending inland along some of the larger waterways.	105	28/07/2019	Moderate - Potential foraging area and individuals may soar above the site particularly in proximity to You Yangs.
White-throated Needletail	<i>Hirundapus caudacutus</i>	VU	VU	Almost exclusively aerial, over a wide variety of habitats	12	3/03/2007	Moderate - Several records with none in several years, however, has historically been observed and suitable habitat is present.
Wood Sandpiper	<i>Tringa glareola</i>	M	E	Occur in small flocks or singly on inland shallow freshwater wetlands, often with other waders. They prefer ponds and pools with emergent reeds and grass, surrounded by tall plants or dead trees and fallen timber.	18	17/02/2019	Low - Migratory species. A number of recent observations in the search region. Little to no suitable habitat within 500m of the onshore powerline Project area, likely limited to coastal and wetlands regions within the onshore pipeline Project area.

INVERTEBRATES

Common Name	Scientific Name	EPBC Act	FFG Act	Habitat Preference	Number of records within 5 km of the onshore powerline Project area	Most recent record within 5km	Likelihood of occurrence within the onshore powerline Project area
Golden Sun Moth	<i>Synemon plana</i>	VU	VU	Occurs in grassy areas in the greater Melbourne region, mainly in areas dominated by native grasses such as wallaby grass and spear grass, but also in areas of introduced grasses such as Chilean Needle-grass.	223	23/12/2019	High - High number of recent records within a cluster in adjacent property between Hovells Creek and Ballan Road. Generally, prefers grasslands with sufficient grass and ground cover with minimal disturbance.
MAMMALS							
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	VU	VU	Requires foraging resources and roosting sites. The primary food source is blossom from Eucalyptus and related genera but commonly forages on fruit trees in urban areas. Two known Flying Fox camps occur in the greater Melbourne region including one at Yarra Bend and one at Doveton.	4	10/03/2017	Moderate - Recent observation in the search area. Suitable habitat in the Project area along urban boundaries and wooded areas.
REPTILES							
Striped Legless Lizard	<i>Delma impar</i>	VU	E	Inhabits intact grassland habitats where it shelters in grass tussocks, under rocks and in cracks in the soil	5	22/06/1992	Moderate - Potential grassland habitats modelled to occur. Prefer sites with suitable surface rock cover and cracking basalt clays that provide habitat and refuge.

Appendix D - Modelled vegetation communities in the onshore powerline Project area












281000

282000

283000


5793000

5792000

-  Project area
-  SWP pipeline
-  APA transmission assets
-  LGA boundary
-  Western Treatment Plant (WTP)
-  Existing powerline
-  Watercourse or drain
-  Fauna threatened species
- Ecological Vegetation Class (EVC)
 -  Creepline Grassy Woodland
 -  Plains Grassland
 -  Plains Grassy Woodland

