INDIGENOUS DESIGN
ENVIRONMENTAL MANAGEMENT

## Report for Beveridge Williams

# Native Vegetation and Fauna Assessment - South Wurruk Growth Area

**May 2021**

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## Disclaimer

## Acknowledgements

**Chris Curnow –** Principal Town Planner, Beveridge Williams

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## Version Control

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| Draft 1.1 | 31/05/2021 | First draft, first review | B. Imbery | A. Fuhrmann |
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# Contents

# 1 Introduction

## 1.1 Project Background

Indigenous Design Environmental Management has been commissioned by Beveridge Williams to undertake a native vegetation and fauna assessment to provide relevant site ecological information for a proposed development of the Wurruk South Growth Area.

The development plan designed by Beveridge Williams entails independent development of the 6 Estates within the study area and proposes to create residential Lots, active open spaces, drainage reserves, a farm zones and general reserves/park lands.

## 1.2 Objectives

The assessment scope includes a Native Vegetation and Fauna Assessment, comprising:

- Undertake a search of the Victorian Biodiversity Atlas (VBA) and the EPBC Act Protected Matters Search Tool databases to identify rare or threatened state or federally listed fauna species and potential habitat recorded within a 5km radius of the study area; and
- EVC extant mapping for the project.
- Undertake a site assessment including:
    - A complete flora list;
    - Incidental observations of fauna;
    - Map and record all native vegetation patches and complete vegetation quality assessments (one representative habitat hectare assessment completed where there are numerous patches of similar quality and condition within a section);
    - Map and record locations and diameter at breast height of all scattered and large trees in patches to accuracy of approximately <3m (<1m where possible);
    - Map and record aquatic habitats on site which may provide habitat for rare and threatened fauna species; and
    - Map and record habitat features throughout the study area such as tree hollows, logs, or other habitat characteristics which may be utilised by rare or threatened fauna.
- Prepare a report including:
    - Full flora list and list of incidental fauna observations;
    - Description of the extent and type of existing native vegetation and fauna habitats across the study area;
    - Assessment of the potential impact of the project on identified fauna;
    - Description of vegetation, fauna and habitat types (EVC's) across the study area and the conservation significance of fauna species and vegetation types present;
    - Identify the likely implications of the project on rare and threatened fauna against any relevant guides, legislation, standards or acts at both a both a state and federal level;

- Provide recommendations for the application of any avoidance and minimisation principles to the removal of native vegetation for the proposal;
- Provide detailed native vegetation 'clearing' information as required under Victoria's 'Clearing Guidelines' to support the planning permit application. Required information includes identification of the projects offset requirements and a description of the offset 'strategy' to achieve the offset requirements; and
- Provide detailed scale maps with aerial photo base maps showing location and extent of identified native vegetation or potential habitat for rare and threatened fauna.
- Provide recommendations for additional targeted survey requirement for rare and threatened fauna species.

## 1.3 Site Details

The study area (*Figure 1*) is located approximately 5 kilometres from the township of Sale and is approximately 200 kilometres east of Melbourne, Victoria. It is situated within the Wellington Shire and West Gippsland Catchment Management Authority regions. The study area lies within the Gippsland Plains Bioregion.

The study area is made up of eight property parcels, all private land, which mostly comprises farming/grazing activities of the privately run historical Kilmany Park Estate and surrounding private grounds. Agriculture is the predominate land use surrounding the study area with new estate developments occurring along the northwest and northeast boundaries of the site.

The Sale Common Nature Conservation Reserve is located 4km east of the study area which holds approximately 300 hectares of contiguous native bushland. The Reserve lies adjacent to the Thomson River and the Latrobe River, which are located approximately 1km north and 2km south respectively of the study area, and hold large tracts of intact riparian vegetation. Native vegetation is scare to the wider west, south and north of the study area with large scale agriculture common across the wider region.

*Table 1* lists the address and property identification information for all properties contained within the study area. Property reports are attached as *Appendix 1*.

*Table 1: Study Area Property Details*

| Lot/Plan or Crown Description |
|---|
| Lot 6 PS702630 |
| Lot 7 PS702630 |
| Lot 1 PS410216 |
| CA21, Section E, Parish of Wurruk Wurruk |
| Lot 2 PS610634 |
| CA19, Section E, Parish of Wurruk Wurruk |
| Lot 1 PS415183 |
| Lot 2 PS415183 |

The site is subject to the following planning zones and overlays:

**Planning Zones**

General Residential Zone (GRZ1)
Farm Zone (FZ)

**Planning Overlays**

Design and Development Overlay - Schedule 1, 6, 9 (DD01), (DD06), (DD09)
(DELWP, 2021a)

## Topographic and Land Information

*Table 2: Site- Topographic and land information description*

| Item | Description |
|---|---|
| The role of native vegetation in protecting water quality and waterway and riparian ecosystems. | Four drainage lines/channels are found across the site from the south-east corner up to the northern and central region. All drainage lines have been heavily modified across most of their length and retain a low coverage of native rushes, sedges and small herbaceous species but overall the vegetation condition is poor.<br>Three man-made farm dams are located within the study area. Two of the dams hold minimal native vegetation and have banks that have been heavily affected by cattle access. One small dam in the central south of the study area has a moderate coverage of native graminoids and herbs.<br>Located in the eastern corner is the southern margins of a tributary of the Thomson River which hold a high cover of native rushes, sedges and herbaceous species. |
| Waterways, wetlands or special water supply catchments located within 30 metres of site. | As described above, the tributary located in the eastern corner of the study area forms a connection to the Thomson River, located approximately 600m north-east of the study area. |
| Ridges, crests or hilltops or slopes greater than 20%. Areas of existing erosion. | At its highest point, the study area sits at around 20m above sea level (asl) and falls away gently to the south to an altitude of around 5m asl at its southern end.<br>The average slope gradient across the study area is around 5% with no area having a slope gradient greater than 10%.<br>No locations of significant erosion are found within the study area. |
| Low-lying areas, saline discharge areas or groundwater recharge areas. | The south-eastern corner holds a low-lying area that retains a damp depression. |
| Landscape values | No vegetation within the site forms connections with wider vegetation or habitat corridors, however the tributary mentioned above has a minimal connection of riparian vegetation, albeit scattered and somewhat fragmented by one roadway, which connects with the Thomson River.<br>Overall there are no connections to larger areas of core habitat. |

### Additional Encumbrances

The study area is contained within a mapped area of 'cultural heritage sensitivity'. This report does not consider any potential impacts of proposed development under the *Aboriginal Cultural Heritage Act* 2006 (Aboriginal Victoria, 2021).

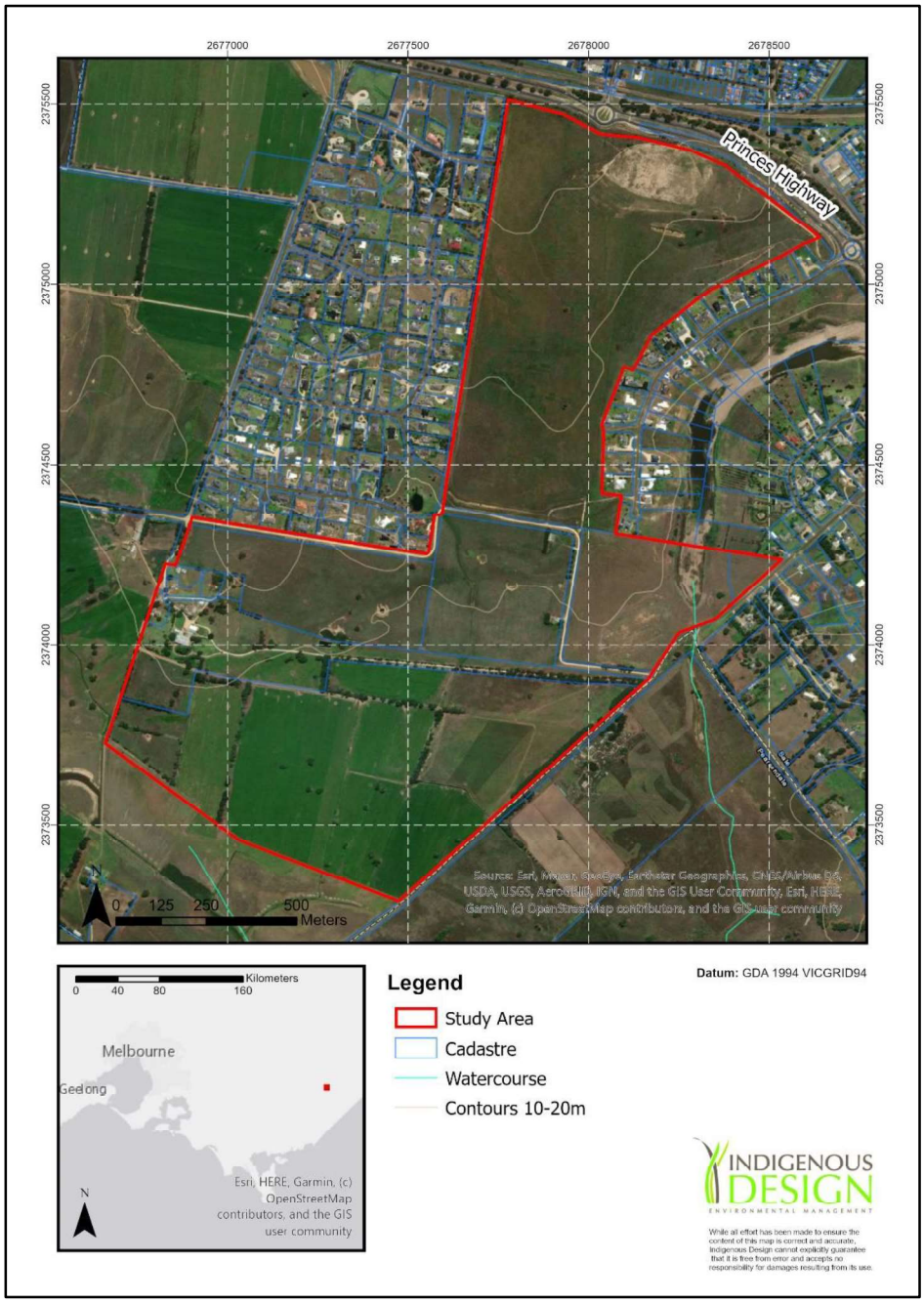


*Figure 1: Study area*

# 2 Description of Methods

## 2.1 Data and Literature Review

The DELWP's *Nature Kit* (DELWP, 2020b) was used to gain the following information:

- An insight into the overall distribution of native vegetation on the site and the EVC to which any remnant vegetation may belong;
- The 'landscape context score' applicable to a particular habitat zone; and
- Guidance on the strategic biodiversity and habitat importance scores of vegetation located on-site.

Prior to field assessments the following resources were used to determine if any taxa listed or protected under the Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act), or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) have been, or potentially could be, located at the site:

- DELWP's *Victorian Biodiversity Atlas* (VBA) (DELWP, 2020d); and
- The Commonwealth's Protected Matters Search Tool (PMST) (DAWE, 2021).

A search radius of five kilometres around the site was used for these databases.

As per the Victorian fauna advisory list, the term 'threatened' only applies to fauna taxa that are classified as vulnerable, endangered, critically endangered, or extinct in the wild. Taxa that are classified as extinct, data deficient or near threatened are not considered to be threatened (DSE, 2013).

## 2.2 Field Survey

An Autumn survey of the study area was undertaken in May and was completed by:

Antares Fuhrmann - BSc. (Earth Science), DELWP accredited native vegetation assessor, 8 years' experience in environmental consultancy and flora and fauna assessments and Tim Bowler - BSc. (Environmental Management), DELWP accredited native vegetation assessor, 8 years' experience in environmental consultancy and flora and fauna assessments

The survey included:

- Recording all flora present. Flora species were recorded following the species nomenclature requirements of the VBA;
- Identification and recording of any flora and fauna communities including rare, threatened, protected species / communities or habitat;
- Recording and tabulating all data on native vegetation, trees within patches and scattered trees in accordance DELWP requirements;

- Completing a fauna assessment that included the opportunistic observation of scats, footprints, diggings, burrows, tracks, incidental bird and other fauna observations and listening for frog and bird calls;
- Identifying and recording notes on any habitat features including vegetation type and structure, proximity to water, the presence of hollow bearing trees and stags, logs and other ground debris. The surrounding landscape was also observed and notes taken with reference to its habitat provision, intactness of native vegetation and connectivity with the study site;
- Mapping and recording all native vegetation patches and complete vegetation quality assessments (one representative habitat hectare assessment completed where there are numerous patches of similar quality and condition within a section); and
- Mapping and recording locations and diameter at breast height of all scattered and large trees in patches to accuracy of approximately <3m (<1m where possible).

GPS (GPS) mapping (+/- 3m) was completed using the ArcGIS Collector application and an Android handheld device. The mapping included:

- Walking and recording the outer extent of all native patches, flora and fauna communities and habitat;
- Recording locations of all scattered trees and large trees within native patches; and
- Recording the location of any rare, threatened or protected flora species.

### 2.2.1 Vegetation Assessment

Prior to the field survey, the DELWP modelling of Ecological Vegetation Classes on NatureKit (DELWP, 2020b) was examined. Onsite, EVC distribution across the site was assigned based on the site's position in the wider landscape, landform, soils and floristic composition in comparison to the DELWP benchmarks for each EVC.

Native vegetation is defined in the Victoria Planning Provisions (Definitions – Clause 72) as *'plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses'*. DELWPs *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017) (the Guidelines) further defines native vegetation into two categories: 'remnant patches' and 'scattered trees' outlined below:

A 'remnant patch' of native vegetation is either:

- An area of vegetation where at least 25% of the total perennial understorey plant cover is native;
- Any area with three or more native canopy trees where the drip line 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, available in DELWP systems and tools.

A 'scattered tree' is:

- A native canopy tree that does not form part of a remnant patch.

(DELWP, 2017)

Following these definitions, all native vegetation on site was categorised as either 'remnant patches' or 'scattered trees'.

Remnant patches were further categorised into EVCs and furthermore into habitat zones. These areas were GPS mapped and assessed using the habitat hectare method described by DSE (2004) in the *Vegetation Quality Assessment Manual – Guidelines for applying the habitat hectares scoring method - Version 1.3.*

Any scattered trees on site were identified, GPS mapped and had their diameter at breast height (DBH) recorded. Under the Guidelines (DELWP, 2017) large trees in patches are accounted for in the overall condition score of remnant patches, whilst the value of scattered trees are assigned a default area and condition score.

#### *2.2.1.1 Rare and threatened Species Impacts*

Under the Guidelines (DELWP, 2017) the presence of individuals or potential habitat for rare or threatened flora and fauna is assessed through the use of modelled data. Any threatened species habitat deemed to be affected by the modelling is accounted for in the specific offset requirements for the project and provided in a *Native Vegetation Removal* (NVR) report generated by DELWP.

### 2.2.2 Fauna Habitat Assessment

All fauna species encountered incidentally during the field survey were recorded, however, no targeted fauna surveys were undertaken. A broad fauna habitat assessment was undertaken during the field survey that focused on identifying areas of potential habitat for any rare or threatened fauna species identified in database searches as having potential to utilise the site. The focus of this habitat assessment was to inform any recommendations to undertake further targeted surveys.

## 2.3 Determination of Native Vegetation Losses

#### Marking the Extent of Native Vegetation Losses

- For Scattered Trees deemed lost:
    - A 10 meter buffer is applied to small size class trees and a circular polygon is marked.
    - A 15 meter buffer is applied to large size class trees and a circular polygon is marked.
- For large canopy trees within patches deemed lost:
    - The outer canopy extent of the tree is marked as being a loss of that part of the patch.
    - The full extent of a remnant patch contained within the construction footprint / limit of works is marked as lost.

#### Tree Protection Zones

The DELWP defines a Tree Protection Zone as an area around the trunk of the tree which has a radius of 12× the DBH to a maximum of 15 metres but no less than 2 metres. Dead trees should be protected with a radius of 15 metres from the base. Any works affecting more than 10% of this area are considered to equate to a loss of the tree unless a qualified arborist can confirm that no significant damage will be caused (DELWP, 2018).

## 2.4 Definitions of Significance

The significance of a species or ecological community described in this report follows its listing status under Commonwealth or State legislation.

- **National** significance includes all species listed as critically endangered, endangered or vulnerable under the EPBC Act; and
- **State** Listed as critically endangered, endangered or vulnerable on the DELWP Advisory lists (DELWP, 2009) (DELWP, 2013) (DELWP, 2014) or Listed as threatened under the FFG Act.

## 2.5 Likelihood of Occurrence

In determining the likelihood of presence of a listed species a likelihood rating of present, high, moderate, low or unlikely is assigned. This rating is based on consideration of the following factors:

- Was the species recorded on site or has it been previously recorded on the site;
- Is there likely to be a resident population within the local area (5km radius);
- Is suitable habitat present on site or is habitat modified but aspects of suitable habitat present;
- Is it possible the species may seasonally or opportunistically use resources within the local area; and
- Are there any records for the species within the local area within the last 5, 10 or 25 years.

*Table 3 - Likelihood of occurrence determination*

| Likelihood | Comments |
|---|---|
| **Present** | Species has been confirmed as present on site during field work |
| **High** | Suitable habitat present on site |
| | Likely to be a resident population/s in the local area* |
| | Previously recorded on site |
| | Numerous records within the local area within the past 5 years |
| **Moderate** | Aspects of habitat present but may be modified |
| | Species may be resident in the local area or it forms part of the species' range |
| | May seasonally or opportunistically use resources within the local area |
| | Less than 10 year old records within local area |
| **Low** | Limited aspects of habitat present or habitat highly modified |
| | Species may occur rarely or as an opportunistic visitor in the area |
| | Few records within the local area within the past 25 years |
| **Unlikely** | No suitable habitat present |
| | Site is located outside of species natural range |
| | Considered locally extinct |
| | No records of the species within the local area in the last 25 years |

## 2.6 Legislation and Policy

Any biodiversity related implications for the project were assessed against the following biodiversity legislation and policy:

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) including related listing advice, recovery plans and criteria in the significant impact guidelines;
- *Flora and Fauna Guarantee Act 1988* (FFG Act) including related action statements and listing advice;
- *Planning and Environment Act 1987* including Clause 52.17 and any overlays applicable to the study area under the Baw Baw Shire Planning Scheme;
- The DELWP's Guidelines for the removal, destruction or lopping of native vegetation (DELWP, 2017);
- *Catchment and Land Protection Act 1994* (CaLP Act) including noxious weed and pest animal listings;
- *Water Act 1989*;
- *Wildlife Act 1979*; and
- *Environmental Effects Act 1987*.

## 2.7 Limitations

The assessment was undertaken in May 2021. It is, therefore, possible that some annual, deciduous or dormant taxa may not have been visible. Additionally, some taxa have not been identified to specific or infraspecific rank due to the absence of flowering, or other material typically used for identification.

# 3 Ecological Values

## 3.1 Vegetation

Vegetation across the site is typically scattered *Eucalyptus camaldulensis* (River Red Gum) canopy trees over an absent midstory. The ground layer is dominated by exotic grasses such as *Anthoxanthum odoratum* (Sweet Vernal Grass) and *Bromus catharticus* (Prairie Grass), alongside scattered native grasses. *Microlaena stipoides var. stipoides* (Weeping Grass) is the most common native grass species present, forming large swathes in the south west region amongst the grazing land.

Native riparian vegetation persists along the depressions and drainage lines, mainly consisting of native sedges and small herbs alongside the occasional emergent Eucalypt.

### 3.1.1 Ecological Vegetation Classes

EVC's are a type of vegetation classification which aims to group plant communities according to common flora species, vegetation structure and common environmental factors such as elevation, soils and average rainfall.

EVC 55: *Plains Grassy Woodland* is shown covering most of the site in the DELWP's pre-1750 EVC modelling alongside two small bands of EVC 681: *Deep Freshwater Marsh* which covers waterbodies along the southern boundary and a small section along the north east boundary. (DELWP, 2020b).

Extant EVC mapping (DELWP, 2020b) shows a significantly reduced coverage of EVC 55: *Plains Grassy Woodland* remaining, with scattered small pockets remaining across the study area. Small Fragmented patches of EVC 681: *Deep Freshwater Marsh* remain but the overall coverage has been reduced.

The assignment of EVCs within the study area closely aligns with the DELWP modelling of EVC distribution within the study area. Key EVC determinations include:

- EVC 55: *Plains Grassy Woodland* was found to be the most appropriate EVC to assign across approximately 95% of the site, consistent with the DELWP EVC modelling.
- EVC 56: *Floodplain Riparian Woodland* was assigned to two locations within the site mapped by DELWP as EVC 681: *Deep Freshwater Marsh*. The landform, position in the landscape and remnant flora at this location were all more indicative of the presence of EVC 56: *Floodplain Riparian Woodland*.

*Figure 2* displays the distribution of EVCs within the study area and *Table 4* details the Bioregional Conservation Status of the EVCs present (DELWP, 2020c).

*Table 4: Bioregional conservation status of assigned Ecological Vegetation Classes*

| Bioregion | Ecological Vegetation Class | Bioregional Conservation Significance |
|---|---|---|
| Gippsland Plains | EVC 55: Plains Grassy Woodland | Endangered |
| | EVC 56: Floodplain Riparian Woodland | Endangered |

The DELWP Benchmark for *Plains Grassy Woodland* describes the EVC as:

> *'An open, eucalypt woodland to 15m tall occurring on a number of geologies and soil types. Occupies poorly drained, fertile soils on flat or gently undulating plains at low elevations. The understory consists of a few sparse shrubs over a species rich grassy and herbaceous ground layer.* (DELWP, 2020c)

The DELWP Benchmark for *Floodplain Riparian Woodland* describes the EVC as:

> *'An open eucalypt woodland to 20m tall over a medium to tall shrub layer with a ground layer consisting of amphibious and aquatic herbs and sedges. Occurs along banks and floodplains of the larger meandering rivers and major creeks, often in conjunction with one or more floodplain communities. Elevation and rainfall are relatively low and soils are fertile alluviums subject to periodic flooding and inundation.* (DELWP, 2020c)

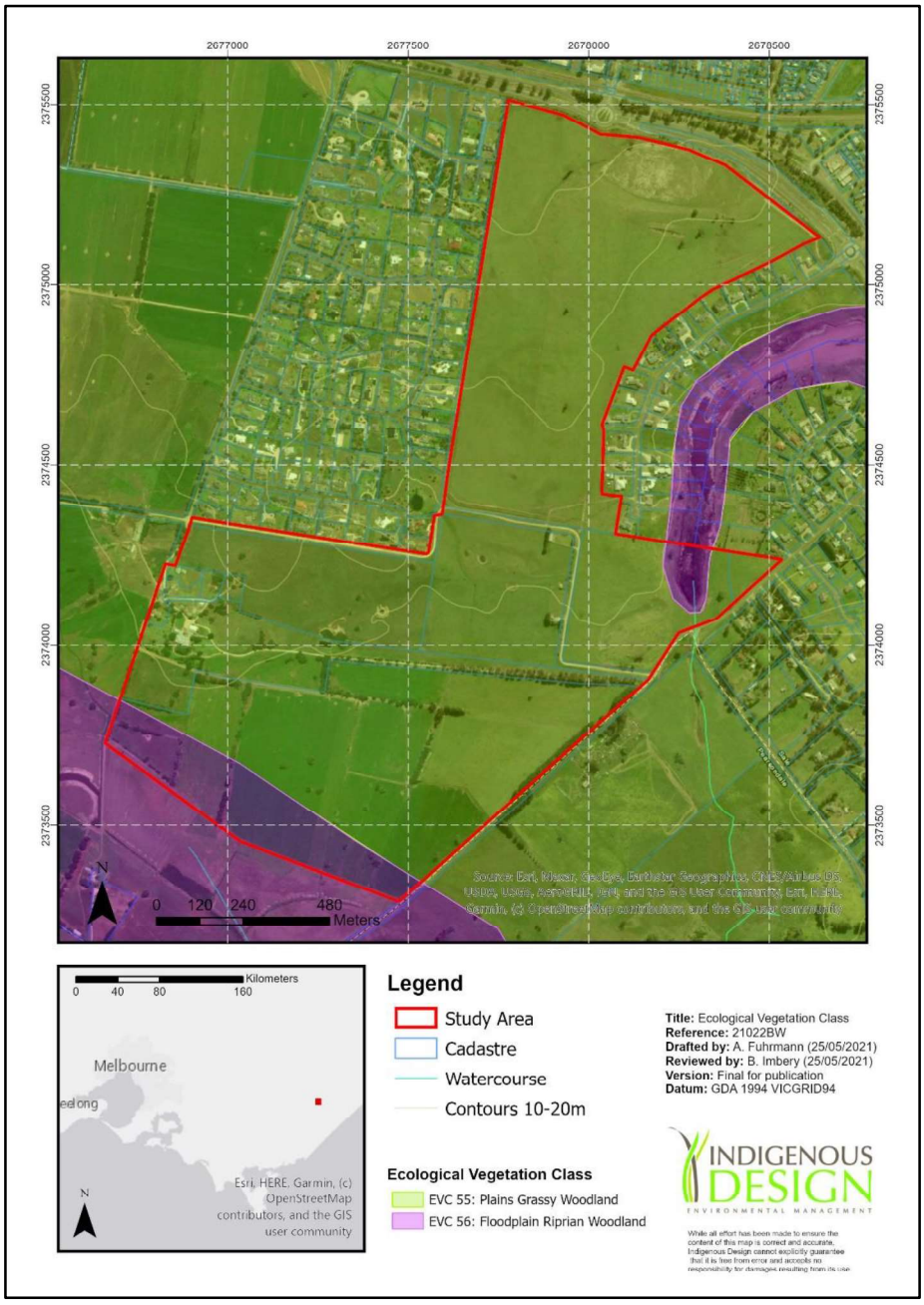


*Figure 2: Distribution of assigned Ecological Vegetation Classes within the Study Area*

### 3.1.2 Vegetation Quality Assessment

#### *3.1.2.1 Native Patches- Habitat Zones*

The vegetation quality assessment identified and mapped native vegetation patches of varying quality that covered approximately 4.773 hectares of the approximate 182 hectare study area. Six patches were assigned to *EVC 55: Plains Grassy Woodland* and one to *EVC 56: Floodplain Riparian Woodland*, with the assigned categorised into seven habitat zones. A habitat hectare assessment was undertaken

against the EVC benchmarks for each habitat zone. All habitat zones form a single discrete area of native patch and the assessment recorded log levels, large trees, woody species recruitment, organic litter, weed cover etc. across the entirety of the zone.

The results of these assessments are provided in *Table 5*, along with the score attributed to each of the site condition components for each habitat zone, including landscape factors. *Appendix 2* provides the vegetation quality assessment scoresheets for each habitat zone and *Appendix 3* provides a full list of all flora species recorded in each zone. Descriptions of the vegetation within each zone is provided below.

*Map 1* displays the location and extent of all native patches mapped within the study area.

