

Final Report

# Desktop Biodiversity Assessment: West Sale and Wurruk Industrial Land Supply Strategy

Prepared for

**Urban Enterprise**

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**Ecology and Heritage Partners Pty Ltd**

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## **1 Introduction**

Ecology and Heritage Partners Pty Ltd was commissioned by Urban Enterprise to conduct a Desktop Biodiversity Assessment for the West Sale and Wurruk Industrial Land Supply Strategy. The Strategy will inform Wellington Shire Council whether sufficient, appropriately zoned industrial land is available to meet the forecast demand over a short-medium term (five to ten-year period) and ensure that its future development can occur in a coordinated and timely manner.

The purpose of this desktop biodiversity assessment was to identify ecological values that are known to, or are likely to occur within the study area, and determine the potential regulatory and legislative implications, and potential key constraints, for future industrial use of the sites. This report discusses the results of the assessment in relation to relevant Commonwealth and State environmental legislation. The report also provides recommendations to address or reduce impacts and, where necessary, highlights components that require further investigation, such as targeted surveys.

### **1.1 Study Area**

The study area is located at West Sale and Wurruk, approximately 12 kilometres west of Sale, Victoria (Figure 1). This assessment covers three sites along the Princes Highway, which have the following characteristics:

- Site 1: located to the west of the existing industrial zoned land in Wurruk:
  - Approximately 42 ha in size;
  - Zoned as Farming Zone; and,
  - The northern boundary backs on to the Thompson River and riverside vegetation.
- Site 2: located to the north of the Princes Highway and to the east of the West Sale Aerodrome:
  - Approximately 79 ha in size; and,
  - Zoned as Farming Zone.
- Site 3: located to the south of the Princes Highway and east of the Fulham Correctional Centre:
  - Approximately 104 ha in size; and,
  - Zoned as Farming Zone.

According to the Department of Environment, Land, Water and Planning (DELWP) Native Vegetation Information Management (NVIM) Tool (DELWP 2017a), the study areas occur within the Gippsland Plain bioregion. The study area is located within the jurisdiction of the West Gippsland Catchment Management Authority (CMA) and the Wellington Shire Council municipality.

## 2 Methods

### 2.1 Desktop Assessment

The following relevant literature, online-resources and databases were reviewed to provide an assessment of flora and fauna values associated with the study area:

- The DELWP NVIM Tool (DELWP 2017a) and NatureKit (DELWP 2017b) for:
  - Modelled data for location risk, remnant vegetation patches, scattered trees and habitat for rare or threatened species;
  - Current wetlands; and,
  - The extent of historic and current EVCs.
- EVC benchmarks (DELWP 2017c) for descriptions of EVCs within the relevant bioregion;
- The Victorian Biodiversity Atlas (VBA) for previously documented flora and fauna records within the project locality (DELWP 2017d);
- The Illustrated Flora Information System of Victoria (IFLISV) (Gullan 2017) for assistance with the distribution and identification of flora species;
- The Commonwealth Department of the Environment (DoEE) Protected Matters Search Tool (PMST) for matters of National Environmental Significance (NES) protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (DoEE 2017);
- Relevant listings under the Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act), including the latest Threatened and Protected Lists (DELWP 2017e; DELWP 2016);
- The Planning Maps Online (DELWP 2017f) and Planning Schemes Online (DELWP 2017g) to ascertain current zoning and environmental overlays in the study area;
- Other relevant environmental legislation and policies as required; and,
- Aerial photography of the study area.

### 2.2 Permitted Clearing Assessment (the Guidelines)

Under the *Planning and Environment Act 1987*, Clause 52.17 of the Planning Schemes requires a planning permit from the relevant local Council to remove, destroy or lop native vegetation. The assessment process for the clearing of vegetation follows the 'Permitted clearing of native vegetation - Biodiversity assessment guidelines' (the Guidelines) (DEPI 2013). The 'Biodiversity assessment handbook - Permitted clearing of native vegetation' (the Handbook) provides clarification regarding the application of the Guidelines (DELWP 2015).

For the purposes of this desktop assessment, modelled native vegetation and condition scores provided by DELWP (2017b) was used to estimate the extent of native vegetation to be removed and quantity and quantity of biodiversity offsets that may be required for each site. However, a site assessment will be required to assess the extent and quality of native vegetation to be removed prior to submitting a planning permit to Council. The sub-sections below explains this process.

### 2.2.1 Risk-based Pathway

The Guidelines manage the impacts on biodiversity from native vegetation removal using a risk-based approach. Two factors – extent risk and location risk – are used to determine the risk associated with an application for a permit to remove native vegetation. The location risk (A, B or C) has been determined for all areas in Victoria and is available on DELWP’s Native Vegetation Information Management (NVIM) Tool (DELWP 2017a). Determination of risk-based pathway is summarised in Table 1.

**Table 1.** Risk-based pathways for applications to remove native vegetation (DEPI 2013)

Extent		Location		
		A	B	C
Native Vegetation	< 0.5 hectares	Low	Low	High
	≥ 0.5 hectares and < 1 hectare	Low	Moderate	High
	≥ 1 hectare	Moderate	High	High
Scattered Trees	< 15 scattered trees	Low	Moderate	High
	≥ 15 scattered trees	Moderate	High	High

**Notes:** For the purpose of determining the risk-based pathway of an application to remove native vegetation the extent includes any other native vegetation that was permitted to be removed on the same contiguous parcel of land with the same ownership as the native vegetation to be removed, where the removal occurred in the five year period before an application to remove native vegetation is lodged.

### 2.2.2 Vegetation Assessment

Native vegetation (as defined in Table 2) is assessed using two key parameters: extent (in hectares) and condition. Extent is determined through a field assessment. The condition score for Moderate and High Risk-based pathways must be assessed through a habitat hectare<sup>1</sup> assessment conducted by a qualified ecologist. The condition score for Low Risk-based pathways may be based on either modelled data available on the NVIM Tool (DELWP 2017a), or through a habitat hectare assessment.

In addition, all mapped wetlands (based on the DELWP ‘Current Wetlands’ layer) must be included as native vegetation, with the modelled condition score assigned to them (DELWP 2017b).

<sup>1</sup> A ‘habitat hectare’ is a unit of measurement which combines the condition and extent of native vegetation.

**Table 2.** Determination of remnant native vegetation (DEPI 2013)

Category	Definition	Extent	Condition
Remnant patch of native vegetation	An area of vegetation where at least 25 per cent of the total perennial understorey plant cover is native. OR An area with three or more native canopy trees where the canopy foliage cover is at least 20 per cent of the area.	Measured in hectares. Based on hectare area of the remnant patch.	Vegetation Quality Assessment Manual (DSE 2004).
Scattered tree	A native canopy tree that does not form part of a remnant patch.	Measured in hectares. Each scattered tree is assigned an extent of 0.071 hectares (30m diameter).	Scattered trees are assigned a default condition score of 0.2.

**Notes:** Native vegetation is defined in the Victoria Planning Provisions as ‘plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses’.

### 2.2.3 Offsets

Offsets are required to compensate for the permitted removal of native vegetation.

The offset requirements for Low risk-based pathway applications are calculated using the NVIM Tool, resulting in a Biodiversity Assessment Report.

The offset requirements for a Moderate or High risk-based pathway are calculated by DELWP, based on the vegetation condition scores determined during a biodiversity assessment. This results in a Biodiversity Assessment Report OR Biodiversity Impact and Offset Requirements report (BIOR) produced by DELWP.

For the purposes of this desktop assessment, a scenario of native vegetation clearing was carried out using modelled native vegetation and condition scores provided by DELWP (2017b), and assuming that all of the modelled vegetation within the three sites is proposed to be removed. The estimation of the offsets required was calculated using the EnSym offsets tool.

## 2.3 Assessment Qualifications and Limitations

Data and information held within the ecological databases and mapping programs reviewed in the desktop assessment (e.g. VBA, PMST, Biodiversity Interactive Maps etc.) are unlikely to represent all flora and fauna observations within, and surrounding, the study area. It is therefore important to acknowledge that a lack of documented records does not necessarily indicate that a species or community is absent.

The assessment was based on desktop information only and did not include a site assessment.

### 3 Results

#### 3.1 Native Vegetation

##### 3.1.1 Ecological Vegetation Classes (EVCs)

Pre-1750 modelled EVC mapping indicates that study area would have been historically dominated by Plains Grassy Woodland (EVC 55) and Plains Grassy Woodland/Gilgai Wetland Mosaic (EVC 259), with smaller areas of Floodplain Reedbed (EVC 863) and Floodplain Riparian Woodland (EVC 56) located along the banks of the Thomson River in Site 1 (DELWP 2017b).

Current (2005) modelled mapping of EVCs indicates that approximately 35.35 hectares of native vegetation remains within the study area (Table 3) (DELWP 2017b). Plains Grassy Woodland is modelled as occurring in all three sites, with the largest extent (14.91 hectares) of this EVC occurring within the western side of Site 2 (Figure 2). Floodplain Riparian Woodland is also modelled to be present within Site 1, and Plains Grassy Woodland/Gilgai Wetland Mosaic is modelled to be present in Site 3. All of these EVCs have a Bioregional Conservation Status of Endangered.

**Table 3.** Extent of remnant native vegetation modelled to be present in each of the three sites within the study area (2005 data; DELWP 2017b).

Site	EVC	EVC Number	Bioregional Conservation Status	Area (ha)
1	Plains Grassy Woodland	55	Endangered	1.36
1	Floodplain Riparian Woodland	56	Endangered	5.22
2	Plains Grassy Woodland	55	Endangered	8.16
2	Plains Grassy Woodland/ Gilgai Wetland Mosaic	259	Endangered	5.70
3	Plains Grassy Woodland	55	Endangered	14.91

Recent and historical aerial imagery suggests that remnant vegetation is still present within Site 1 adjacent to Thomson River (Plate 1a). However, current aerial imagery shows little evidence of native canopy cover throughout the Site 2 and 3, and it is likely that parts of these Sites have been cleared and used for agriculture (Plate 1b-c).

Rows of trees are present along fencelines and driveways, however many appear to be in straight lines and are possibly planted, which would mean that they are exempt from native vegetation clearing regulations. In particular, the area in the west of Site 2 appears to be largely cleared of any woodland vegetation, contrary to DELWP's current EVC modelling (see Figure 2). A site assessment will be required to confirm that these trees are indeed planted. It is possible that some of these trees are scattered remnant trees and/or small areas of remnant woodland. It is also possible that a native understorey and groundcover persists in some areas, even though a canopy is lacking.



**Plate 1.** Recent aerial imagery of the three sites. (a) Site 1; (b) Site 2; (c) Site 3. Source: ESRI; date not provided.

### 3.1.2 Current Wetlands

The DELWP Current Wetlands layer identified wetlands present in all three sites, with a total area of 2.23 hectares (Figure 2; Table 4; DELWP 2017b). Due to the difficulty in mapping wetlands, under the Guidelines all mapped wetlands based on this layer that are to be impacted must be included as native vegetation, with the modelled condition score assigned to them (DELWP 2017b).

**Table 4.** Extent of mapped wetlands present in each of the three sites within the study area (DELWP 2017b).

Site	Area (ha)
1	0.59
2	1.42
3	0.23

### 3.2 Significance Assessment

#### 3.2.1 Flora

The VBA contains records of five nationally significant and 19 State significant flora species previously recorded within 10 kilometres of the study area (DELWP 2017d) (Appendix 1.1; Figure 4). The PMST nominated an additional five nationally significant species which have not been previously recorded but have the potential to occur in the locality (DoE 2017).

The majority of the nearby significant flora records are from the Holey Plains State Park, located approximately 10 km to the south west of the study area, with a smaller number of records in nearby riparian and wetland habitats within the Gippsland Lakes and a nearby flora reserve (Herb Guyatt Flora Reserve) (Figure 4).

It is possible that the native vegetation present within Site 1 adjacent to Thomson River provides habitat for significant flora. However given the remainder of the Site 1, and all of Site 2 and Site 3 appears to be cleared there are unlikely to be any other areas that provide habitat for significant flora, particularly if understorey vegetation has been heavily disturbed. It is also possible that the small wetland areas indicated by the DELWP Current Wetlands layer provide habitat for significant flora species; however, this is dependent on the history and degree of disturbance (which is likely to be high) and will need to be clarified with a site assessment.

Depending on the condition of the remnant vegetation near Thomson River, and the condition of any other remnant vegetation that may be present (including wetlands), there may be suitable habitat for several State significant flora species (Appendix 1). In particular, Rough-grain Love-grass *Eragrostis trachycarpa* and Lanky Buttons *Leptorhynchus elongatus* have been recorded in roadside vegetation adjacent to Site 2, although these records are from the early 1990s and the species may no longer persist in the area.