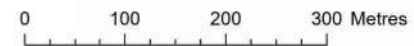



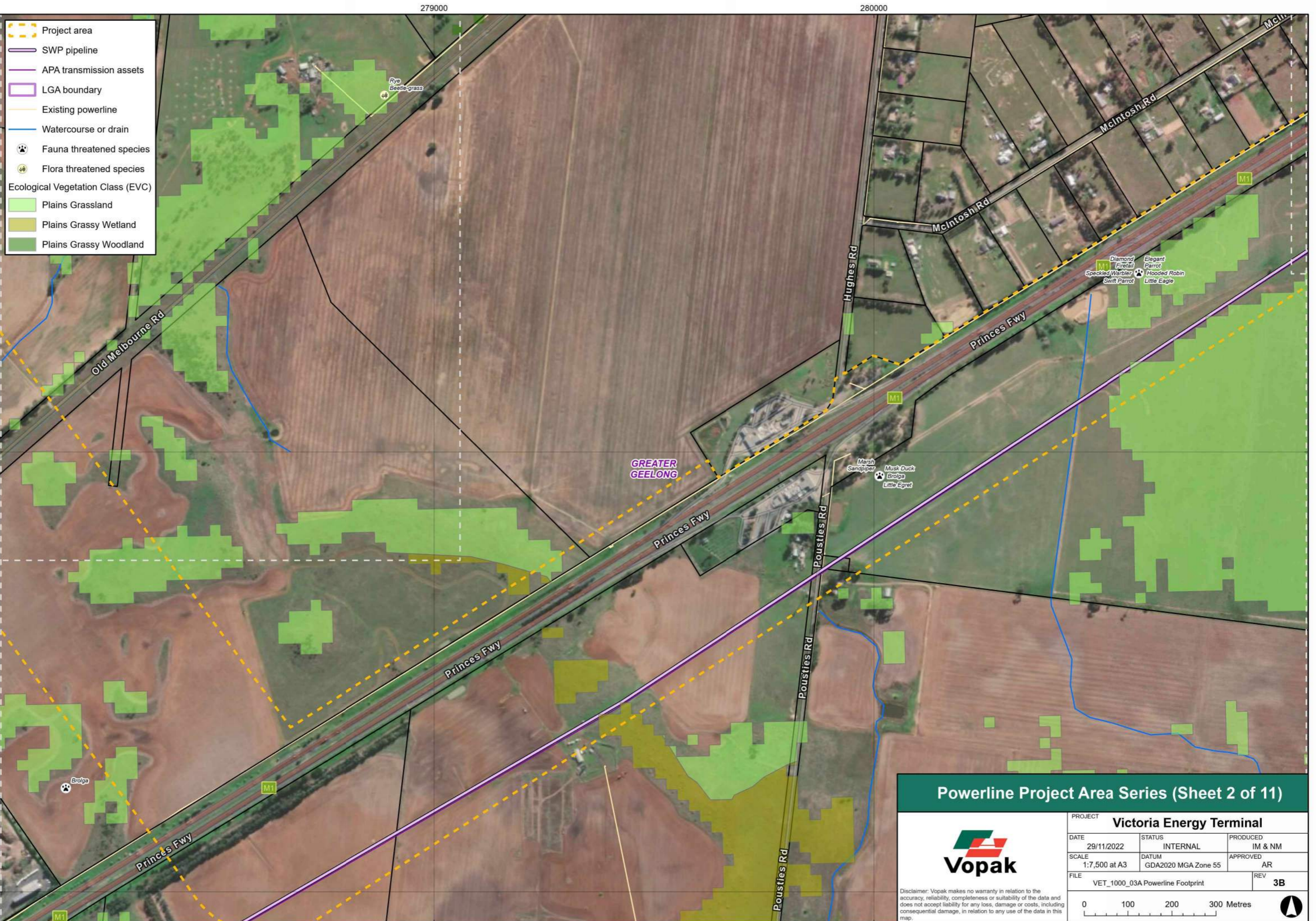
Powerline Project Area Series (Sheet 1 of 11)



PROJECT		
Victoria Energy Terminal		
DATE	STATUS	PRODUCED
29/11/2022	INTERNAL	IM & NM
SCALE	DATUM	APPROVED
1:7,500 at A3	GDA2020 MGA Zone 55	AR
FILE	REV	
VET_1000_03A Powerline Footprint	3B	

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- Project area
- SWP pipeline
- APA transmission assets
- LGA boundary
- Existing powerline
- Watercourse or drain
- Fauna threatened species
- Flora threatened species
- Ecological Vegetation Class (EVC)
- Plains Grassland
- Plains Grassy Wetland
- Plains Grassy Woodland

Powerline Project Area Series (Sheet 2 of 11)



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PROJECT			Victoria Energy Terminal		
DATE	STATUS	PRODUCED			
29/11/2022	INTERNAL	IM & NM			
SCALE	DATUM	APPROVED			
1:7,500 at A3	GDA2020 MGA Zone 55	AR			
FILE	REV				
VET_1000_03A Powerline Footprint	3B				
0 100 200 300 Metres					

Project area

LGA boundary

Existing powerline

Watercourse or drain

Fauna threatened species

Flora threatened species

Ecological Vegetation Class (EVC)

- Plains Grassland
- Plains Grassy Wetland
- Plains Grassy Woodland



Powerline Project Area Series (Sheet 3 of 11)

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PROJECT Victoria Energy Terminal		
DATE 29/11/2022	STATUS INTERNAL	PRODUCED IM & NM
SCALE 1:7,500 at A3	DATUM GDA2020 MGA Zone 55	APPROVED AR
FILE VET_1000_03A Powerline Footprint	REV 3B	

0 100 200 300 Metres



- Project area
- LGA boundary
- Existing powerline
- Watercourse or drain
- Fauna threatened species
- Flora threatened species
- Ecological Vegetation Class (EVC)
- Plains Grassland

Powerline Project Area Series (Sheet 4 of 11)