*Table 5: Results of Vegetation Quality Assessments for Native Patch- Habitat Zones*

| | | | Habitat Zone 1 | Habitat Zone 2 | Habitat Zone 3 | Habitat Zone 4 | Habitat Zone 5 | Habitat Zone 6 | Habitat Zone 7 |
|---|---|---|---|---|---|---|---|---|---|
| **Bioregion** | | | **Gippsland Plain** | **Gippsland Plain** | **Gippsland Plain** | **Gippsland Plain** | **Gippsland Plain** | **Gippsland Plain** | **Gippsland Plain** |
| **EVC Name (initials)** | | | **PGW** | **PGW** | **PGW** | **PGW** | **PGW** | **PGW** | **FRP** |
| **EVC Number** | | | **55** | **55** | **55** | **55** | **55** | **55** | **56** |
| **Bioregional Conservation Status** | | | **Endangered** | **Endangered** | **Endangered** | **Endangered** | **Endangered** | **Endangered** | **Endangered** |
| | | **Max Score** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |
| Site Condition | Large Old Trees | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Canopy Cover | 5 | 0 | 0 | 0 | 0 | 0 | 4 | 0 |
| | Understorey | 25 | 5 | 5 | 5 | 5 | 5 | 5 | 15 |
| | Lack of Weeds | 15 | 0 | 0 | 4 | 4 | 7 | 0 | 4 |
| | Recruitment | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| | Organic Matter | 5 | 5 | 5 | 5 | 5 | 5 | 2 | 0 |
| | Logs | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | **Total Site Score** | 75 | **10** | **10** | **14** | **14** | **17** | **11** | **24** |
| | Site score out of? | eg 55 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| | **Adjusted Site Score** | | **10** | **10** | **14** | **14** | **17** | **11** | **24** |
| Landscape value | Patch Size | 10 | 2 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Neighbourhood | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Distance to Core | 5 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| **Habitat points out of 100** | | **100** | **14** | **13** | **17** | **17** | **20** | **14** | **27** |
| **Habitat Score (hab points/100)** | | | **0.14** | **0.13** | **0.17** | **0.17** | **0.2** | **0.14** | **0.27** |
| **Total area of the Zone (ha)** | | | 2.7464 | 0.0535 | 0.0952 | 0.4532 | 0.0923 | 0.0150 | 1.2800 |
| **Total HHA in the zone** | | | **0.3845** | **0.0070** | **0.0162** | **0.0771** | **0.0185** | **0.0021** | **0.3456** |
| **Catchment** | | | **West Gippsland Catchment Management Authority (CMA)** | | | | | | |

### EVC 55: Plains Grassy Woodland – Habitat Zones 1, 2, 3 and 4

All flora species recorded in these zones are listed in *Appendix 3*.

These zones are all very similar in their vegetation structure, quality and degree of disturbance and all received a very similar habitat score of 13, 14 or 17 points out of 100 (0.13), (0.14) or (0.17).

All zones lack any woody overstory component and are characterised by the presence of native grasses and herbs. All zones are located within the modelled extent of EVC 55: *Plains Grassy Woodland* and have been assigned to this EVC.

*Microlaena stipoides var. stipoides* (Weeping Grass) and *Rytidosperma racemosum var. racemosum* (Slender Wallaby-grass) form the main coverage of native species in each zone, with scatterings of other native grasses including *Poa labillardierei* (Common Tussock-grass) and *Rytidosperma caespitosum* (Common Wallaby-grass).

Overall weed cover was moderate with typical weed species including the broadleaf weeds *Arctotheca calendula* (Cape Weed) and *Chenopodium album* (Fat Hen) while other more environmentally threatening weeds recorded within the zones include *Lycium ferocissimum* (African Boxthorn) and *Cirsium vulgare* (Spear Thistle).

These zones scored poorly overall for their landscape values and the generally high level of clearing for agriculture across the wider surrounds of the study area.

*Figure 3* provides an example of native patch vegetation typical to Habitat Zone 1, 2, 3 and 4.

*Figure 3: Example of typical EVC 55: Plains Grassy Woodland- Habitat Zone 1*

### EVC 55: Plains Grassy Woodland – Habitat Zone 5

All flora species recorded in this zone are listed in *Appendix 3*. The zone is a moderate quality remnant of EVC 55: *Plains Grassy Woodland* vegetation.

The vegetation quality assessment of the zone assigned an overall score of 20 points out of 100 (0.20), indicative of the reasonable coverage and diversity of native herbs and graminoids and the moderate overall level of understorey and ground layer disturbance.

The zone received a poor score for large trees due to no specimens being present, nor were any immature canopy specimens present. The zone also received a low range score for its understorey and woody species recruitment, which was reflective of the absence of any native shrubs.

The understory is dominated by small herbs and graminoids including *Bolboschoenus caldwellii* (Salt Club-sedge) *Phragmites australis* (Common Reed) and *Triglochin procera s.l.* (Water Ribbons) while typical waterway weeds such as *Symphyotrichum subulatum* (Aster-weed) are common.

The zone scored poorly overall for its landscape values reflecting its relatively small patch size and the generally high level of clearing for agriculture across the wider surrounds of the study area.

*Figure 4* provides an example of native patch vegetation typical to Habitat Zone 5.

*Figure 4: Example of typical EVC 55: Plains Grassy Woodland- Habitat Zone 5*

### EVC 55: Plains Grassy Woodland – Habitat Zone 6

All flora species recorded in this zone are listed in *Appendix 3*. The zone is a low-quality remnant of EVC 55: *Plains Grassy Woodland* vegetation and has a highly disturbed understorey.

The vegetation quality assessment of the zone assigned an overall score of 14 points out of 100 (0.14), indicative of the low coverage and diversity of native trees and shrubs and the low overall level of understorey and ground layer diversity.

The zone received a moderate range score for its understorey and woody species recruitment that was reflective of the reasonable recruitment levels of *Eucalyptus camaldulensis* (River Red Gum).

The dominance of exotic herbaceous and woody weeds across the ground layer and the high proportion of high threat weeds was reflected in the poor score assigned for the 'lack of weeds' component. Common weeds present in the zone include the exotic grasses *Cynodon dactylon var. dactylon* (Couch) and *Dactylis glomerata* (Cocksfoot) and woody weeds *Lycium ferocissimum* (African Box-thorn) and *Rubus fruticosus spp. agg.* (Blackberry), with only minor occurrences of native grasses *Austrostipa rudis* (Veined Spear-grass) and *Rytidosperma caespitosum* (Common Wallaby-grass).

The zone scored poorly overall for its landscape values reflecting its relatively small patch size and the generally high level of clearing for agriculture across the wider surrounds of the study area.

*Figure 5* provides an example of native patch vegetation typical to Habitat Zone 6.

*Figure 5: Example of typical EVC 55: Plains Grassy Woodland- Habitat Zone 6*

### EVC 56: Floodplain Riparian Woodland – Habitat Zone 7

All flora species recorded in this zone are listed in *Appendix 3*. The zone is a moderate quality remnant of EVC 56: *Floodplain Riparian Woodland* vegetation and has a relatively intact ground storey.

This zone forms habitat connections with the vegetated riparian corridor of the Thomson River which lies to the east of the study area.

The vegetation quality assessment of the zone assigned an overall score of 27 points out of 100 (0.27), indicative of the reasonable coverage and diversity of herbs and graminoids and the low overall level of understorey and ground layer disturbance. Species including *Eleocharis acuta* (Common Spike-sedge), *Typha spp.* (Bulrush) and *Schoenoplectus tabernaemontani* (River Club-sedge) where recorded throughout the main waterbody and surrounding banksides.

Common weeds recorded included Spear Thistle and African Boxthorn which were scattered throughout the riparian vegetation, concentrated along the eastern bankside.

The zone scored poorly overall for its landscape values reflecting the generally high level of clearing for agriculture across the wider surrounds of the study area.

*Figure 6* provides an example of native patch vegetation typical to Habitat Zone 7.

*Figure 6: Example of typical EVC 56: Floodplain Riparian Woodland- Habitat Zone 7*

### 3.1.3 Native Trees

*Map 1* shows the locations of all native trees which meet the definition of a 'large tree' (LT) under the relevant EVC benchmark (LT size benchmark for both assigned EVC's is 80cm DBH). The species, size and size class category of each tree is detailed in *Table 6*. Tree ID numbers listed in *Table 6* correspond with those shown in *Map 1* and are taken from *'Vegetation Assessment for Rezoning Application – Wurruk.' Ethos NRM Report, June 2014 – Appendix 3: Scattered Tree Measurements and Location.* (Ethos NRM, 2014)

Tree Numbers 45-49 follow on from the identification numbers in Appendix 3 of the Ethos report.

*Table 6: Scattered and large old tree information*

| Tree ID No | Botanical Name | Common Name | Origin | Diameter at Breast Height (cm) | Type | Size Category |
|---|---|---|---|---|---|---|
| 1 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 136 | Scattered Tree | Large |
| 2 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 85 | Scattered Tree | Large |
| 3 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 110 | Scattered Tree | Large |
| 4 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 110 | Scattered Tree | Large |
| 5 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 35 | Scattered Tree | Small |
| 6 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 15 | ST in Patch | Small |
| 7 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 20 | ST in Patch | Small |
| 8 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 18 | ST in Patch | Small |
| 9 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 15 | ST in Patch | Small |
| 10 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 26 | ST in Patch | Small |
| 11 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 84 | Scattered Tree | Large |
| 12 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 116 | Scattered Tree | Large |
| 13 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 75 | Scattered Tree | Small |
| 14 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 127 | Scattered Tree | Large |
| 15 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 102 | Scattered Tree | Large |
| 16 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 102 | Scattered Tree | Large |
| 17 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 135 | Scattered Tree | Large |
| 18 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 133 | Scattered Tree | Large |
| 19 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 90 | Scattered Tree | Large |
| 20 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 48 | Scattered Tree | Small |
| 21 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 26 | Scattered Tree | Small |
| 22 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 91 | Scattered Tree | Large |
| 23 | Eucalyptus botryoides | Southern Mahogany | Victorian Native | 78 | Scattered Tree | Small |
| 24 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 151 | Scattered Tree | Large |
| 25 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 106 | Scattered Tree | Large |
| 26 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 166 | Scattered Tree | Large |
| 27 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 158 | Scattered Tree | Large |
| 28 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 138 | Scattered Tree | Large |
| 29 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 136 | Scattered Tree | Large |
| 30 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 73 | Scattered Tree | Small |

| Tree ID No | Botanical Name | Common Name | Origin | Diameter at Breast Height (cm) | Type | Size Category |
|---|---|---|---|---|---|---|
| 31 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 129 | Scattered Tree | Large |
| 32 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 119 | Scattered Tree | Large |
| 33 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 120 | Scattered Tree | Large |
| 34 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 126 | Scattered Tree | Large |
| 35 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 129 | Scattered Tree | Large |
| 36 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 105 | Scattered Tree | Large |
| 37 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 91 | Scattered Tree | Large |
| 38 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 88 | Scattered Tree | Large |
| 39 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 96 | Scattered Tree | Large |
| 40 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 105 | Scattered Tree | Large |
| 41 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 94 | Scattered Tree | Large |
| 42 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 73 | Scattered Tree | Small |
| 43 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 150 | Scattered Tree | Large |
| 44 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 138 | Scattered Tree | Large |
| 45 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 141 | Scattered Tree | Large |
| 46 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 146 | Scattered Tree | Large |
| 47 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 84 | Scattered Tree | Large |
| 48 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 25 | Scattered Tree | Small |
| 49 | Eucalyptus camaldulensis | River Red Gum | Locally Native | 60 | Scattered Tree | Small |

### 3.1.4 Significant Vegetation Communities

Two threatened ecological community, listed as Critically Endangered under the *EPBC Act,* were identified in database searches within a five kilometre radius of the study area;

- Gippsland Red Gum (Eucalyptus tereticornis subsp. Mediana) Grassy Woodland and Associated Native Grassland; and
- Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains

Following appropriate consideration these communities were found to be not present within the study area.

## 3.2 Flora Species

### 3.2.1 Flora Species Recorded

A total of 95 vascular plants were found to occur on site during site assessments. Of these, 38 are considered to be taxa native to Victoria. *Appendix 3* displays the results of the flora survey.

### 3.2.2 Significant Flora Species

No significant flora species were identified within the study area during the site inspection.

## 3.3 Fauna Species

### 3.3.1 Fauna Species Recorded

A total of 36 fauna species were found to occur on site during the site assessment. Of these, 32 were considered taxa native to Victoria. *Appendix 5* displays the results of the fauna survey.

### 3.3.2 Significant Fauna Species

No significant fauna species were detected within the study area during the site inspection.

The PMST (DAWE, 2021) was used to query a five kilometre radius of the study area and identified the possible presence of 30 significant fauna species, comprised of the following:

- 22 bird species;
- 3 amphibian species;
- 3 mammal species; and
- 2 fish species.

The VBA (DELWP, 2020d) was used to query a five kilometre radius of the study area and identified existing records for the following additional 37 state significant fauna species:

- 28 bird species;
- 3 amphibian species;
- 4 mammal species; and
- 2 fish species.

*Appendix 4* lists the results of the fauna database searches using the PMST (DAWE, 2021) and the VBA (DELWP, 2020d) within a five kilometre radius of the study area. *Appendix 6* provides an assessment of the likelihood of occurrence of these fauna species within the study area.

In summary, the field survey and likelihood assessment found:

- *Anseranas semipalmata* (Magpie Goose) listed as Near Threatened on the DELWP advisory list, was determined to have a **low** likelihood of occurrence within the study area. It is considered unlikely to be more than an occasional visitor to the study area.
- *Ardea alba* (Great Egret) listed as Vulnerable on the DELWP advisory list, was determined to have **low** likelihood of occurrence within the study area. It is considered unlikely to be more than an occasional visitor to the study area.
- *Ardea plumifera* (Plumed Egret) listed as Endangered on the DELWP advisory list, was determined to have **low** likelihood of occurrence within the study area. It is considered unlikely to be more than an occasional visitor to the study area.
- *Botaurus poiciloptilus* (Australasian Bittern) listed as Endangered on the DELWP advisory list and Endangered on the federal EPBC list, was determined to have a **low** likelihood of occurrence within the study area. It is considered a possible occasional visitor to the study area.
- *Chlidonias hybridus* (Whiskered Tern) listed as Near Threatened on the DELWP advisory list, was determined to have a **low** likelihood of occurrence within the study area. It is considered a possible occasional visitor to the study area.
- *Gallinago hardwickii* (Latham's Snipe) listed as Near Threatened on the DELWP advisory list and Threatened on the federal EPBC list, was determined to have a **low** likelihood of occurrence within the study area. It is considered a possible occasional visitor to the study area.
- *Haliaetus leucogaster* (White-bellied Sea-Eagle) listed as Vulnerable on the DELWP advisory list, was determined to have a **low** likelihood of occurrence within the study area. It is considered a possible occasional visitor to the study area.
- *Nycticorax caledonicus* (Nankeen Night Heron) listed as Near Threatened on the DELWP advisory list, was determined to have a **low** likelihood of occurrence within the study area. It is considered a possible occasional visitor to the study area.
- *Platalea regia* (Royal Spoonbill) listed as Near Threatened on the DELWP advisory list, was determined to have a **low** likelihood of occurrence within the study area. It is considered a possible occasional visitor to the study area.
- *Plegadis falcinellus* (Glossy Ibis) listed as Near Threatened on the DELWP advisory list, was determined to have a **low** likelihood of occurrence within the study area. It is considered a possible occasional visitor to the study area.
- *Stictonetta naevosa* (Freckled Duck) listed as Endangered on the DELWP advisory list and Endangered on the federal EPBC list, was determined to have a **low** likelihood of occurrence within the study area. It is considered a possible occasional visitor to the study area.
- *Chelodina longicollis* (Eastern Snake-necked Turtle) listed as Data Deficient on the DELWP advisory list, was determined to have a **low** likelihood of occurrence within the study area. It is considered a possible occasional visitor to the study area.

- *Litoria aurea* (Green and Golden Bell Frog) listed as Vulnerable on the DELWP advisory list and Vulnerable on the federal EPBC list, was determined to have a **moderate** likelihood of occurrence within the study area. Species may be a resident in the local area or it forms part of the species' range
- *Galaxiella pusilla* (Dwarf Galaxias) listed as Endangered in the DELWP advisory list and Vulnerable on the federal EPBC list, was determined to have a **moderate** likelihood of occurrence within the study area. Species may be a resident in the local area or it forms part of the species' range
- *Nannoperca sp. 1* (Flinders Pygmy Perch) listed as Vulnerable in the DELWP advisory list, was determined to have a **moderate** likelihood of occurrence within the study area. Species may be a resident in the local area or it forms part of the species' range
- All other rare or threatened fauna species identified in the database searches were unlikely to occur within the study area.

## 3.4 Species Habitat

A description of the available habitat types within the study area is provided below.

### Plains Grassy Woodland - Scattered Remnant Trees

The large, scattered *Eucalyptus camaldulensis* (River Red Gums) as shown in *Map 1,* provide the best terrestrial habitat across the study area. The majority of the trees as represented in *Table 6* reach the benchmark canopy height and are classed as large in the size category. Many of these trees contain multiple hollows and were observed to house common nesting bird species including *Trichoglossus haematodus* (Rainbow Lorikeet) and *Eolophus roseicapilla* (Galahs.

The River Red Gums are likely to provide foraging opportunities for small passerines such as *Cincloramphus cruralis* (Brown Songlark) and *Petrochelidon neoxena* (Welcome Swallow) to medium and large size parrots and cockatoos such as *Platycercus eximius* (Eastern Rosella), *Calyptorhynchus funereus* (Yellow-tailed Black-Cockatoo) and *Cacatua galerita* (Sulphur-crested Cockatoo).

The trees may also be used opportunistically or as a stepping-stone for *Haliaetus leucogaster* (White-bellied Sea-Eagle) as they move throughout the wider landscape, which has recent records (2019) within a 2km radius of the study site.

*Figure 7: Example of Scattered tree containing multiple hollows*

### Plains Grassy Woodland – Native Grassland Patches

The patches of Native Grassland which correspond with Habitat Zones 1, 2, 3, and 4 held reasonable structure in the form of tussocks and large swathes of weeping grass which may be utilized by common ground dwelling reptiles and small avian fauna such as *Coturnix coturnix* (Common Quail). Although containing native grasses, it overall provides negligible habitat value for small ground dwelling native fauna.

It is also likely to provide harbour for exotic pest mammals such as *Oryctolagus cuniculus* (European Rabbit).

### Waterbodies/Drainage Lines and Channels

The standing waterbodies which correspond with Habitat Zones 5 and 7 contain large bands of native riparian vegetation including *Typha sp*. (Bulrush), *Phragmites australis* (Common Reed) and *Eleocharis acuta* (Common Spike-sedge) which provide habitat for nesting and foraging common waterbirds such as *Tachybaptus novaehollandiae* (Australasian Grebe), *Threskiornis Molucca* (Australian White Ibis) and *Anas superciliosa* (Pacific Black Duck).

They may support such species including *Platalea regia* (Royal Spoonbill), *Ardea alba* (Great Egret) and *Chlidonias hybridus* (Whiskered Tern) who may be occasional visitors to the site.

The channels and drainage lines provide habitat for common frog species such as *Crinia signifera* (Common Froglet) and may provide connectivity to habitat in the wider region for *Litoria aurea* (Green and Golden Bell Frog) which has records in the local area within 1km of the study site.

The channels and waterbodies also provide potentially suitable habitat for *Galaxiella pusilla* (Dwarf Galaxias) which can occur in slow flowing and still, shallow, permanent and temporary freshwater habitats such as swamps, drains and the backwaters of streams and creek and *Nannoperca sp. 1* (Flinders Pygmy Perch) which are often found in small systems with a low flow rate and quiet vegetated areas in streams, billabongs, lakes and even irrigation channels. The Dwarf Galaxias and Flinders Pygmy Perch both have records in the local area within the past 10 years, within 3km of the study area.

*Figure 8: Example of a channel running though the study area*

## 3.5 Further Survey Recommendations

Three rare or threatened fauna species have been deemed to have a moderate likelihood of occurring within the study area that would necessitate a recommendation for further targeted flora species surveys:

- *Litoria aurea* (Green and Golden Bell Frog) listed as Vulnerable on the DELWP advisory list and Vulnerable on the federal EPBC list, was determined to have a **moderate** likelihood of occurrence within the study area. Based on the likelihood determination a targeted survey is recommended to determine more conclusively the presence of the species within waterbodies and related depressions on site.
- *Galaxiella pusilla* (Dwarf Galaxias) listed as Endangered in the DELWP advisory list and Vulnerable on the federal EPBC list, was determined to have a **moderate** likelihood of occurrence within the study area. Based on the likelihood determination a targeted survey is recommended to determine more conclusively the presence of the species within any waterbodies on site.
- *Nannoperca sp. 1* (Flinders Pygmy Perch) listed as Vulnerable in the DELWP advisory list, was determined to have a **moderate** likelihood of occurrence within the study area. Based on the likelihood determination a targeted survey is recommended to determine more conclusively the presence of the species within any waterbodies on site.

All other 12 rare or threatened fauna species assigned as having a low likelihood of occurrence are associated with the waterbodies/waterways that are protected under the proposal designs. The largest waterbody/wetland area on the site will be impacted by the creation of residential lots. These other 12 threatened fauna species are not considered to be 'reliant' on the habitat affected and therefore further survey work is not recommended for these species.

# 4 Policy and Legislative Implications

## 4.1 Commonwealth – Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act establishes a Commonwealth process for assessment of proposed actions that are likely to have a significant impact on Matters of National Environmental Significance (MNES) or on Commonwealth land. An action (i.e. project, development, undertaking, activity, or series of activities), unless otherwise exempt, requires approval from the Commonwealth Environment Minister if they are considered likely to have an impact on any MNES. A referral under the EPBC Act is required if a proposed action is likely to have a 'significant impact' on any of the following MNES:

- World Heritage properties;
- National heritage places;
- Ramsar wetlands of international significance;
- Threatened species and ecological communities;
- Migratory and marine species;
- Commonwealth marine area;
- Nuclear actions (including uranium mining);
- Great Barrier Reef Marine Park; and
- A water resource, in relation to coal seam gas development and large coal mining development.

In determining whether an action is likely to have a significant impact on any MNES a 'self assessment' should be undertaken by the proponent. The 'self assessment' should be as objective as possible and based on sufficient information to make an informed judgement. If after 'self assessment' the proponent is still unsure whether the proposed action is likely to have a significant impact on MNES then the action should be referred to the Australian Government Minister for Department of Environment and Energy (Department of Environment, 2013).

If an action is referred, the Minister will decide as to whether approval is required under the EPBC Act and also on the process of assessment. A decision will also be made by the Minister as to whether the action is a 'controlled action', 'not a controlled action' or alternatively that the proposed action is clearly unacceptable (DEE, 2017).

All EPBC listed threatened species and communities identified through database interrogation using the Protected Matters Search Tool (DEE, 2021) are listed in *Table 7*. *Table 7* provides a summary of assessment of the likelihood of occurrence of any EPBC listed threatened species or communities, with additional detail and comments for threatened species provided in *Appendix 4* and *Appendix 6*

*Table 7: Assessment of likelihood of occurrence of EPBC Act 1999 listed fauna species or communities within the study area*

| MNES | Assessed Likelihood of Occurrence / Determination | Comments |
|---|---|---|
| **Fauna** | | |
| Common Sandpiper | Unlikely | No suitable habitat |
| Regent Honeyeater | Unlikely | No suitable habitat |
| Fork-tailed Swift | Unlikely | No suitable habitat |
| Australasian Bittern | **Low** | Species may occur rarely or as an occasional visitor to the area. Few records found in the local area within the past 25years within 1km of the study area. |
| Sharp-tailed Sandpiper | Unlikely | No suitable habitat |
| Curlew Sandpiper | Unlikely | No suitable habitat |
| Pectoral Sandpiper | Unlikely | No suitable habitat |
| Grey Falcon | Unlikely | No suitable habitat |
| Latham's Snipe | **Low** | Species may occur rarely or as an occasional visitor to the area. Few records found in the local area within the past 25years within 3km of the study area. |
| Painted Honeyeater | Unlikely | No suitable habitat |
| White-throated Needletail | Unlikely | No suitable habitat |
| Swift Parrot | Unlikely | No suitable habitat |
| Bar-tailed Godwit | Unlikely | No suitable habitat |
| Black-faced Monarch | Unlikely | No suitable habitat |
| Yellow Wagtail | Unlikely | No suitable habitat |
| Satin Flycatcher | Unlikely | No suitable habitat |
| Eastern Curlew | Unlikely | No suitable habitat |
| Osprey | Unlikely | No suitable habitat |
| Rufous Fantail | Unlikely | No suitable habitat |
| Australian Painted Snipe | Unlikely | No suitable habitat |
| Fairy Tern | Unlikely | No suitable habitat |
| Common Greenshank | Unlikely | No suitable habitat |
| Giant Burrowing Frog | Unlikely | No suitable habitat |
| Green and Golden Bell Frog | **Moderate** | Suitable habitat present.<br>Multiple records in the past 10 years within 4km of the study area<br>Species may be a resident in the local area of it forms part of the species range. |
| Growling Grass Frog | Unlikely | No suitable habitat |
| Spot-tailed Quoll | Unlikely | No suitable habitat |
| Greater Glider | Unlikely | No suitable habitat |
| Grey-headed Flying-fox | Unlikely | No suitable habitat |
| Dwarf Galaxias | **Moderate** | Suitable habitat present.<br>Multiple records in the past 10 years within 4km of the study area<br>Species may be a resident in the local area of it forms part of the species range. |
| Australian Grayling | Unlikely | No suitable habitat |

| MNES | Assessed Likelihood of Occurrence / Determination | Comments |
|---|---|---|
| **Ecological Community** | | |
| Gippsland Red Gum (*Eucalyptus tereticornis subsp. Mediana*) Grassy Woodland and Associated Native Grassland | Not present | Not considered to be present within study area. |
| Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains | Not present | Not considered to be present within study area. |

### 4.1.1 Implications (Significant Impact Criteria)

There are two MNES that warrant further consideration under the proposal, described below.

#### Dwarf Galaxias

- *Galaxiella pusilla* (Dwarf Galaxias) listed as Endangered under the DELWP advisory list and Vulnerable on the Federal EPBC list, was determined to have a moderate likelihood of presence within the study area based on the presence of numerous recent records within 4 km of the study area and the presence of suitable habitat for the species;
- Further advice should be sought from a species expert to ascertain the degree of impact to the species and its habitat under the proposed development. Should impact to the species and its habitat be unavoidable a Significant Impact Assessment should be undertaken to identify mitigation actions and determine if referral is required.

#### Green and Golden Bell Frog

- *Litoria aurea* (Green and Golden Bell Frog) listed as Vulnerable under the DELWP advisory list and Vulnerable on the Federal EPBC list, was determined to have a moderate likelihood of presence within the study area based on the presence of numerous recent records within 1 km of the study area and the presence of suitable habitat for the species;
- Further advice should be sought from a species expert to ascertain the degree of impact to the species and its habitat under the proposed development. Should impact to the species and its habitat be unavoidable a Significant Impact Assessment should be undertaken to identify mitigation actions and determine if referral is required.

## 4.2 State – Flora and Fauna Guarantee Act 1988

The FFG Act is the primary State legislation for the protection of native plants, native animals and ecological communities on public land and waters in Victoria. Species and ecological communities can be listed as threatened under the Act based on assessments by an independent Scientific Advisory Committee. Threatening processes may also be listed.

