

# VEGETATION ASSESSMENT

**BELLARINE SERVICE BASIN, WALLINGTON**

PREPARED FOR: SPIRE PTY LTD  
ON BEHALF OF: BARWON WATER



**ÖKOLOGIE** CONSULTING



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## Document Information


Vegetation assessment for the Bellarine Service Basin Development project,  
Wallington

Report prepared by Okologie Consulting for Spiire on behalf of Barwon Water

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Version	Author	Review	Approval	Date
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- Tony Belcher (Barwon Water) for project information.

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## Summary

Okologie Consulting Pty Ltd was engaged by Spiire Pty Ltd on behalf of Barwon Water to undertake a vegetation assessment for the proposed Bellarine Service Basin Development project, Wallington.

Barwon Water is undertaking a review of development options for the Bellarine Service Basin project, which includes removal of the pine plantation and reinstatement of Yarram Creek. The vegetation assessment was undertaken to determine the extent of ecological values within the project area. The results of the assessment will also inform the project masterplan process and legislation and policy implications associated with future development.

The project area supports a reservoir and associated infrastructure that provides drinking water for the Bellarine Peninsula. The area surrounding the reservoir comprised a pine plantation, planted vegetation and open slashed grassland. Native vegetation consisted of Sedge Wetland associated with Yarram Creek and Grassy Woodland in the southern section, which also occurs as a modified ground cover under the pine plantation and planted native vegetation.

No state or commonwealth listed threatened ecological communities, flora or fauna species or associated habitats were recorded, and none are considered likely to occur. An *Environment Protection Biodiversity Conservation Act 1999* referral will not be required, as no Matters of National Environmental Significance are likely to be significantly impacted by future development the project area.

Grassy Woodland in the southern section and Sedge Wetland in the western section were identified as high ecological value. Modified areas of Grassy Woodland under the pine planation and planted native vegetation were considered moderate ecological value, with exotic grassland of low ecological value.

The proposed removal of the pine plantation will result in the unavoidable loss of approximately 9.6 hectares of modified Grassy Woodland in the understorey. A permit to remove native vegetation will be under Clause 52.17 of the Greater Geelong Planning Scheme and a detailed assessment pathway application in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation*.

The Scenario test – native vegetation removal report identified a general offset amount of 1.056 general habitat units would be required. The general offset must have a minimum strategic biodiversity value score of 0.367 and be within the Corangamite Catchment Management Authority or Greater Geelong City Council.

It is recommended that Barwon Water applies the principles of avoid and minimise during the design process to ensure the final project design avoids adverse impacts on existing biodiversity values as much as practicable.



# 1 Introduction

## 1.1 Project Background

Okologie Consulting Pty Ltd was engaged by Spiire Pty Ltd on behalf of Barwon Water to undertake a vegetation assessment for the proposed Bellarine Service Basin Development project, Wallington.

Barwon Water is undertaking a review of development options for the Bellarine Service Basin project, which includes removal of the pine plantation and reinstatement of Yarram Creek. The vegetation assessment was undertaken to determine the extent of ecological values within the site. The results of the assessment will also inform the project masterplan process and legislation and policy implications associated with future development.

## 1.2 Objectives

The objectives of the assessment were to:

- Assess terrestrial ecological values (i.e. vegetation communities, flora and fauna species and associated habitats) within the project area.
- Ensure ecological values are identified in the early planning phase.
- Identify environmental legislation and policy requirements.

## 1.3 Site Description

The project area comprises the Bellarine Service Basin, Wallington and is comprised of several land parcels (Lot 1 TP879663, Lot 2 PS805366, Lot RES1 PS805366, Lot 1 PS805366). It covers approximately 38 hectares and is bound by Swan Bay Road to the north, Grubb Road to the west and private property to the south and east (Figure 1).

The project area supports a reservoir and associated infrastructure that provides drinking water for the Bellarine Peninsula. The area surrounding the reservoir comprises a pine plantation, open slashed grassland, planted trees and shrubs, remnant native woodland and wetland communities. The topography consists of low undulating slopes towards the southwest. The surrounding land use includes agriculture and residential development. A minor ephemeral waterway (Yarram Creek) intersects the reservoir and wetlands.

The project area occurs within the Otway Plain bioregion, the Corangamite Catchment Management Authority area and the City of Greater Geelong municipality (DELWP 2020a). The Native Vegetation Location mapping shows the project area occurs within Location 1 and 2 (DELWP 2020b). The project area is zoned Public Use

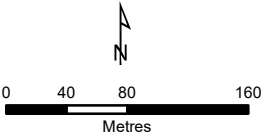


Zone – Service and Utility (PUZ1) and is not subject to any environmental overlays under the Greater Geelong Planning Scheme (DELWP 2020c).



**Figure 1**  
*Site Location*  
Ballarine Basin, Wallington

**Legend**  
 Subject Site



Coordinate System: GDA 1994 MGA Zone 55  
Map Scale when printed @ A4 1:5,000



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## 2 Methodology

### 2.1 Species Information

Scientific and common names of flora species follow the Australian Plant Census (Australian National Botanic Gardens 2020). The names of terrestrial vertebrate fauna follow the Victorian Biodiversity Atlas (VBA) (DELWP 2020d). Vegetation communities follow the Ecological Vegetation Class (EVC) bioregion benchmarks (DELWP 2020a).

Native flora and fauna referred to as 'threatened' include species:

- Listed as critically endangered, endangered or vulnerable under the *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act) (DoEE 2020).
- Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (FFG Act) (DELWP 2020e).
- Listed as critically endangered, endangered, vulnerable or rare on Victoria's rare or threatened flora and fauna advisory lists (DEPI 2014; DSE 2013).

### 2.2 Desktop Assessment

A desktop assessment was undertaken of relevant databases and other resources, including:

- NatureKit for modelled biodiversity data (DELWP 2020a).
- Native Vegetation Information Management system tool (DELWP 2020b).
- Planning Schemes Online for planning information (DELWP 2020c).
- The VBA for threatened flora and fauna species records (DELWP 2020d).
- The Protected Matters Search Tool (PMST) for information relating to Matters of National Environmental Significance (MNES) (listed species and communities) under the EPBC Act (DoEE 2020).
- Relevant environmental legislation, policies and strategies.
- Previously ecological reports for the site.

### 2.3 Field Assessment

The field assessment was undertaken on 19 February 2020 and involved traversing the project area on foot to identify ecological values. The extent of native vegetation was mapped using a Trimble Catalyst DA1 differential GPS (sub-metre accuracy post-processing) and recorded to MGA 94, Zone 55 coordinate system. EVCs were determined by reference to the relevant bioregion mapping and benchmarks descriptions (DELWP 2020a), and review of remnant vegetation in the local area.





## 2.4 Assessment Guidelines

The *Guidelines for the removal, destruction or lopping of native vegetation* (the Guidelines) (DELWP 2017) has been incorporated into the Victoria Planning Provisions and all planning schemes in Victoria. The purpose of the Guidelines is to set out and describe the application of Victoria's statewide policy in relation to assessing and compensating for the removal of native vegetation in response to permit applications under Clause 52.17.

Native vegetation is defined in Clause 72 of the Victoria Planning Provisions as *plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses*. Plants from other states or overseas are not native and the permitted clearing regulations do not apply if they are being removed (DELWP 2017).

The Guidelines considers the biodiversity value of native vegetation by measuring the following two components:

- Site-based information that can be measured or observed at a site.
- Landscape scale information that cannot be measured or observed at the site and is included in maps and models (DELWP 2017).

Under the Guidelines native vegetation is classified as a *patch* or *scattered tree*.

A patch of native vegetation is:

- An area of vegetation where at least 25 per cent of the total perennial understorey plant cover is native<sup>1</sup>; or
- Any area with three or more native canopy trees<sup>2</sup> where the drip line<sup>3</sup> of each tree touches the drip line of at least one other tree, forming a continuous canopy; or
- Any mapped wetland included in the Current wetlands map.

A scattered tree is:

- A native canopy tree that does not form part of a patch (DELWP 2017).

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<sup>1</sup> Plant cover is the proportion of the ground that is shaded by vegetation foliage when lit from directly above. Areas that include non-vascular vegetation (such as mosses and lichens) but otherwise support no native vascular vegetation are not considered to be a patch for the purposes of the Guidelines. However, when non-vascular vegetation is present with vascular vegetation, it does contribute to cover when determining the percentage of perennial understorey plant cover.

<sup>2</sup> A native canopy tree is a mature tree (i.e. it is able to flower) that is greater than 3 metres in height and is normally found in the upper layer of the relevant vegetation type.

<sup>3</sup> The drip line is the outermost boundary of a tree canopy (leaves and/or branches) where the water drips on to the ground (DELWP 2017).