Two nationally significant species have been found within 10 km of the study area within the last ten years: Wellington Mint-bush *Prostanthera galbraithiae* and River Swamp Wallaby-grass *Amphibromus fluitans*. Further notes on these two species are as follows:

#### **Wellington Mint-bush**

There are several records of the nationally significant Wellington Mint-bush located in the Holey Plains State Park. This park is the stronghold for this species, and supports ten of the 11 current or recently known populations of Wellington Mint-bush, with plants from the 11<sup>th</sup> population at Dutson Downs (approximately 25 km east of the study area) not being recorded since 1986 (Carter and Walsh 2006). Given the lack of records outside of the Holey Plains State Park, and that the preferred habitat of Wellington Mint Bush is heathy open forest, heathland and heathy woodland usually on gravelly sand (Carter and Walsh 2006), it is unlikely that the study area supports habitat for this species.

#### **River Swamp Wallaby-grass**

River Swamp Wallaby-grass is known from the Rosedale, Meeniyan and Wonthaggi areas in Gippsland, and occurs in both natural and man-made water-bodies, including swamps, lagoons, billabongs and dams (TSSC 2008). Habitat could potentially occur within the study area for River Swamp Wallaby-grass, within wetlands

and remnant vegetation near Thomson River. A site assessment would establish the presence of suitable habitat and the species' likelihood of presence.

### 3.2.2 Fauna

The VBA contains records of six nationally significant, 22 State significant and 9 regionally significant fauna species previously recorded within 10 kilometres of the study area (DELWP 2017d) (Appendix 2.1; Figure 5). The PMST nominated an additional 11 nationally significant species which have not been previously recorded but have the potential to occur in the locality (DoE 2016).

Habitat within the study area may be suitable to support three EPBC Act-listed species, namely Grey-headed Flying Fox *Pteropus poliocephalus*, Dwarf Galaxias *Galaxiella pusilla* and Growling Grass Frog *Litoria raniformis*.

Grey-headed Flying Fox is a highly mobile species and forages on flowering eucalypts, which may be present within the woodland patch to the north-east of the study area (Site 1).

Wetland habitat within the study area, including farm dams may provide suitable habitat for a range of aquatic and wetland dependant fauna including fish, frogs and wetland birds. Nationally significant fauna that may utilise this habitat include Dwarf Galaxias and Growling Grass Frog *Litoria raniformis*. These species also have potential to occur in the adjoining Thomson River which may be impacted by the project due to sedimentation and changes in hydrology.

There are a high number of records of State and regionally significant wetland birds within 10 kilometres of the study area including Magpie Goose *Anseranas semipalmata*, Musk Duck *Biziura lobata*, Australian Shoveler *Anas rhynchos*, Hardhead *Aythya australis*, Eastern Great Egret *Ardea modesta*, Pied Cormorant *Phalacrocorax varius*, Royal Spoonbill *Platalea regia* and Latham's Snipe *Gallinago hardwickii*. However most of these records are contained within the larger wetlands associated with Sale Common Nature Conservation Reserve located approximately 6 kilometres to the south-east of the study area.

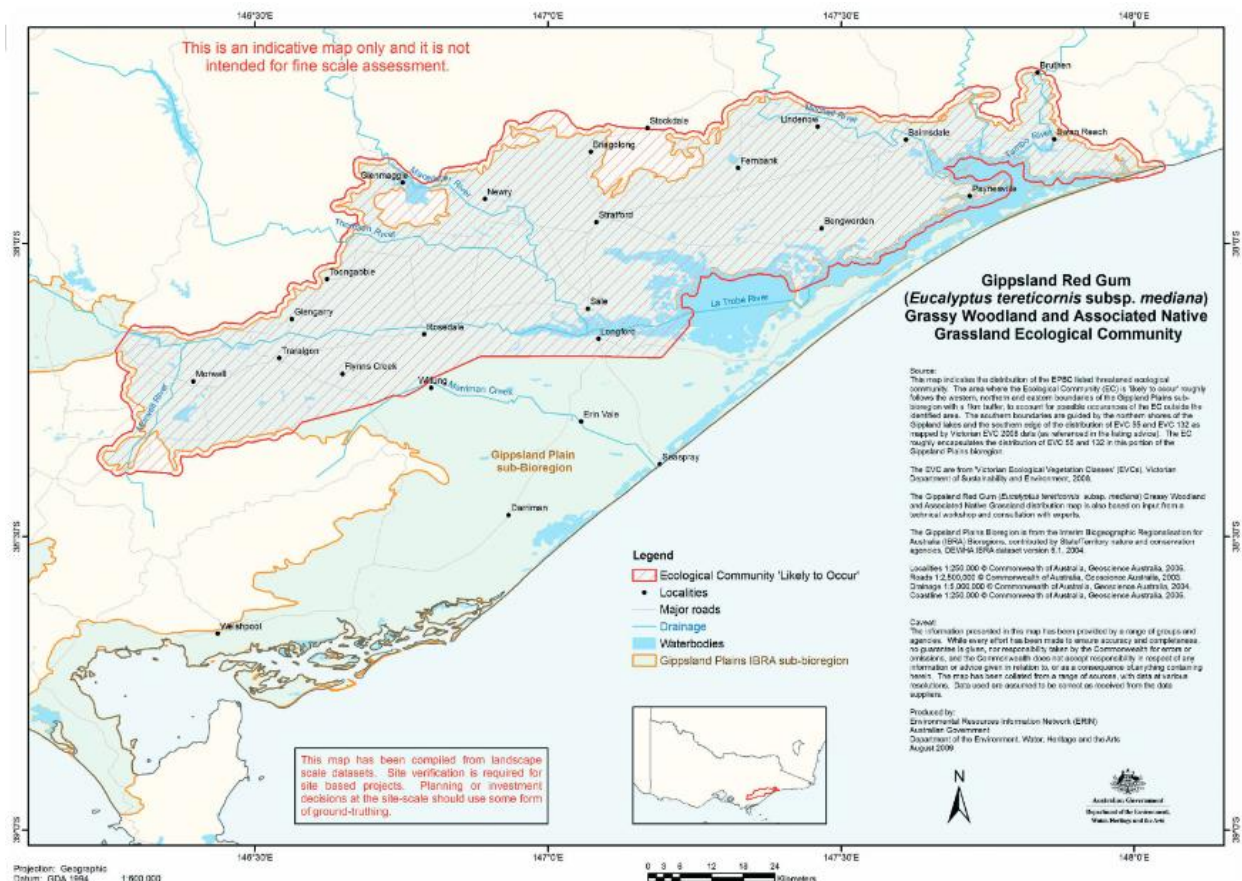
The VBA and PMST contain records for 15 migratory species. The majority of records are from the coastline, lakes and wetlands in the surrounding landscape associated with the Gippsland Lakes Ramsar site (Figure 5). Aerial imagery indicates that the study area does not support any significant water bodies, and as such it is unlikely to provide 'important habitat' for migratory species as defined under the EPBC Act; although, migratory species may fly over the study area during their migration period or en-route to better quality habitats in the surrounding area.

### 3.2.3 Communities

Three nationally listed ecological communities are predicted to occur within 10 kilometres of the study area (DoEE 2017):

- Natural Damp Grassland of the Victorian Coastal Plains;
- Gippsland Red Gum (*Eucalyptus tereticornis* subsp. *mediana*) Grassy Woodland and Associated and Native Grassland; and,
- Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains.

Any Plains Grassy Woodland that is present within the study area will need to be assessed against the condition thresholds for the Gippsland Red Gum (*Eucalyptus tereticornis* subsp. *mediana*) Grassy Woodland and Associated and Native Grassland, as the study area falls within the indicative area for the occurrence of this community (Plate 2), and the Gippsland Plains Grassy Woodland EVC can correspond to this community (DEWHA 2010).



**Plate 2.** Indicative map of the distribution of the Gippsland Red Gum (*Eucalyptus tereticornis* subsp. *mediana*) Grassy Woodland and Associated and Native Grassland (DEWHA 2010).

It is unlikely that Natural Damp Grassland of the Victorian Coastal Plains occurs within the study area, given that grassland EVCs are not modelled to occur (DELWP 2017b), and that the study area has been used for agricultural purposes, likely resulting in a high level of understorey degradation.

Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains has potential to occur in the study area. The DELWP Current Wetlands layer indicates the presence of several wetlands, and there is an area of modelled Plains Grassy Woodland/Gilgai Wetland Mosaic EVC in Site 3 (Figure 2). The listing advice for this community lists Gilgai Wetland (EVC 678) as one of the EVCs that can correspond with the Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains ecological community (TSSC 2012). If the area has been significantly disturbed as a result of cultivation, then the potential for this community to occur is low.

Two FFG Act-listed ecological communities are modelled to occur in the study area (Figure 2, DELWP 2017b):

- Central Gippsland Plains Grassland; and,
- Forest Red Gum Grassy Woodland.

Both of these communities correspond to the nationally significant Gippsland Red Gum (*Eucalyptus tereticornis* subsp. *mediana*) Grassy Woodland and Associated and Native Grassland, and may occur in the study area if remnant Plains Grassy Woodland is found to occur.

### 3.3 Permitted Clearing Assessment (the Guidelines)

#### 3.3.1 Vegetation proposed to be removed

In the event that native vegetation within the three sites is proposed to be cleared, a site assessment would be required to determine the extent of clearing and the associated risk-based pathway. Location Risk for each site is provided in Figure 3. An explanation of how risk-based pathway is determined is provided in Section 2.2.1.

For the purposes of this desktop assessment, a scenario of native vegetation clearing was investigated using modelled native vegetation and condition scores provided by DELWP (2017b), and assuming that all of the modelled vegetation is proposed to be removed. The estimation of the offsets required was calculated using the EnSym offsets tool.

Note that this includes the extent of modelled EVCs as well as the extent of wetlands provided in the DELWP Current Wetlands layer.

#### Site 1:

The study area is within Location A, with 7.170 hectares of modelled native vegetation present. If all modelled vegetation is proposed to be removed, the permit application would fall under the Moderate Risk-based pathway.

**Table 5.** Permitted Clearing Assessment (the Guidelines).

Risk-based pathway	Moderate
Total Extent*	7.170
Remnant Patch (ha)	7.170
Scattered Trees (no.)	0
Location Risk	A
Strategic Biodiversity Score	0.332

\* Extent based on modelled native vegetation extent provided by DELWP (2017b)

#### Site 2:

The study area is within Location A, with 16.323 hectares of modelled native vegetation present. If all modelled vegetation is proposed to be removed, the permit application would fall under the Moderate Risk-based pathway.

**Table 5.** Permitted Clearing Assessment (the Guidelines)

Risk-based pathway	High
Total Extent*	16.337
Remnant Patch (ha)	16.337
Scattered Trees (no.)	0
Location Risk	C
Strategic Biodiversity Score	0.770

\* Extent based on modelled native vegetation extent provided by DELWP (2017b)

### Site 3:

The study area is within Location A, with 14.089 hectares of modelled native vegetation present. If all modelled vegetation is proposed to be removed, the permit application would fall under the High Risk-based pathway.

**Table 4.** Permitted Clearing Assessment (the Guidelines)

Risk-based pathway	Moderate
Total Extent*	14.101
Remnant Patch (ha)	14.101
Scattered Trees (no.)	0
Location Risk	A
Strategic Biodiversity Score	0.111

\* Extent based on modelled native vegetation extent provided by DELWP (2017b)

### 3.3.2 Offset Targets

Based on an estimate of 100% loss of vegetation modelled by DELWP, the offset requirement for native vegetation removal is as follows: Site 1 = 1.762 General Biodiversity Equivalence Units (BEU); Site 2 = 1.728 General BEUs along with 9.023 Specific units of habitat for Rough-grain Love-grass; Site 3 = 0.471 General BEUs. Please note that these results are based on desktop data only and are unlikely to represent the true offset targets at each site.

**Table 6.** Offset targets, based on the assumption of 100% loss of all modelled vegetation (DELWP 2017b) within study area. BEU = Biodiversity Equivalence Units

	Site 1	Site 2	Site 3
General Offsets Required	1.762 General BEUs	1.728 General BEUs	0.471 General BEUs
Specific Offsets Required	None	9.023 specific units of habitat for Rough-grain Love-grass	None
Vicinity (catchment / LGA)	West Gippsland CMA or Wellington Shire Council	West Gippsland CMA or Wellington Shire Council	West Gippsland CMA or Wellington Shire Council
Minimum Strategic Biodiversity Score*	0.265	0.443	0.089

## 4 Legislative and Policy Implications

### 4.1 *Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)*

The EPBC Act establishes a Commonwealth process for the assessment of proposed actions likely to have a significant impact on any matters of National Environment Significance (NES), described in Table 7.