Under the FFG Act a permit is required from the DELWP to 'take' 'protected' flora species, 'listed communities' or 'threatened species' from public land. Removal of any protected flora taxa, listed flora species or listed communities may not be undertaken until this permit has been issued (DELWP, 2020e).

The FFG Act also provides specific protection of fish passage by noting that the '*prevention of passage of aquatic biota as a result of the presence of instream structures*' is a potentially threatening process and that '*there should be no further preventable decline in the viability of any rare species*'.

### 4.2.1 Implications

#### Threatened & Protected Flora Species / Communities

No native patches identified on site correspond with any threatened ecological communities that are listed as protected under Victoria's FFG Act.

Due to this proposal being located on private land, an application for a Permit to Take Protected Flora is not required.

## 4.3 State – Catchment and Land Protection Act 1994

In accordance with Section 20 of the CaLP Act, landholders and managers have a responsibility to take all reasonable steps to:

- Avoid causing or contributing to land degradation which causes or may cause damage to land of another land owner;
- Eradicate regionally prohibited weeds;
- Prevent the growth and spread of regionally controlled weeds on their land; and
- Prevent the spread of, and as far as possible, eradicate established pest animals.

### 4.3.1 Implications

Six weeds declared noxious under the *Catchment and Land Protection Act 1994* (CaLP Act) were identified on site during assessments (*Table 8*). Five of these weeds are categorised within the West Gippsland Catchment Management Authority region as 'Regionally Controlled' and one is categorised as 'Restricted' (DELWP, 2020e).

*Table 8: Declared noxious weeds proclaimed under the Catchment and Land Protection Act 1994*

| Scientific Name | Common Name | Classification |
|---|---|---|
| *Cirsium vulgare* | Spear Thistle | Regionally controlled |
| *Echium plantagineum* | Paterson's Curse | Regionally Controlled |
| *Lycium ferocissimum* | African Box-thorn | Regionally Controlled |
| *Rubus fruticosus spp. agg.* | Blackberry | Regionally Controlled |
| *Salix spp.* | Willows | Restricted |
| *Xanthium spinsum* | Bathurst Burr | Regionally Controlled |

To prevent the spread of noxious weeds listed in *Table 8*, the contractor engaged to carry out the works must be made aware of the presence of these weed species. Appropriate site weed hygiene practices must be employed to limit the spread of any existing noxious weeds within the construction area. Similarly, vehicle hygiene practice must be employed to prevent the import or export of any noxious weeds to or from the construction area.

## 4.4 State - Water Act 1987

Catchment Management Authorities have statutory responsibilities under Section 67 of the *Water Act* to monitor, manage, enforce, and administer control over all works which may impact upon designated waterways to ensure works undertaken do not adversely affect the health of those waterways.

A permit is required to undertake works on a designated waterway and can include activities such as:

- Crossings – bridges, fords, culverts;
- Deviations – waterway realignments;
- Extractions – sand, silt or gravel;
- Stabilisation – bank protection, retaining structures;
- Vegetation – fallen timber and vegetation removal, revegetation projects;
- Works – stormwater outlets, service crossings; and
- Other – jetty, river mouth opening, boardwalks.

### 4.4.1 Implications

The waterbodies and the drainage line in the south east of the site are impacted by the creation of residential lots. Consultation with the West Gippsland Catchment Management Authority is recommended to confirm if a requirement to obtain a 'works on waterways' permit is required.

## 4.5 State – Wildlife Act 1979

The *Wildlife Act 1975* provides the primary legislation for the protection and management of wildlife, the purposes of this Act are:

- To establish procedures in order to promote the protection and conservation of wildlife, the prevention of taxa of wildlife from becoming extinct and the sustainable use of and access to wildlife; and
- To prohibit and regulate the conduct of persons engaged in activities concerning or related to wildlife.

### 4.5.1 Implications

Persons engaged to remove, salvage, hold or relocate any native fauna species during proposed construction works must have a permit under this Act to undertake such actions and ensure any actions to manage wildlife must be undertaken in accordance with the requirements of the Act or at the direction of DELWP.

## 4.6 State – Fisheries Act 1995

One of the objectives of the *Fisheries Act* is to protect and conserve fisheries resources, habitats and ecosystems including the maintenance of aquatic ecological processes and genetic diversity. A provision of this Act is that a person must not, except as permitted by or under the Fisheries Act or any other Act, create an obstruction across or within a bay, inlet, river or creek or across or around an inter-tidal flat that:

*"(a) fish will or could be blocked and left stranded; or*
*(b) immature fish will or could be destroyed; or*
*(c) the free passage of fish will or could be obstructed*."

This Act is relevant if there is a likelihood that a development will impact on fish habitat and aquatic ecological processes. Similar to the FFG Act, action statements must outline the process that will be implemented to ensure the long-term protection of fish habitat and/or specific species.

Under the Act, permits are required to handle, capture or translocate fish. DELWP generally prefer that a proponent err on the side of caution and apply for the permit if there is the 'possibility' of encountering fish.

### 4.6.1 Implications

Should any waterways be obstructed or altered during any construction processes, further consideration of any requirements under the Act must be undertaken. Any Site Environmental Management Plan (SEMP) must identify how waterways are not obstructed or impacted directly or indirectly during any construction phase.

## 4.7 State – Environmental Effects Act 1978

In Victoria, environmental impact assessments of proposed development projects are conducted through the Environmental Effects Statement (EES) process under the *Environment Effects Act 1978* (EE Act). The Minister for Planning (the Minister) administers the EES process through the Ministerial

Guidelines for Assessment of Environmental Effects (Ministerial Guidelines), whilst DELWP manages this process (Victorian Auditor General's Report, 2017).

A proponent should ask the Minister administering the Act whether an EES is required for projects or amended projects that could have a significant effect on the environment. If the Minister decides that an Environment Effects Statement (EES) is required, the project proponent is responsible for preparing the EES and undertaking the necessary investigations (DELWP, 2019)

Referral criteria is based on either individual potential environmental effects or a combination of potential environmental effects.

### 4.7.1 Implications

Assessment of referral requirements for relevant criteria are outlined below.

#### Individual Potential Environmental Effects

*Potential long-term loss of a significant proportion (e.g. 1 to 5 percent depending on the conservation status of the species) of known remaining habitat or population of a threatened species within Victoria*

- No referral is likely to be required under this criterion, although certainty cannot be achieved until further surveys and consideration of impacts have been completed for Dwarf Galaxias and the Green and Golden Bell Frog.

*Potential clearing of 10 ha or more of native vegetation from an area that is of an EVC identified as endangered.*

- The Plains Grassy Woodland and Swampy Riparian Woodland EVC's both have a Bioregional Conservation Significance (BCS) of Endangered. The total amount of native vegetation (patches and scattered trees) assigned to this EVC amounts to approximately 4.96 hectares. This total is below the referral threshold of 10 hectares, and therefore no referral is required under this criterion.

## 4.8 State – Planning and Environment Act 1987

### 4.8.1 Planning Overlays

#### Environmental Significance Overlay (ESO)

There are no Environmental Significance Overlays (ESO) that apply to the site and therefore no implications for the removal of native vegetation proposed to occur under this project.

### 4.8.2 Clause 52.17 -Native Vegetation

To facilitate the works there is a requirement to remove native vegetation from both sides of the banks and within the waterway. Under Clause 52.17 of the Wellington Planning Scheme, a planning permit is required to clear or disturb native vegetation within the study area and application of the 'Guidelines' to obtain a planning permit for the works is necessary.

### Purpose

The purpose of Clause 52.17 is to ensure that there is no net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation. This is achieved by applying the following three step approach in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017) (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. To manage the removal, destruction or lopping of native vegetation to minimise land and water degradation.

### Permit Exemptions

A permit is required to remove, destroy or lop native vegetation, including dead native vegetation. This does not apply:

- If the table to Clause 52.17-7 specifically states that a permit is not required.
- If a native vegetation precinct plan corresponding to the land is incorporated into this scheme and listed in the schedule to Clause 52.16.
- To the removal, destruction or lopping of native vegetation specified in the schedule to this clause.

Under Clause 52.17 permit exemptions that may be relevant to the project include:

- **Dead native vegetation** (This exemption does not apply to a standing dead tree with a trunk diameter of 40 centimetres or more at a height of 1.3 metres above ground level).
- **Utility Installations**- Native vegetation that is to be removed, destroyed or lopped to the minimum extent necessary:
  - to maintain the safe and efficient function a Minor utility installation; or
  - by or on behalf of a utility service provider to maintain or construct a utility installation in accordance with the written agreement of the Secretary to the Department of Environment, Land, Water and Planning (as constituted under Part 2 of the Conservation, Forests and Lands Act 1987).

### Application and Assessment Pathways

An application to remove, destroy or lop native vegetation must comply with the application requirements specified in the Guidelines. A combination of site-based and landscape information is used to calculate the biodiversity value (being a general or species habitat score) of native vegetation to be removed. This is calculated by the extent and condition score, combined to determine the site-based measure of biodiversity value.

The assessment pathway for an application to remove native vegetation reflects its potential impact on biodiversity and is determined by combining the location and extent of the native vegetation proposed to be removed, in accordance with Table 3 of the Guidelines.

The pathways are:

*Basic* - limited impacts on biodiversity.
*Intermediate* - could impact on large trees, endangered EVC's, and sensitive wetlands and coastal areas.
*Detailed* - could impact on large trees, endangered EVC's, sensitive wetlands and coastal area and could significantly impact on habitat for rare or threatened species. (DELWP, 2017)

#### *4.8.2.1 Avoiding and Minimising Impacts*

The principles of avoidance and minimisation can be achieved in a Project by avoiding the removal of native vegetation and consequently species habitat via locating or designing the project works outside of these areas. Minimising impacts can be achieved through minimising the design construction footprint, restricting project works to areas of native vegetation that have the least biodiversity or other values and managing the works to minimise impacts on surrounding vegetation (DELWP, 2017).

##### Design

The draft design located in *Appendix 7 - Development Plan Wurruk Growth Area*, (*Version No 04: 10.05.21),* highlights the design modifications that are proposed to minimise impacts to native vegetation with the following avoidance and minimization outcomes to be achieved:

- The design ensures that four large size class trees and one small size class tree located within the proposed *unencumbered passive open space* reserve of 0.77ha, have been adequately retained;
- Thirteen large size class trees and one small size class tree have been adequately retained within the proposed *farm zone* located in the south of the development; and
- Drainage reserves are proposed which will protect approximately 4.96ha of watercourses, damp depressions and channels across the development.

Further mitigation measures to minimise impacts to retained native vegetation during the construction phase are outlined in *Section 4.9*.

#### *4.8.2.2 Determination of Losses to Native Vegetation*

Consistent with the Guidelines (DELWP, 2017) all native vegetation within proposed subdivision lots less than 0.4 hectares in size, including patches and scattered trees should be deemed lost, even if not removed at the time of subdivision. In addition, trees impacted above 10% of their TPZ are also deemed lost even if removal is not required under the proposal.

A digital file of the works footprint (*Appendix 7*) with limit of works extents was provided by Beveridge Williams that was then overlaid on the GIS mapped native vegetation layers to determine the extent of impacts to native vegetation using the following methodology.

Using the methodology described in *Section 2.2.1* a determination was made on losses to native vegetation. *Map 2* shows the extent of native vegetation deemed lost under the proposal and *Table 9* provides a breakdown of all native vegetation deemed lost under the proposal and a summary of tree loss determinations.

*Table 9: Summary of Native Vegetation Losses and Tree Loss Determinations*

| Determination | Description | Area / Tree Number | Detail |
|---|---|---|---|
| Deemed Lost | Native Patch – Habitat Zone 1 (EVC 55) | 2.7464 ha | |
| Deemed Lost | Native Patch – Habitat Zone 2 (EVC 55) | 0.0053 ha | |
| Deemed Lost | Native Patch – Habitat Zone 3 (EVC 55) | 0.0951 ha | |
| Deemed Lost | Native Patch – Habitat Zone 4 (EVC 55) | 0.4532 ha | |
| Deemed Lost | Native Patch – Habitat Zone 5 (EVC 55) | 0.0922 ha | |
| Deemed Lost | Native Patch – Habitat Zone 6 (EVC 55) | 0.0154 ha / Tree ID No's 6, 7, 8, 9, 10 | Locally Indigenous – Small size class |
| Deemed Lost | Native Patch – Habitat Zone 7 (EVC 56) | 0.4664 ha | |
| Deemed Lost | Scattered Trees | Tree ID No's 1, 11, 14, 15, 16, 17, 18, 19,22 24, 25, 26, 27,28, 29, 47 | Locally Indigenous – Large size class |
| Deemed Lost | Scattered Trees | Tree ID No's 13, 30, 48, 49 | Locally Indigenous – Small size class |

The GIS clearing shapefile was submitted to the DELWP's Native Vegetation Support to process a Native Vegetation Removal (NVR) report identifying the project's offset requirements.

The NVR, attached as *Appendix 8*, determined the following offset requirements would apply to the Project:

- The proposal falls under the 'Detailed Assessment Pathway';
- Offset requirements equate to 0.919 General Habitat Units (GHUs) with a minimum strategic biodiversity score of 0.329 and the protection of 16 large size class trees; and
- Offsets must be located within the West Gippsland Catchment Management Authority (CMA) boundary or within the Wellington Shire Council municipality.

### Previous Clearing

It has been assumed that no other native vegetation has been approved to be removed or was removed without the required approvals, on the same property or on contiguous land in the same client ownership in the past 5 years.

### Offset Statement

In accordance with the DELWP's *Guidelines for the removal, destruction or lopping of native vegetation* an offset statement is typically required providing evidence that an offset that meets the offset requirements for the native vegetation to be removed has been identified and can be secured.

A suitable statement includes evidence that the required offset:

- Is available to purchase from a third party; or
- Will be established as a new offset and has the agreement of the proposed offset provider; or
- Can be met by a first party offset.

### Implications

As described previously in this section Beveridge Williams have appropriately applied the principles of avoidance and minimisation to the Project's design to limit the extent of native vegetation removal. Losses to native vegetation are unavoidable under the project, however, through the application of a limit of works and No-Go zones that includes locating hard stand, stockpiling and parking within areas that do not contain native vegetation, any additional losses to native vegetation are avoided and minimised, consistent with the objectives of the *Guidelines*.

Measures as mentioned above to minimise impacts to retained native vegetation during the project's implementation phase include the use of limit of works and No-Go zone fencing, installation of silt fencing, and site rehabilitation / reinstatement activities within the works area, once construction activities are completed.

The proponent has identified that appropriate offsets exist that they intend to purchase and offset evidence is provided in the form of a quotation.

# 5 Recommended Mitigation Measures during Construction

The below measures are recommended to minimise construction impacts on any retained native vegetation and threatened species or habitat.

### No-go Zone Fencing / Limit of Works

- Prior to the commencement of any works:
    - The construction zone footprint and limit of works must be clearly defined on construction plans and should be physically delineated with fencing;
    - Native vegetation outside of the limit of works must be protected by the establishment of No-Go zones, with fencing and exclusion areas identified as part of contract conditions.
- All works and construction activities associated with the project (i.e. stack sites, temporary storage areas, parking areas, turn around points, etc.) should be located within degraded areas not containing native vegetation; and
- The fencing should be constructed of supported para-webbing or rope bunting and include signage identifying the area as 'No-Go Zone - No Unauthorised Access'. The No-Go zone fence is to be erected prior to the commencement of construction works and be retained in place for the duration of construction activities, and then removed.

### Retained Trees

The following are recommended to reduce any potential impacts to retained trees:

- Install No Go fencing around the Tree retention zones of all trees to be retained;
- Limit impacts to <10% of the tree retention zones of any trees where possible;
- Do not stockpile or undertake vehicular access within the tree retention zone of any retained trees; and
- Minimise construction clearing path, soil disturbance and construction footprint, in potential habitat areas.

### Vehicle Hygiene / Weed Management

- Vehicle / plant hygiene protocols should be implemented to prevent the importation and the spread of declared weeds, environmental weeds, pests and diseases (pathogens) within the construction works area and offsite.

### Sedimentation / Erosion

Erosion and sediment controls should include but not be limited to:

- Installation and maintenance of erosion and sedimentation controls established in accordance with EPA best practice guidelines for the treatment of sediment laden run-off resulting from construction activities. Sediment controls must be maintained in good order throughout the project and all materials removed from site at the completion of works;
- Adequately control and route runoff within the construction site to the appropriate sedimentation controls. Any controls installed should prevent any surface water run off;

- Appropriate control structures within the 'limits of works' should also be established where required to prevent surface water run-off from exiting construction works areas beyond the 'limit of works' or onto adjoining native vegetation to be retained / No Go Zones;
- Minimising the amount of exposed erodible surfaces during construction - i.e. through the staging of works and progressive reinstatement of earthworks; and
- Prompt covering of exposed surfaces (including batters and stockpiles) that would otherwise remain bare for more than 28 days - cover may include mulch, erosion control mat or seeding with sterile grass.

### Wildlife Management

- Should there be a likelihood that wildlife may be encountered on the site, directly impacted or potentially displaced by construction works, a suitability qualified wildlife expert / zoologist with appropriate DELWP authorisations should be engaged to ensure the protection and management of any wildlife encountered during the works. Any displaced fauna should be salvaged and relocated at an appropriate time.

# 6 Conclusion and Recommendations

### Study Area- Ecological Values

The study area is situated within the Wellington Shire Council and West Gippsland Catchment Management Authority region. The study area is situated within the Gippsland Plains Bioregion.

The study area is made up of several properties and is covered by private land and encompasses mainly grazing land and areas of drainage channels and damp depressions. Agriculture is the predominate land use surrounding the study area with the residential township of Sale to the east.

Vegetation across the study area was found to comprise a mix of native patches and degraded (non-indigenous) exotic species dominated vegetation. The vegetation quality assessment identified and mapped native vegetation patches of varying quality that covered approximately 5 hectares of the approximate 180-hectare study area. The native patches were assigned EVC 55: *Plains Grassy Woodland and EVC 56: Floodplain Riparian Woodland* and categorised into seven habitat zones all within the Gippsland Plains Bioregion. 49 scattered trees were identified including 42 large size class trees.

No native patches identified on site correspond with any threatened ecological communities that are listed as protected under Victoria's FFG Act and no threatened ecological communities listed as protected under the EPBC Act were found to occur within the study area during the site inspection.

No significant flora species were identified within the study area during the site inspection.

No significant fauna species were identified within the study area during the site inspection. The likelihood assessment determined several significant fauna species had a low likelihood of occurrence, including *Anseranas semipalmata* (Magpie Goose), *Ardea alba* (Great Egret), *Ardea plumifera* (Plumed Egret), *Botaurus poiciloptilus* (Australasian Bittern), *Chlidonias hybridus* (Whiskered Tern), *Gallinago hardwickii* (Latham's Snipe), *Haliaeetus leucogaster* (White-bellied Sea-Eagle), *Nycticorax caledonicus* (Nankeen Night Heron), *Platalea regia* (Royal Spoonbill), *Plegadis falcinellus* (Glossy Ibis), *Stictonetta naevosa* (Freckled Duck), *Chelodina longicollis* (Eastern Snake-necked Turtle).

Three species where assessed as having a moderate likelihood of occurrence*; Galaxiella pusilla* (Dwarf Galaxias), *Nannoperca sp. 1* (Flinders Pygmy Perch) and *Litoria aurea* (Green and Golden Bell Frog)

### Legislation / Policy Considerations

#### *EPBC Act- Matters of National Environmental Significance*

Two fauna species listed under the EPBC Act were identified as having a greater than low likelihood of utilizing habitat within the site.

**Dwarf Galaxias** listed as Endangered under the DELWP advisory list and Vulnerable under the federal EPBC Act, was determined to have a moderate likelihood of presence within the study area. There are numerous records within 1km of the study area and the species may occur rarely as an occasional visitor.

**Green and Golden Bell Frog** listed as Vulnerable by the EPBC Act, was determined to have a moderate likelihood of presence within the study area. There are numerous records within 1km of the study area and the species may occur rarely as an occasional visitor.

### *Flora and Fauna Guarantee Act*

No threatened ecological communities are impacted by the proposal. Due to this proposal being located on private land, an application for a Permit to Take Protected Flora is not required.

### *Catchment and Land Protection Act*

Six weeds declared noxious under the CaLP Act were identified on site during assessments. These species must be controlled, and methods employed to prevent their spread as part of the project's construction.

### *Environmental Effects Act 1978*

*Potential long-term loss of a significant proportion (e.g. 1 to 5 percent depending on the conservation status of the species) of known remaining habitat or population of a threatened species within Victoria*

- No referral is likely to be required under this criterion, although certainty cannot be achieved until further surveys and consideration of impacts have been completed for Dwarf Galaxias and the Green and Golden Bell Frog.

*Potential clearing of 10 ha or more of native vegetation from an area that is of an EVC identified as endangered.*

- The Plains Grassy Woodland and Swampy Riparian Woodland EVC's both have a Bioregional Conservation Significance (BCS) of Endangered. The total amount of native vegetation (patches and scattered trees) assigned to this EVC amounts to approximately 4.96 hectares. This total is below the referral threshold of 10 hectares, and therefore no referral is required under this criterion.

### *Planning and Environment Act 1987*

To facilitate the works there is a requirement to remove native vegetation from both sides of banks and within the waterway. Under Clause 52.17 of the Wellington Planning Scheme, a planning permit is required to clear or disturb native vegetation within the study area and application of the 'Guidelines' to obtain a planning permit for the works is necessary.

The purpose of Clause 52.17 is to ensure that there is no net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation. This is achieved by applying the following three step approach in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017) (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. To manage the removal, destruction or lopping of native vegetation to minimise land and water degradation.

### *State Wildlife Act 1979*

Persons engaged to remove, salvage, hold or relocate any native fauna must have a permit or approval issued by the DELWP.

### *State – Fisheries Act 1995*

Should any waterways be obstructed or altered during any construction processes further consideration of any requirements under the Act must be undertaken. Any Site Environmental Management Plan (SEMP) must identify how waterways are not obstructed or impacted directly or indirectly during any construction phase.

### *Water Act 1989*

The waterbodies and the drainage line in the south east of the site are impacted by the creation of residential lots. Consultation with the West Gippsland Catchment Management Authority is recommended to confirm if a requirement to obtain a 'works on waterways' permit is required.

### *Native Vegetation Removal*

Native vegetation deemed lost under the project comprises:

- 5.116 hectares of native patches; and
- 16 large size class native trees.

### Avoid Minimise

Design measures applied through the project's planning phase have enabled the following avoidance and minimisation outcomes to be achieved:

- The design ensures that four large size class trees and one small size class tree located within the proposed *unencumbered passive open space* reserve of 0.77ha, have been adequately retained;
- Thirteen large size class trees and one small size class tree have been adequately retained within the proposed *farm zone* located in the south of the development; and
- Drainage reserves are proposed which will protect approximately 4.96ha of watercourses, damp depressions and channels across the development.

### *Offset Requirements*

- The proposal falls under the 'Detailed Assessment Pathway';
- Offset requirements equate to 0.919 General Habitat Units (GHUs) with a minimum strategic biodiversity score of 0.329 and the protection of 16 large size class trees; and

- Offsets must be located within the West Gippsland Catchment Management Authority (CMA) boundary or within the Wellington Shire Council municipality.

### *Project Mitigation Measures*

Further measures to minimise impacts to retained vegetation during the project's implementation phase, detailed in *Section 5*, include the use of limit of works and No-Go zone fencing, installation of silt fencing, vehicle hygiene and weed management and site rehabilitation activities within the works area once construction activities are completed.

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## Glossary

| | |
|---|---|
| **Avoid** | Avoiding removing any native vegetation when undertaking a use or development. This can be either by not permitting or not going ahead with the use or development, or locating it elsewhere so that removing native vegetation is not required. |
| **Biodiversity** | The variety of all life forms, the different plants, animals and microorganisms, the genes they contain, and the ecosystems of which they form a part. |
| **Bioregion** | Biogeographic areas that capture the patterns of ecological characteristics in the landscape or seascape, providing a natural framework for recognising and responding to biodiversity values. |
| **Bioregional Conservation Status (BCS of an EVC)** | A state-wide classification of the degree of depletion in the extent and/or quality of an Ecological Conservation Class (EVC) within a bioregion in comparison to the State's estimation of its pre-1750 extent and condition. |
| **Canopy Tree** | A tree, greater than five meters in height, that is normally found in the upper layer of a vegetation type. A tree, greater than five meters in height, that is normally found in the upper layer of a vegetation type. |
| **Diameter at Breast Height (DBH)** | The diameter of the trunk of a tree measured over bark at 1.3m above ground level. |
| **Ecological Vegetation Class (EVC)** | A type of native vegetation classification that is described through a combination of its floristic, life form and ecological characteristics, and through an inferred fidelity to particular environmental attributes. Each EVC includes a collection of floristic communities (i.e. lower level in the classification that is based solely on groups of the same species) that occur across a biogeographic range, and although differing in species, have similar habitat and ecological processes operating. |
| **EVC Benchmark** | A standard vegetation-quality reference point relevant to the vegetation type that is applied in habitat hectare assessments. Represents the average characteristics of a mature and apparently long-undisturbed state of the same vegetation type. |
| **Habitat Hectares** | Combined measure of condition and extent of native vegetation. This measure is obtained by multiplying the site's condition score (measured between 0 and 1) with the area of the site (in hectares). |
| **Habitat Zone** | A discrete area of native vegetation consisting of a single vegetation type (EVC) with an assumed similar quality. This is the base spatial unit for conducting a habitat hectare assessment. |
| **Landholder** | An owner, occupier, proprietor or holder of land. |
| **Large Tree (LT)** | A tree with a Diameter at Breast Height equal to or greater than the large tree diameter as specified in the relevant EVC benchmark. |
| **Loss** | Loss in the contribution to Victoria's biodiversity when native vegetation is fully or partially removed, as measured in biodiversity equivalence scores or units. |
| **Minimise** | Locating, designing or managing a use or development to reduce the impacts on biodiversity from the removal of native vegetation. |
| **Native vegetation** | Native vegetation is defined in the Victoria Planning Provisions as 'plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses'. |
| **Native vegetation particular provision** | Clause 52.17 in the Victoria Planning Provisions that relates to the removing, destroying or lopping of native vegetation. |
| **No net loss** | The outcome that the native vegetation removal regulations achieve by ensuring that native vegetation removal is avoided, minimised and offset. |
| **Offset** | Protection and management (including revegetation) of native vegetation at a site to generate a gain in the contribution that native vegetation makes to Victoria's biodiversity. An offset is used to compensate for the loss to Victoria's biodiversity from the removal of native vegetation. |
| **Patch** | • an area of vegetation where at least 25 per cent of the total perennial understorey plant cover is native, or<br>• any area with three or more native canopy trees where the drip line of each tree touches the drip line of at least one other tree, forming a continuous canopy, or<br>• any mapped wetland included in the Current wetlands map, available in DELWP systems and tools. |
| **Permit** | A legal document that gives permission for a use or development on a particular piece of land. |
| **Permitted clearing** | Removal of native vegetation for which a planning permit has been granted to remove native vegetation. |

| | |
|---|---|
| **Scattered Trees** | An indigenous canopy tree that does not form part of a remnant patch of native vegetation (see definition of remnant patch of native vegetation). |
| **Site** | An area of land that contains contiguous patches of native vegetation or scattered trees, within the same ownership. |
| **Small Tree (ST)** | A tree with a Diameter at Breast Height (DBH) less than the DBH for a large tree. |
| **Understorey** | The lower layers of vegetation, including the shrub layer, grass layer and ground layer. The understorey may comprise native and non-native species. |
| **Zone** | A zone in the Victoria Planning Provisions is a set of permitted uses of land which are defined spatially. |

# Appendices

Appendices commence on the next page.