The assessment pathway for an application to remove native vegetation reflects its potential impact on biodiversity and is determined from the location and extent of the native vegetation to be removed. The three assessment pathways are:

- Basic – limited impacts on biodiversity.
- Intermediate – could impact on large trees, endangered EVCs, and sensitive wetlands and coastal areas.
- Detailed – could impact on large trees, endangered EVCs, sensitive wetlands and coastal areas, and could significantly impact on habitat for rare or threatened species.

The assessment pathway of an application is determined in accordance with the requirements in Table 1.

**Table 1: Assessment pathways**

Extent of native vegetation	Location Category		
	Location 1	Location 2	Location 3
Less than 0.5 hectares and not including any large trees	Basic	Intermediate	Detailed
Less than 0.5 hectares and including one or more large trees	Intermediate	Intermediate	Detailed
0.5 hectares or more	Detailed	Detailed	Detailed

Source: DELWP (2017).

## 2.5 Limitations

The preferred survey period for undertaking vegetation assessments in Victoria is spring, which maximises the likelihood of detecting all flora species within a site. Flora surveys provide a valuable ‘snapshot’ of vegetation at a point in time; however, the limitations of seasonal influence (summer) on the presence/absence of flora species (particularly annuals or cryptic species) must be considered. The short duration of the assessment limited the opportunity to observe migratory, transitory or uncommon fauna species.

The information outlined in this report relies on the accuracy of ecological database information, GIS layers and spatial imagery. To minimise potential errors, the most current available data was obtained from relevant sources.

The Department of Environment, Land, Water and Planning (DELWP) bioregion and EVC mapping are subject to inherently broad environmental and ecological parameters used in the mapping process. Where the observed EVC was not reflective of what would be expected from EVC mapping and classification, it was attributed to the most appropriate EVC based on combination of its floristic, life form and ecological characteristics, and particular environmental conditions.



## 3 Results

### 3.1 Ecological Vegetation Classes

NatureKit pre-1750 EVC modelling for the project area predominantly comprised of Grassy Woodland (EVC 175) and Heathy Woodland (EVC 48). Extant (2005) EVC mapping shows a modified cover of Grassy Woodland and Heathy Woodland (DELWP 2020a).

Remnant native vegetation was attributed to Sedge Wetland (EVC 136) and Grassy Woodland based on floristic, life form, ecological characteristics and soil type (Figure 2). The Native Vegetation Layer modelling shows the reservoir and wetland areas are listed as a Current wetland (DELWP 2020a).

Note that sections of the project area support species that are commonly associated with Heathy Woodland; however, the overall native species composition and cover is generally associated with Grassy Woodland. Ecology Partners (2008) previously identified the site contains Aquatic Sedgeland; however, it is considered that this vegetation type aligns with Sedge Wetland (DSE 2012).

### 3.2 Vegetation Condition

The project area was characterised by a Grassy Woodland in the southern section, which also occurs as a modified ground layer under the pine plantation and planted vegetation. The area surrounding the reservoir comprises slashed exotic grassland. Wetland communities occur in the western section of the site.

#### ***Grassy Woodland (EVC 175)***

Grassy Woodland is described as *variable open eucalypt woodland to 15 metres tall or occasionally Sheoak/Acacia woodland to 10 metres tall over a diverse ground layer of grasses and herbs. The shrub component is usually sparse. It occurs on sites with moderate fertility on gentle slopes or undulating hills on a range of geologies* (DELWP 2017a).

Grassy Woodland in the southern section of the project area was dominated by Manna Gum *Eucalyptus viminalis* to 15 metres tall, with Swamp Gum *Eucalyptus ovata* also present. The shrub layer consisted of Golden Wattle *Acacia pycnantha*, Hedge Wattle *Acacia paradoxa* and Lightwood *Acacia implexa*. Native weed species present included Coast Tea-tree *Leptospermum laevigatum*, Sallow Wattle *Acacia longifolia*, Giant Honey-myrtle *Melaleuca armillaris* and exotic Radiata Pine *Pinus radiata*. The ground included Erect Guinea-flower *Hibbertia riparia*, Cranberry Heath *Astroloma humifusum*, Honey-pots *Acrotriche serrulata*, Thatch Saw-sedge *Gahnia radula*, Black-anther Flax-lily *Dianella admixta*, Variable Sword-sedge *Lepidosperma laterale*,





Grey Tussock-grass *Poa sieberiana*, Supple Spear-grass *Austrostipa mollis*, Kangaroo Grass *Themeda triandra*, Bristly Wallaby-grass *Rytidosperma setaceum*, Striped Wallaby-grass *Rytidosperma racemosum*, Weeping Grass *Microlaena stipoides*, Wattle Mat-rush *Lomandra filiformis*, Common Raspwort *Gonocarpus tetragynus* and Bidgee-widgee *Acaena novae-zelandiae*. Exotic species comprised a sparse cover (<5%) of Lesser Quaking-grass *Briza minor*, Sweet Vernal-grass *Anthoxanthum odoratum* and Flat Weed *Hypochoeris radicata* (Plates 1 and 2).

### ***Pine Plantation***

The project area supports an extensive plantation of Radiata Pine which extends throughout the northern section and parts of the property boundary (Figure 2). A modified cover of Grassy Woodland was present under the planted pine trees. The vegetation comprised dense cover (70-100%) of native Thatch Saw-sedge, Common Rapier-sedge *Lepidosperma filiforme*, Clustered Sword-Sedge *Lepidosperma congestum*, with Spiny-head Mat-rush *Lomandra longifolia*, Bower Spinach *Tetragonia implexicoma*, Black-anther Flax-lily and Variable Sword-sedge also present. Exotic species present included Flat Weed, Perennial Veldt-grass *Ehrharta calycina*, Cocksfoot *Dactylis glomerata*, Blackberry *Rubus fruticosus* spp. agg., Briar Rose *Rosa rubignosa*, Boneseed *Chrysanthemoides monilifera* and Gorse *Ulex europaeus* (Plates 3 to 5).

### ***Planted Native Vegetation***

Planted native vegetation along the northern section of the site included Swamp Gum, Manna Gum, Black Wattle *Acacia mearnsii* and Drooping Sheoak *Allocasuarina verticillata*. The ground layer under planted vegetation was attributed to Grassy Woodland dominated by native Prickly Tea-tree *Leptospermum continentale*, Supple Spear-grass, Thatch Saw-sedge, Common Wallaby-grass *Rytidosperma caespitosum*, Bristly Wallaby-grass, Weeping Grass, Bidgee-widgee, Cranberry Heath and Honey-pots. Exotic Radiata Pine, Myrtle-leaf Milkwort *Polygala myrtifolia*, Spear Thistle *Cirsium vulgare*, Large Quaking-grass *Briza major*, Yorkshire Fog *Holcus lanatus* and Flat Weed (Plates 6 and 7). Scattered native Manna Gum trees with an exotic dominated understorey were also attributed to Grassy Woodland (Plate 8).

### ***Sedge Wetland (EVC 136)***

Sedge Wetland is characterised as seasonally inundated freshwater sedgeland of depressions, typically within swales amidst soils with a substantial sandy component, clearly dominated by tall sedges. Widespread in southern and higher rainfall western areas (DSE 2012).

Sedge Wetland occurs as two separate patches in the western section of the site and is intersected by Yarram Creek (Figure 2). The vegetation consisted of native sedges and aquatic herbaceous species including Pity Sword-sedge *Lepidosperma longitudinale*, Common Spike-sedge *Eleocharis acuta*, Fine Twig-sedge *Baumea arthropphylla*



Common Bog-sedge *Shoenus apogon* and Running Marsh-flower *Villarsia reniformis*. No exotic species were observed in these areas (Plate 9 and 10). Two modified patches of Sedge Wetland were present in the reservoir and was dominated by native River Club-sedge *Schoenoplectus tabernaemontani* and Common Grass-sedge *Carex breviculmis*.

### ***Predominantly Introduced Vegetation***

Exotic dominated vegetation (mapped as predominantly introduced vegetation) in open areas adjacent to the reservoir were slashed for maintenance. The vegetation consisted of exotic *Paspalum dilatatum*, Kikuyu *Pennisetum clandestinum*, Perennial Ryegrass *Lolium perenne*, Onion Grass *Romulea rosea*, Brown-top Bent *Agrostis capillaris*, Delicate Hair-grass *Aira elegantissima*, Couch Grass, Flat Weed, Galenia *Galenia pubescens*, Ox-tongue *Helminthotheca echioides*, Cape Weed *Arctotheca calendula* and Ribwort *Plantago lanceolata*. A sparse cover of Weeping Grass, Striped Wallaby-grass, Common Wallaby-grass, Bristly Wallaby-grass (<5% overall perennial cover) was occasionally present (Plates 11 and 12).