**Table 7.** Potential impacts to matters of National Environmental Significance (NES)

Matter of NES	Potential Impacts
World Heritage properties	The proposed action will not impact any properties listed for World Heritage.
National heritage places	The proposed action will not impact any places listed for national heritage.
Ramsar wetlands of international significance	The study area occurs within the same catchment as one Ramsar wetland (DoEE 2017): Gippsland Lakes. Management practices and construction techniques should be consistent with Construction Techniques for Sediment Pollution Control (EPA 1991) and Environmental Guidelines for Major Construction Sites (EPA 1996). It is possible that the proposed action will impact the ecological character of any Ramsar wetland if erosion and sediment control, and changes to surface-water flows, is not properly considered.
Threatened species and ecological communities	There is potential for one listed flora species occurring in the study area – River Swamp Wallaby-grass. It is possible that there may be habitat for three fauna species listed under the EPBC Act: Grey-headed Flying Fox, Growling Grass Frog and Dwarf Galaxias. It is possible that two listed communities occur in the study area: Gippsland Red Gum ( <i>Eucalyptus tereticornis</i> subsp. <i>mediana</i> ) Grassy Woodland and Associated and Native Grassland occurs within the study area; and, Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains.
Migratory and marine species	The PMST search nominated 15 migratory species as having been recorded within 10 kilometres of the study area (DoEE 2017). However, the study area is unlikely to provide important habitat that migratory species would be dependent upon.
Commonwealth marine area	The proposed action will not impact any Commonwealth marine areas.
Nuclear actions (including uranium mining)	The proposed action is not a nuclear action.
Great Barrier Reef Marine Park	The proposed action will not impact the Great Barrier Reef Marine Park.
Water resources impacted by coal seam gas or mining development	The proposed action is not a coal seam gas or mining development.

#### 4.1.1 *Implications*

Development of the study area has potential to have a significant impact upon two matters of NES: Ramsar Wetlands of International Significance, and, threatened species and ecological communities. A site assessment is recommended to determine the presence and potential impact to threatened species and ecological communities. A hydrological assessment is recommended to determine what impact the development is likely to have on the water quality and quantity of Thomson River and downstream

Gippsland Lakes. If a significant impact to any matter of NES is likely, the proposed development should be referred to the Commonwealth Minister of the Environment for consideration under the EPBC Act. -

#### **4.2 Environment Effects Act 1978**

The EE Act provides for assessment of proposed actions that are capable of having a significant effect on the environment via the preparation of an Environment Effects Statement (EES). A project with potential adverse environmental effects that, individually or in combination, could be significant in a regional or State context should be referred. An action may be referred for an EES decision where:

- one of the following occurs:
  - Potential clearing of 10 hectares or more of native vegetation from an area that:
    - is of an EVC identified as endangered by DELWP;
    - is of Very High conservation significance; or,
    - is not authorised under an approved Forest Management Plan or Fire Protection Plan.
  - Potential long-term loss of a significant proportion (1-5% depending on conservation status of species) of known remaining habitat or population of a threatened species within Victoria.
- or where two or more of the following occur:
  - Potential clearing of 10 hectares or more of native vegetation, unless authorised under an approved Forest Management Act or Fire Protection Plan;
  - Matters listed under the FFG Act:
    - Potential loss of a significant area of a listed ecological community;
    - Potential loss of a genetically important population of an endangered or threatened species;
    - Potential loss of critical habitat; or,
    - Potential significant effects on habitat values of a wetland supporting migratory birds.

##### **4.2.1 Implications**

More than 10 hectares of EVCs identified as Endangered has been modelled by DELWP occur within the study area. As such, development of the study area may trigger an EES referral. A site assessment to confirm the extent of Endangered EVCs should be undertaken before assessing whether an EES referral is required.

#### **4.3 Flora and Fauna Guarantee Act 1988 (Victoria)**

The FFG Act is the primary legislation dealing with biodiversity conservation and sustainable use of native flora and fauna in Victoria. Proponents are required to apply for an FFG Act Permit to 'take' listed and/or protected flora species, listed vegetation communities and listed fish species in areas of public land (i.e. within road reserves, drainage lines and public reserves). An FFG Act permit is generally not required for

removal of species or communities on private land, or for the removal of habitat for a listed terrestrial fauna species.

There may be suitable habitat within the study area for species 'listed' or 'protected' under the FFG Act, however this will need to be confirmed by a site assessment (Appendix 1, Appendix 2).

#### **4.3.1 Implications**

An FFG Act permit is not required to impact on listed species or ecological communities on private land. However, the presence of FFG Act-listed species and ecological communities is relevant when assessing triggers for an EES referral.

#### **4.4 Planning and Environment Act 1987**

The *Planning and Environment Act 1987* outlines the legislative framework for planning in Victoria and for the development and administration of planning schemes. All planning schemes contain native vegetation provisions at Clause 52.17 which require a planning permit from the relevant local Council to remove, destroy or lop native vegetation on a site of more than 0.4 hectares, unless an exemption under clause 52.17-7 of the Victorian Planning Schemes applies (Appendix 1.5.3) or a subdivision is proposed with lots less than 0.4 hectares<sup>2</sup>. Local planning schemes may contain other provisions in relation to the removal of native vegetation.

##### **4.4.1 Planning Zones and Overlays**

The study area is located within the Wellington Shire Council municipality. The following zoning and overlays apply (DELWP 2017f, 2017g):

- Farming Zone (FZ);
- Flood and Land Subject to Inundation Overlay (Schedule 6); and,
- Public Use Schedule 1 (PUZ1).

##### **4.4.2 The Guidelines**

The State Planning Policy Framework and the decision guidelines at Clause 52.17 (Native Vegetation) and Clause 12.01 require Planning and Responsible Authorities to have regard for 'Permitted clearing of native vegetation - Biodiversity assessment guidelines' (the Guidelines) (DEPI 2013).

##### **4.4.3 Implications**

Based on an estimate of modelled DELWP data, and assuming 100% loss of vegetation, the following pathways apply:

- Site 1:

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<sup>2</sup> In accordance with the Victorian Civil and Administrative Tribunal's (VCAT) decision *Villawood v Greater Bendigo CC* (2005) VCAT 2703 (20 December 2005) all native vegetation is considered lost where proposed lots are less than 0.4 hectares in area and must be offset at the time of subdivision.

- The study area is within Location A, with 7.170 hectares of modelled native vegetation present.
- The permit application would fall under the Moderate Risk-based pathway
- Site 2:
  - The study area is within Location A, with 16.323 hectares of modelled native vegetation present.
  - The permit application would fall under the Moderate Risk-based pathway.
- Site 3:
  - The study area is within Location A, with 14.089 hectares of modelled native vegetation present.
  - The permit application would fall under the High Risk-based pathway.

Based on an estimate of 100% loss of vegetation as modelled by DELWP, the offset requirement for native vegetation removal is as follows:

- Site 1: 1.762 General Biodiversity Equivalence Units (BEU);
- Site 2: 1.728 General BEUs along with 9.023 Specific units of habitat for Rough-grain Love-grass; and,
- Site 3: 0.471 General BEUs.

A Planning Permit from Wellington Shire Council is required to remove, destroy or lop any native vegetation. The application will be referred to DELWP if greater than 0.5 hectares of vegetation are proposed for removal. Offsets will need to be achieved in accordance with the Guidelines. Specific offsets for Rough-grain Love-grass are likely to be difficult to locate and require additional effort to secure than general offsets.

#### **4.5 Catchment and Land Protection Act 1994**

The CaLP Act contains provisions relating to catchment planning, land management, noxious weeds and pest animals. Landowners are responsible for the control of any infestation of noxious weeds and pest fauna species to minimise their spread and impact on ecological values.

As the study area is expected to have been disturbed as a result of agricultural disturbances and from adjoining land uses, there is potential for a number of declared noxious weeds and animals to be present.

##### **4.5.1 Implications**

The development is likely to require management actions to avoid the introduction or spread of declared noxious weeds and pest animals to ensure compliance with the CaLP Act. Compliance with the CaLP Act will be required in all sections of the study area and can be addressed through the preparation of a Construction Environmental Management Plan (CEMP) or similar document.

#### **4.6 Wildlife Act 1975**

The *Wildlife Act 1975* (and associated Wildlife Regulations 2013) is the primary legislation in Victoria providing for protection and management of wildlife. Authorisation for habitat removal may be obtained

under the *Wildlife Act 1975* through a licence granted under the *Forests Act 1958*, or under any other Act such as the *Planning and Environment Act 1987*.

#### 4.6.1 Implications

Removal of any habitat trees or shrubs should be supervised by a trained fauna handler with appropriate authorisation under the Act for salvage and translocation.

#### 4.7 Best Practice Mitigation Measures

Recommended measures to mitigate impacts upon terrestrial and aquatic values present within the study area may include:

- Consideration of Water Sensitive Urban Design techniques such as stormwater treatment wetlands, bio-retention systems, porous paving or swales;
- Minimise impacts to native vegetation and habitats through construction and micro-siting techniques, including fencing retained areas of native vegetation. If indeed necessary, trees should be lopped or trimmed rather than removed. Similarly, soil disturbance and sedimentation within wetlands should be avoided or kept to a minimum, to avoid, or minimise impacts to fauna habitats;
- All contractors should be aware of ecologically sensitive areas to minimise the likelihood of inadvertent disturbance to areas marked for retention. Habitat Zones (areas of sensitivity) should be included as a mapping overlay on any construction plans;
- Tree Retention Zones (TRZs) should be implemented to prevent indirect losses of native vegetation during construction activities (DSE 2011). A TRZ applies to a tree and is a specific area above and below the ground, with a radius 12 x the DBH. At a minimum standard a TRZ should consider the following:
  - A TRZ of trees should be a radius no less than two metres or greater than 15 metres;
  - Construction, related activities and encroachment (i.e. earthworks such as trenching that disturb the root zone) should be excluded from the TRZ;
  - Where encroachment exceeds 10% of the total area of the TRZ, the tree should be considered as lost and offset accordingly;
  - Directional drilling may be used for works within the TRZ without being considered encroachment. The directional bore should be at least 600 millimetres deep;
  - The above guidelines may be varied if a qualified arborist confirms the works will not significantly damage the tree (including stags / dead trees). In this case the tree would be retained and no offset would be required; and,
  - Where the minimum standard for a TRZ has not been met an offset may be required.
- Removal of any habitat trees or shrubs (particularly hollow-bearing trees) should be undertaken between February and September to avoid the breeding season for the majority of fauna species. If any habitat trees or shrubs are proposed to be removed, this should be undertaken under the

supervision of an appropriately qualified zoologist to salvage and translocate any displaced fauna. A Fauna Management Plan may be required to guide the salvage and translocation process;

- Where possible, construction stockpiles, machinery, roads, and other infrastructure should be placed away from areas supporting native vegetation, LOTs and/or wetlands;
- Ensure that best practice sedimentation and pollution control measures are undertaken at all times, in accordance with Environment Protection Agency guidelines (EPA 1991; EPA 1996; Victorian Stormwater Committee 1999) to prevent offsite impacts to waterways and wetlands; and,
- As indigenous flora provides valuable habitat for indigenous fauna, it is recommended that any landscape plantings that are undertaken as part of the proposed works are conducted using indigenous species sourced from a local provenance, rather than exotic deciduous trees and shrubs.

In addition to these measures, the following documents should be prepared and implemented prior to any construction activities:

- Construction Environmental Management Plan (CEMP). The CEMP should include specific species/vegetation conservation strategies, daily monitoring, sedimentation management, site specific rehabilitation plans, weed and pathogen management measures, etc.;
- Weed Management Plan. This plan should follow the guidelines set out in the CaLP Act, and clearly outline any obligations of the project team in relation to minimising the spread of weeds as a result of this project. This may include a pre-clearance weed survey undertaken prior to any construction activities to record and map the locations of all noxious and environmental weeds;
- Significant Species Conservation Management Plan (CMP). A CMP will be required if significant species or their habitats are proposed to be impacted, and may include a salvage and translocation plan;
- Fauna Management Plan. This may be required if habitat for common fauna species is likely to be impacted and salvage and translocation must be undertaken to minimise the risk of injury or death to those species ; and,
- A Kangaroo Management Plan (KMP). The KMP provides a long-term, adaptable strategy for the management of Eastern Grey Kangaroos, and must be prepared to the satisfaction of DELWP.

## 4.8 Offset Impacts

### 4.8.1 Offset Options

Potential offsets may be sourced using the following mechanisms:

- BushBroker: BushBroker maintains a register of landowners who are willing to sell offset credits. Offsets secured by Bushbroker are done so via a Section 69 Agreement under the *Conservation, Forest and Lands Act 1987*.
- Trust for Nature: Trust for Nature holds a list of landowners who are willing to sell vegetation offsets. Offsets secured by Trust for Nature are done so under the Victorian *Conservation Trust Act 1972*.
- Local Councils: The proponent may contact local councils to seek availability of offsets.

- Over-the-Counter Offsets Scheme: The Guidelines include the expansion of the “Over-the-Counter” (OTC) Offsets Scheme, allowing non-government agencies to establish themselves as OTC Facilities. OTC Facilities will broker native vegetation offsets (credits) between landholders (with offset sites) and permit holders (with offset requirements).

#### 4.8.2 *Offset Strategy*

Ecology and Heritage Partners are a DELWP accredited OTC offset broker.

Ecology and Heritage Partners can investigate whether the offset obligations that are ultimately generated by this proposal can be satisfied through existing credits registered in our OTC database. Several landowners registered in our offset database have suitable General Biodiversity Equivalence Unit (BEUs) native vegetation credits available within Wellington Shire Council and the West Gippsland CMA, and it is anticipated that the relevant General offset obligations generated by this proposal can be secured through an OTC scheme without any difficulty should a permit be issued for the development.

If Specific offsets for Rough-grain Love-grass are required, Ecology and Heritage Partners can conduct further investigations to locate suitable offsets.