# Appendix 1: Property Reports

## PLANNING PROPERTY REPORT

VICTORIA State Government | Environment, Land, Water and Planning

From www.planning.vic.gov.au on 28 April 2021 08:48 AM

**PROPERTY DETAILS**

| | |
|---|---|
| Lot and Plan Number: | **Lot 1 PS410216** |
| Address: | **15 THE RIDGE WURRUK 3850** |
| Standard Parcel Identifier (SPI): | **1\PS410216** |
| Local Government Area (Council): | **WELLINGTON** www.wellington.vic.gov.au |
| Council Property Number: | **429779** (Part) |
| Planning Scheme: | **Wellington** planning-schemes.delwp.vic.gov.au/schemes/wellington |
| Directory Reference: | **VicRoads 692 H8** |

This parcel is one of 13 parcels comprising the property. For full parcel details get the free Basic Property report at Property Reports

**UTILITIES**

| | |
|---|---|
| Rural Water Corporation: | **Southern Rural Water** |
| Urban Water Corporation: | **Gippsland Water** |
| Melbourne Water: | **outside drainage boundary** |
| Power Distributor: | **AUSNET** |

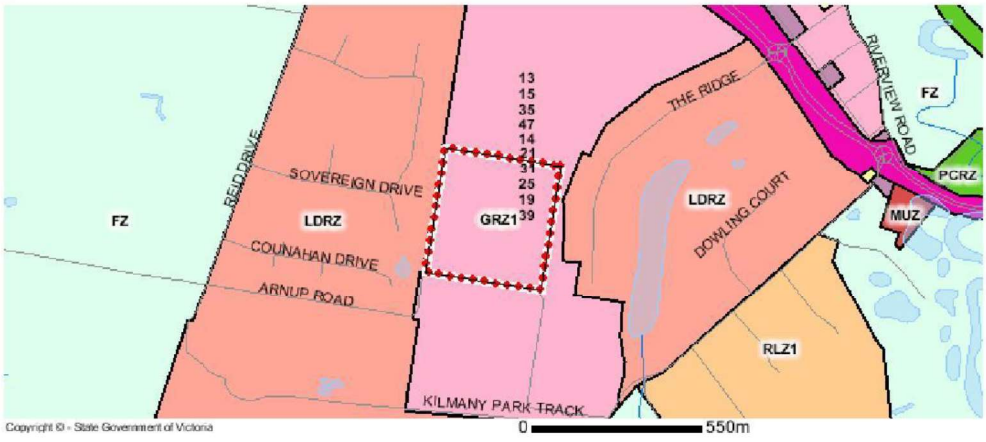
**STATE ELECTORATES**

| | |
|---|---|
| Legislative Council: | **EASTERN VICTORIA** |
| Legislative Assembly: | **GIPPSLAND SOUTH** |

**Planning Zones**

GENERAL RESIDENTIAL ZONE (GRZ)

GENERAL RESIDENTIAL ZONE - SCHEDULE 1 (GRZ1)




C2Z - Commercial 2
FZ - Farming
GRZ - General Residential
LDRZ - Low Density Residential
MUZ - Mixed Use
PCRZ - Public Conservation & Resource
PUZ1 - Public Use - Service & Utility
PUZ2 - Public Use - Education
RDZ1 - Road - Category 1
RLZ - Rural Living

Note: labels for zones may appear outside the actual zone - please compare the labels with the legend.

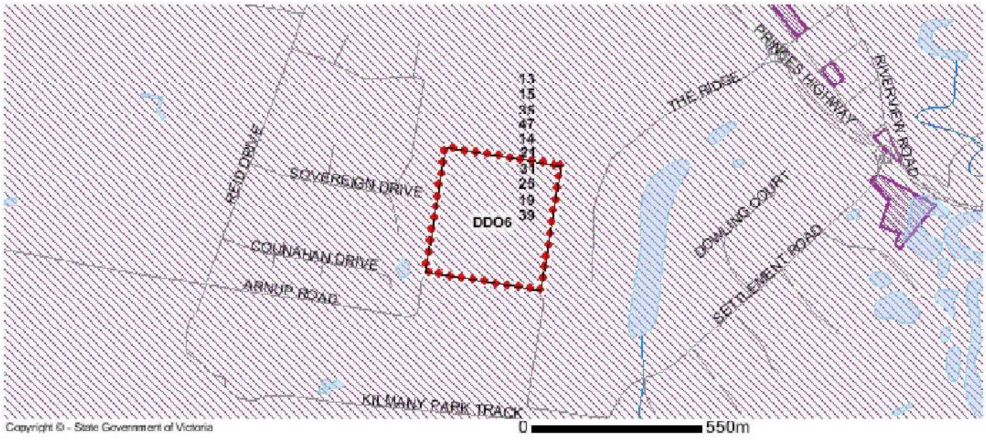
## PLANNING PROPERTY REPORT

VICTORIA State Government | Environment, Land, Water and Planning

### Planning Overlays

DESIGN AND DEVELOPMENT OVERLAY (DDO)

DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 6 (DDO6)

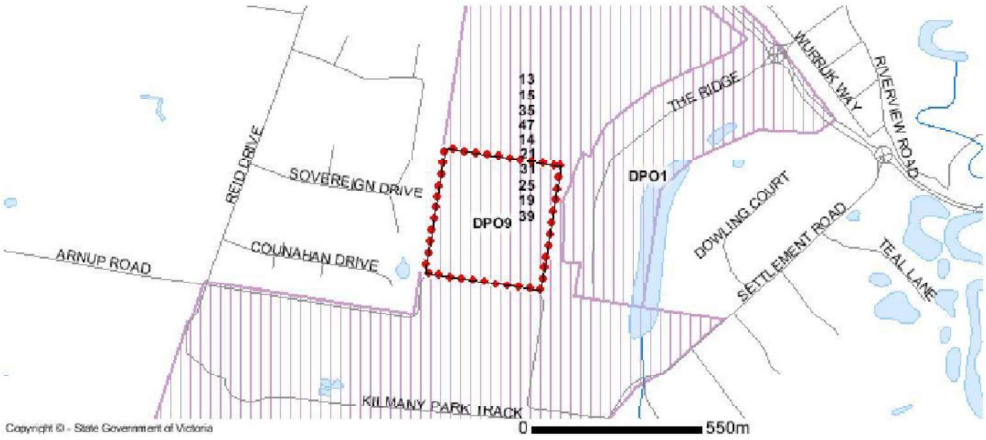



DDO - Design and Development

Note: due to overlaps, some overlays may not be visible, and some colours may not match those in the legend.

DEVELOPMENT PLAN OVERLAY (DPO)

DEVELOPMENT PLAN OVERLAY - SCHEDULE 9 (DPO9)




DPO - Development Plan

Note: due to overlaps, some overlays may not be visible, and some colours may not match those in the legend.

# PLANNING PROPERTY REPORT

From www.planning.vic.gov.au on 28 April 2021 08:50 AM

## PROPERTY DETAILS

| | |
|---|---|
| Lot and Plan Number: | **Lot 2 PS610634** |
| Address: | **402 ARNUP ROAD WURRUK 3850** |
| Standard Parcel Identifier (SPI): | **2\PS610634** |
| Local Government Area (Council): | **WELLINGTON** www.wellington.vic.gov.au |
| Council Property Number: | **101279** (Part) |
| Planning Scheme: | **Wellington** planning-schemes.delwp.vic.gov.au/schemes/wellington |
| Directory Reference: | **VicRoads 692 H8** |

This parcel is one of 2 parcels comprising the property. For full parcel details get the free Basic Property report at Property Reports

## UTILITIES

| | |
|---|---|
| Rural Water Corporation: | **Southern Rural Water** |
| Urban Water Corporation: | **Gippsland Water** |
| Melbourne Water: | **outside drainage boundary** |
| Power Distributor: | **AUSNET** |

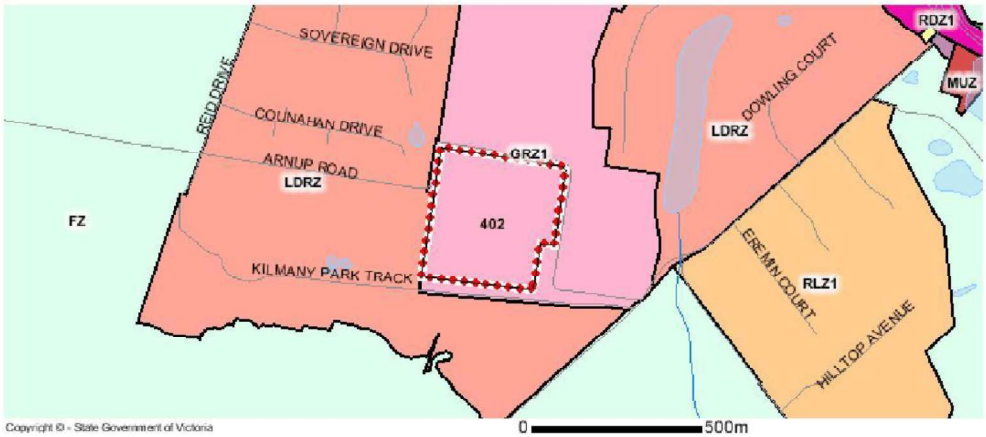
## STATE ELECTORATES

| | |
|---|---|
| Legislative Council: | **EASTERN VICTORIA** |
| Legislative Assembly: | **GIPPSLAND SOUTH** |

## Planning Zones

GENERAL RESIDENTIAL ZONE (GRZ)

GENERAL RESIDENTIAL ZONE - SCHEDULE 1 (GRZ1)




C2Z - Commercial 2
FZ - Farming
GRZ - General Residential
LDRZ - Low Density Residential
MUZ - Mixed Use
PCRZ - Public Conservation & Resource
PUZ1 - Public Use - Service & Utility
RDZ1 - Road - Category 1
RLZ - Rural Living

Note: labels for zones may appear outside the actual zone - please compare the labels with the legend.

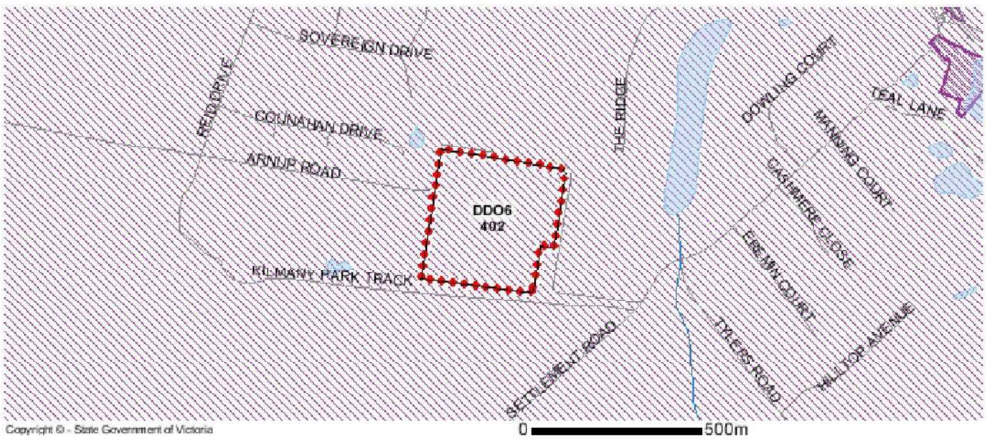
## PLANNING PROPERTY REPORT

VICTORIA State Government | Environment, Land, Water and Planning

### Planning Overlays

DESIGN AND DEVELOPMENT OVERLAY (DDO)

DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 6 (DDO6)

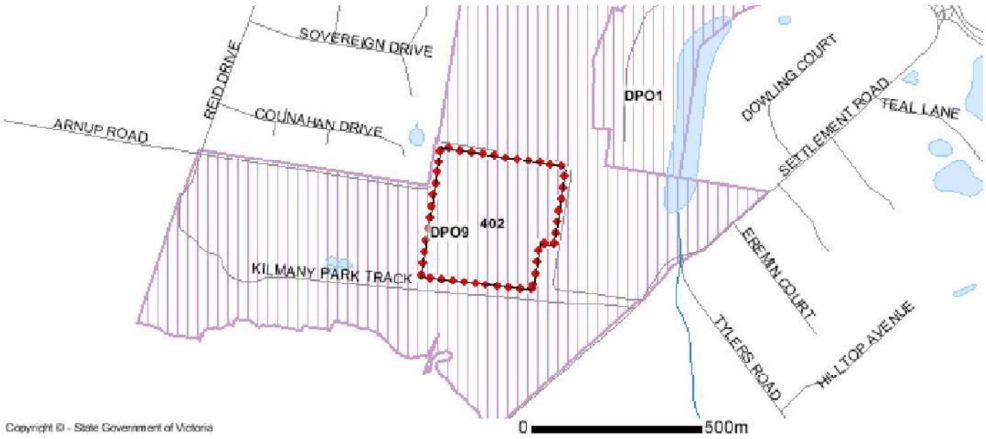



DDO - Design and Development

Note: due to overlaps, some overlays may not be visible, and some colours may not match those in the legend.

DEVELOPMENT PLAN OVERLAY (DPO)

DEVELOPMENT PLAN OVERLAY - SCHEDULE 9 (DPO9)




DPO - Development Plan

Note: due to overlaps, some overlays may not be visible, and some colours may not match those in the legend.

# PLANNING PROPERTY REPORT

VICTORIA State Government | Environment, Land, Water and Planning

From www.planning.vic.gov.au on 28 April 2021 08:42 AM

## PROPERTY DETAILS

| | |
|---|---|
| Lot and Plan Number: | **Lot 6 PS702630** |
| Address: | **15 THE RIDGE WURRUK 3850** |
| Standard Parcel Identifier (SPI): | **6\PS702630** |
| Local Government Area (Council): | **WELLINGTON** www.wellington.vic.gov.au |
| Council Property Number: | **429779** (Part) |
| Planning Scheme: | **Wellington** planning-schemes.delwp.vic.gov.au/schemes/wellington |
| Directory Reference: | **VicRoads 692 H7** |

This parcel is one of 13 parcels comprising the property. For full parcel details get the free Basic Property report at Property Reports

## UTILITIES

| | |
|---|---|
| Rural Water Corporation: | **Southern Rural Water** |
| Urban Water Corporation: | **Gippsland Water** |
| Melbourne Water: | **outside drainage boundary** |
| Power Distributor: | **AUSNET** |

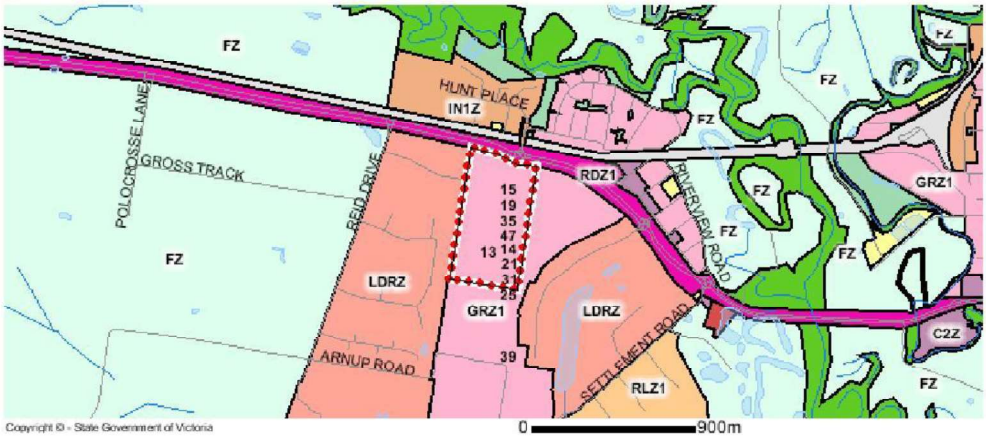
## STATE ELECTORATES

| | |
|---|---|
| Legislative Council: | **EASTERN VICTORIA** |
| Legislative Assembly: | **GIPPSLAND SOUTH** |

## Planning Zones

GENERAL RESIDENTIAL ZONE (GRZ)

GENERAL RESIDENTIAL ZONE - SCHEDULE 1 (GRZ1)




C2Z - Commercial 2
IN1Z - Industrial 1
PCRZ - Public Conservation & Resource
PUZ2 - Public Use - Education
RDZ1 - Road - Category 1
FZ - Farming
LDRZ - Low Density Residential
PPRZ - Public Park & Recreation
PUZ4 - Public Use - Transport
RLZ - Rural Living
GRZ - General Residential
MUZ - Mixed Use
PUZ1 - Public Use - Service & Utility
PUZ6 - Public Use - Local Government

Note: labels for zones may appear outside the actual zone - please compare the labels with the legend.

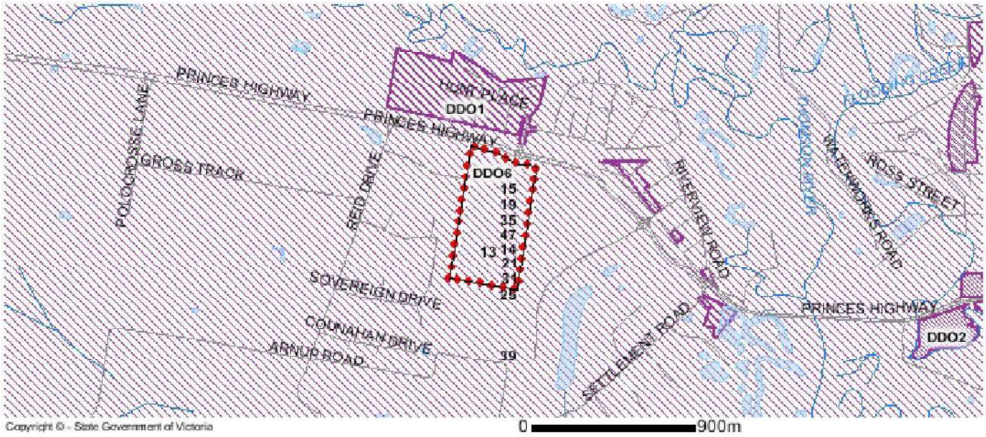
## PLANNING PROPERTY REPORT

VICTORIA State Government | Environment, Land, Water and Planning

### Planning Overlays

DESIGN AND DEVELOPMENT OVERLAY (DDO)

DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 6 (DDO6)



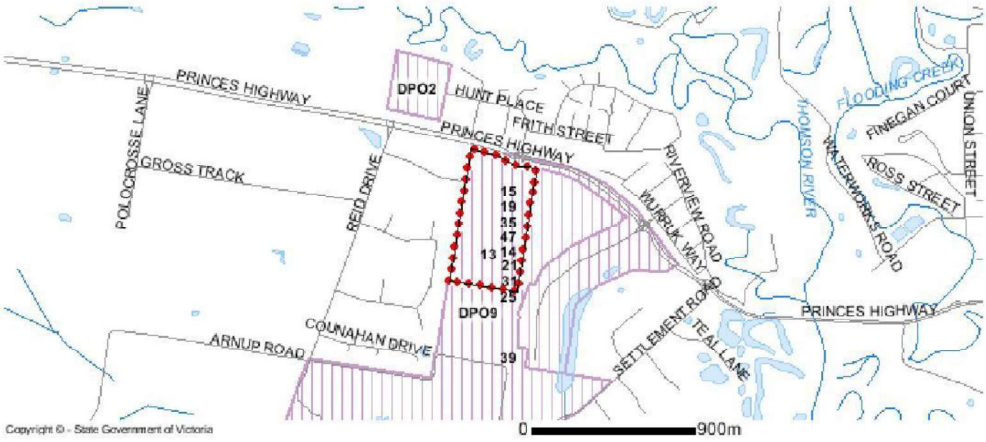

DDO - Design and Development

Note: due to overlaps, some overlays may not be visible, and some colours may not match those in the legend.

DEVELOPMENT PLAN OVERLAY (DPO)

DEVELOPMENT PLAN OVERLAY - SCHEDULE 1 (DPO1)

DEVELOPMENT PLAN OVERLAY - SCHEDULE 9 (DPO9)




DPO - Development Plan

Note: due to overlaps, some overlays may not be visible, and some colours may not match those in the legend.

# PLANNING PROPERTY REPORT

VICTORIA State Government | Environment, Land, Water and Planning

From www.planning.vic.gov.au on 28 April 2021 08:47 AM

## PROPERTY DETAILS

| | |
|---|---|
| Lot and Plan Number: | **Lot 7 PS702630** |
| Address: | **15 THE RIDGE WURRUK 3850** |
| Standard Parcel Identifier (SPI): | **7\PS702630** |
| Local Government Area (Council): | **WELLINGTON** www.wellington.vic.gov.au |
| Council Property Number: | **429779** (Part) |
| Planning Scheme: | **Wellington** planning-schemes.delwp.vic.gov.au/schemes/wellington |
| Directory Reference: | **VicRoads 692 J7** |

This parcel is one of 13 parcels comprising the property. For full parcel details get the free Basic Property report at Property Reports

## UTILITIES

| | |
|---|---|
| Rural Water Corporation: | **Southern Rural Water** |
| Urban Water Corporation: | **Gippsland Water** |
| Melbourne Water: | **outside drainage boundary** |
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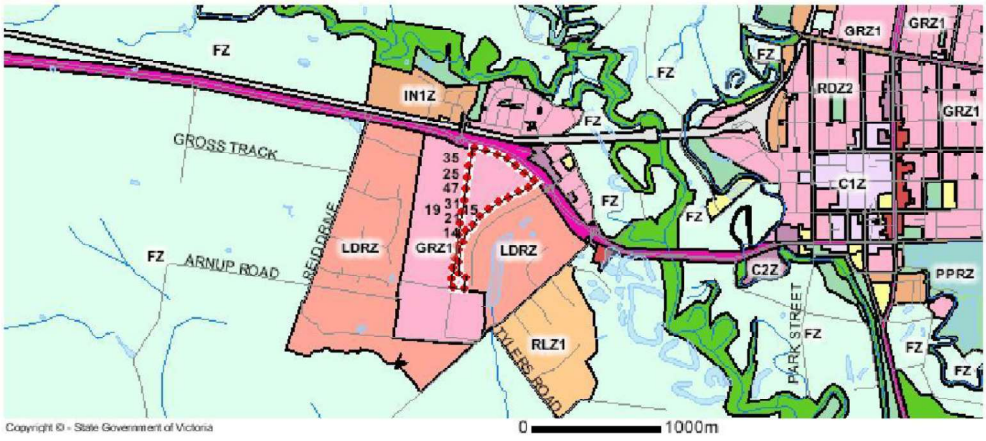
## STATE ELECTORATES

| | |
|---|---|
| Legislative Council: | **EASTERN VICTORIA** |
| Legislative Assembly: | **GIPPSLAND SOUTH** |

## Planning Zones

GENERAL RESIDENTIAL ZONE (GRZ)

GENERAL RESIDENTIAL ZONE - SCHEDULE 1 (GRZ1)






| | | |
|---|---|---|
| C1Z - Commercial 1 | C2Z - Commercial 2 | FZ - Farming |
| GRZ - General Residential | IN1Z - Industrial 1 | LDRZ - Low Density Residential |
| MUZ - Mixed Use | PCRZ - Public Conservation & Resource | PPRZ - Public Park & Recreation |
| PUZ1 - Public Use - Service & Utility | PUZ2 - Public Use - Education | PUZ4 - Public Use - Transport |
| PUZ6 - Public Use - Local Government | PUZ7 - Public Use - Other Public Use | RDZ1 - Road - Category 1 |
| RDZ2 - Road - Category 2 | RGZ - Residential Growth | RLZ - Rural Living |

Note: labels for zones may appear outside the actual zone - please compare the labels with the legend.

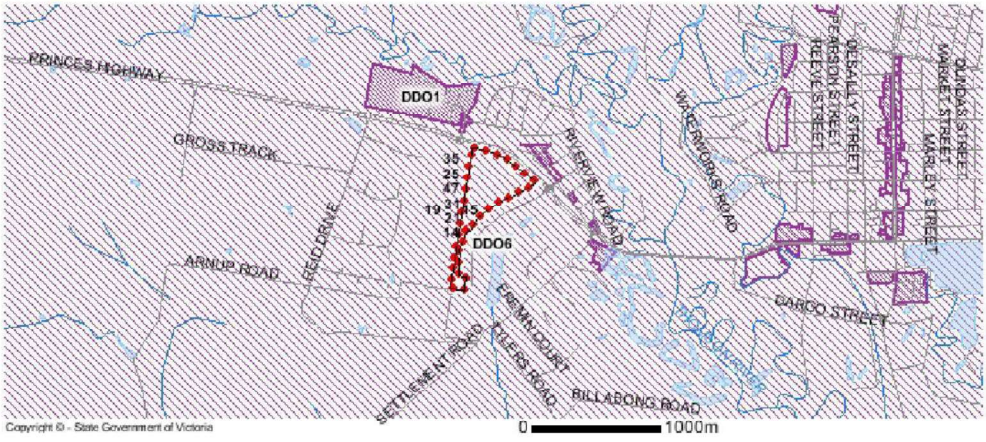
## PLANNING PROPERTY REPORT

VICTORIA State Government | Environment, Land, Water and Planning

### Planning Overlays

DESIGN AND DEVELOPMENT OVERLAY (DDO)

DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 6 (DDO6)

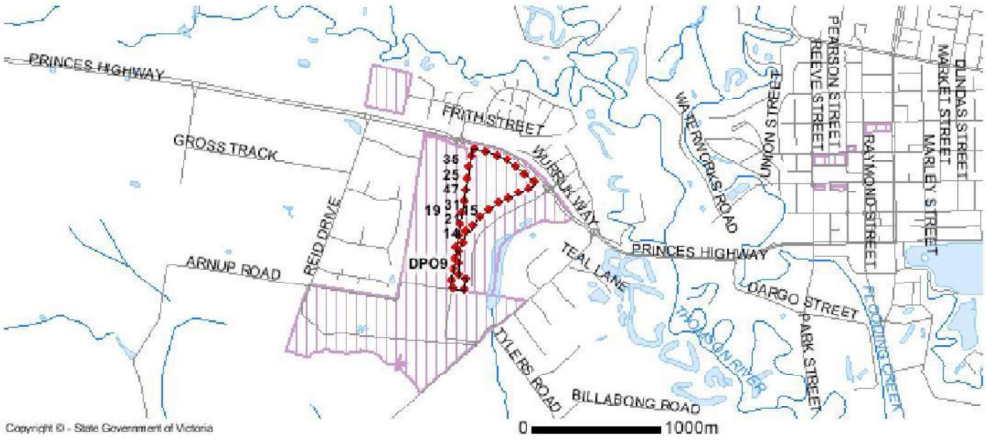



DDO - Design and Development

Note: due to overlaps, some overlays may not be visible, and some colours may not match those in the legend.