### **3.3 Threatened Flora Species**

The VBA (DELWP 2020d) contains records of four listed threatened flora species in local area (within a five-kilometre radius of the project area). The PMST (DoEE 2020) identified 12 EPBC Act listed flora species or species habitats as likely to occur within the local area (Appendix 4).

No listed threatened flora species were recorded during the field assessment. There is a low likelihood of occurrence for any listed threatened flora species due to the modified condition of habitat, which reduces or eliminates the habitat potential for many species.

### **3.4 Threatened Fauna Species**

The VBA (DELWP 2020d) contains records of 54 listed threatened fauna species in the local area. The PMST (DoEE 2020) identified 25 EPBC Act listed fauna species or species habitats (terrestrial) as likely to occur within the local area (Appendix 5).

Ecology Partners (2012) undertook a targeted survey for Growling Grass Frog *Litoria raniformis* waterbodies and patches of Sedge Wetland. While wetland areas support suitable Growling Grass Frog habitat the species was not recorded during targeted surveys. Two state listed fauna species (Musk Duck *Biziura lobata* and Black Falcon *Falco subniger*) were previously recorded in the project area (Ecology Partners (2008). Suitable habitat is also present for Nankeen Night Heron and Latham's Snipe, which may occasionally utilise wetland habitat.



No listed threatened fauna species were recorded during the field assessment. There is a low likelihood of occurrence for any additional listed threatened fauna species due to the highly modified condition of habitat, which limits habitat availability to generalist species adapted to modified habitats.

### 3.5 Threatened Ecological Communities

#### *Commonwealth Listed Ecological Communities*

Review of the PMST (DoEE 2020) identified four EPBC Act listed ecological communities may or are known to occur within the local area:

- *Natural Temperate Grassland of the Victorian Volcanic Plain* (critically endangered).
- *Grassy Eucalypt Woodland of the Victorian Volcanic Plain* (critically endangered).
- *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland* (critically endangered).
- *Natural Damp Grassland of the Victorian Coastal Plains* (critically endangered).

Areas of Sedge Wetland in the project area does not meet the diagnostic characteristics *Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains* (Critically Endangered). The other EPBC Act ecological communities listed above do not occur within the project area.





Plate 1: Grassy Woodland in the southern section of the site



Plate 2: Grassy Woodland in the southern section of the site



Plate 3: Modified Grassy Woodland under pine plantation



Plate 4: Modified Grassy Woodland under pine plantation





Plate 5: Modified Grassy Woodland under pine plantation



Plate 6: Planted vegetation and Grassy Woodland ground layer



Plate 7: Planted vegetation and Grassy Woodland ground layer



Plate 8: Scattered native tree (Manna Gum)





Plate 9: Sedge Wetland



Plate 10: Sedge Wetland



Plate 11: Modified Sedge Wetland











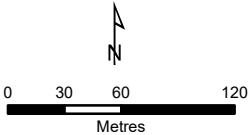
Plate 12: Exotic dominated vegetation



**Figure 2**  
*Ecological Features*  
Ballarine Basin, Wallington

**Legend**

-  Subject Site
-  Grassy Woodland
-  Grassy Woodland Under
-  Pine Plantation
-  Sedge Wetland
-  Modified Grassy Woodland
-  Planted Vegetation
-  Scattered Trees



Coordinate System: GDA 1994 MGA Zone 55  
Map Scale when printed @ A4 1:4,000



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## 4 Assessment of Ecological Values

The criteria to determine the areas of ecological value in the project area is outlined in Table 2 and shown in Figure 3.

**Table 2: Description of Key Ecological Values**

Ecological Value	Criteria
High Ecological Value	<ul style="list-style-type: none"> <li>Vegetation species diversity, structure and cover dominated by indigenous species consistent with the EVC benchmark description.</li> <li>Supports habitat for a range of indigenous flora and fauna species.</li> <li>Supports a number of large old trees.</li> <li>Meets the criteria of a remnant patch and may include scattered trees.</li> <li>Less than 5% weed cover present.</li> <li>Provides, or has the potential to act as a wildlife corridor linking other areas of higher conservation significance and facilitating fauna movement throughout the landscape.</li> <li>The presence of a natural watercourse and its associated unique flora and fauna values.</li> <li>Mapped as a Current wetland in the Native Vegetation Layers.</li> <li>Strategic Biodiversity Score 0.81-0.100</li> </ul>
Moderate Ecological Value	<ul style="list-style-type: none"> <li>Vegetation contains a modified species diversity, structure and cover compared to the EVC benchmark description.</li> <li>Supports some habitat values for indigenous flora and fauna species.</li> <li>May contain large old trees.</li> <li>Meets the criteria of a remnant patch and may include scattered trees.</li> <li>Between 25% and 75% weed cover present.</li> <li>Provides, or has the potential to act as a wildlife corridor linking other areas of higher conservation significance and facilitating fauna movement throughout the landscape.</li> <li>The presence of a natural watercourse and its associated flora and fauna values.</li> <li>Strategic Biodiversity Score 0.41-0.60</li> </ul>
Low Ecological Value	<ul style="list-style-type: none"> <li>Dominated by exotic vegetation (&gt;95% cover) &amp; may contain scattered indigenous trees</li> <li>Native vegetation limited to a sparse cover (&lt;5%) or no native cover present.</li> <li>No listed threatened flora or fauna species or habitat present.</li> <li>Strategic Biodiversity Score 0.00-0.21</li> </ul>

**Notes:** \*The criteria for threatened species and communities is outlined in Section 2.1.



## 5 Opportunities and Constraints

### 5.1 Wetland Remediation

The reinstatement of Yarram Creek has been identified as a future development opportunity for the site. Yarram Creek is an ephemeral waterway that extends through the existing reservoir. It is recommended that patches of Sedge Wetland associated with the creek are retained as they comprise of high ecological values. Remediation works to reinstate the creek through the reservoir should include revegetation of wetland communities along the creek.

The proposed removal of the pine plantation will result in unavoidable impacts to approximately 9.6 hectares of Grassy Woodland in the understorey. However, there is an opportunity to revegetate these areas following the removal of pine trees. Revegetation works should include indigenous species based on the Grassy Woodland EVC benchmark.

Revegetation outcomes should be established according to the Native Vegetation Revegetation Planting Standards (DSE 2006) planting guidelines, which set out the minimum requirements for site preparation, source of planting material, site protection (fencing) and post-planting management (i.e. weed control).

Revegetation may be achieved from either direct seeding or planting of seedlings, using indigenous species based on an appropriate wetland EVC. The success of revegetation works will largely be due to adequate site preparation and weed management. The aim for revegetation works should be to establish as close to 100% indigenous cover as possible, which will minimise the requirement for weed control following completion of the rehabilitation program.

Minimum requirements for revegetation include:

- Plant stock should be of regional provenance (i.e. Otway Plain bioregion) and sourced through a specialist local nursery, regional seedbank or seed collected from the site.
- An adaptive management process is encouraged, whereby additional planting is required over time to account for losses.
- Control of listed noxious and environmental weeds

### 5.2 Management of Ecological Values

If Barwon Water seeks to utilise Grassy Woodland and Sedge Wetland for conservation purposes, it is recommended an Environment Management Plan (EMP) is prepared to manage ecological values. The EMP would typically include the following information:





Measures to enhance the ecological values including:

- Conservation strategies for threatened species and vegetation communities.
- Revegetation and natural rehabilitation management measures.

Management of noxious weeds, including:

- A targeted weed survey.
- Review of relevant legislation and policy requirements.
- Determine the level of risk that noxious and environmental weeds pose to the site and determine priorities for control.
- Management techniques for control of key species.
- An action plan outlining the implementation schedule and timeframes.
- Monitoring and reporting requirements.

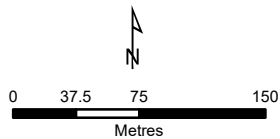
Management of noxious pest animals (i.e. rabbits), including:

- Review of relevant legislation and policy requirements.
- Measures to control existing harbor and fencing for noxious pest animals.
- Determine the level of risk to the site and determine priorities for control.
- Management techniques for control.
- An action plan outlining the implementation schedule and timeframes.
- Monitoring and reporting requirements.