## 5 Opportunities and Further Requirements

Native vegetation and biodiversity values are most likely to be present in Site 1 adjacent to Thomson River, as indicated by modelled DELWP vegetation and aerial imagery. Opportunities for the proposed future development of the sites are likely to have a lower impact on biodiversity values in other areas of Site 1 away from the Thomson River, as well as within Sites 2 and 3. Although there is modelled vegetation elsewhere in the study area, the extent of remnant vegetation in the remainder of the study area is likely to be very low, as indicated by the lack of extensive areas of tree canopies in aerial photos.

Other considerations include the following:

- If Plains Grassy Woodland is present within the study area, it should be assessed against the condition thresholds for the nationally significant Gippsland Red Gum (*Eucalyptus tereticornis* subsp. *mediana*) Grassy Woodland and Associated and Native Grassland. If Gilgai Wetland is present it should be assessed against the condition thresholds for the nationally significant Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains. Depending on the outcome of the site assessment, a referral under the EPBC Act may be required.
  - The likelihood of other nationally significant species or communities present is considered to be low, with a site inspection required to determine whether there is habitat for Grey-headed Flying Fox, Growling Grass Frog and Dwarf Galaxias;
- Due to the proximity of the Gippsland Lakes Ramsar site, a referral may be required if significant impacts are expected to occur as a result of the development.
- Any offsets associated with native vegetation removal will need to include the extent of mapped wetlands provided in the DELWP Current Wetlands layer (a total of 2.23 hectares), in addition to any native vegetation recorded during a site visit;
- Any permit applications for vegetation removal within the Moderate or High risk-based pathway will need to include additional information in the permit application:
  - A habitat hectare assessment of the native vegetation to be removed.
  - A statement outlining what steps have been taken to minimise the impacts of the removal of native vegetation on biodiversity.
  - An assessment of whether the proposed removal of native vegetation will have a significant impact on Victoria's biodiversity, with specific regard to the proportional impact on habitat for any rare or threatened species.
  - An offset strategy that details how a compliant offset will be secured to offset the biodiversity impacts of the removal of native vegetation.
- The information provided in this report is based on requirements under the current Guidelines (DEPI 2013). It should be noted that DELWP are currently revising the Guidelines, with the new native vegetation clearing assessment guidelines due to be released later in 2017. There is likely to be a transitional period, however any permit applications under the revised guidelines may require additional considerations.

As the findings of this assessment are preliminary only and based on desktop information, a site visit is recommended to determine the accuracy of the data reviewed and provide further clarity regarding the presence of ecological values, particularly the extent of native vegetation, the presence of habitat for significant species, and the presence of the nationally significant ecological communities.

Further requirements associated with development of the study area, as well as additional studies or reporting that may be required, are provided in Table 8.

**Table 8.** Further requirements associated with development of the study area

Relevant Legislation	Implications	Further Action
<i>Environment Protection and Biodiversity Conservation Act 1999</i>	Development of the study area has potential to have a significant impact upon two matters of NES: Ramsar Wetlands of International Significance, and, threatened species and ecological communities. A site assessment is recommended to determine the presence and potential impact to threatened species and ecological communities. A hydrological assessment is recommended to determine what impact the development is likely to have on the water quality and quantity of Thomson River and downstream Gippsland Lakes. If a significant impact to any matter of NES is likely, the proposed development should be referred to the Commonwealth Minister of the Environment for consideration under the EPBC Act. -	Conduct site assessment and confirm development footprint
<i>Flora and Fauna Guarantee Act 1988</i>	An FFG Act permit is not required to impact on listed species or ecological communities on private land. However, the presence of FFG Act-listed species and ecological communities is relevant when assessing triggers for an EES referral.	No further action required.
<i>Planning and Environment Act 1987</i>	<p>Implications based on presence of native vegetation based on modelled DELWP data:</p> <p>Site 1: The study area is within Location A, with 7.170 hectares of modelled native vegetation present. If all modelled vegetation is proposed to be removed, the permit application would fall under the Moderate Risk-based pathway.</p> <p>Site 2: The study area is within Location A, with 16.323 hectares of modelled native vegetation present. If all modelled vegetation is proposed to be removed, the permit application would fall under the Moderate Risk-based pathway</p> <p>Site 3: The study area is within Location A, with 14.089 hectares of modelled native vegetation present. If all modelled vegetation is proposed to be removed, the permit application would fall under the High Risk-based pathway.</p> <p>Based on an estimate of 100% loss of vegetation as modelled by DELWP, the offset requirement for native vegetation removal is as follows:</p> <p>Site 1: 1.762 General Biodiversity Equivalence Units (BEU);</p> <p>Site 2: 1.728 General BEUs along with 9.023 Specific</p>	<p>Conduct site biodiversity assessment and confirm development footprint.</p> <p>Calculate offsets requirements and complete planning permit application.</p> <p>Planning Permit conditions may include a requirement for:</p> <ul style="list-style-type: none"> <li>• Demonstration of impact minimisation.</li> <li>• Identification of a compliant offset, as detailed in Section 3.1.</li> <li>• A Construction Environment Management Plan (CEMP).</li> <li>• A Bushfire Management Statement.</li> <li>• A Kangaroo Management Plan (KMP).</li> </ul>

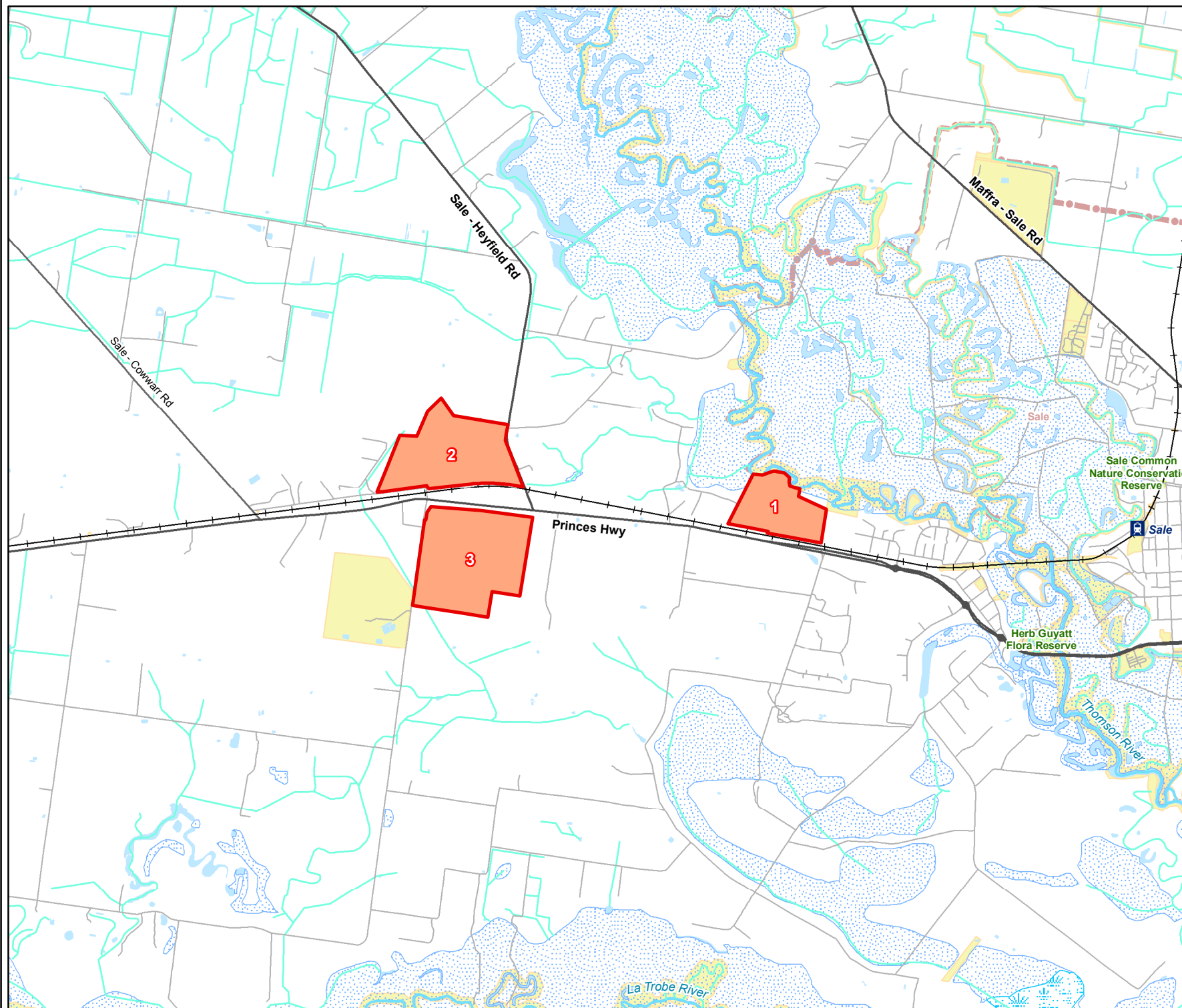
Relevant Legislation	Implications	Further Action
	<p>units of habitat for Rough-grain Love-grass; and,</p> <p>Site 3: 0.471 General BEUs.</p> <p>A Planning Permit from Wellington Shire Council is required to remove, destroy or lop any native vegetation. The application will be referred to DELWP if greater than 0.5 hectares of vegetation are proposed for removal. Offsets will need to be achieved in accordance with the Guidelines. Specific offsets for Rough-grain Love-grass are likely to be difficult to locate and require additional effort to secure than general offsets.</p>	
<i>Catchment and Land Protection Act 1994</i>	Several weed species listed under the CaLP Act were recorded within the study area. To meet requirements under the CaLP Act, listed noxious weeds should be appropriately controlled throughout the study area.	Include management actions to avoid and minimise the spread of declared noxious species in accordance with the Act. Any actions to be implemented should be included in a CEMP or similar document.
<i>Water Act 1989</i>	A 'works on waterways' permit is likely to be required from the West Gippsland CMA where any action impacts on waterways within the study area.	Obtain a 'works on waterways' permit from West Gippsland CMA if works on Thomason River or other waterways is proposed.
<i>Wildlife Act 1975</i>	Any persons engaged to conduct salvage and translocation or general handling of terrestrial fauna species must hold a current Management Authorisation.	Ensure wildlife specialists hold a current Management Authorisation.

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## Figures



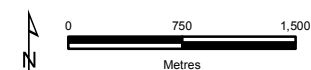
## Legend

- Study Area
- Railway
- Major Road
- Collector Road
- Minor Road
- Minor Watercourse
- Major Watercourse
- Permanent Waterbody
- Land Subject to Inundation
- Wetland/Swamp
- Parks and Reserves
- Crown Land
- Localities



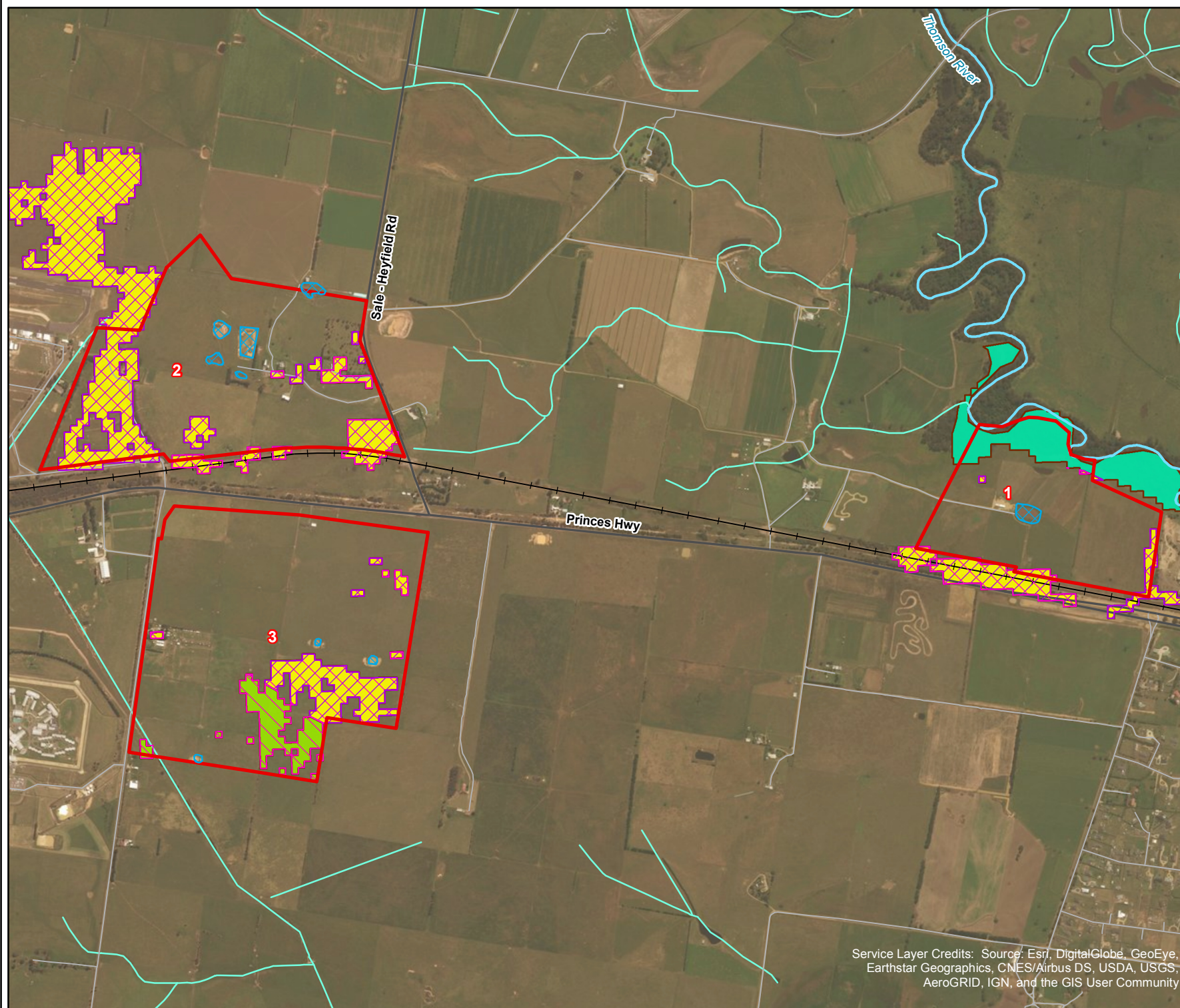
**Figure 1**

**Location of the study area**  
*West Sale and Wurruk*  
*Industrial Land Supply*  
*Strategy: Desktop Biodiversity*  
*Assessment*