DEVELOPMENT PLAN OVERLAY (DPO)

DEVELOPMENT PLAN OVERLAY - SCHEDULE 9 (DPO9)




DPO - Development Plan

Note: due to overlaps, some overlays may not be visible, and some colours may not match those in the legend.

# Appendix 2: Vegetation Quality Assessment Sheets

See Attachment 1

## Appendix 3: Flora survey results

| Origin | Botanical Name | Common Name | Conservation Status* | | | EVC 55: PGW HZ 1 | EVC 55: PGW HZ 2 | EVC 55: PGW HZ 3 | EVC 55: PGW HZ 4 | EVC 55: PGW HZ 5 | EVC 55: PGW HZ 6 | EVC 56: FRP HZ 7 | Entire Site |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | EPBC | VIC. Adv. | FFG | | | | | | | | |
| | *Acacia mearnsii* | Black Wattle | | | | | | | | | | | + |
| | *Acacia melanoxylon* | Blackwood | | | | | | | | | | | + |
| | *Acacia mucronata subsp. longifolia* | Narrow-leaf Wattle | | | | | | | | | | | + |
| * | *Acer spp.* | Maple | | | | | | | | | | | + |
| * | *Acetosella vulgaris* | Sheep Sorrel | | | | | | | | | | | + |
| | *Alisma plantago-aquatica* | Water Plantain | | | | | | | | | | | + |
| * | *Alopecurus pratensis* | Meadow Fox-tail | | | | | | | | | | | + |
| * | *Anthoxanthum odoratum* | Sweet Vernal-grass | | | | | | | | | | | + |
| * | *Arctotheca calendula* | Cape weed | | | | + | + | + | | | | | + |
| * | *Atriplex prostrata* | Hastate Orache | | | | | | | | + | | | + |
| | *Atriplex semibaccata* | Berry Saltbush | | | | | | | | | | + | + |
| | *Austrostipa rudis* | Veined Spear-grass | | | | | | | | | + | | + |
| | *Bolboschoenus caldwellii* | Salt Club-sedge | | | | | | | | + | | | + |
| * | *Brassica fruticulosa* | Twiggy Turnip | | | | | | | | | | + | + |
| * | *Bromus catharticus* | Prairie Grass | | | | | | + | | | | | + |
| | *Carex appressa* | Tall Sedge | | | | | | | | | | | + |
| * | *Cenchrus clandestinus* | Kikuyu | | | | | | | | | | | + |
| | *Centella cordifolia* | Centella | | | | | | | | | | + | + |
| * | *Chenopodium album* | Fat Hen | | | | + | + | + | | | | | + |

| Origin | Botanical Name | Common Name | Conservation Status* | | | EVC 55: PGW HZ 1 | EVC 55: PGW HZ 2 | EVC 55: PGW HZ 3 | EVC 55: PGW HZ 4 | EVC 55: PGW HZ 5 | EVC 55: PGW HZ 6 | EVC 56: FRP HZ 7 | Entire Site |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | EPBC | VIC. Adv. | FFG | | | | | | | | |
| * | *Cirsium vulgare* | Spear Thistle | | | | + | | | | | | + | + |
| * | *Conyza bonariensis* | Flaxleaf Fleabane | | | | | | | | | | | + |
| * | *Conyza sumatrensis var. sumatrensis* | Tall Fleabane | | | | | | | | | | + | + |
| * | *Cortaderia selloana* | Pampas Grass | | | | | | | | | | | + |
| * | *Cotula coronopifolia* | Water Buttons | | | | | | | | + | | | + |
| | *Crassula helmsii* | Swamp Crassula | | | | | | | | | | | + |
| * | *Crataegus monogyna* | Hawthorn | | | | | | | | | | | + |
| * | *Cynodon dactylon var. dactylon* | Couch | | | | + | + | | | | + | | + |
| * | *Cyperus eragrostis* | Drain Flat-sedge | | | | | | | | | | + | + |
| * | *Dactylis glomerata* | Cocksfoot | | | | + | | + | + | | + | | + |
| # | *Dysphania pumilio* | Clammy Goosefoot | | | | | | | | | | | + |
| * | *Echium plantagineum* | Paterson's Curse | | | | | | | | | | | + |
| * | *Ehrharta erecta var. erecta* | Panic Veldt-grass | | | | | | | | | | | + |
| | *Einadia nutans* | Nodding Saltbush | | | | | | | | | | | + |
| | *Einadia trigonos subsp. trigonos* | Lax Goosefoot | | | | + | | | | | | | + |
| | *Eleocharis acuta* | Common Spike-sedge | | | | | | | | | | + | + |
| * | *Erodium moschatum* | Musky Heron's-bill | | | | | | | | | | | + |
| | *Eucalyptus camaldulensis* | River Red-gum | | | R | | | | | | + | + | + |
| * | *Fumaria spp.* | Fumitory | | | | | | | | | | | + |
| | *Helichrysum luteoalbum* | Jersey Cudweed | | | | | | | | | | | + |
| * | *Helminthotheca echioides* | Ox-tongue | | | | | | | | | | + | + |
| * | *Hirschfeldia incana* | Buchan Weed | | | | | | | | | | | + |

| Origin | Botanical Name | Common Name | Conservation Status* | | | EVC 55: PGW HZ 1 | EVC 55: PGW HZ 2 | EVC 55: PGW HZ 3 | EVC 55: PGW HZ 4 | EVC 55: PGW HZ 5 | EVC 55: PGW HZ 6 | EVC 56: FRP HZ 7 | Entire Site |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | EPBC | VIC. Adv. | FFG | | | | | | | | |
| * | *Holcus lanatus* | Yorkshire Fog | | | | | | | | | | | + |
| * | *Hordeum leporinum* | Barley-grass | | | | | | | | | | | + |
| * | *Hypochaeris spp.* | Cat's Ear | | | | + | + | | + | | + | + | + |
| | *Isolepis spp.* | Club Sedge | | | | | | | | | | | + |
| | *Juncus australis* | Austral Rush | | | | + | | | | | | + | + |
| | *Juncus pallidus* | Pale Rush | | | | | | | | | | | + |
| | *Lepidium spp.* | Peppercress | | | | | | | | | | | + |
| * | *Lolium spp.* | Rye Grass | | | | + | | + | | | | | + |
| | *Luzula campestris spp. agg.* | Field Woodrush | | | | | | | + | | | | + |
| * | *Lycium ferocissimum* | African Box-thorn | | | | + | | | + | | + | + | + |
| | *Lycopus australis* | Australian Gipsywort | | | | | | | | | | + | + |
| * | *Lysimachia arvensis* | Pimpernel | | | | | | | | | | | + |
| * | *Malva parviflora* | Small-flower Mallow | | | | | | | | | | + | + |
| # | *Melaleuca ericifolia* | Swamp Paperbark | | | | | | | | | | | + |
| | *Microlaena stipoides var. stipoides* | Weeping Grass | | | | + | + | + | + | + | + | + | + |
| * | *Modiola caroliniana* | Red-flower Mallow | | | | | | | | | | | + |
| * | *Oxalis spp. (naturalised)* | Wood Sorrel | | | | | | | | | | | + |
| * | *Paspalum dilatatum* | Paspalum | | | | + | + | | | | | + | + |
| * | *Paspalum distichum* | Water Couch | | | | | + | | | | | + | + |
| | *Persicaria decipiens* | Slender Knotweed | | | | | | | | | | + | + |
| * | *Phalaris aquatica* | Toowoomba Canary-grass | | | | | | | | | | | + |
| * | *Phalaris minor* | Lesser Canary-grass | | | | | | | | | | | + |
| | *Phragmites australis* | Common Reed | | | | | | | | + | | | + |

| Origin | Botanical Name | Common Name | Conservation Status* | | | EVC 55: PGW HZ 1 | EVC 55: PGW HZ 2 | EVC 55: PGW HZ 3 | EVC 55: PGW HZ 4 | EVC 55: PGW HZ 5 | EVC 55: PGW HZ 6 | EVC 56: FRP HZ 7 | Entire Site |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | EPBC | VIC. Adv. | FFG | | | | | | | | |
| * | *Plantago coronopus* | Buck's-horn Plantain | | | | | | | | | | | + |
| * | *Plantago lanceolata* | Ribwort | | | | | | | | | | + | + |
| * | *Plantago major* | Greater Plantain | | | | | | | | | | | + |
| * | *Poa annua* | Annual Meadow-grass | | | | | | | | | | | + |
| | *Poa labillardierei* | Common Tussock-grass | | | | + | | | | | | | + |
| * | *Polygonum arenastrum* | Wireweed | | | | | | | | | | | + |
| * | *Polypogon spp.* | Beard Grass | | | | | | | | | | | + |
| | *Portulaca oleracea* | Common Purslane | | | | + | | | | | | | + |
| | *Potamogeton spp.* | Pondweed | | | | | | | | | | + | + |
| * | *Rubus fruticosus spp. agg.* | Blackberry | | | | | | | | | + | + | + |
| * | *Romulea rosea* | Onion Grass | | | | + | | | | | | | + |
| | *Rumex brownii* | Slender Dock | | | | + | | | + | | | | + |
| * | *Rumex crispus* | Curled Dock | | | | | | | | | | | + |
| | *Rytidosperma caespitosum* | Common Wallaby-grass | | | | + | | | | | + | + | + |
| | *Rytidosperma racemosum var. racemosum* | Slender Wallaby-grass | | | | + | + | + | + | | | | + |
| * | *Salix fragilis* | Crack Willow | | | | | | | | | | | + |
| | *Sarcocornia quinqueflora* | Beaded Glasswort | | | | | | | | | | | + |
| | *Schoenoplectus tabernaemontani* | River Club-sedge | | | | | | | | + | | + | + |
| * | *Senecio angulatus* | Climbing Groundsel | | | | | | | | | | | + |
| | *Senecio glomeratus* | Annual Fireweed | | | | | | | | | | | + |
| * | *Solanum nigrum s.l.* | Black Nightshade | | | | | | | | | | + | + |
| * | *Sonchus oleraceus* | Common Sow-thistle | | | | | | | | | | | + |

| Origin | Botanical Name | Common Name | Conservation Status* | | | EVC 55: PGW HZ 1 | EVC 55: PGW HZ 2 | EVC 55: PGW HZ 3 | EVC 55: PGW HZ 4 | EVC 55: PGW HZ 5 | EVC 55: PGW HZ 6 | EVC 56: FRP HZ 7 | Entire Site |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | EPBC | VIC. Adv. | FFG | | | | | | | | |
| * | *Sporobolus africanus* | Rat-tail Grass | | | | + | | | | | | | + |
| * | *Stellaria media* | Chickweed | | | | | | | | | | | + |
| * | *Symphyotrichum subulatum* | Aster- weed | | | | | | | + | + | | + | + |
| | *Themeda triandra* | Kangaroo Grass | | | | | | | | | | | + |
| * | *Trifolium repens var. repens* | White Clover | | | | | | | | | | + | + |
| | *Triglochin procera s.l.* | Water Ribbons | | | | | | | | + | | + | + |
| | *Typha spp.* | Bulrush | | | | | | | | | | + | + |
| * | *Vulpia myuros* | Rat's-tail Fescue | | | | | | | | | | | + |
| * | *Xanthium spinosum* | Bathurst Burr | | | | | | | | | | | + |

Key to Conservation Status and Origin

| Taxon Origin | |
|---|---|
| # | Native species that may be considered alien in some circumstances |
| * | Exotic species |

| Flora and Fauna Guarantee Act 1988 | |
|---|---|
| L | Listed as a Threatened in Victoria |
| N | Nominated for listing as Threatened in Victoria |
| I | Invalid or ineligible to be a Threatened species in Victoria |
| D | Delisted as Threatened in Victoria |

| Commonwealth Environment Protection and Biodiversity Conservation Act 1999 | |
|---|---|
| X | Listed as Nationally Extinct |
| CR | Listed as Nationally Critically Endangered |
| E | Listed as Nationally Endangered |
| V | Listed as Nationally Vulnerable |
| CD | Listed as Conservation Dependent |

| Advisory List of Rare or Threatened Plants in Victoria (VROTS) (DEPI, 2014) | |
|---|---|
| x | Listed as Presumed Extinct in Victoria |
| rx | Listed as Regionally Extinct in a geographic range of Victoria |
| ew | Listed as Extinct in the Wild in Victoria |
| cr | Listed as Critically Endangered in Victoria |
| e | Listed as Endangered in Victoria |
| v | Listed as Vulnerable in Victoria |
| nt | Listed as Near Threatened in Victoria |
| r | Listed as Rare in Victoria |
| dd | Listed as Data Deficient in Victoria |
| k | Listed as Poorly Known in Victoria |

| Bilateral migratory bird agreements | |
|---|---|
| J | Japan-Australia Migratory Bird Agreement (JAMBA) |
| C | China-Australia Migratory Bird Agreement (CAMBA) |
| RO | Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA) |
| B | Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) |
| RA | Ramsar Convention on Wetlands |
| A | Agreement on the Conservation of Albatrosses and Petrels (ACAP) |

# Appendix 4: Database Search Results

## EPBC Act Protected Matters Report

**Australian Government**
**Department of Agriculture, Water and the Environment**

### EPBC Act Protected Matters Report

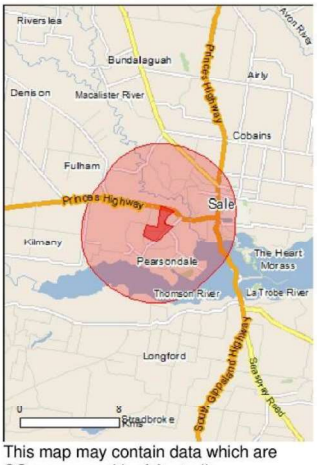
This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

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

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

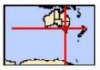
Report created: 27/04/21 10:37:27






This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2015

Coordinates
Buffer: 5.0Km



# Summary

## Matters of National Environmental Significance

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

| | |
|---|---|
| World Heritage Properties: | None |
| National Heritage Places: | None |
| Wetlands of International Importance: | 1 |
| Great Barrier Reef Marine Park: | None |
| Commonwealth Marine Area: | None |
| Listed Threatened Ecological Communities: | 2 |
| Listed Threatened Species: | 29 |
| Listed Migratory Species: | 15 |

## Other Matters Protected by the EPBC Act

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

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

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

| | |
|---|---|
| Commonwealth Land: | None |
| Commonwealth Heritage Places: | None |
| Listed Marine Species: | 20 |
| Whales and Other Cetaceans: | None |
| Critical Habitats: | None |
| Commonwealth Reserves Terrestrial: | None |
| Australian Marine Parks: | None |

## Extra Information

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

| | |
|---|---|
| State and Territory Reserves: | 2 |
| Regional Forest Agreements: | 1 |
| Invasive Species: | 40 |
| Nationally Important Wetlands: | 1 |
| Key Ecological Features (Marine) | None |

# Details

## Matters of National Environmental Significance

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

| Name | Proximity |
|---|---|
| Gippsland lakes | Within Ramsar site |

### Listed Threatened Ecological Communities [ Resource Information ]

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

| Name | Status | Type of Presence |
|---|---|---|
| Gippsland Red Gum (Eucalyptus tereticornis subsp. mediana) Grassy Woodland and Associated Native Grassland | Critically Endangered | Community likely to occur within area |
| Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains | Critically Endangered | Community likely to occur within area |

### Listed Threatened Species [ Resource Information ]

| Name | Status | Type of Presence |
|---|---|---|
| **Birds** | | |
| Anthochaera phrygia<br>Regent Honeyeater [82338] | Critically Endangered | Foraging, feeding or related behaviour likely to occur within area |
| Botaurus poiciloptilus<br>Australasian Bittern [1001] | Endangered | Species or species habitat known to occur within area |
| Calidris ferruginea<br>Curlew Sandpiper [856] | Critically Endangered | Species or species habitat known to occur within area |
| Falco hypoleucos<br>Grey Falcon [929] | Vulnerable | Species or species habitat likely to occur within area |
| Grantiella picta<br>Painted Honeyeater [470] | Vulnerable | Species or species habitat likely to occur within area |
| Hirundapus caudacutus<br>White-throated Needletail [682] | Vulnerable | Species or species habitat known to occur within area |
| Lathamus discolor<br>Swift Parrot [744] | Critically Endangered | Species or species habitat likely to occur within area |
| Limosa lapponica baueri<br>Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380] | Vulnerable | Species or species habitat may occur within area |
| Numenius madagascariensis<br>Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat known to occur within area |

| Name | Status | Type of Presence |
|---|---|---|
| Rostratula australis<br>Australian Painted Snipe [77037] | Endangered | Species or species habitat likely to occur within area |
| Sternula nereis nereis<br>Australian Fairy Tern [82950] | Vulnerable | Species or species habitat known to occur within area |
| **Fish** | | |
| Galaxiella pusilla<br>Eastern Dwarf Galaxias, Dwarf Galaxias [56790] | Vulnerable | Species or species habitat known to occur within area |
| Prototroctes maraena<br>Australian Grayling [26179] | Vulnerable | Species or species habitat known to occur within area |
| **Frogs** | | |
| Heleioporus australiacus<br>Giant Burrowing Frog [1973] | Vulnerable | Species or species habitat may occur within area |
| Litoria aurea<br>Green and Golden Bell Frog [1870] | Vulnerable | Species or species habitat likely to occur within area |
| Litoria raniformis<br>Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828] | Vulnerable | Species or species habitat likely to occur within area |
| **Mammals** | | |
| Dasyurus maculatus maculatus (SE mainland population)<br>Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184] | Endangered | Species or species habitat may occur within area |
| Petauroides volans<br>Greater Glider [254] | Vulnerable | Species or species habitat may occur within area |
| Pteropus poliocephalus<br>Grey-headed Flying-fox [186] | Vulnerable | Foraging, feeding or related behaviour may occur within area |
| **Plants** | | |
| Amphibromus fluitans<br>River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215] | Vulnerable | Species or species habitat may occur within area |
| Caladenia tessellata<br>Thick-lipped Spider-orchid, Daddy Long-legs [2119] | Vulnerable | Species or species habitat likely to occur within area |
| Commersonia prostrata<br>Dwarf Kerrawang [87152] | Endangered | Species or species habitat likely to occur within area |
| Dianella amoena<br>Matted Flax-lily [64886] | Endangered | Species or species habitat may occur within area |
| Dodonaea procumbens<br>Trailing Hop-bush [12149] | Vulnerable | Species or species habitat may occur within area |
| Glycine latrobeana<br>Clover Glycine, Purple Clover [13910] | Vulnerable | Species or species habitat likely to occur within area |
| Lepidium hyssopifolium<br>Basalt Pepper-cress, Peppercress, Rubble Pepper-cress, Pepperweed [16542] | Endangered | Species or species habitat likely to occur within area |

| Name | Status | Type of Presence |
|---|---|---|
| Pterostylis chlorogramma<br>Green-striped Greenhood [56510] | Vulnerable | Species or species habitat may occur within area |
| Thelymitra epipactoides<br>Metallic Sun-orchid [11896] | Endangered | Species or species habitat may occur within area |
| Xerochrysum palustre<br>Swamp Everlasting, Swamp Paper Daisy [76215] | Vulnerable | Species or species habitat may occur within area |

Listed Migratory Species [ Resource Information ]

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

| Name | Threatened | Type of Presence |
|---|---|---|
| Migratory Marine Birds | | |
| Apus pacificus<br>Fork-tailed Swift [678] | | Species or species habitat likely to occur within area |
| Migratory Terrestrial Species | | |
| Hirundapus caudacutus<br>White-throated Needletail [682] | Vulnerable | Species or species habitat known to occur within area |
| Monarcha melanopsis<br>Black-faced Monarch [609] | | Species or species habitat may occur within area |
| Motacilla flava<br>Yellow Wagtail [644] | | Species or species habitat may occur within area |
| Myiagra cyanoleuca<br>Satin Flycatcher [612] | | Species or species habitat known to occur within area |
| Rhipidura rufifrons<br>Rufous Fantail [592] | | Species or species habitat known to occur within area |
| Migratory Wetlands Species | | |
| Actitis hypoleucos<br>Common Sandpiper [59309] | | Species or species habitat known to occur within area |
| Calidris acuminata<br>Sharp-tailed Sandpiper [874] | | Species or species habitat known to occur within area |
| Calidris ferruginea<br>Curlew Sandpiper [856] | Critically Endangered | Species or species habitat known to occur within area |
| Calidris melanotos<br>Pectoral Sandpiper [858] | | Species or species habitat may occur within area |
| Gallinago hardwickii<br>Latham's Snipe, Japanese Snipe [863] | | Species or species habitat known to occur within area |
| Limosa lapponica<br>Bar-tailed Godwit [844] | | Species or species habitat known to occur within area |
| Numenius madagascariensis<br>Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat known to occur within area |

| Name | Threatened | Type of Presence |
|---|---|---|
| Pandion haliaetus | | |
| Osprey [952] | | Species or species habitat likely to occur within area |
| Tringa nebularia | | |
| Common Greenshank, Greenshank [832] | | Species or species habitat likely to occur within area |

## Other Matters Protected by the EPBC Act

Listed Marine Species [ Resource Information ]

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

| Name | Threatened | Type of Presence |
|---|---|---|
| Birds | | |
| Actitis hypoleucos | | |
| Common Sandpiper [59309] | | Species or species habitat known to occur within area |
| Apus pacificus | | |
| Fork-tailed Swift [678] | | Species or species habitat likely to occur within area |
| Ardea ibis | | |
| Cattle Egret [59542] | | Species or species habitat may occur within area |
| Calidris acuminata | | |
| Sharp-tailed Sandpiper [874] | | Species or species habitat known to occur within area |
| Calidris ferruginea | | |
| Curlew Sandpiper [856] | Critically Endangered | Species or species habitat known to occur within area |
| Calidris melanotos | | |
| Pectoral Sandpiper [858] | | Species or species habitat may occur within area |
| Gallinago hardwickii | | |
| Latham's Snipe, Japanese Snipe [863] | | Species or species habitat known to occur within area |
| Haliaeetus leucogaster | | |
| White-bellied Sea-Eagle [943] | | Species or species habitat known to occur within area |
| Hirundapus caudacutus | | |
| White-throated Needletail [682] | Vulnerable | Species or species habitat known to occur within area |
| Lathamus discolor | | |
| Swift Parrot [744] | Critically Endangered | Species or species habitat likely to occur within area |

| Name | Threatened | Type of Presence |
|---|---|---|
| Limosa lapponica<br>Bar-tailed Godwit [844] | | Species or species habitat known to occur within area |
| Merops ornatus<br>Rainbow Bee-eater [670] | | Species or species habitat may occur within area |
| Monarcha melanopsis<br>Black-faced Monarch [609] | | Species or species habitat may occur within area |
| Motacilla flava<br>Yellow Wagtail [644] | | Species or species habitat may occur within area |
| Myiagra cyanoleuca<br>Satin Flycatcher [612] | | Species or species habitat known to occur within area |
| Numenius madagascariensis<br>Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat known to occur within area |
| Pandion haliaetus<br>Osprey [952] | | Species or species habitat likely to occur within area |
| Rhipidura rufifrons<br>Rufous Fantail [592] | | Species or species habitat known to occur within area |
| Rostratula benghalensis (sensu lato)<br>Painted Snipe [889] | Endangered* | Species or species habitat likely to occur within area |
| Tringa nebularia<br>Common Greenshank, Greenshank [832] | | Species or species habitat likely to occur within area |

## Extra Information

| State and Territory Reserves | [ Resource Information ] |
|---|---|
| Name | State |
| Herb Guyatt F.R. | VIC |
| Sale Common N.C.R. | VIC |

| Regional Forest Agreements | [ Resource Information ] |
|---|---|

Note that all areas with completed RFAs have been included.