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PROJECT			Victoria Energy Terminal		
DATE	STATUS	PRODUCED			
29/11/2022	INTERNAL	IM & NM			
SCALE	DATUM	APPROVED			
1:7,500 at A3	GDA2020 MGA Zone 55	AR			
FILE	REV				
VET_1000_03A Powerline Footprint	3B				
0 100 200 300 Metres					

Project area


- Project area (dashed orange line)
- LGA boundary (purple outline)
- Existing powerline (yellow line)
- Watercourse or drain (blue line)
- Fauna threatened species (black paw print icon)
- Flora threatened species (green plant icon)

Ecological Vegetation Class (EVC)

- Plains Grassland (light green)
- Plains Grassy Woodland (dark green)

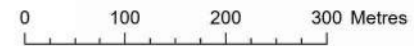



Powerline Project Area Series (Sheet 5 of 11)



PROJECT		
Victoria Energy Terminal		
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29/11/2022	INTERNAL	IM & NM
SCALE	DATUM	APPROVED
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FILE	REV	
VET_1000_03A Powerline Footprint	3B	

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
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270000

271000

5794000

5793000


-  Project area
-  LGA boundary
-  Existing powerline
-  Watercourse or drain
-  Fauna threatened species
-  Flora threatened species
- Ecological Vegetation Class (EVC)
 -  Creekline Grassy Woodland
 -  Plains Grassland
 -  Plains Grassy Woodland



Powerline Project Area Series (Sheet 6 of 11)



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PROJECT			Victoria Energy Terminal		
DATE	STATUS	PRODUCED			
29/11/2022	INTERNAL	IM & NM			
SCALE	DATUM	APPROVED			
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FILE	REV				
VET_1000_03A Powerline Footprint	3B				
0 100 200 300 Metres					

266000

267000

268000

5795000

5794000

Project area

LGA boundary

Existing powerline

Watercourse or drain

Flora threatened species

Ecological Vegetation Class (EVC)

Creekline Grassy Woodland

Plains Grassland



Powerline Project Area Series (Sheet 7 of 11)

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PROJECT			Victoria Energy Terminal		
DATE	STATUS	PRODUCED			
29/11/2022	INTERNAL	IM & NM			
SCALE	DATUM	APPROVED			
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FILE	REV				
VET_1000_03A Powerline Footprint	3B				

0 100 200 300 Metres







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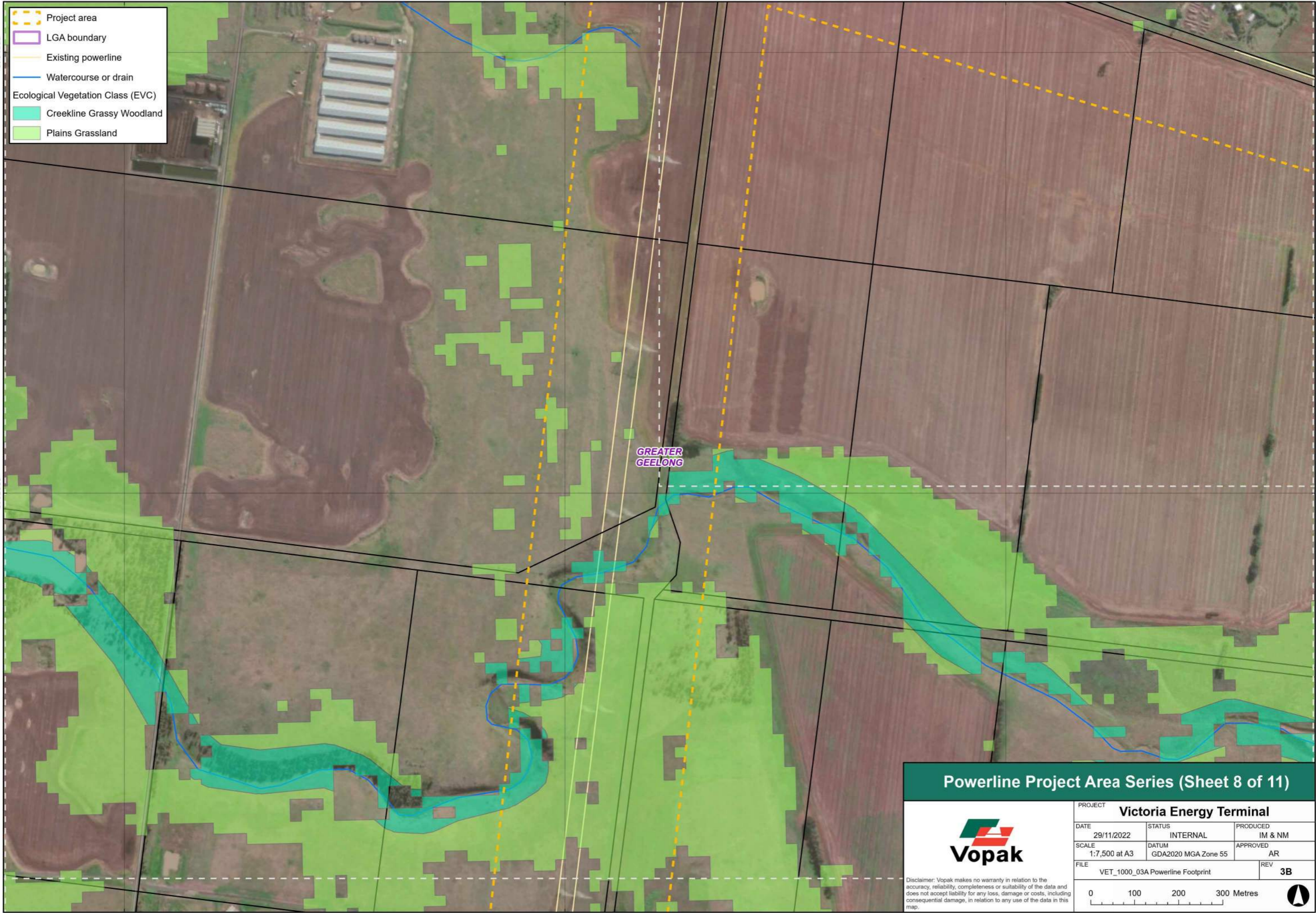
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5794000