  
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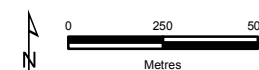


## Legend

- Study Area
- Current Wetlands
- FFG Act listed vegetatin community (DELWP 2005)**
  - Central Gippsland Plains Grassland
  - Forest Red Gum Grassy Woodland
- Modelled Ecological Vegetation Classes (DELWP 2005)**
  - Floodplain Riparian Woodland
  - Plains Grassy Woodland
  - Plains Grassy Woodland/Gilgai Wetland Mosaic

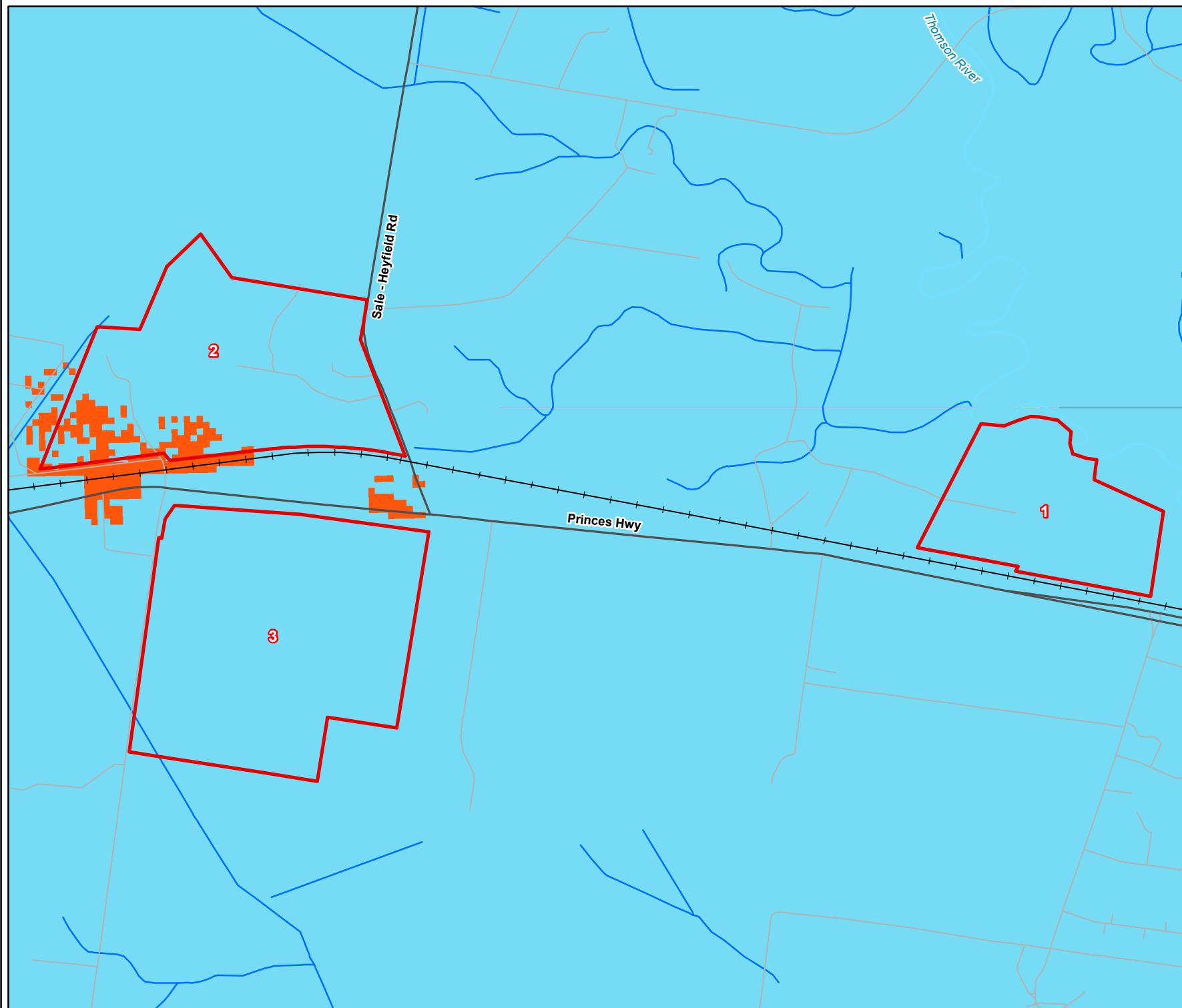


**Figure 2**  
**Ecological features**  
*West Sale and Wurruk Industrial Land Supply Strategy: Desktop Biodiversity Assessment*



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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## Legend

Study Area

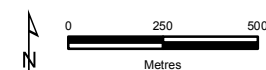
### Location risk

Location A

Location C



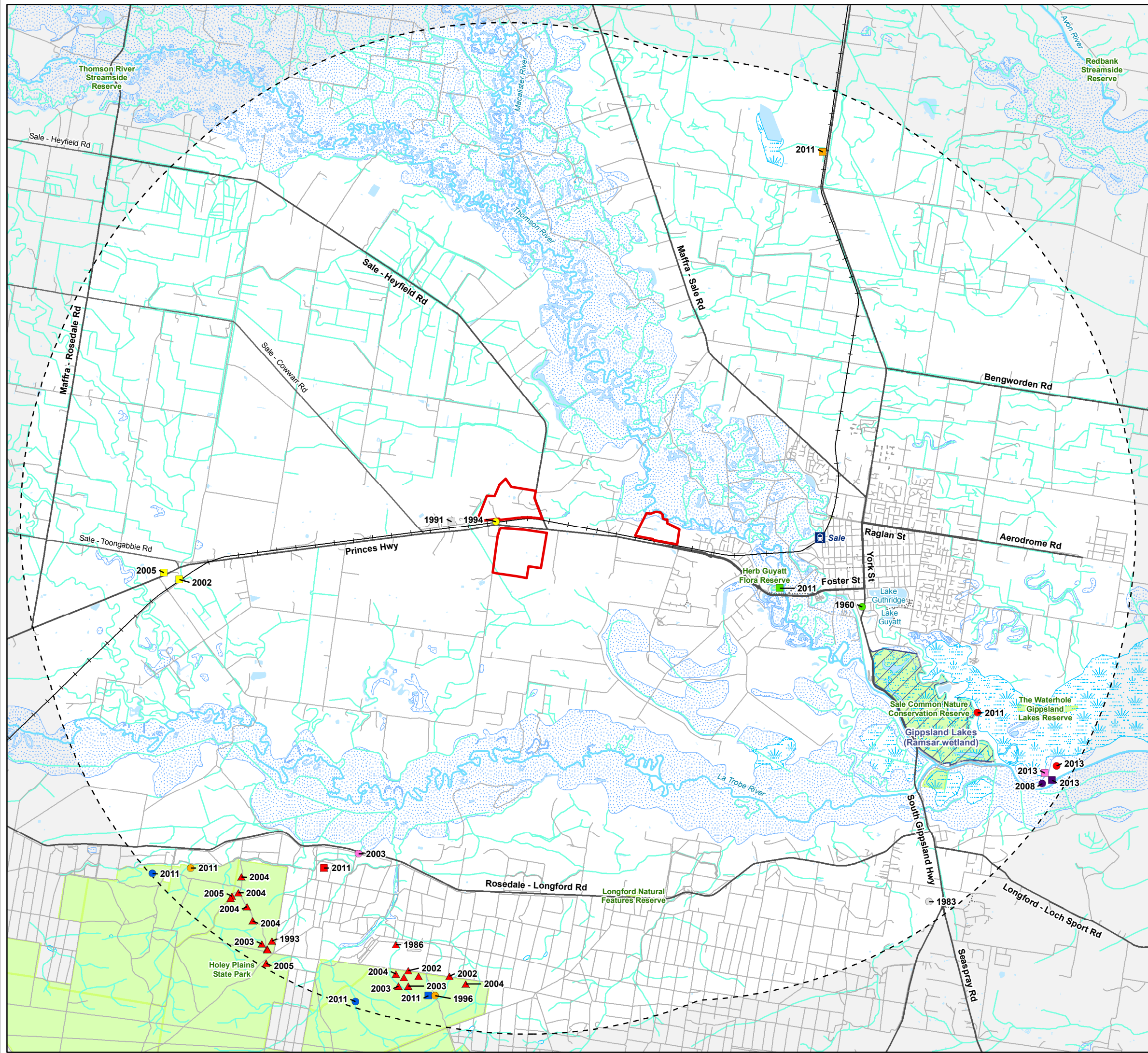
**Figure 3**  
**Native Vegetation Location Risk**  
*West Sale and Wurruk Industrial Land Supply Strategy: Desktop Biodiversity Assessment*



  
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9353 Fig03\_LocRisk 5/09/2017 Iroy



**Legend**


Study Area

**Significant flora**

- Coast Grey-box
- Eastern Water-ribbons
- Golden Grevillea
- Lanky Buttons
- Pink Zieria
- Promontory Peppermint
- Purple Diuris
- River Swamp Wallaby-grass
- Rough-grain Love-grass
- Rush Lily
- Slender Wire-lily
- Small Scurf-pea
- Tall Club-sedge
- Variable Bossiaea
- Veiled Fringe-sedge
- Wavy Swamp Wallaby-grass
- ▲ Wellington Mint-bush




**Figure 4**  
**Previously documented significant flora within 10km of the study area**  
*West Sale and Wurruk Industrial Land Supply Strategy: Desktop Biodiversity Assessment*



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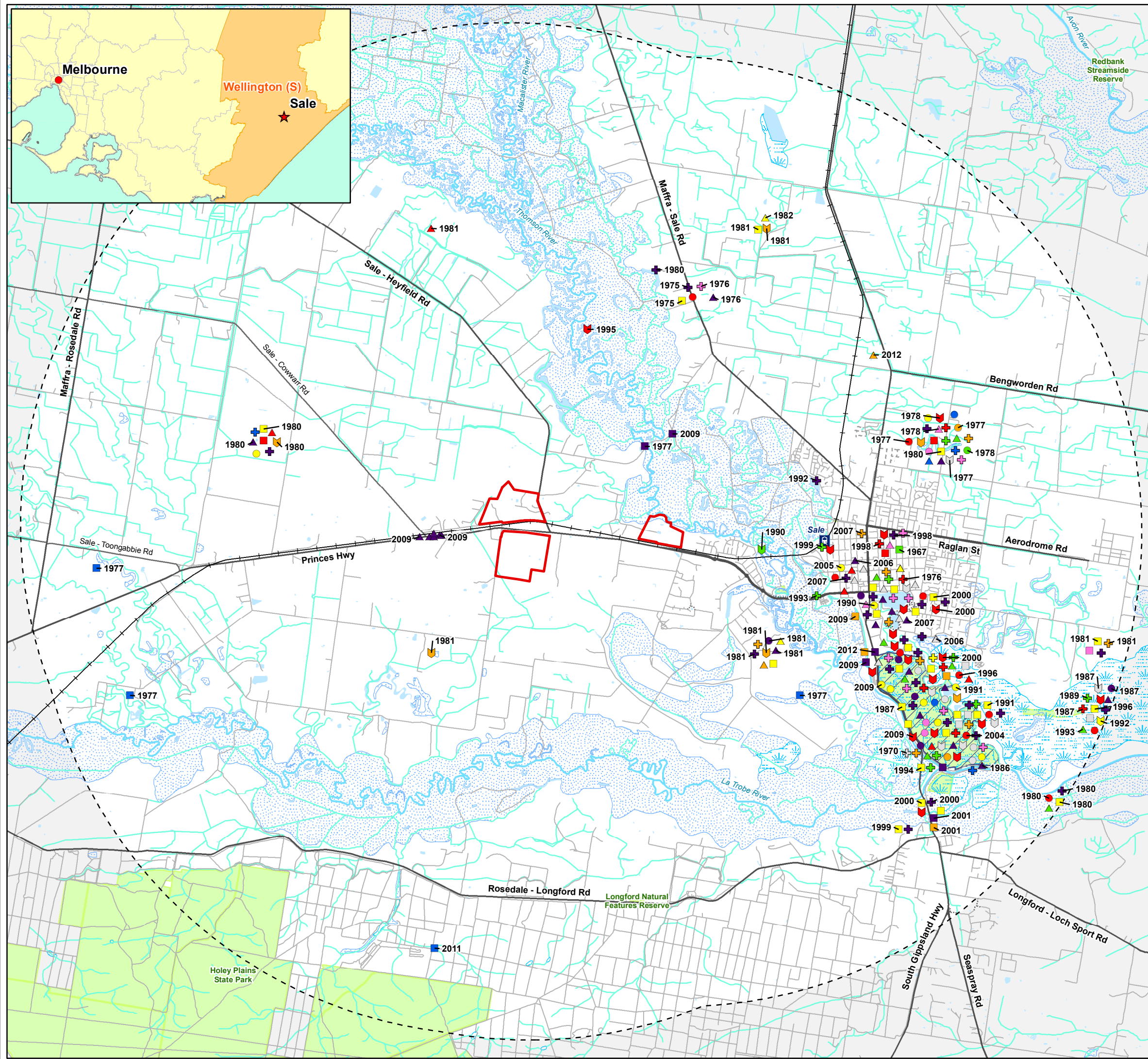
Kilometres



VBA 2017. Victorian Biodiversity Atlas. // Sourced from: 'VBA\_FLORA25' and 'VBA\_FLORA100', February 2017 © The State of Victoria, Department of Environment, Land, Water and Planning. Records prior to 1949 not shown.