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

| Invasive Species | [ Resource Information ] |
|---|---|

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

| Name | Status | Type of Presence |
|---|---|---|
| Birds | | |

| Name | Status | Type of Presence |
|---|---|---|
| Acridotheres tristis<br>Common Myna, Indian Myna [387] | | Species or species habitat likely to occur within area |
| Alauda arvensis<br>Skylark [656] | | Species or species habitat likely to occur within area |
| Anas platyrhynchos<br>Mallard [974] | | Species or species habitat likely to occur within area |
| Carduelis carduelis<br>European Goldfinch [403] | | Species or species habitat likely to occur within area |
| Carduelis chloris<br>European Greenfinch [404] | | Species or species habitat likely to occur within area |
| Columba livia<br>Rock Pigeon, Rock Dove, Domestic Pigeon [803] | | Species or species habitat likely to occur within area |
| Passer domesticus<br>House Sparrow [405] | | Species or species habitat likely to occur within area |
| Passer montanus<br>Eurasian Tree Sparrow [406] | | Species or species habitat likely to occur within area |
| Streptopelia chinensis<br>Spotted Turtle-Dove [780] | | Species or species habitat likely to occur within area |
| Sturnus vulgaris<br>Common Starling [389] | | Species or species habitat likely to occur within area |
| Turdus merula<br>Common Blackbird, Eurasian Blackbird [596] | | Species or species habitat likely to occur within area |
| Turdus philomelos<br>Song Thrush [597] | | Species or species habitat likely to occur within area |
| Mammals | | |
| Bos taurus<br>Domestic Cattle [16] | | Species or species habitat likely to occur within area |
| Canis lupus familiaris<br>Domestic Dog [82654] | | Species or species habitat likely to occur within area |
| Capra hircus<br>Goat [2] | | Species or species habitat likely to occur within area |
| Felis catus<br>Cat, House Cat, Domestic Cat [19] | | Species or species habitat likely to occur within area |
| Lepus capensis<br>Brown Hare [127] | | Species or species habitat likely to occur within area |
| Mus musculus<br>House Mouse [120] | | Species or species habitat likely to occur within area |

| Name | Status | Type of Presence |
|---|---|---|
| Oryctolagus cuniculus<br>Rabbit, European Rabbit [128] | | Species or species habitat likely to occur within area |
| Rattus norvegicus<br>Brown Rat, Norway Rat [83] | | Species or species habitat likely to occur within area |
| Rattus rattus<br>Black Rat, Ship Rat [84] | | Species or species habitat likely to occur within area |
| Sus scrofa<br>Pig [6] | | Species or species habitat likely to occur within area |
| Vulpes vulpes<br>Red Fox, Fox [18] | | Species or species habitat likely to occur within area |
| **Plants** | | |
| Asparagus asparagoides<br>Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473] | | Species or species habitat likely to occur within area |
| Asparagus scandens<br>Asparagus Fern, Climbing Asparagus Fern [23255] | | Species or species habitat likely to occur within area |
| Carrichtera annua<br>Ward's Weed [9511] | | Species or species habitat may occur within area |
| Chrysanthemoides monilifera<br>Bitou Bush, Boneseed [18983] | | Species or species habitat may occur within area |
| Chrysanthemoides monilifera subsp. monilifera<br>Boneseed [16905] | | Species or species habitat likely to occur within area |
| Cytisus scoparius<br>Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934] | | Species or species habitat likely to occur within area |
| Eichhornia crassipes<br>Water Hyacinth, Water Orchid, Nile Lily [13466] | | Species or species habitat likely to occur within area |
| Genista linifolia<br>Flax-leaved Broom, Mediterranean Broom, Flax Broom [2800] | | Species or species habitat likely to occur within area |
| Genista monspessulana<br>Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126] | | Species or species habitat likely to occur within area |
| Genista sp. X Genista monspessulana<br>Broom [67538] | | Species or species habitat may occur within area |
| Lycium ferocissimum<br>African Boxthorn, Boxthorn [19235] | | Species or species habitat likely to occur within area |
| Nassella trichotoma<br>Serrated Tussock, Yass River Tussock, Yass Tussock, Nassella Tussock (NZ) [18884] | | Species or species habitat likely to occur within area |
| Olea europaea<br>Olive, Common Olive [9160] | | Species or species habitat may occur within area |

| Name | Status | Type of Presence |
|---|---|---|
| Opuntia spp.<br>Prickly Pears [82753] | | Species or species habitat likely to occur within area |
| Rubus fruticosus aggregate<br>Blackberry, European Blackberry [68406] | | Species or species habitat likely to occur within area |
| Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii<br>Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497] | | Species or species habitat likely to occur within area |
| Ulex europaeus<br>Gorse, Furze [7693] | | Species or species habitat likely to occur within area |

| Nationally Important Wetlands | [ Resource Information ] |
|---|---|
| Name | State |
| Lake Wellington Wetlands | VIC |

## 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.

# Caveat

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

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

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

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

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

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

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

- migratory and
- marine

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

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

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

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

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

# Coordinates

-38.104498 147.026998,-38.105444 147.031246,-38.106288 147.03425,-38.107808 147.036739,-38.109023 147.034036,-38.110172 147.03219,-38.111421 147.030774,-38.11321 147.03013,-38.114291 147.030002,-38.11446 147.029959,-38.11473 147.030774,-38.115338 147.030645,-38.115979 147.036096,-38.122293 147.027641,-38.124675 147.024215,-38.122953 147.018378,-38.120792 147.014816,-38.11539 147.017176,-38.116099 147.024901,-38.104517 147.027047,-38.104498 147.026998

## VBA Results – Significant Fauna Species

| Scientific Name | Common Name | Victorian Advisory List | Conservation Status | Count of Sightings | Last Record |
|---|---|---|---|---|---|
| *Accipiter novaehollandiae* | Grey Goshawk | Vulnerable | vu L | 1 | 18/05/2020 |
| *Anseranas semipalmata* | Magpie Goose | Near threatened | nt L | 1 | 31/03/2007 |
| *Ardea alba* | Great Egret | Vulnerable | vu L | 1 | 6/05/2019 |
| *Ardea alba modesta* | Eastern Great Egret | Vulnerable | vu L | 1 | 18/05/2020 |
| *Ardea intermedia plumifera* | Plumed Egret | Endangered | en L | 1 | 18/05/2020 |
| *Aythya australis* | Hardhead | Vulnerable | vu | 1 | 18/05/2020 |
| *Biziura lobata* | Musk Duck | Vulnerable | vu | 1 | 26/07/1999 |
| *Botaurus poiciloptilus* | Australasian Bittern | Endangered | EN en L | 1 | 4/04/2019 |
| *Calidris ferruginea* | Curlew Sandpiper | Endangered | CR en L | 40 | 10/09/2017 |
| *Cercartetus nanus* | Eastern Pygmy-possum | Near threatened | nt X | 1 | 30/08/1967 |
| *Ceyx azureus* | Azure Kingfisher | Near threatened | nt | 1 | 18/05/2020 |
| *Chelodina longicollis* | Eastern Snake-necked Turtle | Data deficient | dd | 1 | 1/12/1977 |
| *Chlidonias hybrida* | Whiskered Tern | Near threatened | nt | 8 | 18/05/2020 |
| *Egretta garzetta* | Little Egret | Endangered | en L | 2 | 10/11/2018 |
| *Falco subniger* | Black Falcon | Vulnerable | vu L | 1 | 18/05/2020 |
| *Galaxiella pusilla* | Dwarf Galaxias | Endangered | VU en L | 4 | 28/03/2012 |
| *Gallinago hardwickii* | Latham's Snipe | Near threatened | nt | 1 | 2/02/2019 |
| *Haliaeetus leucogaster* | White-bellied Sea-Eagle | Vulnerable | vu L | 1 | 23/05/2019 |
| *Hieraaetus morphnoides* | Little Eagle | Vulnerable | vu L | 1 | 24/01/2010 |
| *Hirundapus caudacutus* | White-throated Needletail | Vulnerable | VU vu L | 8 | 21/01/2010 |
| *Hydroprogne caspia* | Caspian Tern | Near threatened | nt L | 2 | 28/09/2017 |
| *Litoria aurea* | Green and Golden Bell Frog | Vulnerable | VU vu X | 20 | 18/05/2020 |
| *Litoria raniformis* | Growling Grass Frog | Endangered | VU en L | | 21/02/1963 |
| *Macquaria ambigua* | Golden Perch | Near threatened | nt X | 1 | 14/03/2019 |
| *Nannoperca sp. 1* | Flinders Pygmy Perch | Vulnerable | vu | 14 | 28/03/2012 |
| *Nycticorax caledonicus* | Nankeen Night-Heron | Near threatened | nt | 6 | 18/05/2020 |
| *Ornithorhynchus anatinus* | Platypus | Vulnerable | vu L | 1 | 11/04/1961 |
| *Phalacrocorax varius* | Pied Cormorant | Near threatened | nt | 1 | 20/02/2019 |
| *Platalea regia* | Royal Spoonbill | Near threatened | nt | 1 | 18/05/2020 |
| *Plegadis falcinellus* | Glossy Ibis | Near threatened | nt | 1 | 18/05/2020 |
| *Pteropus poliocephalus* | Grey-headed Flying-fox | Vulnerable | VU vu L | 999 | 1/11/1951 |
| *Saccolaimus flaviventris* | Yellow-bellied Sheathtail Bat | Data deficient | dd L | 1 | 11/04/1990 |
| *Spatula rhynchotis* | Australasian Shoveler | Vulnerable | vu | 2 | 9/09/2018 |
| *Stagonopleura guttata* | Diamond Firetail | Near threatened | nt L | | 30/12/1998 |
| *Sternula nereis* | Fairy Tern | Endangered | VU en L | 35 | 4/11/2017 |
| *Stictonetta naevosa* | Freckled Duck | Endangered | en L | 4 | 13/06/2019 |
| *Tringa nebularia* | Common Greenshank | Vulnerable | vu | 15 | 3/03/1995 |
| *Tringa stagnatilis* | Marsh Sandpiper | Vulnerable | vu | 2 | 21/02/2006 |

## Key to Conservation Status and Origin

| | |
|---|---|
| **Flora and Fauna Guarantee Act 1988** | |
| **IR** | Rejected, Invalid or Ineligible for listing as Threatened in Victoria |
| **L** | Listed as a Threatened in Victoria |
| **N** | Nominated for listing as Threatened in Victoria |
| **Commonwealth Environment Protection and Biodiversity Conservation (EPBC) Act 1999** | |
| **C** | Listed as Nationally Critically Endangered |
| **E** | Listed as Nationally Endangered |
| **V** | Listed as Nationally Vulnerable |
| **X** | Listed as Nationally Extinct |
| **Advisory List of Threatened Vertebrate Fauna in Victoria (DSE, 2013) Advisory List of Threatened Invertebrate Fauna in Victoria (DSE, 2009)** | |
| **c** | Critically Endangered in Victoria |
| **dd** | Data Deficient - insufficient data exists to determine whether the taxon is secure |
| **e** | Endangered in Victoria |
| **nt** | Near Threatened in Victoria |
| **r** | Rare in Victoria |
| **v** | Vulnerable in Victoria |
| **xp** | Presumed Extinct in Victoria |
| **xr** | Regionally Extinct |
| **xw** | Extinct in the Wild in Victoria |

# Appendix 5: Fauna Survey Results

| Origin | Zoological Name | Common Name | Conservation Status | | | TREATY |
|---|---|---|---|---|---|---|
| | | | EPBC | VIC. Adv. | FFG | |
| * | *Acridotheres tristis* | Common Myna | | | | |
| | *Anas superciliosa* | Pacific Black Duck | | | | |
| | *Anthelid sp.* | Anthelid Moth | | | | |
| | *Anthochaera carunculata* | Red Wattlebird | | | | |
| | *Apis mellifera* | European Honey Bee | | | | |
| | *Araneinae sp.* | Orb-weaver Spider | | | | |
| | *Cacatua galerita* | Sulphur-crested Cockatoo | | | | |
| | *Calyptorhynchus funereus* | Yellow-tailed Black-Cockatoo | | | | |
| | *Chenonetta jubata* | Australian Wood Duck | | | | |
| | *Cincloramphus cruralis* | Brown Songlark | | | | |
| * | *Columba livia* | Rock Dove | | | | |
| | *Corvus coronoides* | Australian Raven | | | | |
| | *Coturnix coturnix* | Common Quail | | | | |
| | *Crinia signifera* | Common Froglet | | | | |
| | *supf. Culicoidea fam. Culicidae* | Mosquitoes | | | | |
| | *Didymus versicolor* | Harlequin Bug | | | | |
| | *Eolophus roseicapilla* | Galah | | | | |
| | *Formicidae sp.* | Ant | | | | |
| | *Grallina cyanoleuca* | Magpie-lark | | | | |
| | *Gymnorhina tibicen* | Australian Magpie | | | | |
| | *Haliastur sphenurus* | Whistling Kite | | | | |
| | *Lucilia cuprina* | Australian Sheep Blowfly | | | | |
| | *Myrmarachne sp.* | Ant-mimicking Jumping Spider | | | | |
| | *Myrmecia croslandi* | Jumping Jack Ant | | | | |
| | *Ocyphaps lophotes* | Crested Pigeon | | | | |
| * | *Oryctolagus cuniculus* | European Rabbit | | | | |
| | *Petrochelidon neoxena* | Welcome Swallow | | | | |
| | *Platycercus eximius* | Eastern Rosella | | | | |
| | *Porphyrio porphyrio* | Purple Swamphen | | | | |
| | *Strepera graculina* | Pied Currawong | | | | |
| * | *Sturnus vulgaris* | Common Starling | | | | |
| | *Tachybaptus novaehollandiae* | Australasian Grebe | | | | |
| | *Threskiornis molucca* | Australian White Ibis | | | | |
| | *Threskiornis spinicollis* | Straw-necked Ibis | | | | |
| | *Trichoglossus haematodus* | Rainbow Lorikeet | | | | |
| | *Vespula germanica* | European Wasp | | | | |

## Key to Conservation Status and Origin

| **Origin** | |
|---|---|
| * | Introduced |
| *? | Introduced but there is doubt that the taxon has ever been established in Victoria |
| ? | There is doubt that the taxon has ever been established in Victoria |
| | |
| **Flora and Fauna Guarantee Act 1988** | |
| IR | Rejected, Invalid or Ineligible for listing as Threatened in Victoria |
| L | Listed as a Threatened in Victoria |
| N | Nominated for listing as Threatened in Victoria |
| | |
| **Commonwealth Environment Protection and Biodiversity Conservation (EPBC)Act 1999** | |
| C | Listed as Nationally Critically Endangered |
| E | Listed as Nationally Endangered |
| V | Listed as Nationally Vulnerable |
| X | Listed as Nationally Extinct |
| | |
| **Advisory List of Threatened Vertebrate Fauna in Victoria (DSE, 2007)** | |
| C | Critically Endangered in Victoria |
| DD | Data Deficient - insufficent data exisits to determine whether the taxon is secure |
| E | Endangered in Victoria |
| NT | Near Threatened in Victoria |
| R | Rare in Victoria |
| V | Vulnerable in Victoria |
| XP | Presumed Extinct in Victoria |
| XR | Regionally Extinct |
| XW | Extinct in the Wild in Victoria |

## Appendix 6: Summary of the assessment of likelihood of presence for rare or threatened fauna species identified within 5km database searches

| *Scientific Name* | Common Name | Conservation Status | | | Treaty | Count of Sightings | Date of Last Record | Preferred Habitat Notes | Database Source | Likelihood of occurrence | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPBC Listing | Victorian Advisory List | FFG Act Listing | | | | | | | |
| ***Birds*** | | | | | | | | | | | |
| *Accipiter novaehollandiae* | Grey Goshawk | | Vulnerable | Listed | | | 18/05/2020 | Found in most forest types, especially tall closed forests (BiB 2016a). | VBA | Unlikely | No suitable habitat present |
| *Actitis hypoleucos* | Common Sandpiper | Threatened | Vulnerable | | CAMBA JAMBA ROKAMBA BONN | 1 | 31/03/2007 | Found in coastal or inland wetlands, both saline or fresh. It is found mainly on muddy edges or rocky shores (BiB 2016b). | VBA / DEE | Unlikely | Limited aspects of habitat present or habitat highly modified |
| *Anseranas semipalmata* | Magpie Goose | | Near Threatened | Listed | | 1 | 31/03/2007 | Floodplains and wet grasslands. Magpie Geese build nests in secluded places, usually close to wetlands (BiB 2016d). | VBA | **Low** | Species may occur rarely or as an occasional visitor to the area. Few records within the local area within the past 25 years (within 1km of the study area) |
| *Anthochaera phrygia* | Regent Honeyeater | Critically Endangered | Critically Endangered | Listed | | | | Occur mainly in dry box ironbark open-forest and woodland areas. feeding on the nectar from eucalypts such as the Mugga Ironbark, White Box and Yellow Box, and Blakeley's Red Gum on which they are reliant (DSEWPC 2016b). | DEE | Unlikely | No suitable habitat present |

| *Scientific Name* | Common Name | Conservation Status | | | Treaty | Count of Sightings | Date of Last Record | Preferred Habitat Notes | Database Source | Likelihood of occurrence | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPBC Listing | Victorian Advisory List | FFG Act Listing | | | | | | | |
| *Apus pacificus* | Fork-tailed Swift | Threatened | | | | | | They mostly occur over dry or open habitats, including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh. They are also found at treeless grassland and sandplains covered with spinifex, open farmland and inland and coastal sand-dunes XX (DEE 2016b) | DEE | Unlikely | Limited aspects of habitat present or habitat highly modified |
| *Ardea alba* | Great Egret | | Vulnerable | Listed | | 1 | 6/05/2019 | The Eastern Great Egret has been reported in a wide range of wetland habitats (for example inland and coastal, freshwater and saline, permanent and ephemeral, open and vegetated, large and small, natural and artificial). These include swamps and marshes; margins of rivers and lakes; damp or flooded grasslands, pastures or agricultural lands; reservoirs; sewage treatment ponds; drainage channels; salt pans and salt lakes; salt marshes; estuarine mudflats, tidal streams; mangrove swamps; coastal lagoons; and offshore reefs (DEE 2020a) | VBA | **Low** | Species may occur rarely or as an occasional visitor to the area. Few records within the local area within the past 25 years (within 1km of the study area) |

| *Scientific Name* | Common Name | Conservation Status | | | Treaty | Count of Sightings | Date of Last Record | Preferred Habitat Notes | Database Source | Likelihood of occurrence | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPBC Listing | Victorian Advisory List | FFG Act Listing | | | | | | | |
| *Ardea modesta* | Eastern Great Egret | | Vulnerable | Listed | CAMBA JAMBA | | 18/05/2020 | Prefer shallow water, particularly when flowing, but may be seen on any watered area, including damp grasslands (DSE 2010a). | VBA | Unlikely | Limited aspects of habitat present or habitat highly modified |
| *Ardea plumifera* | Plumed Egret | | Endangered | Listed | | | 18/05/2020 | Found mostly in freshwater wetlands, shallows of rivers, swamps with short or tall vegetation (HBW 2019a) | VBA | **Low** | Species may occur rarely or as an occasional visitor to the area. Few records within the local area within the past 25 years (within 1km of the study area) |
| *Aythya australis* | Hardhead | | Vulnerable | | | | 18/05/2020 | Found in freshwater swamps and wetlands and occasionally in sheltered estuaries. They prefer deep, fresh open water and densely vegetated wetlands for breeding (BiB 2016f). | VBA | Unlikely | No suitable habitat present |
| *Biziura lobata* | Musk Duck | | Vulnerable | | | 1 | 26/07/1999 | Found in deep freshwater lagoons, with dense reed beds (Birdlife 2016b). | VBA | Unlikely | No suitable habitat present |
| *Botaurus poiciloptilus* | Australasian Bittern | Endangered | Endangered | Listed | | | 10/09/2017 | Frequents reedbeds, and other vegetation in water such as cumbungi, lignum and sedges. The nest is a shallow structure of dry or green reeds, within a clump of reeds in water or a swamp (SA-MDB 2016). | VBA / DEE | **Low** | Species may occur rarely or as an occasional visitor to the area. Few records within the local area within the past 25 years (within 1km of the study area) |
| *Calidris acuminata* | Sharp-tailed Sandpiper | Threatened | | | | | | Prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh | DEE | Unlikely | Limited aspects of habitat present or habitat highly modified |

| *Scientific Name* | Common Name | Conservation Status | | | Treaty | Count of Sightings | Date of Last Record | Preferred Habitat Notes | Database Source | Likelihood of occurrence | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPBC Listing | Victorian Advisory List | FFG Act Listing | | | | | | | |
| | | | | | | | | or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline saltlakes inland. They also occur in saltworks and sewage farms (DEE 2019g) | | | |
| *Calidris ferruginea* | Curlew Sandpiper | Critically Endangered | Endangered | | | 40 | 10/09/2017 | intertidal mudflats of estuaries, lagoons, mangroves, as well as beaches, rocky shores and around lakes, dams and floodwaters (BL 2016a) | VBA / DEE | Unlikely | No suitable habitat present |
| *Calidris melanotos* | Pectoral Sandpiper | Threatened | | | BONN JAMBA ROKAMBA | | | Found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent or fringing vegetation, such as grass or samphire (DEE 2019h) | DEE | Unlikely | No suitable habitat present |
| *Ceyx azureus* | Azure Kingfisher | | Near Threatened | | | | 18/05/2020 | The Azure Kingfisher is never far from water, preferring freshwater rivers and creeks as well as billabongs, lakes, swamps and dams, usually in shady overhanging vegetation. It occurs in parks on rivers, as well as duck | VBA | Unlikely | Limited aspects of habitat present or habitat highly modified |

| *Scientific Name* | Common Name | Conservation Status | | | Treaty | Count of Sightings | Date of Last Record | Preferred Habitat Notes | Database Source | Likelihood of occurrence | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPBC Listing | Victorian Advisory List | FFG Act Listing | | | | | | | |
| | | | | | | | | ponds in urban areas. (Birdlife 2019b) | | | |
| *Chlidonias hybridus* | Whiskered Tern | | Near Threatened | | | | 18/05/2020 | Prefers shallow terrestrial freshwater wetlands, freshwater swamps, brackish and saline lakes, floodwaters, sewage farms, irrigated croplands and large dams (BiB 2016g). | VBA | **Low** | Species may occur rarely or as an occasional visitor to the area. Records found within the local area within the past 25 years (within 2km of the study area) |
| *Egretta garzetta* | Little Egret | | Endangered | Listed | | 2 | 10/11/2018 | Frequents tidal mudflats, saltwater and freshwater wetlands, and mangroves (Day and Simpson 2010). | VBA | Unlikely | Limited aspects of habitat present or habitat highly modified |
| *Falco hypoleucos* | Grey Falcon | Vulnerable | Endangered | Listed | | | | Found in shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near wetlands where surface water attracts prey (NSW- OoEHb). | DEE | Unlikely | No suitable habitat present |
| *Falco subniger* | Black Falcon | | Vulnerable | Listed | | | 18/05/2020 | 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 (BiB 2016i). | VBA | Unlikely | Limited aspects of habitat present or habitat highly modified |

| *Scientific Name* | Common Name | Conservation Status | | | Treaty | Count of Sightings | Date of Last Record | Preferred Habitat Notes | Database Source | Likelihood of occurrence | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPBC Listing | Victorian Advisory List | FFG Act Listing | | | | | | | |
| *Gallinago hardwickii* | Latham's Snipe | Threatened | Near Threatened | | CAMBA JAMBA ROKAMBA BONN | 1 | 2/02/2019 | Found in small groups or singly in freshwater wetlands on or near the coast, generally among dense cover. They are found in any vegetation around wetlands, in sedges, grasses, lignum, reeds and rushes and also in saltmarsh and creek edges on migration. They also use crops and pasture (BiB 2016j). | VBA / DEE | **Low** | Species may occur rarely or as an occasional visitor to the area. Few records within the local area within the past 25 years (within 3km of the study area) |
| *Grantiella picta* | Painted Honeyeater | Vulnerable | Vulnerable | Listed | | | | Found in dry open forests and woodlands, and is strongly associated with mistletoe. It may also be found along rivers, on plains with scattered trees and on farmland with remnant vegetation. It has been seen in urban parks and gardens where large eucalypts are available (BiB 2016m). | DEE | Unlikely | No suitable habitat present |
| *Haliaetus leucogaster* | White-bellied Sea-Eagle | | Vulnerable | Listed | CAMBA | 1 | 23/05/2019 | Usually seen high in a tree, or soaring over waterways and adjacent land. The nest can be located in a tree up to 30m above the ground, but may also be placed on the ground or on rocks (BiB 2016p). | VBA | **Low** | Species may occur rarely or as an occasional visitor to the area. Few records within the local area within the past 25 years (within 1km of the study area) |
| *Hieraaetus morphnoides* | Little Eagle | | Vulnerable | Listed | | | 24/01/2010 | Found mostly in open forest, woodland and scrub types and open | VBA | Unlikely | Limited aspects of habitat present or habitat highly modified |

| *Scientific Name* | Common Name | Conservation Status | | | Treaty | Count of Sightings | Date of Last Record | Preferred Habitat Notes | Database Source | Likelihood of occurrence | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPBC Listing | Victorian Advisory List | FFG Act Listing | | | | | | | |
| | | | | | | | | agricultural land (Day and Simpson 2010) | | | |
| *Hirundapus caudacutus* | White-throated Needletail | Vulnerable | Vulnerable | Listed | CAMBA JAMBA ROKAMBA | 8 | 21/01/2010 | In Australia, the White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground (Coventry 1989; Tarburton 1993; Watson 1955). Because they are aerial, it has been stated that conventional habitat descriptions are inapplicable (Cramp 1985), but there are, nevertheless, certain preferences exhibited by the species They are probably recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland (Higgins 1999). (DSEWPCj). | VBA / DEE | Unlikely | This species is highly mobile, largely 'aerial' bird that occasionally uses trees for roosting and is therefore highly unlikely to be reliant or make significant usage of any of the habitats contained within the site. |
| *Hydroprogne caspia* | Caspian Tern | | Near Threatened | Listed | CAMBA JAMBA | 2 | 28/09/2017 | Usually found near the coast, in extensive wetlands, on coastal and interior beaches and sheltered estuaries. Lives equally well in fresh water and saline environments (BiB 2016q). | VBA | Unlikely | No suitable habitat present |

| *Scientific Name* | Common Name | Conservation Status | | | Treaty | Count of Sightings | Date of Last Record | Preferred Habitat Notes | Database Source | Likelihood of occurrence | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPBC Listing | Victorian Advisory List | FFG Act Listing | | | | | | | |
| *Lathamus discolor* | Swift Parrot | Critically Endangered | Endangered | Listed | | | | Found in dry sclerophyll forests and woodlands, suburban parks and gardens and flowering fruit trees (BiB 2016t). | DEE | Unlikely | No suitable habitat present |
| *Limosa lapponica baueri* | Bar-tailed Godwit | Vulnerable | | Listed | | | | The Bar-tailed Godwit is found mainly in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. It is found often around beds of seagrass and, sometimes, in nearby saltmarsh. It has been sighted in coastal sewage farms and saltworks, saltlakes and brackish wetlands near coasts, sandy ocean beaches, rock platforms, and coral reef-flats. It is rarely found on inland wetlands or in areas of short grass, such as farmland, paddocks and airstrips, although it is commonly recorded in paddocks at some locations overseas (Marchant & Higgins 1993) (DSEWPC 2016k). | DEE | Unlikely | No suitable habitat present |
| *Monarcha melanopsis* | Black-faced Monarch | Threatened | | | | | | Mainly occurs in rainforest ecosystems, including semi-deciduous vine-thickets, complex notophyll vine-forest, tropical (mesophyll) rainforest, | DEE | Unlikely | No suitable habitat present |

| *Scientific Name* | Common Name | Conservation Status | | | Treaty | Count of Sightings | Date of Last Record | Preferred Habitat Notes | Database Source | Likelihood of occurrence | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPBC Listing | Victorian Advisory List | FFG Act Listing | | | | | | | |
| | | | | | | | | subtropical (notophyll) rainforest, mesophyll (broadleaf) thicket/shrubland, warm temperate rainforest (DEE 2016c) | | | |
| *Motacilla flava* | Yellow Wagtail | Threatened | | | | | | Occurs in mainly salt works, paddocks, marshes, grassy wetlands (Day and Simpson 2010) | DEE | Unlikely | No suitable habitat present |
| *Myiagra cyanoleuca* | Satin Flycatcher | Threatened | | | | | | Occurs mainly in wetter, denser forests often at high elevations (Day and Simpson 2010) | DEE | Unlikely | No suitable habitat present |
| *Nycticorax caledonicus* | Nankeen Night Heron | | Near Threatened | | | | 18/05/2020 | Frequents well-vegetated wetlands, and is found along shallow river margins, mangroves, floodplains, swamps, and parks and gardens (BiB 2016v). | VBA | **Low** | Species may occur rarely or as an occasional visitor to the area. Few records within the local area within the past 25 years (within 2km of the study area) |
| *Numenius madagascariensis* | Eastern Curlew | Critically Endangered | Vulnerable | | CAMBA JAMBA ROKAMBA BONN | | | Found on intertidal mudflats and sandflats, often with beds of seagrass, on sheltered coasts, especially estuaries, mangrove swamps, bays, harbours and lagoons (BiB 2016x). | DEE | Unlikely | No suitable habitat present |
| *Pandion haliaetus* | Osprey | Threatened | | | | | | Mainly occurs in mangroves, rivers and estuaries, inshore seas, coastal islands (Day and Simpson 2010) | DEE | Unlikely | No suitable habitat present |

| *Scientific Name* | Common Name | Conservation Status | | | Treaty | Count of Sightings | Date of Last Record | Preferred Habitat Notes | Database Source | Likelihood of occurrence | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPBC Listing | Victorian Advisory List | FFG Act Listing | | | | | | | |
| *Phalacrocorax varius* | Pied Cormorant | | Near Threatened | | | 1 | 20/02/2019 | Found in marine habitats, including estuaries, harbours and bays. It is also found in mangroves and on large inland wetlands in eastern Australia. Breeds in colonies on coastal islands, flooded tree plains, mangroves and sometimes on artificial structures such as beacons (BiB 2016z). | VBA | Unlikely | No suitable habitat present |
| *Platalea regia* | Royal Spoonbill | | Near Threatened | | | | 18/05/2020 | Found in shallow freshwater and saltwater wetlands, intertidal mud flats and wet grasslands. Will also use artificial wetlands such as sewage lagoons, saltfields, dams and reservoirs (BiB 2016aa). | VBA | **Low** | Species may occur rarely or as an occasional visitor to the area. Few records within the local area within the past 25 years (within 50m - 500m of the study area) |
| *Plegadis falcinellus* | Glossy Ibis | | Near Threatened | | CAMBA BONN | | 18/05/2020 | Requires shallow water and mudflats. Found in well-vegetated wetlands, floodplains, mangroves and ricefields (BiB 2016ab). | VBA | **Low** | Species may occur rarely or as an occasional visitor to the area. Few records within local area within 2km of the study area |
| *Rhipidura rufifrons* | Rufous Fantail | Threatened | | | BONN | | | Mainly inhabits wet sclerophyll forests, often in gullies dominated by eucalypts, usually with a dense shrubby understorey often including ferns. (DEE 2016d) | DEE | Unlikely | No suitable habitat present |
| *Rostratula australis* | Australian Painted Snipe | Endangered | Critically Endangered | Listed | CAMBA | | | Inhabits inland and coastal shallow freshwater wetlands, occurring in both ephemeral and | DEE | Unlikely | Limited aspects of habitat present or habitat highly modified |