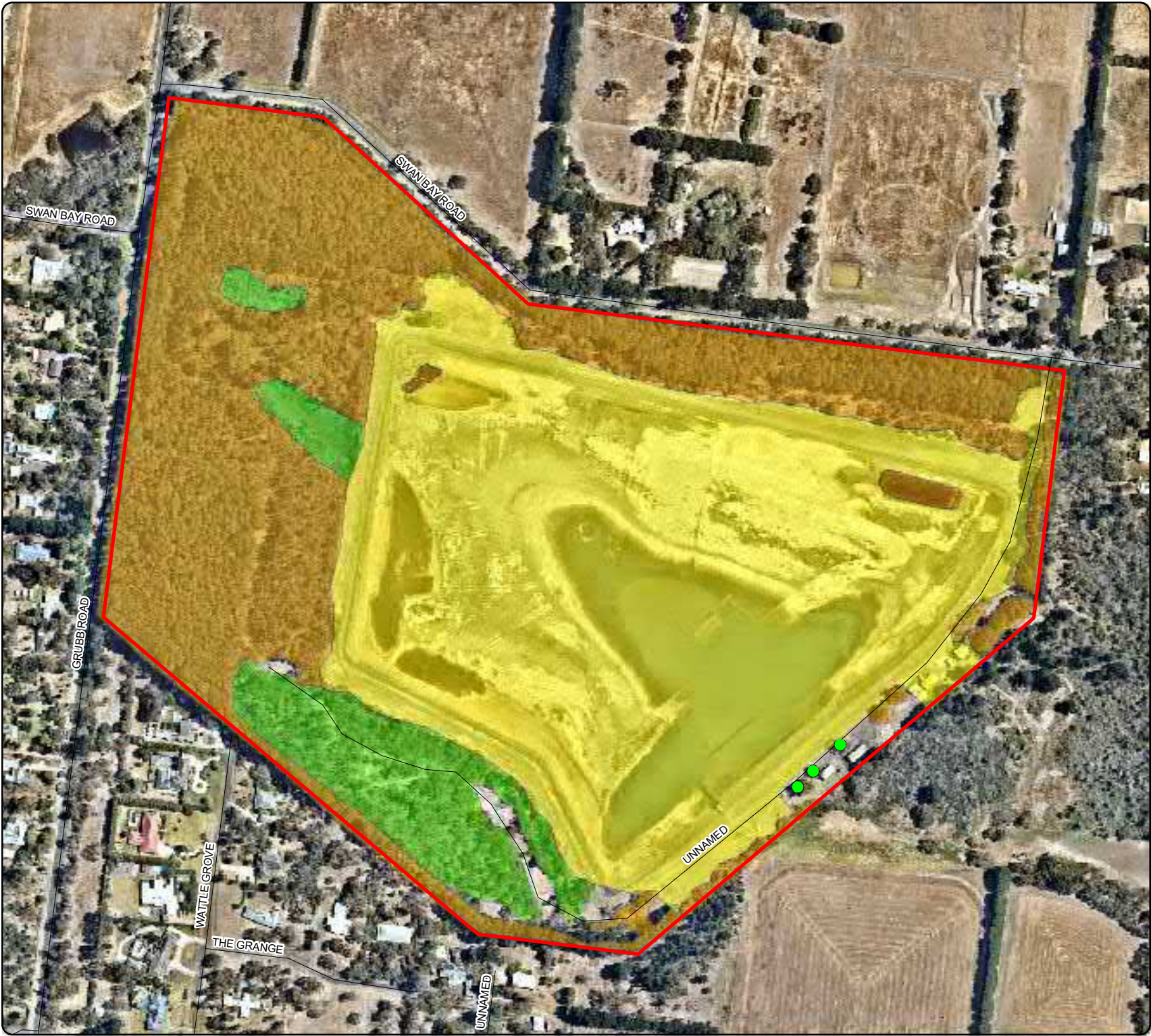


**Figure 3**  
*Ecological Values*  
Ballarine Basin, Wallington

- Legend**
- Subject Site
  - High Ecological Value
  - Moderate Ecological Value
  - Low Ecological Value
  - Scattered Trees



Coordinate System: GDA 1994 MGA Zone 55  
Map Scale when printed @ A4 1:4,500



VicMap Data: The state of Victoria does not warrant the accuracy or correctness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.





## 6 Environmental Legislation and Policy Implications

### 6.1 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act provides a process for assessment of proposed actions that may have a significant impact on a MNES, which includes EPBC Act listed flora, fauna and ecological communities (DOE 2013).

The EPBC Act affects any group or individual (including companies) whose actions (i.e. proposal or project) are assessed for environmental impacts under the EPBC Act. An action requires approval from the Commonwealth Environment Minister if it is considered likely to have a significant impact on a MNES (DOE 2013).

No EPBC Act listed threatened ecological communities or flora, or fauna species were recorded within the project area, and none are considered likely to occur due to the absence of suitable habitat. An EPBC Act referral to the Commonwealth Environment Minister is not required as no MNES are present or likely to be significantly impacted by future works in the project area.

### 6.2 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.

A permit is required from DELWP to 'take' (kill, injure, disturb or collect) listed flora species, flora species that are members of listed communities or protected flora from public land. Protected flora species includes all members of the following plant families Asteraceae (Daisies), Epacridaceae (Heaths) and Orchidaceae (Orchids), all clubmosses, ferns and fern allies (excluding *Pteridium esculentum*). All species of the following genera are also protected: *Acacia* (excluding *Acacia dealbata*, *Acacia decurrens*, *Acacia implexa*, *Acacia melanoxylon* and *Acacia paradoxa*), *Baeckea*, *Calytrix*, *Correa*, *Darwinia*, *Eremophila*, *Eriostemon*, *Gompholobium*, *Grevillea*, *Prostanthera*, *Sphagnum*, *Thryptomene*, *Thysanotus* and *Xanthorrhoea* (Grass-trees) (DELWP 2020e).

No listed threatened flora species were recorded in the project area. One listed protected flora species (Golden Wattle) occurs in the pine plantation area for removal. An FFG Act permit application will be required from DELWP to remove Golden Wattle shrubs in this instance as the project area is located on public land.

### 6.3 Planning and Environment Act 1987



The purpose of the *Planning and Environment Act 1987* is to establish a framework for planning the use, development and protection of land in Victoria. Native vegetation clearance is managed under the Act and through municipal planning schemes (DELWP 2020c).

A permit is required under Clause 52.17 (Native Vegetation) to remove, destroy or lop native vegetation, including dead vegetation, unless the action is exempt. To ensure that there is no net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation, the following three step approach is applied in accordance with the Guidelines:

1. Avoid the removal, destruction or lopping of native vegetation.
2. Minimise impacts from the removal, destruction or lopping of native vegetation that cannot be avoided.
3. Provide an offset to compensate for the biodiversity impact if a permit is granted to remove, destroy or lop native vegetation.

If native vegetation removal is required, a permit application must be categorised as a basic, intermediate or detailed assessment pathway as specified in the Guidelines (DELWP 2017). Each assessment pathway has specific application requirements and decision guidelines that must be considered by the responsible authority.

Clause 66 (Referral and Notice Provisions) requires that the following applications to remove native vegetation be referred to the Secretary to DELWP:

- To remove, destroy or lop native vegetation in the Detailed Assessment Pathway
- To remove, destroy or lop native vegetation if a Property Vegetation Plan applies to the site.
- To remove, destroy or lop native vegetation on Crown land, which is occupied or managed by the responsible authority (DELWP 2020c).

#### ***Clause 52.17 – Native Vegetation***

The proposed removal of the pine plantation will result in the unavoidable loss of approximately 9.6 hectares of Grassy Woodland in the understorey. The machinery used to remove pine trees is likely to impact understorey vegetation during the removal process.

A permit to remove 9.6 hectares of native vegetation will be under Clause 52.17 of the Greater Geelong Planning Scheme. The Scenario test – native vegetation removal report for impacts to 9.6 hectares of Grassy Woodland identified a general offset amount of 1.056 general habitat units would be required. The general offset must have a minimum strategic biodiversity value score of 0.367 and be within the Corangamite Catchment Management Authority or Greater Geelong City Council (DELWP 2020f) (Appendix 6).





It is recommended that Barwon Water applies the principles of avoid and minimise during the design process to ensure the final project design avoids adverse impacts on existing biodiversity values as much as practicable. If the final project design requires removal of >0.5 hectares of native vegetation, a detailed pathway application report will be required. The application will also be referred to the Secretary to DELWP for assessment under Clause 66 (Referral and Notice Provisions).

If required for removal for future development, planted trees (non-native and exotic) are considered to meet the permit exemption under Clause 52.17-7 Planted Vegetation, which states: *Native vegetation that is to be removed, destroyed or lopped that was either planted or grown as a result of direct seeding. This exemption does not apply to native vegetation planted or managed with public funding for the purpose of land protection or enhancing biodiversity unless the removal, destruction or lopping of the native vegetation is in accordance with written permission of the agency (or its successor) that provided the funding* (DELWP 2019c). Planted native trees within the project area were not planted for conservation purposes using public funding.

#### 6.4 Catchment and Land Protection Act 1994

The *Catchment and Land Protection Act 1994* (CaLP Act) is the key legislation for management of noxious weeds in Victoria (Agriculture Victoria 2019). There are four categories of noxious weeds defined under the CaLP Act, including: State Prohibited, Regionally Prohibited, Regionally Controlled and Restricted weeds.