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9353\_Fig04\_SigFlora 18/07/2017 melsley



- Legend**  

Study Area
- Significant fauna**

Australasian Bittern

Australasian Shoveler

Australian Painted Snipe

Azure Kingfisher

Baillon's Crake

Black Falcon

Blue-billed Duck

Caspian Tern

Common Greenshank

Diamond Firetail

Dwarf Galaxis

Eastern Great Egret

Eastern Pygmy-possum

Eastern Snake-necked Turtle

Emu

Flinders Pygmy Perch

Freckled Duck

Glossy Ibis

Grey-headed Flying-fox

Growing Grass Frog

Hardhead

Hooded Robin

Intermediate Egret

Latham's Snipe

Little Bittern

Little Egret

Magpie Goose

Marsh Sandpiper

Musk Duck

Nankeen Night Heron

Pied Cormorant

Royal Spoonbill

Whiskered Tern

White-bellied Sea-Eagle

White-throated Needletail

White-winged Black Tern

Yellow-bellied Sheathtail Bat
- Figure 5**  
**Previously documented significant fauna within 10km of the study area**  
*West Sale and Wurruk Industrial Land Supply Strategy: Desktop Biodiversity Assessment*
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Kilometres

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## Appendix 1 - Flora

**Table A1.1** Significant flora recorded within 10 kilometres of the study area

**Likelihood:** Habitat characteristics of significant flora species previously recorded within 10 kilometres of the study area, or that may potentially occur within the study area were assessed to determine their likelihood of occurrence. The likelihood of occurrence rankings are defined below.

<b>1 - Known occurrence</b> - Recorded within the study area recently (i.e. within ten years)	<b>3 - Moderate Likelihood</b> - Limited previous records of the species in the local vicinity; and/or, - The study area contains poor or limited habitat.	<b>5 – Unlikely</b> - No suitable habitat and/or outside the species range.
<b>2 - High Likelihood</b> - Previous records of the species in the local vicinity; and/or, - The study area contains areas of high quality habitat.	<b>4 - Low Likelihood</b> - Poor or limited habitat for the species however other evidence (such as a lack of records or environmental factors) indicates there is a very low likelihood of presence.	

Scientific name	Common name	Total # of documented records	Last documented record	EPBC	FFG	DEPI	Likely occurrence in study area*
<b>NATIONAL SIGNIFICANCE</b>							
<i>Amphibromus fluitans</i>	River Swamp Wallaby-grass	2	2008	VU	-	-	2/3
<i>Dianella amoena</i> #	Matted Flax-lily	-	-	EN	L	e	4
<i>Dodonaea procumbens</i>	Trailing Hop-bush	1	1900	VU	-	v	4
<i>Glycine latrobeana</i>	Clover Glycine	1	1882	VU	L	v	4
<i>Prasophyllum correctum</i> #	Gaping Leek-orchid	-	-	EN	L	e	4
<i>Prasophyllum frenchii</i> #	Maroon Leek-orchid	-	-	EN	L	e	4
<i>Prostanthera galbraithiae</i>	Wellington Mint-bush	20	2011	VU	L	v	4
<i>Rulingia prostrata</i> #	Dwarf Kerrawang	-	-	EN	L	e	4
<i>Thelymitra epipactoides</i>	Metallic Sun-orchid	1	1895	EN	L	e	4
<i>Xerochrysum palustre</i> #	Swamp Everlasting	-	-	VU	L	v	4

Scientific name	Common name	Total # of documented records	Last documented record	EPBC	FFG	DEPI	Likely occurrence in study area*
STATE SIGNIFICANCE							
<i>Amphibromus sinuatus</i>	Wavy Swamp Wallaby-grass	3	2013	-	-	v	2/3
<i>Bolboschoenus fluviatilis</i>	Tall Club-sedge	1	2011	-	-	k	2/3
<i>Bossiaea heterophylla</i>	Variable Bossiaea	2	2011	-	-	r	3
<i>Cardamine tenuifolia</i>	Slender Bitter-cress	1	1884	-	-	p	4
<i>Cullen parvum</i>	Small Scurf-pea	2	2005	-	L	e	3
<i>Cychnogeton microtuberosum</i>	Eastern Water-ribbons	7	2013	-	-	r	4
<i>Diuris punctata</i>	Purple Diuris	5	2003	-	L	v	2/3
<i>Eragrostis trachycarpa</i>	Rough-grain Love-grass	1	1991	-	-	r	2/3
<i>Eucalyptus bosistoana</i>	Coast Grey-box	1	1983	-	-	r	3
<i>Eucalyptus willisii</i> s.s.	Promontory Peppermint	2	2011	-	-	r	3
<i>Fimbristylis velata</i>	Veiled Fringe-sedge	2	2013	-	-	r	3
<i>Grevillea chrysophaea</i>	Golden Grevillea	5	2011	-	-	r	3
<i>Laxmannia gracilis</i>	Slender Wire-lily	1	2011	-	-	r	3
<i>Leonema lamprophyllum</i> subsp. <i>lamprophyllum</i>	Shiny Leonema	1	1770	-	-	r	4
<i>Leptorhynchus elongatus</i>	Lanky Buttons	1	1994	-	-	e	3
<i>Pseudanthus ovalifolius</i>	Oval-leaf Pseudanthus	1	1899	-	-	r	4
<i>Pterostylis grandiflora</i>	Cobra Greenhood	1	1899	-	-	r	4
<i>Sowerbaea juncea</i>	Rush Lily	1	2011	-	-	r	3
<i>Zieria veronicea</i> subsp. <i>veronicea</i>	Pink Zieria	2	1960	-	-	r	4

**Notes:** EPBC = Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), FFG = Flora and Fauna Guarantee Act 1988 (FFG Act), DEPI= Advisory List of Rare or Threatened Plants in Victoria (DEPI 2014), L = Listed, # = Records identified from EPBC Act Protected Matters Search Tool, Data source: Victorian Biodiversity Atlas (DELWP 2017d); Protected Matters Search Tool (DoEE 2017). Order: Alphabetical. \* the likelihood of occurrence for species marked with a 2/3 is dependent on the extent/quality of remnant vegetation and wetlands within the study area.

## Appendix 2 – Fauna

**Table A2.1.** Significant fauna within 10 kilometres of the study area

**Likelihood:** Habitat characteristics of significant fauna species previously recorded within 10 kilometres of the study area, or that may potentially occur within the study area were assessed to determine their likelihood of occurrence. The likelihood of occurrence rankings are defined below.

1	High Likelihood	<ul style="list-style-type: none"> <li>Known resident in the study area based on site observations, database records, or expert advice; and/or,</li> <li>Recent records (i.e. within five years) of the species in the local area (DELWP 2017d); and/or,</li> <li>The study area contains the species' preferred habitat.</li> </ul>
2	Moderate Likelihood	<ul style="list-style-type: none"> <li>The species is likely to visit the study area regularly (i.e. at least seasonally); and/or,</li> <li>Previous records of the species in the local area (DELWP 2017d); and/or,</li> <li>The study area contains some characteristics of the species' preferred habitat.</li> </ul>
3	Low Likelihood	<ul style="list-style-type: none"> <li>The species is likely to visit the study area occasionally or opportunistically whilst en route to more suitable sites; and/or,</li> <li>There are only limited or historical records of the species in the local area (i.e. more than 20 years old); and/or,</li> <li>The study area contains few or no characteristics of the species' preferred habitat.</li> </ul>
4	Unlikely	<ul style="list-style-type: none"> <li>No previous records of the species in the local area; and/or,</li> <li>The species may fly over the study area when moving between areas of more suitable habitat; and/or,</li> <li>Out of the species' range; and/or,</li> <li>No suitable habitat present.</li> </ul>

EPBC *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

FFG *Flora and Fauna Guarantee Act 1988* (FFG Act)

DSE Advisory List of Threatened Vertebrate Fauna in Victoria (DSE 2013); Advisory List of Threatened Invertebrate Fauna in Victoria (DSE 2009)

NAP National Action Plan (Cogger et al 1993; Duncan et al. 1999; Garnet et al 2011; Woinarski et al 2014; Sands and New 2002; Tyler 1997)

EX Extinct

RX Regionally extinct

CR Critically endangered

# Listed on the Protected Matters Search Tool

VU Vulnerable

LC least concern

DD Data deficient (insufficiently or poorly known)

L Listed as threatened under FFG Act

EN Endangered

NT Near threatened

CD Conservation dependent

RA Rare

Common Name	Scientific Name	Last Documented Record (VBA)	# Records (VBA)	EPBC Act	FFG ACT	DSE (2013)	National Action Plan	Likelihood
<b>NATIONAL SIGNIFICANCE</b>								
Spot-tailed Quoll #	<i>Dasyurus maculatus macula</i>	-	-	EN	L	EN	VU	4
Greater Glider #	<i>Petauroides volans</i>	-	-	VU	-	VU	VU	3
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	2012	2	VU	L	VU	VU	2
New Holland Mouse #	<i>Pseudomys novaehollandiae</i>	-	-	-	L	VU	-	4
Australasian Bittern	<i>Botaurus poiciloptilus</i>	1992	9	EN	L	EN	VU	3
Australian Painted Snipe	<i>Rostratula australis</i>	1977	2	VU	L	CR	VU	3
Northern Siberian Bar-tailed Godwit #	<i>Limosa lapponica menzbieri</i>	-	-	EN	-	-	VU	4
Eastern Curlew #	<i>Numenius madagascariensis</i>	-	-	CR	-	VU	-	4
Curlew Sandpiper #	<i>Calidris ferruginea</i>	-	-	CR	-	EN	-	4
Swift Parrot #	<i>Lathamus discolor</i>	-	-	CR	L	EN	EN	4
Regent Honeyeater	<i>Anthochaera phrygia</i>	1933	1	CR	L	CR	EN	4
Painted Honeyeater #	<i>Grantiella picta</i>	-	-	VU	L	VU	NT	4
Green and Golden Bell Frog #	<i>Litoria aurea</i>	-	-	VU	-	VU	EN	4
Growling Grass Frog	<i>Litoria raniformis</i>	1963	3	VU	L	EN	VU	3
Dwarf Galaxias	<i>Galaxiella pusilla</i>	2012	7	VU	L	EN	VU	2
Australian Grayling #	<i>Prototroctes maraena</i>	-	-	VU	L	VU	VU	4
Golden Sun Moth #	<i>Synemon plana</i>	-	-	CR	L	CR	-	4
<b>STATE SIGNIFICANCE</b>								
Yellow-bellied Sheathtail Bat	<i>Saccolaimus flaviventris</i>	1990	1	-	L	DD	LC	3
Magpie Goose	<i>Anseranas semipalmata</i>	2007	13	-	L	NT	-	2