| *Scientific Name* | Common Name | Conservation Status | | | Treaty | Count of Sightings | Date of Last Record | Preferred Habitat Notes | Database Source | Likelihood of occurrence | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPBC Listing | Victorian Advisory List | FFG Act Listing | | | | | | | |
| | | | | | | | | permanent wetlands, particularly where there is grass. Individuals have been spotted in artificial dams, sewage ponds and waterlogged grasslands (DSEWPC 2016o). | | | |
| *Spatula rhynchotis* | Australasian Shoveler | | Vulnerable | | | 2 | 9/09/2018 | All kinds of wetlands, preferring large undisturbed heavily vegetated freshwater swamps. It is also found on open waters and occasionally along the coast. Nests are built on the ground in dense vegetation, sometimes on a stump or hollow of a tree that is standing in water (Birdlife 2019a). | VBA | Unlikely | Limited aspects of habitat present or habitat highly modified |
| *Sterna nereis* | Fairy Tern | Vulnerable | Endangered | Listed | | 35 | 4/11/2017 | Almost exclusively coastal however may occur several kilometres from the sea in harbours, inlets and rivers. Nests in small, scattered colonies in low dunes or on sandy beaches just above high tide mark (DSEWPC 2016p). | VBA / DEE | Unlikely | Limited aspects of habitat present or habitat highly modified |
| *Stictonetta naevosa* | Freckled Duck | Endangered | Endangered | Listed | | 1 | 13/06/2019 | Prefers permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree. During drier times they move from ephemeral breeding swamps to more permanent waters | VBA | **Low** | Species may occur rarely or as an occasional visitor to the area. Few records within the local area within the past 25 years (within 1km of the study area) |

| *Scientific Name* | Common Name | Conservation Status | | | Treaty | Count of Sightings | Date of Last Record | Preferred Habitat Notes | Database Source | Likelihood of occurrence | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPBC Listing | Victorian Advisory List | FFG Act Listing | | | | | | | |
| | | | | | | | | such as lakes, reservoirs, farm dams and sewage ponds (AM 2016). | | | |
| *Tringa nebularia* | Common Greenshank | Threatened | Vulnerable | | CAMBA JAMBA ROKAMBA BONN | 15 | 3/03/1995 | The Common Greenshank is found in a wide variety of inland wetlands and sheltered coastal habitats of varying salinity. It occurs in sheltered coastal habitats, typically with large mudflats and saltmarsh, mangroves or seagrass. The edges of the wetlands used are generally of mud or clay, occasionally of sand, and may be bare or with emergent or fringing vegetation, including short sedges and saltmarsh, mangroves, thickets of rushes, and dead or live trees. (DSEWPC 2016r) | VBA / DEE | Unlikely | Limited aspects of habitat present or habitat highly modified |
| *Tringa stagnatilis* | Marsh Sandpiper | | Vulnerable | | CAMBA JAMBA ROKAMBA BONN | 2 | 21/02/2006 | The Marsh Sandpiper lives in permanent or ephemeral wetlands of varying salinity, including swamps, lagoons, billabongs, saltpans, saltmarshes, estuaries, pools on inundated floodplains, and intertidal mudflats and also regularly at | VBA | Unlikely | Limited aspects of habitat present or habitat highly modified |

| *Scientific Name* | Common Name | Conservation Status | | | Treaty | Count of Sightings | Date of Last Record | Preferred Habitat Notes | Database Source | Likelihood of occurrence | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPBC Listing | Victorian Advisory List | FFG Act Listing | | | | | | | |
| | | | | | | | | sewage farms and saltworks. They are recorded less often at reservoirs, waterholes, soaks, bore-drain swamps and flooded inland lakes (DSEWPC 2016s). | | | |
| ***Amphibians and Reptiles*** | | | | | | | | | | | |
| *Chelodina longicollis* | Eastern Snake-necked Turtle | | Data deficient | Listed | | | 18/05/2020 | prefers swamps, oxbow lakes, billabongs, and slow-moving weedy rivers and streams, but can also occur in swift-flowing watercourses and can be found dispersing overland. (CSIRO 2016b) | VBA | **Low** | Species may occur rarely or as an occasional visitor to the area. Records found within the local area within the past 25 years (within 2km of the study area) |
| *Heleioporus australiacus* | Giant Burrowing Frog | Vulnerable | | | | | | In the southern portion of its range, the Giant Burrowing Frog has been reported to occur in a wide range of forest communities including montane sclerophyll woodland, montane riparian woodland, as well as wet and dry sclerophyll forest (DSEWPC 2016t) | DEE | Unlikely | No suitable habitat present |
| *Litoria aurea* | Green and Golden Bell Frog | Vulnerable | Vulnerable | | | 20 | 18/05/2020 | In Victoria, the Green and Golden Bell Frog has been recorded in a range of lentic (still water) and terrestrial habitats in the coastal plains and low foothills of the hinterland including lowland forest, | VBA / DEE | **Moderate** | Suitable habitat present. Multiple records found within the past 10 years with 1km of the study area. Species may be a resident in the local |

| *Scientific Name* | Common Name | Conservation Status | | | Treaty | Count of Sightings | Date of Last Record | Preferred Habitat Notes | Database Source | Likelihood of occurrence | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPBC Listing | Victorian Advisory List | FFG Act Listing | | | | | | | |
| | | | | | | | | Banksia woodland, wet heath land, riparian scrub complex, riparian forest, damp forest, shrubby dry forest, limestone box woodland and cleared pastoral areas (Gillespie 1996) (DSEWPC 2016q). | | | area or it forms part of the species range |
| *Litoria raniformis* | Growling Grass Frog | Vulnerable | Endangered | Listed | | | 21/02/1963 | Need still or slow moving water with emergent vegetation around the edges and mats of floating and submerged plants (DSE 2007). | VBA / DEE | Unlikely | No records found in the past 25 years. Limited aspects of habitat present or highly modified |
| ***Mammals*** | | | | | | | | | | | |
| *Cercartetus nanus* | Eastern Pygmy-possum | | Near Threatened | | | 1 | 30/08/1967 | Inhabits a wide range of vegetation alliances, ranging form sub-alpine woodland through Ash forests, gully forests, peppermint forests and stringybark forests to box ironbark forest, heathy woodlands (especially those dominated by Banksia sp.), coast scrub, wet heath and sub-alpine heath in the grampians (Menkhorst, Knight 2010). | VBA | Unlikely | No suitable habitat present |
| *Dasyurus maculatus maculatus* | Spot-tailed Quoll | Endangered | Endangered | Listed | | | | Home range 100 to 200 ha. Trees with hollows, hollow logs on the ground, rocky outcrops, caves or rock crevices (Menkhorst, Knight 2010). | DEE | Unlikely | No suitable habitat present |

| *Scientific Name* | Common Name | Conservation Status | | | Treaty | Count of Sightings | Date of Last Record | Preferred Habitat Notes | Database Source | Likelihood of occurrence | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPBC Listing | Victorian Advisory List | FFG Act Listing | | | | | | | |
| *Ornithorhynchus anatinus* | Platypus | | Near Threatened | | | 1 | 11/04/1961 | The ideal habitat for the species includes a river or a stream with earth banks and native vegetation that provides shading of the stream and cover near the bank. The presence of logs, twigs, and roots, as well as cobbled or gravel water substrate result in increased microinvertebrate fauna (a main food source), and the Platypus also tends to be more abundant in areas with pool-riffle sequences (Australian Museum 2021) | VBA | Unlikely | No suitable habitat present |
| *Petauroides volans* | Greater Glider | Vulnerable | Vulnerable | | | | | The greater glider is an arboreal nocturnal marsupial, largely restricted to eucalypt forests and woodlands. It is primarily folivorous, with a diet mostly comprising eucalypt leaves, and occasionally flowers (Kehl & Borsboom 1984; Kavanagh & Lambert 1990; van der Ree et al., 2004). It is typically found in highest abundance in taller, montane, moist eucalypt forests with relatively old trees and abundant hollows (Andrews et al., 1994; Smith et al., 1994, | DEE | Unlikely | No suitable habitat present |

| *Scientific Name* | Common Name | Conservation Status | | | Treaty | Count of Sightings | Date of Last Record | Preferred Habitat Notes | Database Source | Likelihood of occurrence | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPBC Listing | Victorian Advisory List | FFG Act Listing | | | | | | | |
| | | | | | | | | 1995; Kavanagh 2000; Eyre 2004; van der Ree et al., 2004; Vanderduys et al., 2012). The distribution may be patchy even in suitable habitat (Kavanagh 2000). The greater glider favours forests with a diversity of eucalypt species, due to seasonal variation in its preferred tree species (Kavanagh 1984) (Menkhorst, Knight 2010). | | | |
| *Pteropus poliocephalus* | Grey-headed Flying-fox | Vulnerable | Vulnerable | Listed | | 999 | 1/11/1951 | Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy (Menkhorst, Knight 2010). | VBA / DEE | Unlikely | No suitable habitat present |
| *Saccolaimus flaviventris* | Yellow-bellied Sheathtail Bat | | Data deficient | Listed | | 1 | 11/04/1898 | This species occupies most wooded habitats, including both wet and dry sclerophyll forest, mallee and *Acacia* shrubland, desert, and open woodland. They are a hollow-roosting species, so tend to be found in proximity of adequate old-growth trees. (AOLA 2020a) | VBA | Unlikely | No suitable habitat present |
| ***Fish*** | | | | | | | | | | | |

| *Scientific Name* | Common Name | Conservation Status | | | Treaty | Count of Sightings | Date of Last Record | Preferred Habitat Notes | Database Source | Likelihood of occurrence | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPBC Listing | Victorian Advisory List | FFG Act Listing | | | | | | | |
| *Galaxiella pusilla* | Dwarf Galaxias | Vulnerable | Endangered | Listed | | 4 | 28/03/2012 | Dwarf Galaxias has broad habitat requirements and occurs in slow flowing and still, shallow, permanent and temporary freshwater habitats such as swamps, drains and the backwaters of streams and creeks, often (but not always) containing dense aquatic macrophytes and emergent plants (Cadwallader & Backhouse 1983; McDowall 1996; Hammer 2002a). In larger pools, the species is usually found amongst marginal vegetation. Some wetlands where it occurs may partially or completely dry up during summer (Humphries 1986) and such wetlands rely on seasonal flooding plus linkages to other sites where the species occurs, for recolonisation (Backhouse & Vanner 1978). Wetlands connected to a more permanent waterbody (such as river or creek) may also be vital to their long-term survival (particularly during extended dry conditions) | VBA / DEE | **Moderate** | Suitable habitat present. Multiple records in the past 10 years within 4km of the study area Species may be a resident in the local area of it forms part of the species range |

| *Scientific Name* | Common Name | Conservation Status | | | Treaty | Count of Sightings | Date of Last Record | Preferred Habitat Notes | Database Source | Likelihood of occurrence | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPBC Listing | Victorian Advisory List | FFG Act Listing | | | | | | | |
| | | | | | | | | and must therefore be considered as part of the habitat requirement critical to survival (DSEWPC 2016u) | | | |
| *Macquaria ambigua* | Golden Perch | | Near Threatened | | | 1 | 14/03/2019 | predominantly found in the lowland, warmer, turbid, slow flowing rivers. In the Broken River they have been shown to prefer deep, slow flowing pool habitats and were often associated with snags and other cover (MDBA 2016) | VBA | Unlikely | Outside of species natural range |
| *Nannoperca sp. 1* | Flinders Pygmy Perch | | Vulnerable | | | 14 | 28/03/2012 | Often found in small systems with a low flow rate and quiet vegetated areas in streams, billabongs, lakes and even irrigation channels. Not usually found in open water, prefers covered habitats. Often seems to form loose aggregations (nativefish 2016) | VBA | **Moderate** | Suitable habitat present. Multiple records in the past 10 years within the local area 3km of the study area Species may be a resident in the local area of it forms part of the species range |

| *Scientific Name* | Common Name | Conservation Status | | | Treaty | Count of Sightings | Date of Last Record | Preferred Habitat Notes | Database Source | Likelihood of occurrence | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPBC Listing | Victorian Advisory List | FFG Act Listing | | | | | | | |
| *Prototroctes maraena* | Australian Grayling | Vulnerable | Vulnerable | Listed | | | | Inhabit cool, clear, freshwater streams with gravel substrate and areas alternating between pools and riffle zones. The species has been found over 100 km upstream from the sea (DSEWPC 2016v) | DEE | Unlikely | No suitable habitat present |

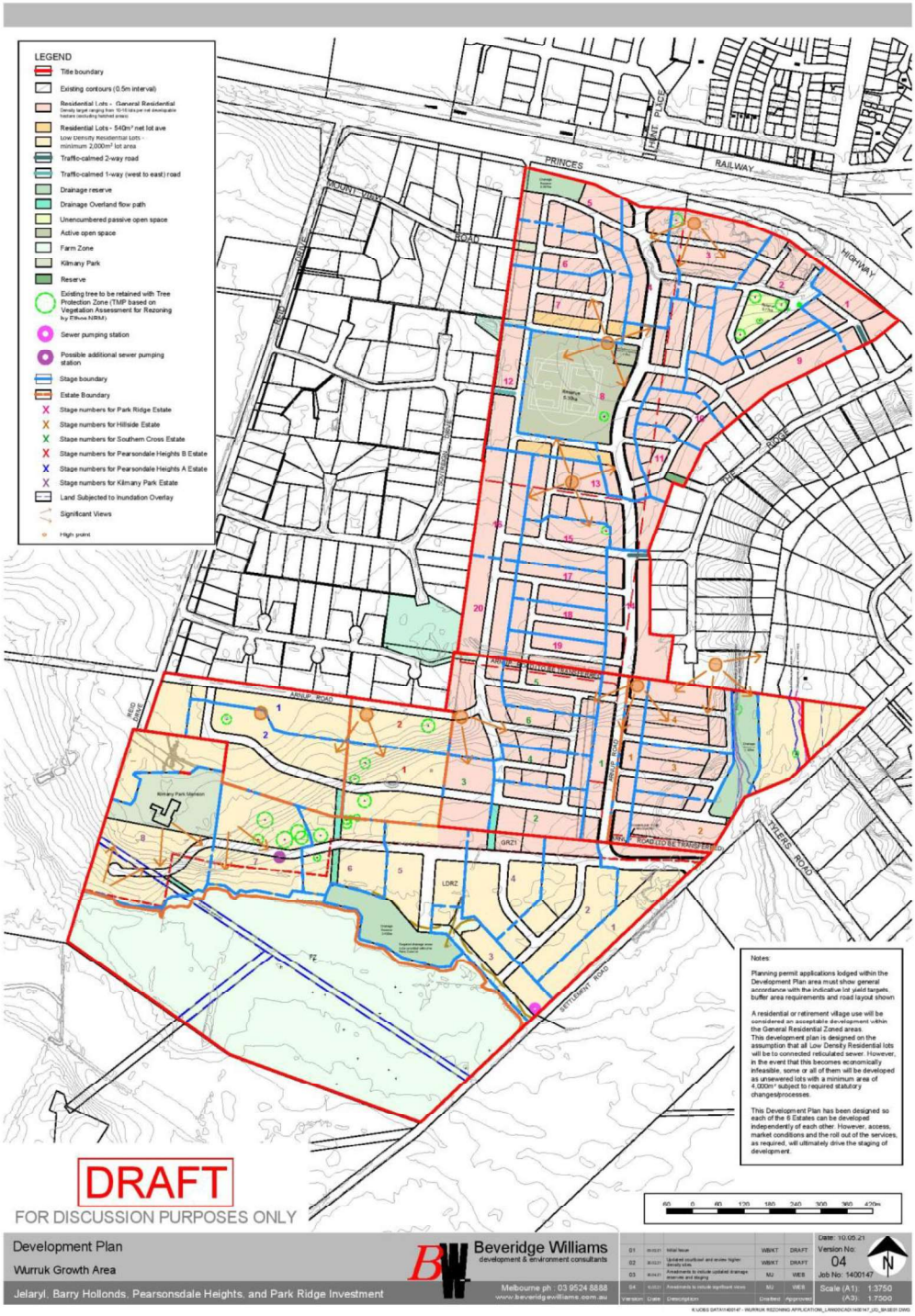
## References


| SPECIES | TAG | Title | Detail |
|---|---|---|---|
| **Birds** | | | |
| *Accipiter novaehollandiae* | BiB 2016a | Grey Goshawk | http://www.birdsinbackyards.net/species/Accipiter-novaehollandiae |
| *Actitis hypoleucos* | BiB 2016b | Common Sandpiper | http://www.birdsinbackyards.net/species/Actitis-hypoleucos |
| *Anseranas semipalmata* | BiB 2016d | Magpie Goose | http://www.birdsinbackyards.net/species/Anseranas-semipalmata |
| *Anthochaera phrygia* | DSEWPC 2016b | Regent Honeyeater | https://www.environment.gov.au/biodiversity/threatened/publications/factsheet-regent-honeyeater-xanthomyza-phrygia |
| *Apus pacificus* | DEE 2016b | Fork-tailed Swift | http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=678 |
| *Ardea alba* | DEE 2020a | Great Egret | https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=82410 |
| *Ardea modesta* | DSE 2010a | Action Statement No 120 | http://www.depi.vic.gov.au/__data/assets/pdf_file/0004/251185/Great_Egret_Ardea-alba.pdf |
| *Ardea plumifera* | HBW 2019a | Plumed Egret | https://www.hbw.com/species/plumed-egret-ardea-plumifera |
| *Aythya australis* | BiB 2016f | Hardhead | http://www.birdsinbackyards.net/species/Aythya-australis |
| *Biziura lobata* | Birdlife 2016b | Musk Duck | http://www.birdlife.org/datazone/speciesfactsheet.php?id=363 |
| *Botaurus poiciloptilus* | SA-MDB 2016 | Australasian Bittern | http://root.ala.org.au/bdrs-core/mdnrm/fieldguide/taxon.htm?id=29026 |
| *Calidris acuminata* | DEE 2019g | Sharp-tailed Sandpiper | http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=874 |
| *Calidris ferrunginea* | Birdlife 2016e | Curlew Sandpiper | http://birdlife.org.au/bird-profile/curlew-sandpiper |
| *Calidris melanotos* | DEE 2019h | Pectoral Sandpiper | http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=858 |
| *Ceyx azureus* | Birdlife 2019b | Azure Kingfisher | http://www.birdlife.org.au/bird-profile/azure-kingfisher |
| *Chlidonias hybridus* | BiB 2016g | Whiskered Tern | http://www.birdsinbackyards.net/species/Chlidonias-hybrida |

| SPECIES | TAG | Title | Detail |
|---|---|---|---|
| *Egretta garzetta* | Day and Simpson 2010 | Field Guide to the Birds of Australia | |
| *Falco hypoleucos* | NSW- OoEHb | Grey Falcon | http://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10330 |
| *Falco subniger* | BiB 2016i | Black Falcon | http://www.birdsinbackyards.net/species/Falco-subniger |
| *Gallinago hardwickii* | BiB 2016j | Latham's Snipe | http://www.birdsinbackyards.net/species/Gallinago-hardwickii |
| *Grantiella picta* | BiB 2016m | Painted Honeyeater | http://www.birdsinbackyards.net/species/Grantiella-picta |
| *Haliaeetus leucogaster* | BiB 2016p | White-bellied Sea-Eagle | http://www.birdsinbackyards.net/species/Haliaeetus-leucogaster |
| *Hieraaetus morphnoides* | Day and Simpson 2010 | Little Eagle | |
| *Hirundapus caudacutus* | DSEWPC 2016j | White-throated Needletail | http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=682 |
| *Hydroprogne caspia* | BiB 2016q | Caspian Tern | http://www.birdsinbackyards.net/species/Hydroprogne-caspia |
| *Lathamus discolor* | BiB 2016t | Swift Parrot | http://www.birdsinbackyards.net/species/Lathamus-discolor |
| *Limosa lapponica baueri* | DSEWPC 2016k | Limosa lapponica | http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=844 |
| *Monarcha melanopsis* | DEE 2016c | Black-faced Monarch | http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=609 |
| *Motacilla flava* | Day and Simpson 2010 | Field Guide to the Birds of Australia | |
| *Myiagra cyanoleuca* | Day and Simpson 2010 | Field Guide to the Birds of Australia | |
| *Nycticorax caledonicus* | BiB 2016v | Nankeen Night-Heron | http://www.birdsinbackyards.net/species/Nycticorax-caledonicus |
| *Numenius madagascariensis* | BiB 2016w | Eastern Curlew | http://www.birdsinbackyards.net/species/Numenius-madagascariensis |
| *Pandion haliaetus* | Day and Simpson 2010 | Field Guide to the Birds of Australia | |
| *Phalacrocorax varius* | BiB 2016z | Pied Cormorant | http://www.birdsinbackyards.net/species/Phalacrocorax-varius |
| *Platalea regia* | BiB 2016aa | Royal Spoonbill | http://www.birdsinbackyards.net/species/Platalea-regia |
| *Plegadis falcinellus* | BiB 2016ab | Glossy Ibis | http://birdsinbackyards.net/species/Plegadis-falcinellus |
| *Rhipidura rufifrons* | DEE 2016d | Rufous Faintail | http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=592 |
| *Rostratula australis* | DSEWPC 2016o | Australian Painted Snipe | http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=77037 |
| *Spatula rhynchotis* | Birdlife 2019a | Australasian Shoveler | http://datazone.birdlife.org/species/factsheet/22680243 |
| *Sterna nereis* | DSEWPC 2016p | Australian Fairy Tern | http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=82950 |
| *Stictonetta naevosa* | AM 2016 | Freckled Duck | http://australianmuseum.net.au/freckled-duck |
| *Tringa nebularia* | DSEWPC 2016r | Common Greenshank | http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=832 |
| *Tringa stagnatilis* | DSEWPC 2016s | Marsh Sandpiper | http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=833 |

| SPECIES | TAG | Title | Detail |
|---|---|---|---|
| **Amphibians & Reptiles** | | | |
| *Chelodina longicollis* | CSIRO 2016b | Eastern Snake-necked Turtle | |
| *Heleioporus australiacus* | DSEWPC 2016t | Giant Burrowing Frog | http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=1973 |
| *Litoria aurea* | DSEWPC 2016q | Green and Golden Bell Frog | http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=1870 |
| *Litoria raniformis* | DSE 2007xxx | Growling Grass Frog | http://www.dse.vic.gov.au/__data/assets/pdf_file/0016/103408/GGF_fact_sheet.pdf |
| **Mammals** | | | |
| *Cercartetus nanus* | Menkhorst, Knight 2010 | A Field Guide to the Mammals of Australia, Third Edition, 2010. Oxford University Press. | |
| *Dasyurus maculatus maculatus* | Menkhorst, Knight 2010 | A Field Guide to the Mammals of Australia, Third Edition, 2010. Oxford University Press. | |
| *Ornithorhynchus anatinus* | Australian Museum 2021 | Platypus | https://australian.museum/learn/animals/mammals/platypus/ |
| *Petauroides volans* | Menkhorst, Knight 2010 | A Field Guide to the Mammals of Australia, Third Edition, 2010. Oxford University Press. | |
| *Pteropus poliocephalus* | Menkhorst, Knight 2010 | A Field Guide to the Mammals of Australia, Third Edition, 2010. Oxford University Press. | |
| *Saccolaimus flaviventris* | AOLA 2020a | Yellow-bellied Sheathtail Bat | https://bie.ala.org.au/species/urn:lsid:biodiversity.org.au:afd.taxon:d45a3f9e-b8a7-4b96-bc02-a840e67737a4 |
| **Fish** | | | |
| *Galaxiella pusilla* | DSEWPC 2016u | Dwarf Galaxias | http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=56790 |
| *Macquaria ambigua* | MDBA 2016 | Golden Perch - Fact Sheet | http://www.mdba.gov.au/sites/default/files/archived/mdbc-NFS-reports/2202_factsheet_native_golden_perch.pdf |
| *Nannoperca sp. 1* | Nativefish 2016 | Southern Pygmy Perch | http://www.nativefish.asn.au/southern-pygmy-perch.html |
| *Prototroctes maraena* | DSEWPC 2016v | Australian Grayling | http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=26179 |

# Appendix 7: Design



# Appendix 8: Native Vegetation Removal report

## Native vegetation removal report

This report provides information to support an application to remove, destroy or lop native vegetation in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation*. The report **is not an assessment by DELWP** of the proposed native vegetation removal. Native vegetation information and offset requirements have been determined using spatial data provided by the applicant or their consultant.

**Date of issue:** 27/05/2021
**Time of issue:** 3:02 pm

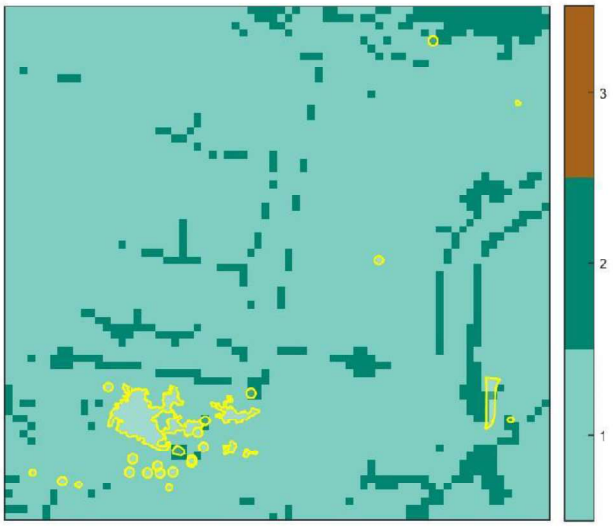
**Report ID: IND_2021_021**

| **Project ID** | 21022BW_ENSYM_VG94_v1_26052021 |
|---|---|

### Assessment pathway

| **Assessment pathway** | **Detailed Assessment Pathway** |
|---|---|
| Extent including past and proposed | 5.116 ha |
| Extent of past removal | 0.000 ha |
| Extent of proposed removal | 5.116 ha |
| No. Large trees proposed to be removed | 16 |
| Location category of proposed removal | Location 2<br>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**

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Native vegetation removal report

## Offset requirements if a permit is granted

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

| | |
|---|---|
| **General offset amount**[1] | 0.919 general habitat units |
| Vicinity | West Gippsland Catchment Management Authority (CMA) or Wellington Shire Council |
| Minimum strategic biodiversity value score[2] | 0.329 |
| Large trees | 16 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

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

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

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Native vegetation removal report

## 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.

If you wish to remove the mapped native vegetation you are required to apply for a permit from your local council. Council will refer your application to DELWP for assessment, as required. **This report is not a referral assessment by DELWP.**

This *Native vegetation removal report* must be submitted with your application for a permit to remove, destroy or lop native vegetation.