Under the CaLP Act landowners/managers have obligations regarding the management of declared noxious weeds on their land, and must take all reasonable steps to:










- Eradicate regionally prohibited weeds.
- Prevent the growth and spread of regionally controlled weeds.
- Prevent the spread of regionally controlled weeds on a roadside that adjoins the landowner's land (Agriculture Victoria 2020).

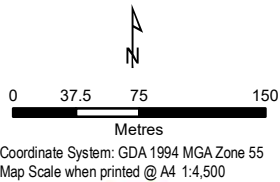
The project area supports several listed noxious weeds (Appendix 2). It is recommended that Barwon Water implement weed control works to meet the obligations for the management of declared noxious weeds under the CaLP Act.



**Figure 3**  
*Proposed vegetation removal*  
Ballarine Basin, Wallington

**Legend**

-  Subject Site
-  Grassy Woodland
-  Grassy Woodland Under
-  Pine Plantation
-  Sedge Wetland
-  Modified Grassy Woodland
-  Planted Vegetation
-  Vegetation for Removal
-  Scattered Trees



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## 7 Conclusion

The project area was characterised by a Grassy Woodland in the southern section, which also occurs as a modified ground layer under the pine plantation and planted vegetation. The area surrounding the reservoir comprises slashed exotic grassland. Wetland communities occur in the western section of the site.

No state or commonwealth listed threatened ecological communities, flora or fauna species or associated habitats were recorded within the project area, and none are considered likely to occur. An EPBC Act referral will not be required, as no MNES are present, or likely to be significantly impacted by future works within the project area.

The area of Grassy Woodland in the southern section and Sedge Wetland communities were identified as high ecological value. Modified areas of Grassy Woodland under the pine planation and planted native vegetation were considered moderate ecological value, with exotic grassland of low ecological value.

The proposed removal of the pine plantation will result in the loss of approximately 9.6 hectares of Grassy Woodland in the understorey. A permit to remove native vegetation will be under Clause 52.17 of the Greater Geelong Planning Scheme and a detailed assessment pathway application in accordance with the Guidelines.

The Scenario test – native vegetation removal report for impacts to 9.6 hectares of Grassy Woodland identified a general offset amount of 1.056 general habitat units would be required. The general offset must have a minimum strategic biodiversity value score of 0.367 and be within the Corangamite Catchment Management Authority or Greater Geelong City Council.

It is recommended that Barwon Water applies the principles of avoid and minimise during the design process to ensure the final project design avoids adverse impacts on existing biodiversity values as much as practicable.

The proposed reinstatement of Yarram Creek waterway is recommended as this will enhance wetland communities and associated habitat in the project area.



## 8 References

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## Appendices

### Appendix 1 – Likelihood of Occurrence

One or more of the following criteria was used to establish the likelihood of occurrence for threatened flora and fauna species within the project area.

Present: Recorded during the field survey.

High likelihood:

- Previously recorded within the site.
- Likely to visit the site during seasonal movements.
- Frequently recorded within the local area.
- Known or likely to maintain resident populations in the local area.
- Presence of preferred habitat within the site.

Moderate likelihood:

- May regularly move through or visit the site as a seasonal visitor.
- Previous records within the local area.
- Some characteristics of a species preferred habitat is present although in a modified condition.
- Unlikely to maintain a population within the site.

Low Likelihood:

- Species likely to occur as a rare or opportunistic visitor.
- Few previous records within the local area.
- Habitat within the site is highly modified and does not represent the species preferred habitat.

Unlikely:

- No suitable habitat present on the site or in the surrounding area.
- No species records in the local area.
- Beyond the species natural distribution or considered locally extinct.

The outcome of the assessment of likelihood of occurrence for threatened flora is Appendix 4 and Appendix 5 for threatened fauna.



## Appendix 2 – Flora Species Recorded

**Table 3: Flora species recorded during the field assessment**

Scientific Name	Common Name
<i>Acacia baileyana</i>	Cootamundra Wattle#
<i>Acacia implexa</i>	Lightwood
<i>Acacia longifolia</i> subsp. <i>longifolia</i>	Sallow Wattle*
<i>Acacia mearnsii</i>	Black Wattle#
<i>Acacia paradoxa</i>	Hedge Wattle
<i>Acacia pycnantha</i>	Golden Wattle
<i>Acaena echinata</i>	Sheep's Burr
<i>Acaena novae-zelandiae</i>	Bidgee-widgee
<i>Acrotriche serrulata</i>	Honey-pots
<i>Agrostis capillaris</i>	Brown-top Bent*
<i>Aira caryophyllea</i> subsp. <i>caryophyllea</i>	Silvery Hair-grass*
<i>Aira elegantissima</i>	Delicate Hair-grass*
<i>Allocasuarina verticillata</i>	Drooping Sheoak#
<i>Anthosachne scabra</i> s.l.	Common Wheat-grass
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass*
<i>Arctotheca calendula</i>	Cape Weed*
<i>Asparagus asparagoides</i>	Bridal Creeper*
<i>Astroloma humifusum</i>	Cranberry Heath
<i>Austrostipa mollis</i>	Supple Spear-grass
<i>Austrostipa</i> spp.	Spear Grass
<i>Baumea arthrophylla</i>	Fine Twig-sedge
<i>Billardiera heterophylla</i>	Bluebell Creeper
<i>Brassica fruticulosa</i>	Twiggy Turnip*
<i>Briza maxima</i>	Large Quaking-grass*
<i>Briza minor</i>	Lesser Quaking-grass*
<i>Bromus catharticus</i>	Prairie Grass*
<i>Carex breviculmis</i>	Common Grass-sedge
<i>Cassytha glabella</i>	Slender Dodder-laurel
<i>Cenchrus clandestinus</i>	Kikuyu*
<i>Centaurea erythraea</i>	Common Centaury
<i>Cerastium glomeratum</i> s.l.	Common Mouse-ear Chickweed*
<i>Chenopodium murale</i>	Sowbane*
<i>Chrysanthemoides monilifera</i> subsp. <i>monilifera</i>	African Boneseed**
<i>Cirsium vulgare</i>	Spear Thistle**
<i>Clematis microphylla</i> s.l.	Small-leaved Clematis
<i>Cortaderia selloana</i>	Pampas Grass*





Scientific Name	Common Name
<i>Corymbia maculata</i>	Spotted Gum#
<i>Cynodon dactylon</i>	Couch*
<i>Cynosurus echinatus</i>	Rough Dog's-tail*
<i>Cyperus congestus</i>	Dense Flat-sedge*
<i>Dactylis glomerata</i>	Cocksfoot*
<i>Daucus carota</i>	Carrot*
<i>Dianella admixta</i>	Black-anther Flax-lily
<i>Distichlis distichophylla</i>	Australian Salt-grass
<i>Ehrharta calycina</i>	Perennial Veldt-grass*
<i>Ehrharta erecta</i>	Panic Veldt-grass*
<i>Ehrharta longiflora</i>	Annual Veldt-grass*
<i>Eleocharis acuta</i>	Common Spike-sedge
<i>Eleocharis sphacelata</i>	Tall Spike-sedge
<i>Epilobium billardioreanum subsp. cinereum</i>	Grey Willow-herb
<i>Eriqeron bonariensis</i>	Flaxleaf Fleabane*
<i>Eucalyptus cladocalyx</i>	Sugar Gum#
<i>Eucalyptus gomphocephala</i>	Tuart#
<i>Eucalyptus ovata</i>	Swamp Gum##
<i>Eucalyptus radiata subsp. radiata</i>	Narrow-leaf Peppermint
<i>Eucalyptus viminalis</i>	Manna Gum
<i>Gahnia radula</i>	Thatch Saw-sedge
<i>Galenia pubescens var. pubescens</i>	Galenia
<i>Galium aparine</i>	Cleavers
<i>Genista linifolia</i>	Flax-leaf Broom**
<i>Gonocarpus tetragynus</i>	Common Raspwort
<i>Helminthotheca echioides</i>	Ox-tongue*
<i>Hibbertia riparia</i>	Erect Guinea-flower
<i>Holcus lanatus</i>	Yorkshire Fog*
<i>Hordeum leporinum</i>	Barley-grass*
<i>Hydrocotyle laxiflora</i>	Stinking Pennywort
<i>Hypochaeris radicata</i>	Flatweed*
<i>Juncus bufonius</i>	Toad Rush
<i>Juncus microcephalus</i>	Tiny-headed Rush*
<i>Juncus pallidus</i>	Pale Rush
<i>Juncus subsecundus</i>	Finger Rush
<i>Lagurus ovatus</i>	Hare's-tail Grass*
<i>Laphangium luteoalbum</i>	Jersey Cudweed
<i>Lepidosperma congestum</i>	Clustered Sword-sedge