Common Name	Scientific Name	Last Documented Record (VBA)	# Records (VBA)	EPBC Act	FFG ACT	DSE (2013)	National Action Plan	Likelihood
Musk Duck	<i>Biziura lobata</i>	1999	18	-	-	VU	-	2
Freckled Duck	<i>Stictonetta naevosa</i>	2008	8	-	L	EN	-	2
Australasian Shoveler	<i>Anas rhynchos</i>	2006	17	-	-	VU	-	2
Hardhead	<i>Aythya australis</i>	2008	18	-	-	VU	-	2
Blue-billed Duck	<i>Oxyura australis</i>	1989	3	-	L	EN	-	3
White-throated Needletail	<i>Hirundapus caudacutus</i>	1992	14	-	-	VU	-	3
Little Bittern	<i>Ixobrychus minutus dubius</i>	1970	1	-	L	EN	-	3
Eastern Great Egret	<i>Ardea modesta</i>	2009	127	-	L	VU	-	1
Intermediate Egret	<i>Ardea intermedia</i>	1998	5	-	L	EN	-	2
Little Egret	<i>Egretta garzetta nigripes</i>	1999	9	-	L	EN	-	2
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	2009	33	-	L	VU	-	2
Black Falcon	<i>Falco subniger</i>	1999	2	-	-	VU	-	3
Brolga	<i>Grus rubicunda</i>	1850	1	-	L	VU	-	4
Baillon's Crake	<i>Porzana pusilla palustris</i>	1978	2	-	L	VU	-	3
Australian Bustard	<i>Ardeotis australis</i>	1850	4	-	L	CR	NT	4
Common Greenshank	<i>Tringa nebularia</i>	2001	6	-	-	VU	-	4
Marsh Sandpiper	<i>Tringa stagnatilis</i>	2006	1	-	-	VU	-	4
Caspian Tern	<i>Hydroprogne caspia</i>	2009	6	-	L	NT	-	4
Hooded Robin	<i>Melanodryas cucullata cucullata</i>	1979	2	-	L	NT	NT	4
Diamond Firetail	<i>Stagonopleura guttata</i>	1998	3	-	L	NT	NT	4
<b>REGIONAL SIGNIFICANCE</b>								
Eastern Pygmy-possum	<i>Cercartetus nanus</i>	1967	2	-	-	NT	-	4

Common Name	Scientific Name	Last Documented Record (VBA)	# Records (VBA)	EPBC Act	FFG ACT	DSE (2013)	National Action Plan	Likelihood
Pied Cormorant	<i>Phalacrocorax varius</i>	2011	15	-	-	NT	-	2
Nankeen Night Heron	<i>Nycticorax caledonicus hillii</i>	1991	4	-	-	NT	-	2
Glossy Ibis	<i>Plegadis falcinellus</i>	2006	8	-	-	NT	-	3
Royal Spoonbill	<i>Platalea regia</i>	2007	81	-	-	NT	-	1
Latham's Snipe	<i>Gallinago hardwickii</i>	2009	50	-	-	NT	-	1
Whiskered Tern	<i>Chlidonias hybridus javanicus</i>	1991	7	-	-	NT	-	4
White-winged Black Tern	<i>Chlidonias leucopterus</i>	1992	2	-	-	NT	-	4
Azure Kingfisher	<i>Alcedo azurea</i>	2009	12	-	-	NT	-	2

**Data source:** Victorian Biodiversity Atlas (DELWP 2017d); Protected Matters Search Tool (DoEE 2017).

**Taxonomic order:** Mammals (Strahan 1995 *in* Menkhorst and Knight 2004); Birds (Christidis and Boles, 2008); Reptiles and Amphibians (Cogger et al. 1983 *in* Cogger 1996); Fish (Nelson 1994).

## **APPENDIX 3 - Ensym Report**

# Testing Clearing proposal (modelled)

This report provides biodiversity information associated with the proposed native vegetation clearing. PLEASE NOTE: This report used modelled condition scores. A habitat hectare assessment is required before the shapefiles are submitted to DELWP for processing.

Date of issue: 02/08/2017

Time of issue: 2:56 pm

Ref: Scenario Testing

Project ID	EHP9353_Sale_SA1_VG94
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## Summary of marked native vegetation

Risk-based pathway	Moderate
Total extent	7.170 ha
Remnant patches	7.170 ha
Scattered trees	0 trees
Location risk	A

Strategic biodiversity score of all marked native vegetation	0.332
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## Offset requirements

If the marked vegetation was cleared, using modelled scores, the following offsets would be applicable.

Offset type	General offset
General offset amount (general biodiversity equivalence units)	1.762 general units
General offset attributes	
Vicinity	West Gippsland Catchment Management Authority (CMA) or Wellington Shire Council
Minimum strategic biodiversity score	0.265 <sup>1</sup>

NB: values presented in tables throughout this document may not add to totals due to rounding

<sup>1</sup> Minimum strategic biodiversity score is 80 per cent of the weighted average score across habitat zones where a general offset is required

# Testing Clearing proposal (modelled)

## Next steps

Any proposal to remove native vegetation must meet the application requirements of the moderate risk-based pathway and it will be assessed under the moderate risk-based pathway.

If you wish to remove the marked native vegetation, you must complete the required habitat hectare assessment to determine the condition score of the native vegetation and then submit the related shapefiles to the Department of Environment, Land, Water and Planning (DELWP) for processing, by email to [nativevegetation.support@delwp.vic.gov.au](mailto:nativevegetation.support@delwp.vic.gov.au). DELWP will provide a Biodiversity impact and offset requirements report that is required to meet the permit application requirements.

## Biodiversity impact of removal of native vegetation

### Habitat hectares

Habitat hectares are calculated for each habitat zone within your proposal using the extent in the GIS data you provided and modelled condition scores.

Habitat zone	Modelled condition score	Extent (ha)	Habitat hectares
1-1-A	0.571	0.359	0.205
2-2-A	0.200	0.007	0.001
3-3-A	0.254	0.023	0.006
4-4-A	0.218	0.067	0.015
5-5-A	0.339	0.799	0.271
6-6-A	0.200	0.062	0.012
7-7-A	0.200	0.003	0.001
8-8-A	0.267	0.038	0.010
9-9-A	0.200	0.000	0.000
10-1-WL	0.200	0.586	0.117
11-1-B	0.544	5.225	2.841
<b>TOTAL</b>			<b>3.479</b>

### Impacts on rare or threatened species habitat above specific offset threshold

The specific-general offset test was applied to your proposal. The test determines if the proposed removal of native vegetation has a proportional impact on any rare or threatened species habitats above the specific offset threshold. The threshold is set at 0.005 per cent of the total habitat for a species. When the proportional impact is above the specific offset threshold a specific offset for that species' habitat is required.

The specific-general offset test found your proposal does not have a proportional impact on any rare or threatened species' habitats above the specific offset threshold. No specific offsets are required. A general offset is required as set out below.

### Clearing site biodiversity equivalence score(s)

The general biodiversity equivalence score for the habitat zone(s) is calculated by multiplying the habitat hectares by the strategic biodiversity score.

# Testing Clearing proposal (modelled)

Habitat zone	Habitat hectares	Proportion of habitat zone with general offset	Strategic biodiversity score	General biodiversity equivalence score (GBES)
1-1-A	0.205	100.000 %	0.538	0.110
2-2-A	0.001	100.000 %	0.768	0.001
3-3-A	0.006	100.000 %	0.767	0.004
4-4-A	0.015	100.000 %	0.614	0.009
5-5-A	0.271	100.000 %	0.406	0.110
6-6-A	0.012	100.000 %	0.550	0.007
7-7-A	0.001	100.000 %	0.488	0.000
8-8-A	0.010	100.000 %	0.336	0.003
9-9-A	0.000	100.000 %	0.343	0.000
10-1-WL	0.117	100.000 %	0.100	0.012
11-1-B	2.841	100.000 %	0.323	0.918

## Mapped rare or threatened species' habitats on site

This table sets out the list of rare or threatened species' habitats mapped at the site beyond those species for which the impact is above the specific offset threshold. These species habitats do not require a specific offset according to the specific-general offset test.

Species number	Species common name	Species scientific name
10045	Lewin's Rail	<i>Lewinia pectoralis pectoralis</i>
10050	Baillon's Crake	<i>Porzana pusilla palustris</i>
10170	Australian Painted Snipe	<i>Rostratula benghalensis australis</i>
10185	Little Egret	<i>Egretta garzetta nigripes</i>
10186	Intermediate Egret	<i>Ardea intermedia</i>
10187	Eastern Great Egret	<i>Ardea modesta</i>
10195	Australian Little Bittern	<i>Ixobrychus minutus dubius</i>
10197	Australasian Bittern	<i>Botaurus poiciloptilus</i>
10212	Australasian Shoveler	<i>Anas rhynchotis</i>
10215	Hardhead	<i>Aythya australis</i>
10216	Blue-billed Duck	<i>Oxyura australis</i>
10217	Musk Duck	<i>Biziura lobata</i>
10220	Grey Goshawk	<i>Accipiter novaehollandiae novaehollandiae</i>
10226	White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>
10230	Square-tailed Kite	<i>Lophoictinia isura</i>

# Testing Clearing proposal (modelled)

Species number	Species common name	Species scientific name
10238	Black Falcon	Falco subniger
10598	Painted Honeyeater	Grantiella picta
12283	Lace Monitor	Varanus varius
13117	Brown Toadlet	Pseudophryne bibronii
13207	Growling Grass Frog	Litoria raniformis
4686	Australian Grayling	Prototroctes maraena
501084	Purple Diuris	Diuris punctata var. punctata
505337	Austral Crane's-bill	Geranium solanderi var. solanderi s.s.

## Offset requirements

If a permit is granted to remove the marked native vegetation the permit condition will include the requirement to obtain a native vegetation offset.

To calculate the required offset amount required the biodiversity equivalence scores are aggregated to the proposal level and multiplied by the relevant risk multiplier.

Offsets also have required attributes:

- General offsets must be located in the same Catchment Management Authority (CMA) boundary or Local Municipal District (local council) as the clearing and must have a minimum strategic biodiversity score of 80 per cent of the clearing.<sup>2</sup>

The offset requirements for your proposal are as follows:

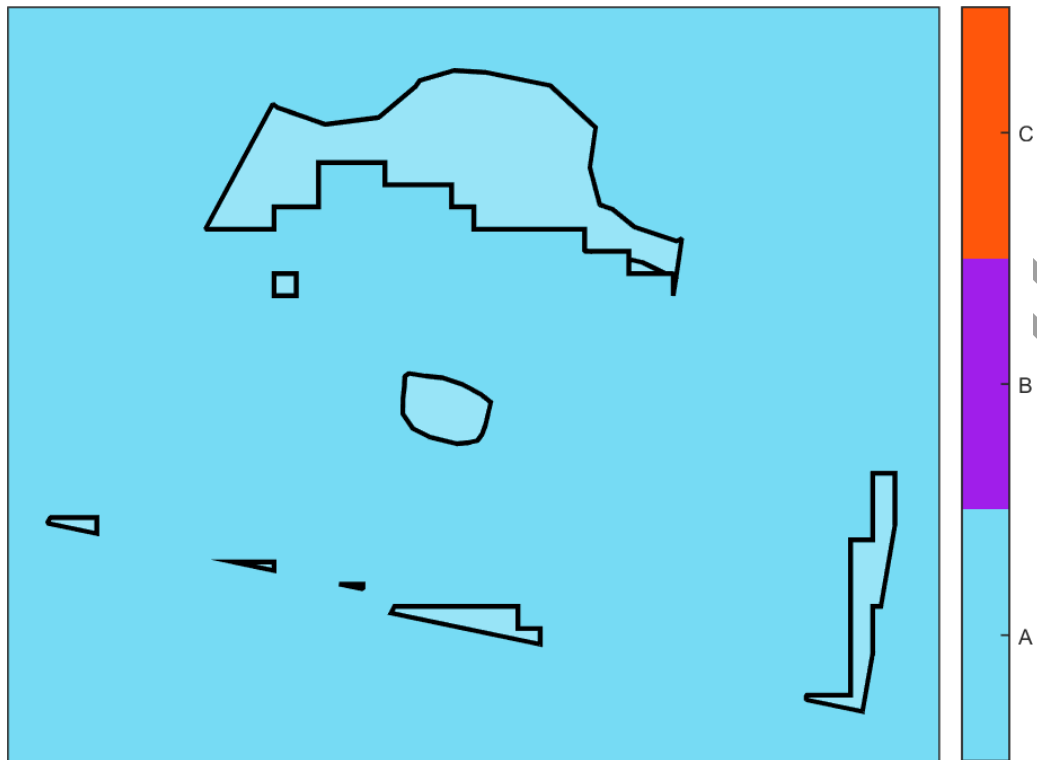
Offset type	Clearing site biodiversity equivalence score	Risk multiplier	Offset requirements	
			Offset amount (biodiversity equivalence units)	Offset attributes
General	1.175 GBES	1.5	1.762 general units	Offset must be within West Gippsland CMA or Wellington Shire Council Offset must have a minimum strategic biodiversity score of 0.265

<sup>2</sup> Strategic biodiversity score is a weighted average across habitat zones where a general offset is required