Refer to the *Guidelines for the removal, destruction or lopping of native* vegetation (the Guidelines) for a full list of application requirements This report provides information that meets the following application requirements:

- The assessment pathway and reason for the assessment pathway
- A description of the native vegetation to be removed (partly met)
- Maps showing the native vegetation and property (partly met)
- Information about the impacts on rare or threatened species.
- The offset requirements determined in accordance with section 5 of the Guidelines that apply if approval is granted to remove native vegetation.

Additional application requirements must be met including:

- Topographical and land information
- Recent dated photographs
- Details of past native vegetation removal
- An avoid and minimise statement
- A copy of any Property Vegetation Plan that applies
- A defendable space statement as applicable
- A statement about the Native Vegetation Precinct Plan as applicable
- A site assessment report including a habitat hectare assessment of any patches of native vegetation and details of trees
- An offset statement that explains that an offset has been identified and how it will be secured.

## 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:

*Species habitat units = extent x condition x species landscape factor x 2, where the species landscape factor = 0.5 + (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:

*General habitat units = extent x condition x general landscape factor x 1.5, where the general landscape factor = 0.5 + (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 | gipp0055 | Endangered | 0 | no | 0.140 | 2.746 | 2.746 | 0.444 | | 0.416 | General |
| 1-B | Patch | gipp0055 | Endangered | 0 | no | 0.130 | 0.053 | 0.053 | 0.254 | | 0.007 | General |
| 1-C | Patch | gipp0055 | Endangered | 0 | no | 0.170 | 0.095 | 0.095 | 0.431 | | 0.017 | General |
| 1-D | Patch | gipp0055 | Endangered | 0 | no | 0.170 | 0.453 | 0.453 | 0.460 | | 0.084 | General |
| 1-E | Patch | gipp0055 | Endangered | 0 | no | 0.200 | 0.092 | 0.092 | 0.366 | | 0.019 | General |
| 1-F | Patch | gipp0055 | Endangered | 0 | no | 0.140 | 0.015 | 0.015 | 0.400 | | 0.002 | General |
| 1-G | Patch | gipp0056 | Endangered | 0 | no | 0.270 | 0.466 | 0.466 | 0.468 | | 0.139 | General |
| 3-A | Scattered Tree | gipp0055 | Endangered | 0 | no | 0.200 | 0.031 | 0.031 | 0.200 | | 0.006 | General |
| 3-B | Scattered Tree | gipp0055 | Endangered | 0 | no | 0.200 | 0.031 | 0.031 | 0.170 | | 0.005 | General |
| 3-C | Scattered Tree | gipp0055 | Endangered | 0 | no | 0.200 | 0.031 | 0.031 | 0.160 | | 0.005 | General |

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| 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 |
| 3-D | Scattered Tree | gipp0055 | Endangered | 0 | no | 0.200 | 0.031 | 0.031 | 0.470 | | 0.007 | General |
| 2-A | Scattered Tree | gipp0055 | Endangered | 1 | no | 0.200 | 0.070 | 0.070 | 0.735 | | 0.018 | General |
| 2-B | Scattered Tree | gipp0055 | Endangered | 1 | no | 0.200 | 0.070 | 0.070 | 0.430 | | 0.015 | General |
| 2-C | Scattered Tree | gipp0055 | Endangered | 1 | no | 0.200 | 0.070 | 0.070 | 0.170 | | 0.012 | General |
| 2-D | Scattered Tree | gipp0055 | Endangered | 1 | no | 0.200 | 0.070 | 0.070 | 0.166 | | 0.012 | General |
| 2-E | Scattered Tree | gipp0055 | Endangered | 1 | no | 0.200 | 0.070 | 0.070 | 0.160 | | 0.012 | General |
| 2-F | Scattered Tree | gipp0055 | Endangered | 1 | no | 0.200 | 0.070 | 0.066 | 0.160 | | 0.012 | General |
| 2-G | Scattered Tree | gipp0055 | Endangered | 1 | no | 0.200 | 0.070 | 0.066 | 0.160 | | 0.012 | General |
| 2-H | Scattered Tree | gipp0055 | Endangered | 1 | no | 0.200 | 0.070 | 0.070 | 0.160 | | 0.012 | General |
| 2-I | Scattered Tree | gipp0055 | Endangered | 1 | no | 0.200 | 0.070 | 0.070 | 0.460 | | 0.015 | General |
| 2-J | Scattered Tree | gipp0055 | Endangered | 1 | no | 0.200 | 0.070 | 0.046 | 0.160 | | 0.008 | General |
| 2-K | Scattered Tree | gipp0055 | Endangered | 1 | no | 0.200 | 0.070 | 0.046 | 0.160 | | 0.008 | General |
| 2-L | Scattered Tree | gipp0055 | Endangered | 1 | no | 0.200 | 0.070 | 0.070 | 0.460 | | 0.015 | General |
| 2-M | Scattered Tree | gipp0055 | Endangered | 1 | no | 0.200 | 0.070 | 0.070 | 0.460 | | 0.015 | General |
| 2-N | Scattered Tree | gipp0055 | Endangered | 1 | no | 0.200 | 0.070 | 0.070 | 0.408 | | 0.015 | General |

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| 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 |
| 2-O | Scattered Tree | gipp0055 | Endangered | 1 | no | 0.200 | 0.070 | 0.070 | 0.460 | | 0.015 | General |
| 2-P | Scattered Tree | gipp0055 | Endangered | 1 | no | 0.200 | 0.070 | 0.070 | 0.196 | | 0.013 | 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 |
|---|---|---|---|---|---|---|
| Australian Mudfish | *Neochanna cleaveri* | 4703 | Critically endangered | Dispersed | Habitat importance map | 0.0006 |
| Eastern Water-ribbons | *Cycnogeton microtuberosum* | 504537 | Rare | Dispersed | Habitat importance map | 0.0003 |
| Lacey River Buttercup | *Ranunculus amplus* | 505019 | Rare | Dispersed | Habitat importance map | 0.0002 |
| Australian Grayling | *Prototroctes maraena* | 4686 | Vulnerable | Dispersed | Habitat importance map | 0.0002 |
| Annual Fireweed | *Senecio glomeratus subsp. longifructus* | 507144 | Rare | Dispersed | Habitat importance map | 0.0002 |
| Fairy Tern | *Sterna nereis nereis* | 10118 | Endangered | Dispersed | Habitat importance map | 0.0002 |
| Little Tern | *Sterna albifrons sinensis* | 10117 | Vulnerable | Dispersed | Habitat importance map | 0.0002 |
| Woolly Waterlily | *Philydrum lanuginosum* | 502494 | Vulnerable | Dispersed | Habitat importance map | 0.0002 |
| Creeping Rush | *Juncus revolutus* | 501839 | Rare | Dispersed | Habitat importance map | 0.0001 |
| Grey Billy-buttons | *Craspedia canens* | 504643 | Endangered | Dispersed | Habitat importance map | 0.0001 |
| Rough-grain Love-grass | *Eragrostis trachycarpa* | 501197 | Rare | Dispersed | Habitat importance map | 0.0001 |
| Whimbrel | *Numenius phaeopus* | 10150 | Vulnerable | Dispersed | Habitat importance map | 0.0001 |
| Veiled Fringe-sedge | *Fimbristylis velata* | 501369 | Rare | Dispersed | Habitat importance map | 0.0001 |
| White-bellied Sea-Eagle | *Haliaeetus leucogaster* | 10226 | Vulnerable | Dispersed | Habitat importance map | 0.0001 |
| Black-tailed Godwit | *Limosa limosa* | 528553 | Vulnerable | Dispersed | Habitat importance map | 0.0001 |
| Slender Pink-fingers | *Caladenia vulgaris* | 504449 | Rare | Dispersed | Habitat importance map | 0.0001 |
| Australian Painted Snipe | *Rostratula australis* | 10170 | Critically endangered | Dispersed | Habitat importance map | 0.0001 |
| Little Egret | *Egretta garzetta nigripes* | 10185 | Endangered | Dispersed | Habitat importance map | 0.0001 |
| Small Scurf-pea | *Cullen parvum* | 502773 | Endangered | Dispersed | Habitat importance map | 0.0001 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Maroon Leek-orchid | *Prasophyllum frenchii* | 502709 | Endangered | Dispersed | Habitat importance map | 0.0001 |
| Forest Bitter-cress | *Cardamine papillata* | 505034 | Vulnerable | Dispersed | Habitat importance map | 0.0001 |
| Australasian Bittern | *Botaurus poiciloptilus* | 10197 | Endangered | Dispersed | Habitat importance map | 0.0001 |
| Australian Little Bittern | *Ixobrychus dubius* | 10195 | Endangered | Dispersed | Habitat importance map | 0.0000 |
| Salt Lawrencia | *Lawrencia spicata* | 501888 | Rare | Dispersed | Habitat importance map | 0.0000 |
| Tall Vanilla-lily | *Arthropodium sp. 1 (robust glaucous)* | 503699 | Rare | Dispersed | Habitat importance map | 0.0000 |
| Matted Flax-lily | *Dianella amoena* | 505084 | Endangered | Dispersed | Habitat importance map | 0.0000 |
| Wavy Swamp Wallaby-grass | *Amphibromus sinuatus* | 503625 | Vulnerable | Dispersed | Habitat importance map | 0.0000 |
| Intermediate Egret | *Ardea intermedia* | 10186 | Endangered | Dispersed | Habitat importance map | 0.0000 |
| Growling Grass Frog | *Litoria raniformis* | 13207 | Endangered | Dispersed | Habitat importance map | 0.0000 |
| Glossy Grass Skink | *Pseudemoia rawlinsoni* | 12683 | Vulnerable | Dispersed | Habitat importance map | 0.0000 |
| Freckled Duck | *Stictonetta naevosa* | 10214 | Endangered | Dispersed | Habitat importance map | 0.0000 |
| Eastern Great Egret | *Ardea modesta* | 10187 | Vulnerable | Dispersed | Habitat importance map | 0.0000 |
| Leafy Twig-sedge | *Cladium procerum* | 500786 | Rare | Dispersed | Habitat importance map | 0.0000 |
| Purple Blown-grass | *Lachnagrostis punicea subsp. punicea* | 504206 | Rare | Dispersed | Habitat importance map | 0.0000 |
| Blue-billed Duck | *Oxyura australis* | 10216 | Endangered | Dispersed | Habitat importance map | 0.0000 |
| Baillon's Crake | *Porzana pusilla palustris* | 10050 | Vulnerable | Dispersed | Habitat importance map | 0.0000 |
| Pale Swamp Everlasting | *Coronidium gunnianum* | 504655 | Vulnerable | Dispersed | Habitat importance map | 0.0000 |
| Purple Blown-grass | *Lachnagrostis punicea subsp. filifolia* | 504222 | Rare | Dispersed | Habitat importance map | 0.0000 |
| Musk Duck | *Biziura lobata* | 10217 | Vulnerable | Dispersed | Habitat importance map | 0.0000 |
| Hardhead | *Aythya australis* | 10215 | Vulnerable | Dispersed | Habitat importance map | 0.0000 |
| Australasian Shoveler | *Anas rhynchotis* | 10212 | Vulnerable | Dispersed | Habitat importance map | 0.0000 |
| Lewin's Rail | *Lewinia pectoralis pectoralis* | 10045 | Vulnerable | Dispersed | Habitat importance map | 0.0000 |



| | | | | | | |
|---|---|---|---|---|---|---|
| Veined Spear-grass | *Austrostipa rudis subsp. australis* | 504940 | Rare | Dispersed | Habitat importance map | 0.0000 |
| Silky Kidney-weed | *Dichondra sp. 1* | 505786 | Rare | Dispersed | Habitat importance map | 0.0000 |
| Purple Diuris | *Diuris punctata* | 501084 | Vulnerable | Dispersed | Habitat importance map | 0.0000 |
| Trailing Hop-bush | *Dodonaea procumbens* | 501090 | Vulnerable | Dispersed | Habitat importance map | 0.0000 |
| Lanky Buttons | *Leptorhynchos elongatus* | 501941 | Endangered | Dispersed | Habitat importance map | 0.0000 |
| Austral Crane's-bill | *Geranium solanderi var. solanderi s.s.* | 505337 | Vulnerable | Dispersed | Habitat importance map | 0.0000 |
| Yarra Gum | *Eucalyptus yarraensis* | 501326 | Rare | Dispersed | Habitat importance map | 0.0000 |
| Black Falcon | *Falco subniger* | 10238 | Vulnerable | Dispersed | Habitat importance map | 0.0000 |
| Spurred Helmet-orchid | *Corybas aconitiflorus* | 500835 | Rare | Dispersed | Habitat importance map | 0.0000 |
| White-throated Needletail | *Hirundapus caudacutus* | 10334 | Vulnerable | Dispersed | Habitat importance map | 0.0000 |
| Grey Mangrove | *Avicennia marina subsp. australasica* | 500345 | Rare | Dispersed | Habitat importance map | 0.0000 |
| Slender Wire-lily | *Laxmannia gracilis* | 501889 | Rare | Dispersed | Habitat importance map | 0.0000 |
| Grey Goshawk | *Accipiter novaehollandiae novaehollandiae* | 10220 | Vulnerable | Dispersed | Habitat importance map | 0.0000 |
| Fringed Helmet-orchid | *Corybas fimbriatus* | 500839 | Rare | Dispersed | Habitat importance map | 0.0000 |
| One-flower Early Nancy | *Wurmbea uniflora* | 503583 | Rare | Dispersed | Habitat importance map | 0.0000 |

**Habitat group**

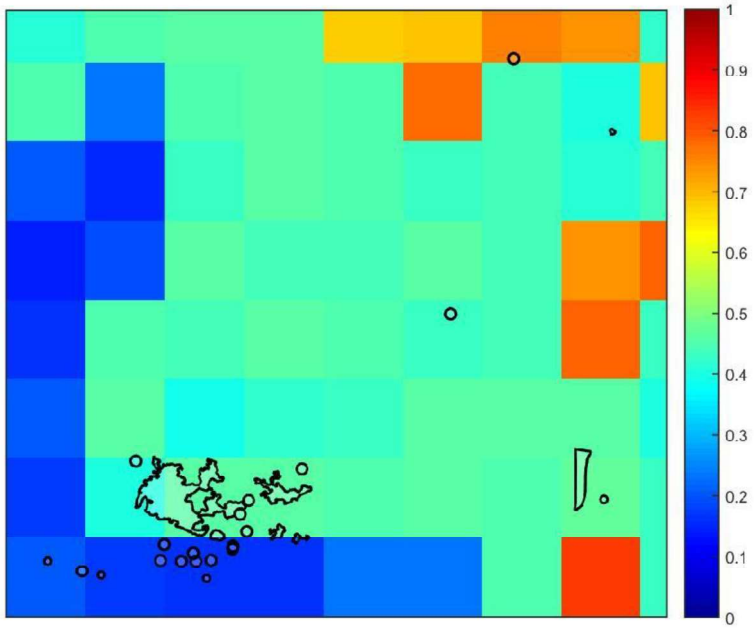
- Highly localised habitat means there is 2000 hectares or less mapped habitat for the species
- Dispersed habitat means there is more than 2000 hectares of mapped habitat for the species

**Habitat impacted**

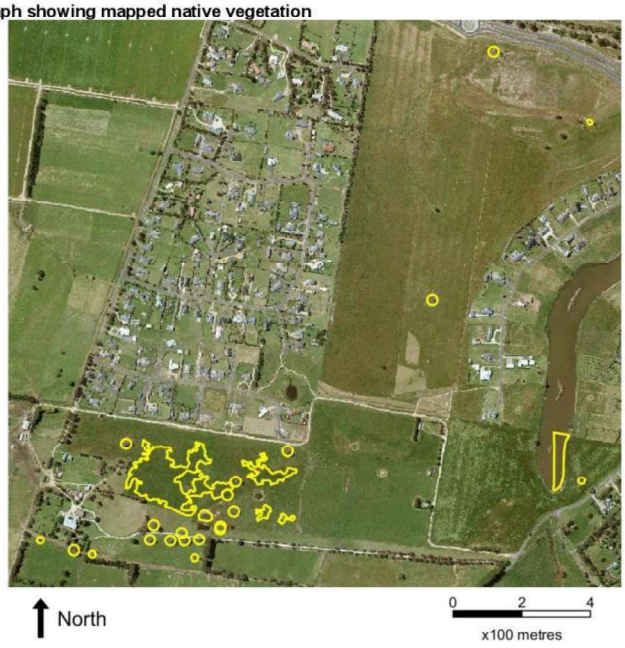
- Habitat importance maps are the maps defined in the Guidelines that include all the mapped habitat for a rare or threatened species
- Top ranking maps are the maps defined in the Guidelines that depict the important areas of a dispersed species habitat, developed from the highest habitat importance 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**




**3. Aerial photograph showing mapped native vegetation**

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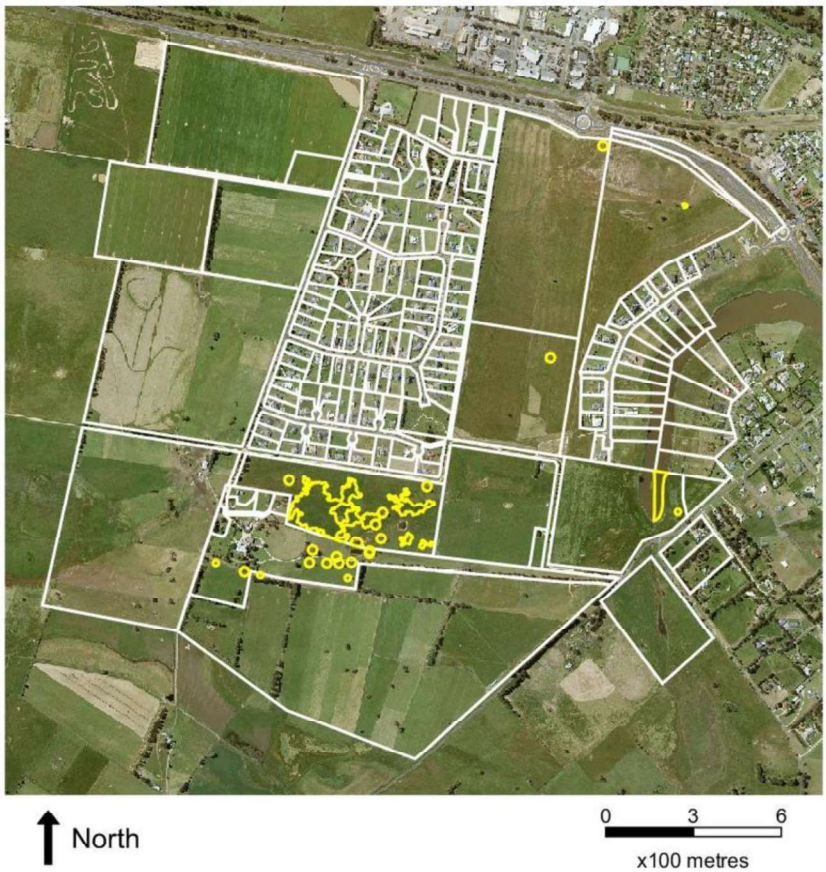
**4. Map of the property in context**

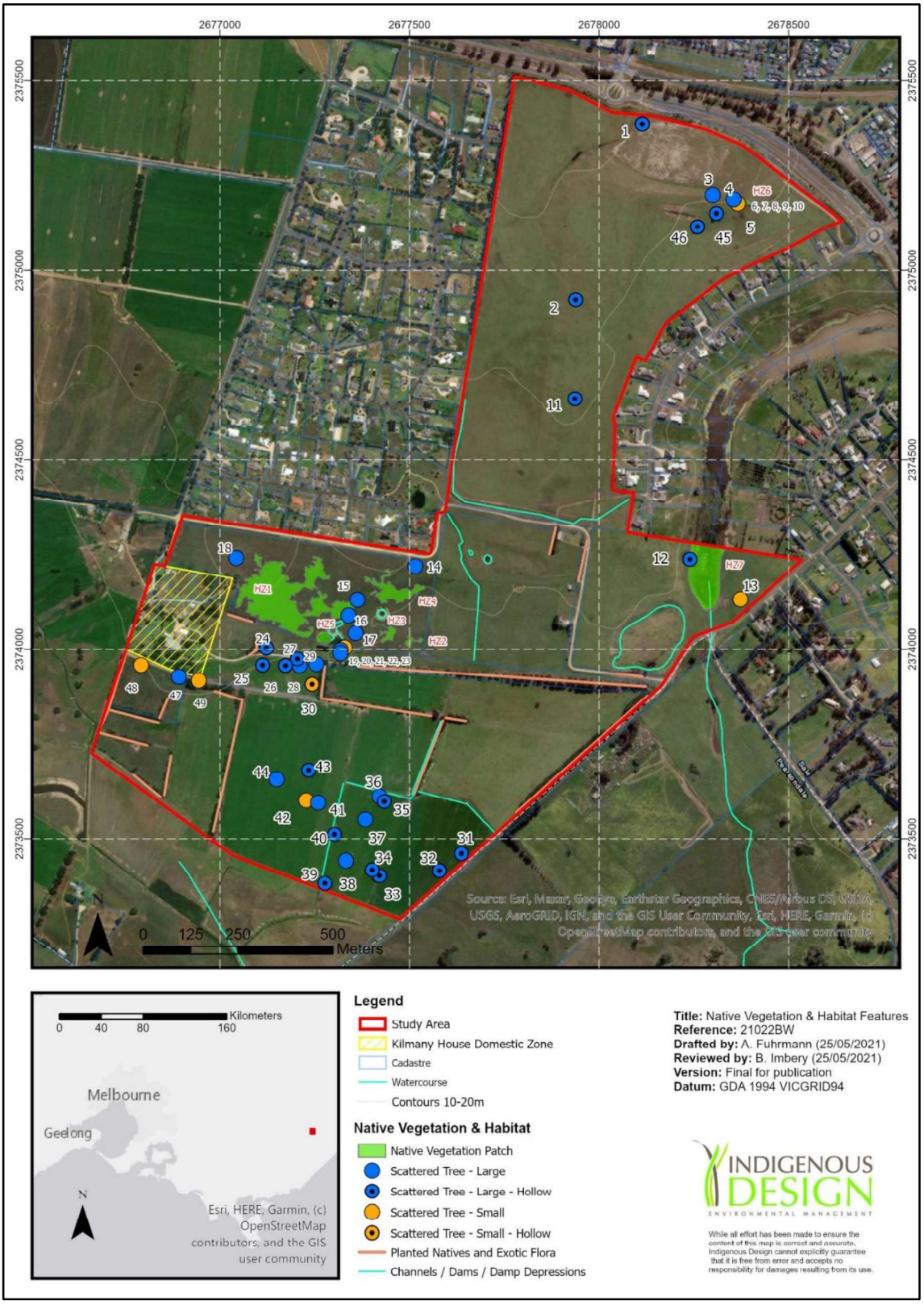



Yellow boundaries denote areas of proposed native vegetation removal.

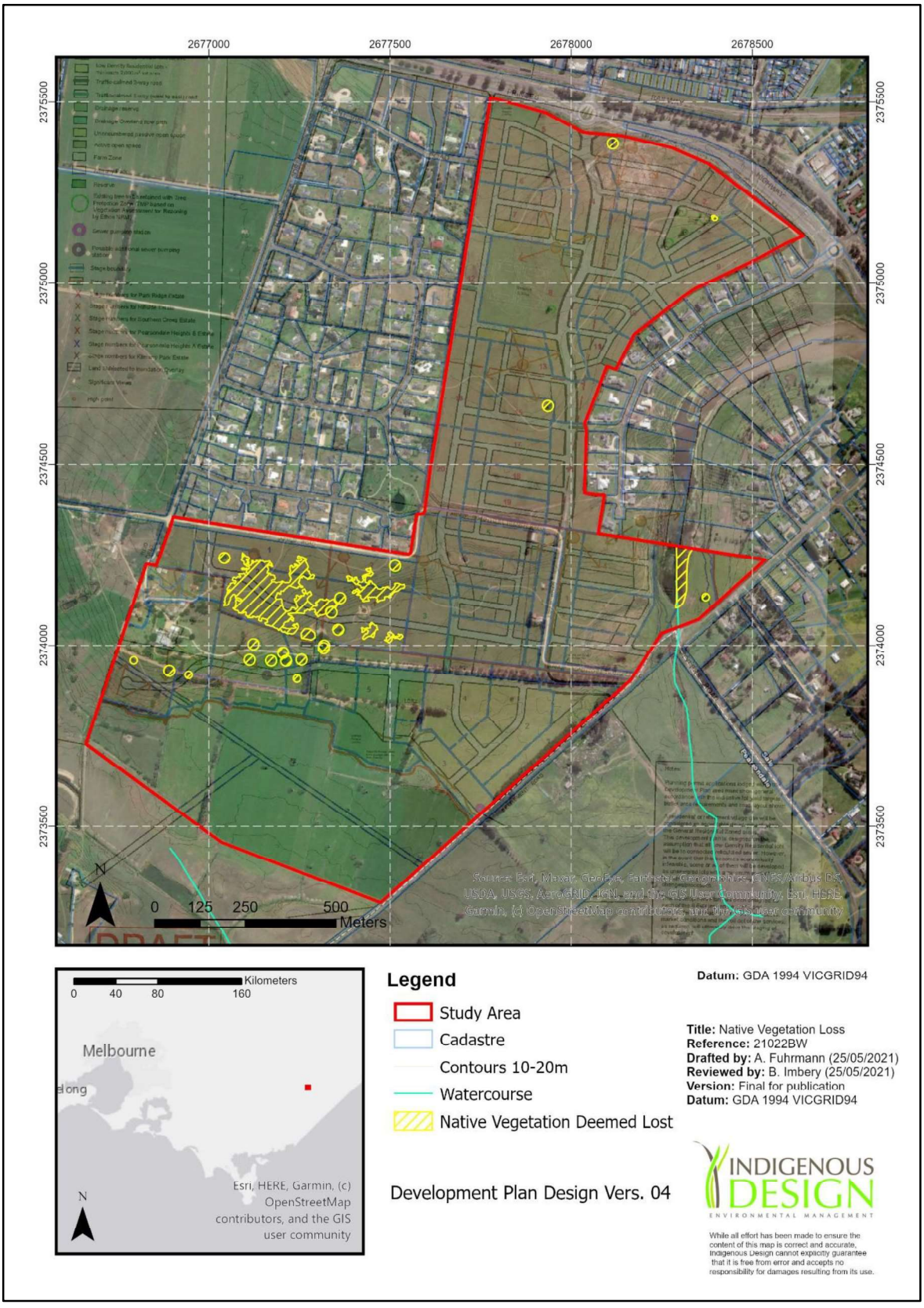
# Maps

Maps commence on the next page.

## Map 1 – Location and extent of native vegetation and habitat features



## Map 2 – Location and extent of native vegetation losses under the proposal

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