Scientific Name	Common Name
<i>Lepidosperma filiforme</i>	Common Rapier-sedge
<i>Lepidosperma laterale</i>	Variable Sword-sedge
<i>Lepidosperma semiteres</i>	Wire Rapier-sedge
<i>Leptospermum continentale</i>	Prickly Tea-tree
<i>Leptospermum laevigatum</i>	Coast Tea-tree*
<i>Lolium perenne</i>	Perennial Rye-grass*
<i>Lomandra filiformis</i>	Wattle Mat-rush
<i>Lomandra longifolia</i>	Spiny-headed Mat-rush
<i>Lysimachia arvensis</i>	Pimpernel*
<i>Lythrum hyssopifolia</i>	Small Loosestrife
<i>Malva parviflora</i>	Small-flower Mallow*
<i>Medicago polymorpha</i>	Burr Medic*
<i>Melaleuca armillaris subsp. armillaris</i>	Giant Honey-myrtle#
<i>Microlaena stipoides var. stipoides</i>	Weeping Grass
<i>Nassella neesiana</i>	Chilean Needle-grass
<i>Nassella trichotoma</i>	Serrated Tussock
<i>Oxalis perennans</i>	Grassland Wood-sorrel
<i>Oxalis pes-caprae</i>	Soursob**
<i>Ozothamnus ferrugineus</i>	Tree Everlasting
<i>Paspalum dilatatum</i>	Paspalum*
<i>Paspalum distichum</i>	Water Couch*
<i>Phalaris aquatica</i>	Toowoomba Canary-grass*
<i>Pimelea humilis</i>	Common Rice-flower
<i>Pinus radiata</i>	Radiata Pine*
<i>Pittosporum undulatum</i>	Sweet Pittosporum*
<i>Plantago coronopus</i>	Buck's-horn Plantain
<i>Plantago lanceolata</i>	Ribwort
<i>Platylobium obtusangulum</i>	Common Flat-pea
<i>Poa annua s.l.</i>	Annual Meadow-grass*
<i>Poa sieberiana</i>	Grey Tussock-grass
<i>Polygala myrtifolia</i>	Myrtle-leaf Milkwort*
<i>Polygonum aviculare s.l.</i>	Prostrate Knotweed*
<i>Pteridium esculentum subsp. esculentum</i>	Austral Bracken
<i>Raphanus raphanistrum</i>	Wild Radish*
<i>Rhagodia candolleana subsp. candolleana</i>	Seaberry Saltbush
<i>Rhamnus alaternus</i>	Italian Buckthorn*
<i>Romulea rosea</i>	Onion Grass*
<i>Rosa rubiginosa</i>	Sweet Briar**





Scientific Name	Common Name
<i>Rubus fruticosus</i> spp. agg.	Blackberry**
<i>Rumex crispus</i>	Curled Dock*
<i>Rytidosperma caespitosum</i>	Common Wallaby-grass
<i>Rytidosperma laeve</i>	Smooth Wallaby-grass
<i>Rytidosperma racemosum</i> var. <i>racemosum</i>	Slender Wallaby-grass
<i>Rytidosperma setaceum</i>	Bristly Wallaby-grass
<i>Schoenus apogon</i>	Common Bog-sedge
<i>Senecio quadridentatus</i>	Cotton Fireweed
<i>Solanum nigrum</i> s.l.	Black Nightshade*
<i>Sonchus asper</i> s.s.	Rough Sow-thistle*
<i>Sonchus oleraceus</i>	Common Sow-thistle*
<i>Stenotaphrum secundatum</i>	Buffalo Grass*
<i>Taraxacum officinale</i> spp. agg.	Garden Dandelion*
<i>Tetragonia implexicoma</i>	Bower Spinach
<i>Themeda triandra</i>	Kangaroo Grass
<i>Trifolium angustifolium</i> var. <i>angustifolium</i>	Narrow-leaf Clover*
<i>Trifolium campestre</i> var. <i>campestre</i>	Hop Clover*
<i>Trifolium repens</i> var. <i>repens</i>	White Clover*
<i>Trifolium subterraneum</i>	Subterranean Clover*
<i>Ulex europaeus</i>	Gorse**
<i>Vicia sativa</i>	Common Vetch*
<i>Vulpia bromoides</i>	Squirrel-tail Fescue

**Notes:** \*Exotic species; \*\*† Listed noxious weed; #Planted



## Appendix 4 – Threatened Flora Records

Table 4. Threatened flora records

Scientific Name	Common Name	Status	Count of Sightings	Last Record	Likely Occurrence	Comments
<i>Avicennia marina</i> subsp. <i>australasica</i>	Grey Mangrove	r	1	18/3/82	U	No suitable habitat
<i>Lepidosperma canescens</i>	Hoary Rapier-sedge	r	1	01/03/1875	U	No suitable habitat
<i>Limonium australe</i> var. <i>australe</i>	Yellow Sea-lavender	r	1	18/3/82	U	No suitable habitat
<i>Eucalyptus leucoxylon</i> subsp. <i>bellarinensis</i>	Bellarine Yellow-gum	en L	53	1/2/14	L	Suitable habitat but not recorded within the site

**Notes:** Threatened species records were sourced from the VBA (DELWP 2020d), within a 5 km radius of the project area. Likelihood of occurrence: P = Present; H = High likelihood; M = Moderate likelihood; L = Low likelihood; U = Unlikely to occur (Appendix 1).

EPBC Act listed species (DoEE 2020)

Cr Critically Endangered

En Endangered

V Vulnerable

FFG Act listed species (DELWP 2019e)

L Listed as Threatened

DEPI listed species (DEPI 1014):

cr Critically endangered

e Endangered

v Vulnerable

r Rare





## Appendix 5 – Threatened Fauna Records

Table 5. Threatened fauna records

Scientific Name	Common Name	Status	Count of Sightings	Last Record	Likely Occurrence	Comments
<i>Pedionomus torquatus</i>	Plains-wanderer	CR cr L	1	24/06/1893	U	No suitable habitat
<i>Lewinia pectoralis</i>	Lewin's Rail	vu L	1	7/1/80	U	No suitable habitat
<i>Porzana pusilla</i>	Baillon's Crake	vu L	2	13/10/15	U	No suitable habitat
<i>Pelagodroma marina</i>	White-faced Storm-Petrel	vu	15	1/12/81	U	No suitable habitat
<i>Pachyptila turtur</i>	Fairy Prion	vu	20	5/9/81	U	No suitable habitat
<i>Diomedea exulans</i>	Wandering Albatross	VU en L	21	17/10/81	U	No suitable habitat
<i>Thalassarche melanophris</i>	Black-browed Albatross	VU vu	37	11/11/81	U	No suitable habitat
<i>Thalassarche carteri</i>	Indian Yellow-nosed Albatross	VU vu L	8	1/9/81	U	No suitable habitat
<i>Thalassarche chrysostoma</i>	Grey-headed Albatross	EN vu L	3	3/8/79	U	No suitable habitat
<i>Thalassarche cauta</i>	Shy Albatross	VU vu L	30	17/10/81	U	No suitable habitat
<i>Gelochelidon macrotarsa</i>	Australian Gull-billed Tern	en L	9	20/6/81	U	No suitable habitat
<i>Sternula albifrons</i>	Little Tern	vu L	31	1/9/81	U	No suitable habitat
<i>Sternula nereis</i>	Fairy Tern	VU en L	62	5/12/81	U	No suitable habitat
<i>Arenaria interpres</i>	Ruddy Turnstone	vu	51	5/12/81	U	No suitable habitat
<i>Pluvialis squatarola</i>	Grey Plover	en	40	5/12/81	U	No suitable habitat
<i>Pluvialis fulva</i>	Pacific Golden Plover	vu	41	13/12/81	U	No suitable habitat
<i>Thinornis cucullatus</i>	Hooded Plover	VU vu L	34	13/12/81	U	No suitable habitat
<i>Charadrius mongolus</i>	Lesser Sand Plover	EN cr	33	5/12/81	U	No suitable habitat
<i>Charadrius leschenaultii</i>	Greater Sand Plover	VU cr	14	1/12/81	U	No suitable habitat
<i>Numenius madagascariensis</i>	Eastern Curlew	CR vu L	65	7/12/03	U	No suitable habitat