5793000

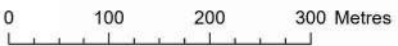

 Project area
 LGA boundary
 Existing powerline
 Watercourse or drain
 Ecological Vegetation Class (EVC)
 Creepline Grassy Woodland
 Plains Grassland



Powerline Project Area Series (Sheet 8 of 11)



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PROJECT			Victoria Energy Terminal		
DATE	STATUS	PRODUCED			
29/11/2022	INTERNAL	IM & NM			
SCALE	DATUM	APPROVED			
1:7,500 at A3	GDA2020 MGA Zone 55	AR			
FILE	REV			REV	
VET_1000_03A Powerline Footprint				3B	
 					

264000






265000

266000


5792000

5791000

Legend

-  Project area
-  LGA boundary
-  Existing powerline
-  Watercourse or drain
-  Fauna threatened species

Ecological Vegetation Class (EVC)


-  Plains Grassland
-  Plains Grassy Wetland



GREATER
GEELONG

Speckled Warbler
Diamond Firetail
Hooded Robin
Powerful Owl
Australasian Bittern


Powerline Project Area Series (Sheet 9 of 11)




PROJECT		
Victoria Energy Terminal		
DATE	STATUS	PRODUCED
29/11/2022	INTERNAL	IM & NM
SCALE	DATUM	APPROVED
1:7,500 at A3	GDA2020 MGA Zone 55	AR
FILE	REV	
VET_1000_03A Powerline Footprint	3B	

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0 100 200 300 Metres





Appendix E – Project area and land use within the onshore pipeline Project area



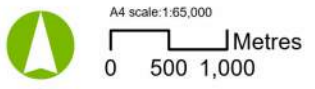
Legend

- Major Watercourse
- Paradise Road Drain
- Roads
- Sub Drainage
- Power Lines**
- Overhead onshore (Option 2)
- Underground (Options 1a and 1b)
- Offshore
- Proposed Pipeline**
- Onshore
- Trenchless shore crossing
- Subsea
- Western Treatment Plant Land Use Category**
- Conservation Area
- Conservation Buffer
- Cropping
- Agriculture
- Treatment Area
- LGA
- Project Areas**
- Onshore Pipeline
- Onshore Powerline
- Offshore



Source:
 ESRI (2022)
 VicMap (2022)
 Aurecon (2022)
 Melbourne Water (2010)

Date Exported: 30/11/2022



Job No: 522249
 Coordinate System: GDA 1994 MGA Zone 55

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