Scientific Name	Common Name	Status	Count of Sightings	Last Record	Likely Occurrence	Comments
<i>Numenius phaeopus</i>	Whimbrel	vu	17	13/12/81	U	No suitable habitat
<i>Tringa glareola</i>	Wood Sandpiper	vu	1	6/10/79	U	No suitable habitat
<i>Tringa brevipes</i>	Grey-tailed Tattler	cr L	36	5/12/81	U	No suitable habitat
<i>Actitis hypoleucos</i>	Common Sandpiper	vu	32	13/12/81	U	No suitable habitat
<i>Tringa nebularia</i>	Common Greenshank	vu	74	20/2/15	U	No suitable habitat
<i>Tringa stagnatilis</i>	Marsh Sandpiper	vu	11	13/12/81	U	No suitable habitat
<i>Calidris ferruginea</i>	Curlew Sandpiper	CR en L	57	19/12/16	U	No suitable habitat
<i>Calidris canutus</i>	Red Knot	EN en	43	5/12/81	U	No suitable habitat
<i>Calidris tenuirostris</i>	Great Knot	CR en L	32	5/12/81	U	No suitable habitat
<i>Egretta garzetta</i>	Little Egret	en L	62	15/5/17	U	No suitable habitat
<i>Ardea intermedia plumifera</i>	Plumed Egret	en L	3	28/9/08	U	No suitable habitat
<i>Botaurus poiciloptilus</i>	Australasian Bittern	EN en L	2	1/1/81	L-M	Potential suitable habitat in wetland communities
<i>Spatula rhynchotis</i>	Australasian Shoveler	vu	236	26/5/19	L-M	Potential suitable habitat in wetland communities
<i>Stictonetta naevosa</i>	Freckled Duck	en L	410	27/7/19	L-M	Potential suitable habitat in wetland communities
<i>Aythya australis</i>	Hardhead	vu	338	16/7/19	L-M	Potential suitable habitat in wetland communities
<i>Oxyura australis</i>	Blue-billed Duck	en L	437	27/7/19	L-M	Potential suitable habitat in wetland communities
<i>Biziura lobata</i>	Musk Duck	vu	40	13/5/19	M-H	Previously recorded on site
<i>Accipiter novaehollandiae</i>	Grey Goshawk	vu L	59	6/6/19	U	No suitable habitat
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	vu L	10	23/5/19	U	No suitable habitat
<i>Lophoictinia isura</i>	Square-tailed Kite	vu L	1	7/1/07	U	No suitable habitat
<i>Falco subniger</i>	Black Falcon	vu L	13	16/1/19	M-H	Previously recorded on site
<i>Tyto novaehollandiae</i>	Masked Owl	en L	1	22/9/79	U	No suitable habitat
<i>Neophema chrysogaster</i>	Orange-bellied Parrot	CR cr L	22	1/10/81	U	No suitable habitat



Scientific Name	Common Name	Status	Count of Sightings	Last Record	Likely Occurrence	Comments
<i>Lathamus discolor</i>	Swift Parrot	CR en L	68	14/7/19	U	No suitable habitat
<i>Hirundapus caudacutus</i>	White-throated Needletail	VU vu L	29	10/3/19	L	May occasionally flyover
<i>Calamanthus pyrrhopygius</i>	Chestnut-rumped Heathwren	vu L	10	16/5/81	U	No suitable habitat
<i>Macronectes giganteus</i>	Southern Giant-Petrel	EN vu L	19	1/9/81	U	No suitable habitat
<i>Phascolositta tapota</i>	Brush-tailed Phascogale	vu L	2	5/6/63	U	No suitable habitat
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	VU vu L	2	15/5/19	U	No suitable habitat
<i>Pseudophryne bibronii</i>	Brown Toadlet	en L	1	12/10/00	U	No suitable habitat
<i>Litoria raniformis</i>	Growling Grass Frog	VU en L	2	26/9/61	L	Potential suitable habitat in wetland communities but not recorded during targeted surveys
<i>Acrodipsas myrmecophila</i>	Small Ant Blue Butterfly	cr L	1	29/12/56	U	No suitable habitat
<i>Limosa limosa</i>	Black-tailed Godwit	vu	23	5/12/81	U	No suitable habitat
<i>Ardea alba</i>	Great Egret	vu L	127	16/3/19	U	No suitable habitat

**Notes:** Threatened species records were sourced from the VBA (DELWP 2020d), within a 5 km radius of the project area. Likelihood of occurrence: H = High likelihood; M = Moderate likelihood; L = Low likelihood; U = Unlikely to occur (Appendix 1).

EPBC Act listed species (DoEE 2020)

Cr Critically Endangered

En Endangered

V Vulnerable

FFG Act listed species (DELWP 2017)

L Listed as Threatened

DEPI listed species (DSE 2013):

cr Critically endangered

e Endangered

v Vulnerable

r Rare



# Scenario test – native vegetation removal

This report provides offset requirements for internal testing of different proposals to remove native vegetation. **This report DOES NOT support an application to remove, destroy or lop native vegetation under Clause 52.16 or 52.17 of planning schemes in Victoria.** A report must be obtained from the Department of Environment, Land, Water and Planning (DELWP).

Date of issue: 03/03/2020  
Time of issue: 11:54 am

Report ID: Scenario Testing

Project ID	DELWP_removal_Guidelines2017
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## Assessment pathway

Assessment pathway	Detailed Assessment Pathway
Extent including past and proposed	9.647 ha
Extent of past removal	0.000 ha
Extent of proposed removal	9.647 ha
No. Large trees proposed to be removed	0
Location category of proposed removal	Location 2 The native vegetation is in an area mapped as an endangered Ecological Vegetation Class (as per the statewide EVC map). Removal of less than 0.5 hectares of native vegetation in this location will not have a significant impact on any habitat for a rare or threatened species.

### 1. Location map



# Scenario test – native vegetation removal

## Offset requirements if a permit is granted

Any approval granted will include a condition to obtain an offset that meets the following requirements:

<b>General offset amount<sup>1</sup></b>	1.056 general habitat units
Vicinity	Corangamite Catchment Management Authority (CMA) or Greater Geelong City Council
Minimum strategic biodiversity value score <sup>2</sup>	0.367
Large trees	0 large trees

NB: values within tables in this document may not add to the totals shown above due to rounding

Appendix 1 includes information about the native vegetation to be removed

Appendix 2 includes information about the rare or threatened species mapped at the site.

Appendix 3 includes maps showing native vegetation to be removed and extracts of relevant species habitat importance maps

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<sup>1</sup> The general offset amount required is the sum of all general habitat units in Appendix 1.

<sup>2</sup> Minimum strategic biodiversity score is 80 per cent of the weighted average score across habitat zones where a general offset is required

# Scenario test – native vegetation removal

## Next steps

Any proposal to remove native vegetation must meet the application requirements of the Detailed Assessment Pathway and it will be assessed under the Detailed Assessment Pathway.

**This report DOES NOT support an application to remove, destroy or lop native vegetation under Clause 52.16 or 52.17 of planning schemes in Victoria.**

If you wish to remove the mapped native vegetation you must submit the related shapefiles to the Department of Environment, Land, Water and Planning (DELWP) for processing, by email to [ensymnvrtool.support@delwp.vic.gov.au](mailto:ensymnvrtool.support@delwp.vic.gov.au). DELWP will provide a *Native vegetation removal report* that is required to meet the permit application requirements in accordance with *Guidelines for the removal, destruction or lopping of native vegetation* (Guidelines).

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## Appendix 1: Description of native vegetation to be removed

The species-general offset test was applied to your proposal. This test determines if the proposed removal of native vegetation has a proportional impact on any rare or threatened species habitats above the species offset threshold. The threshold is set at 0.005 per cent of the mapped habitat value for a species. When the proportional impact is above the species offset threshold a species offset is required. This test is done for all species mapped at the site. Multiple species offsets will be required if the species offset threshold is exceeded for multiple species.

Where a zone requires species offset(s), the species habitat units for each species in that zone is calculated by the following equation in accordance with the Guidelines:

$$\text{Species habitat units} = \text{extent} \times \text{condition} \times \text{species landscape factor} \times 2, \text{ where the species landscape factor} = 0.5 + (\text{habitat importance score}/2)$$

The species offset amount(s) required is the sum of all species habitat units per zone

Where a zone does not require a species offset, the general habitat units in that zone is calculated by the following equation in accordance with the Guidelines:

$$\text{General habitat units} = \text{extent} \times \text{condition} \times \text{general landscape factor} \times 1.5, \text{ where the general landscape factor} = 0.5 + (\text{strategic biodiversity value score}/2)$$

The general offset amount required is the sum of all general habitat units per zone.

### Native vegetation to be removed

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
1-A	Patch	otp_0175	Endangered	0	no	0.100	0.290	0.290	0.100		0.024	General
2-A	Patch	otp_0175	Endangered	0	no	0.100	9.221	9.221	0.470		1.017	General
3-A	Patch	otp_0175	Endangered	0	no	0.100	0.136	0.136	0.466		0.015	General

## Appendix 2: Information about impacts to rare or threatened species' habitats on site

This table lists all rare or threatened species' habitats mapped at the site.

Species common name	Species scientific name	Species number	Conservation status	Group	Habitat impacted	% habitat value affected
Bellarine Yellow-gum	<i>Eucalyptus leucoxylon subsp. bellarinensis</i>	504891	Endangered	Dispersed	Habitat importance map	0.0004
Swamp Diuris	<i>Diuris palustris</i>	501082	Vulnerable	Dispersed	Habitat importance map	0.0003
Annual Fireweed	<i>Senecio glomeratus subsp. longifructus</i>	507144	Rare	Dispersed	Habitat importance map	0.0002
Swamp Everlasting	<i>Xerochrysum palustre</i>	503763	Vulnerable	Dispersed	Habitat importance map	0.0001
Snowy Mint-bush	<i>Prostanthera nivea var. nivea</i>	502746	Rare	Dispersed	Habitat importance map ; special site	0.0001
Wavy Swamp Wallaby-grass	<i>Amphibromus sinuatus</i>	503625	Vulnerable	Dispersed	Habitat importance map	0.0001
Paper Flower	<i>Thomasia petalocalyx</i>	503392	Rare	Dispersed	Habitat importance map	0.0001
Lax Twig-sedge	<i>Baumea laxa</i>	500378	Rare	Dispersed	Habitat importance map	0.0001
Leafy Twig-sedge	<i>Cladium procerum</i>	500786	Rare	Dispersed	Habitat importance map	0.0001
Yarra Gum	<i>Eucalyptus yarraensis</i>	501326	Rare	Dispersed	Habitat importance map	0.0001
Pale Swamp Everlasting	<i>Coronidium gunnianum</i>	504655	Vulnerable	Dispersed	Habitat importance map	0.0001
Purple Diuris	<i>Diuris punctata</i>	501084	Vulnerable	Dispersed	Habitat importance map	0.0001
Western Peppermint	<i>Eucalyptus falciformis</i>	505358	Rare	Dispersed	Habitat importance map	0.0001
Tufted Grass-tree	<i>Xanthorrhoea caespitosa</i>	505088	Rare	Dispersed	Habitat importance map	0.0000
Purple Blown-grass	<i>Lachnagrostis punicea subsp. punicea</i>	504206	Rare	Dispersed	Habitat importance map	0.0000
Lewin's Rail	<i>Lewinia pectoralis pectoralis</i>	10045	Vulnerable	Dispersed	Habitat importance map	0.0000
Velvet Daisy-bush	<i>Olearia pannosa subsp. cardiophylla</i>	502317	Vulnerable	Dispersed	Habitat importance map	0.0000
Clover Glycine	<i>Glycine latrobeana</i>	501456	Vulnerable	Dispersed	Habitat importance map	0.0000

Southern Toadlet	<i>Pseudophryne semimarmorata</i>	13125	Vulnerable	Dispersed	Habitat importance map	0.0000
Spiral Sun-orchid	<i>Thelymitra matthewsii</i>	503378	Vulnerable	Dispersed	Habitat importance map	0.0000
Grey Goshawk	<i>Accipiter novaehollandiae novaehollandiae</i>	10220	Vulnerable	Dispersed	Habitat importance map	0.0000
Salt Blown-grass	<i>Lachnagrostis robusta</i>	504223	Rare	Dispersed	Habitat importance map	0.0000
Black Falcon	<i>Falco subniger</i>	10238	Vulnerable	Dispersed	Habitat importance map	0.0000
White-throated Needletail	<i>Hirundapus caudacutus</i>	10334	Vulnerable	Dispersed	Habitat importance map	0.0000
Chestnut-rumped Heathwren	<i>Calamanthus pyrrhopygius</i>	10498	Vulnerable	Dispersed	Habitat importance map	0.0000
Australasian Bittern	<i>Botaurus poiciloptilus</i>	10197	Endangered	Dispersed	Habitat importance map	0.0000
Freckled Duck	<i>Stictonetta naevosa</i>	10214	Endangered	Dispersed	Habitat importance map	0.0000
Blue-billed Duck	<i>Oxyura australis</i>	10216	Endangered	Dispersed	Habitat importance map	0.0000
Musk Duck	<i>Biziura lobata</i>	10217	Vulnerable	Dispersed	Habitat importance map	0.0000
Baillon's Crake	<i>Porzana pusilla palustris</i>	10050	Vulnerable	Dispersed	Habitat importance map	0.0000
Australasian Shoveler	<i>Anas rhynchotis</i>	10212	Vulnerable	Dispersed	Habitat importance map	0.0000
Hardhead	<i>Aythya australis</i>	10215	Vulnerable	Dispersed	Habitat importance map	0.0000
Eastern Great Egret	<i>Ardea modesta</i>	10187	Vulnerable	Dispersed	Habitat importance map	0.0000
Intermediate Egret	<i>Ardea intermedia</i>	10186	Endangered	Dispersed	Habitat importance map	0.0000
Glossy Grass Skink	<i>Pseudemoia rawlinsoni</i>	12683	Vulnerable	Dispersed	Habitat importance map	0.0000
Powerful Owl	<i>Ninox strenua</i>	10248	Vulnerable	Dispersed	Habitat importance map	0.0000

#### Habitat group

- Highly localised habitat means there is 2000 hectares or less mapped habitat for the species
- Dispersed habitat means there is more than 2000 hectares of mapped habitat for the species

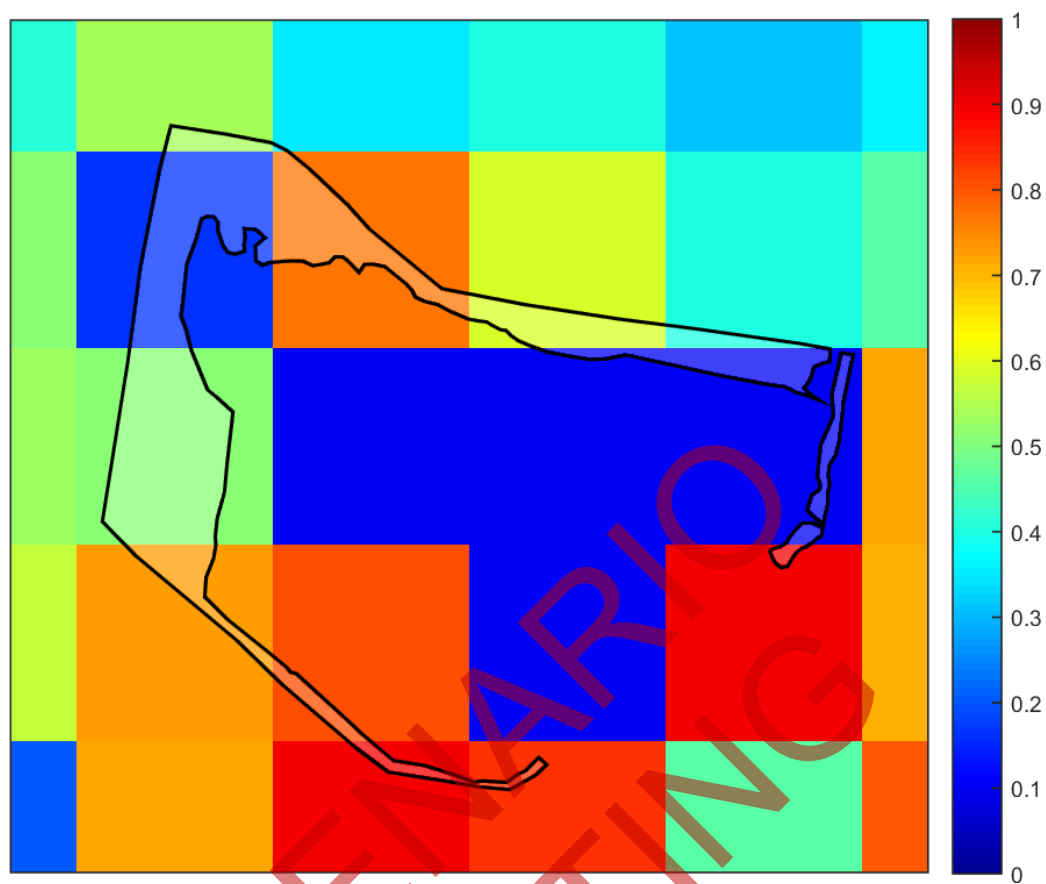
#### Habitat impacted

- Habitat importance maps are the maps defined in the Guidelines that include all the mapped habitat for a rare or threatened species
- Top ranking maps are the maps defined in the Guidelines that depict the important areas of a dispersed species habitat, developed from the highest habitat importance scores in dispersed species habitat maps and selected VBA records
- Selected VBA record is an area in Victoria that represents a large population, roosting or breeding site etc.



Appendix 3 – Images of mapped native vegetation

2. Strategic biodiversity values map



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