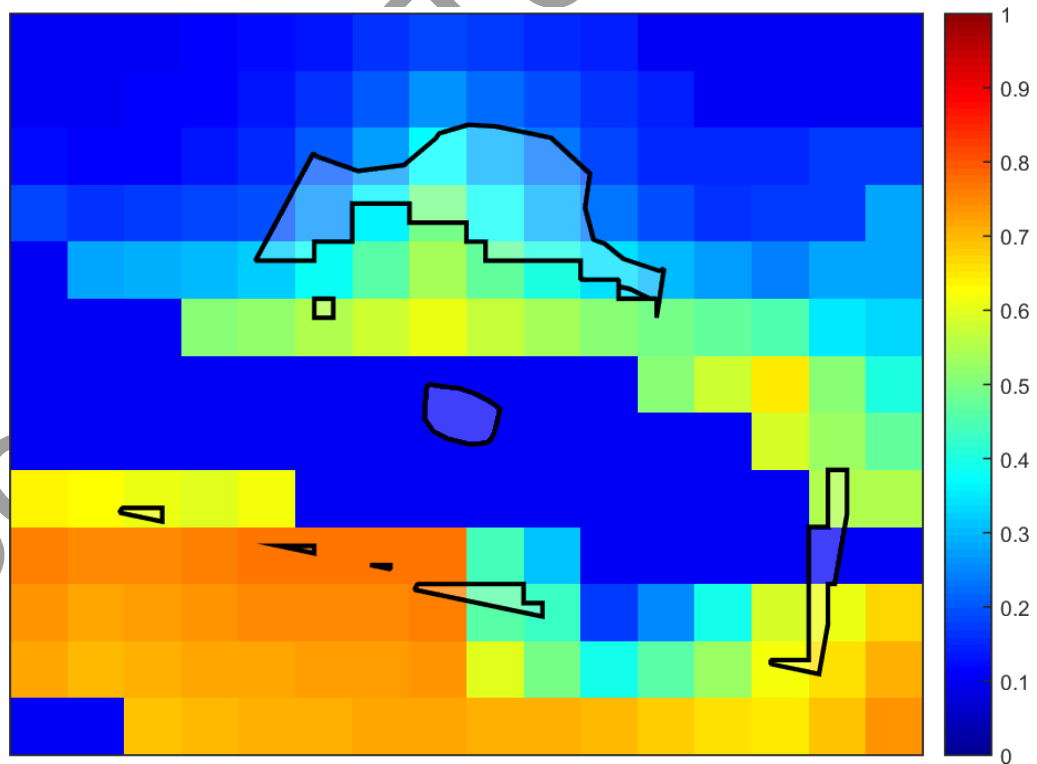
# Testing Clearing proposal (modelled)

## Images of marked native vegetation

### 1. Native vegetation location risk map



### 2. Strategic biodiversity score map



# Testing Clearing proposal (modelled)

## Glossary

**Condition score** This is the site-assessed condition score for the native vegetation. Each habitat zone in the clearing proposal is assigned a condition score according to the habitat hectare assessment method. This information has been provided by or on behalf of the applicant in the GIS file.

**Dispersed habitat** A dispersed species habitat is a habitat for a rare or threatened species whose habitat is spread over a relatively broad geographic area greater than 2,000 hectares.

**General biodiversity equivalence score** The general biodiversity equivalence score quantifies the relative overall contribution that the native vegetation to be removed makes to Victoria's biodiversity. The general biodiversity equivalence score is calculated as follows:

$$\text{General biodiversity equivalence score} = \text{habitat hectares} \times \text{strategic biodiversity score}$$

**General offset amount** This is calculated by multiplying the general biodiversity equivalence score of the native vegetation to be removed by the risk factor for general offsets. This number is expressed in general biodiversity equivalence units and is the amount of offset that is required to be provided should the application be approved. This offset requirement will be a condition to the permit for the removal of native vegetation.

$$\text{Risk adjusted general biodiversity equivalence score} = \text{general biodiversity equivalence score clearing} \times 1.5$$

**General offset attributes** General offset must be located in the same Catchment Management Authority boundary or Municipal District (local council) as the clearing site. They must also have a strategic biodiversity score that is at least 80 per cent of the score of the clearing site.

**Habitat hectares** Habitat hectares is a site-based measure that combines extent and condition of native vegetation. The habitat hectares of native vegetation is equal to the current condition of the vegetation (condition score) multiplied by the extent of native vegetation. Habitat hectares can be calculated for a remnant patch or for scattered trees or a combination of these two vegetation types. This value is calculated for each habitat zone using the following formula:

$$\text{Habitat hectares} = \text{total extent (hectares)} \times \text{condition score}$$

**Habitat importance score** The habitat importance score is a measure of the importance of the habitat located on a site for a particular rare or threatened species. The habitat importance score for a species is a weighted average value calculated from the habitat importance map for that species. The habitat importance score is calculated for each habitat zone where the habitat importance map indicates that species habitat occurs.

# Testing Clearing proposal (modelled)

<b>Habitat zone</b>	<p>Habitat zone is a discrete contiguous area of native vegetation that:</p> <ul style="list-style-type: none"><li>• is of a single Ecological Vegetation Class</li><li>• has the same measured condition.</li></ul>
<b>Highly localised habitat</b>	<p>A highly localised habitat is habitat for a rare or threatened species that is spread across a very restricted area (less than 2,000 hectares). This can also be applied to a similarly limited sub-habitat that is disproportionately important for a wide-ranging rare or threatened species. Highly localised habitats have the highest habitat importance score (1) for all locations where they are present.</p>
<b>Minimum strategic biodiversity score</b>	<p>The minimum strategic biodiversity score is an attribute for a general offset.</p> <p>The strategic biodiversity score of the offset site must be at least 80 per cent of the strategic biodiversity score of the native vegetation to be removed. This is to ensure offsets are located in areas with a strategic value that is comparable to, or better than, the native vegetation to be removed. Where a specific and general offset is required, the minimum strategic biodiversity score relates only to the habitat zones that require the general offset.</p>
<b>Offset risk factor</b>	<p>There is a risk that the gain from undertaking the offset will not adequately compensate for the loss from the removal of native vegetation. If this were to occur, despite obtaining an offset, the overall impact from removing native vegetation would result in a loss in the contribution that native vegetation makes to Victoria's biodiversity.</p> <p>To address the risk of offsets failing, an offset risk factor is applied to the calculated loss to biodiversity value from removing native vegetation.</p> <p><b><i>Risk factor for general offsets = 1.5</i></b></p> <p><b><i>Risk factor for specific offset = 2</i></b></p>
<b>Offset type</b>	<p>The specific-general offset test determines the offset type required.</p> <p>When the specific-general offset test determines that the native vegetation removal will have an impact on one or more rare or threatened species habitat above the set threshold of 0.005 per cent, a specific offset is required. This test is done at the permit application level.</p> <p>A general offset is required when a proposal to remove native vegetation is not deemed, by application of the specific-general offset test, to have an impact on any habitat for any rare or threatened species above the set threshold of 0.005 per cent. All habitat zones that do not require a specific offset will require a general offset.</p>
<b>Proportional impact on species</b>	<p>This is the outcome of the specific-general offset test. The specific-general offset test is calculated across the entire proposal for each species on the native vegetation permitted clearing species list. If the proportional impact on a species is above the set threshold of 0.005 per cent then a specific offset is required for that species.</p>

# Testing Clearing proposal (modelled)

**Specific offset amount** The specific offset amount is calculated by multiplying the specific biodiversity equivalence score of the native vegetation to be removed by the risk factor for specific offsets. This number is expressed in specific biodiversity equivalence units and is the amount of offset that is required to be provided should the application be approved. This offset requirement will be a condition to the permit for the removal of native vegetation.

$$\begin{aligned} & \text{Risk adjusted specific biodiversity equivalence score} \\ &= \text{specific biodiversity equivalence score clearing} \times 2 \end{aligned}$$

**Specific offset attributes** Specific offsets must be located in the modelled habitat for the species that has triggered the specific offset requirement.

**Specific biodiversity equivalence score** The specific biodiversity equivalence score quantifies the relative overall contribution that the native vegetation to be removed makes to the habitat of the relevant rare or threatened species. It is calculated for each habitat zone where one or more species habitats require a specific offset as a result of the specific-general offset test as follows:

$$\begin{aligned} & \text{Specific biodiversity equivalence score} \\ &= \text{habitat hectares} \times \text{habitat importance score} \end{aligned}$$

**Strategic biodiversity score** This is the weighted average strategic biodiversity score of the marked native vegetation. The strategic biodiversity score has been calculated from the *Strategic biodiversity map* for each habitat zone.

The strategic biodiversity score of native vegetation is a measure of the native vegetation's importance for Victoria's biodiversity, relative to other locations across the landscape. The *Strategic biodiversity map* is a modelled layer that prioritises locations on the basis of rarity and level of depletion of the types of vegetation, species habitats, and condition and connectivity of native vegetation.

**Total extent (hectares) for calculating habitat hectares** This is the total area of the marked native vegetation in hectares.

The total extent of native vegetation is an input to calculating the habitat hectares of a site and in calculating the general biodiversity equivalence score. Where the marked native vegetation includes scattered trees, each tree is converted to hectares using a standard area calculation of 0.071 hectares per tree. This information has been provided by or on behalf of the applicant in the GIS file.

**Vicinity** The vicinity is an attribute for a general offset.

The offset site must be located within the same Catchment Management Authority boundary or Local Municipal District as the native vegetation to be removed.

# Testing Clearing proposal (modelled)

This report provides biodiversity information associated with the proposed native vegetation clearing. PLEASE NOTE: This report used modelled condition scores. A habitat hectare assessment is required before the shapefiles are submitted to DELWP for processing.

Date of issue: 02/08/2017  
Time of issue: 3:09 pm

Ref: Scenario Testing

Project ID	EHP9353_Sale_SA2_VG94
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## Summary of marked native vegetation

Risk-based pathway	High
Total extent	16.337 ha
Remnant patches	16.337 ha
Scattered trees	0 trees
Location risk	C

Strategic biodiversity score of all marked native vegetation	0.770
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## Offset requirements

If the marked vegetation was cleared, using modelled scores, the following offsets would be applicable.

Offset type	General offset
General offset amount (general biodiversity equivalence units)	1.728 general units
General offset attributes	
Vicinity	West Gippsland Catchment Management Authority (CMA) or Wellington Shire Council
Minimum strategic biodiversity score	0.443 <sup>1</sup>
Offset type	Specific offset(s)
Specific offset amount (specific biodiversity equivalence units) and attributes	9.023 specific units of habitat for Rough-grain Love-grass

NB: values presented in tables throughout this document may not add to totals due to rounding

<sup>1</sup> Minimum strategic biodiversity score is 80 per cent of the weighted average score across habitat zones where a general offset is required

# Testing Clearing proposal (modelled)

## Next steps

Any proposal to remove native vegetation must meet the application requirements of the high risk-based pathway and it will be assessed under the high risk-based pathway.

If you wish to remove the marked native vegetation, you must complete the required habitat hectare assessment to determine the condition score of the native vegetation and then submit the related shapefiles to the Department of Environment, Land, Water and Planning (DELWP) for processing, by email to [nativevegetation.support@delwp.vic.gov.au](mailto:nativevegetation.support@delwp.vic.gov.au). DELWP will provide a Biodiversity impact and offset requirements report that is required to meet the permit application requirements.

## Biodiversity impact of removal of native vegetation

### Habitat hectares

Habitat hectares are calculated for each habitat zone within your proposal using the extent in the GIS data you provided and modelled condition scores.

Habitat zone	Modelled condition score	Extent (ha)	Habitat hectares
1-1-A	0.665	0.208	0.138
2-2-A	0.373	0.087	0.033
3-3-A	0.570	0.060	0.034
4-4-A	0.205	2.251	0.462
5-5-A	0.487	1.000	0.487
6-6-A	0.200	0.125	0.025
7-7-A	0.200	0.250	0.050
8-8-A	0.200	0.187	0.037
9-9-A	0.200	1.000	0.200
10-10-A	0.200	0.062	0.012
11-11-A	0.200	0.125	0.025
12-12-A	0.491	9.432	4.634
13-13-A	0.200	0.035	0.007
14-14-A	0.200	0.044	0.009
15-15-A	0.200	0.054	0.011
16-16-A	0.200	0.000	0.000
17-17-WL	0.200	0.081	0.016
18-18-WL	0.200	0.217	0.043
19-19-WL	0.200	0.696	0.139
20-20-WL	0.200	0.337	0.067
21-21-WL	0.200	0.086	0.017

# Testing Clearing proposal (modelled)

Habitat zone	Modelled condition score	Extent (ha)	Habitat hectares
TOTAL			6.448

## Impacts on rare or threatened species habitat above specific offset threshold

The specific-general offset test was applied to your proposal. The test determines if the proposed removal of native vegetation has a proportional impact on any rare or threatened species habitats above the specific offset threshold. The threshold is set at 0.005 per cent of the total habitat for a species. When the proportional impact is above the specific offset threshold a specific offset for that species' habitat is required.

The specific-general offset test found your proposal has a proportional impact above the specific offset threshold for the following rare or threatened species' habitats.

Species number	Species common name	Species scientific name	Species type	Area of mapped habitat (ha)	Proportional impact (%)
501197	Rough-grain Love-grass	Eragrostis trachycarpa	Highly Localised - model & points	9.128	0.714 %

## Clearing site biodiversity equivalence score(s)

Where a habitat zone requires specific offset(s), the specific biodiversity equivalence score(s) for each species in that habitat zone is calculated by multiplying the habitat hectares of the habitat zone by the habitat importance score for each species impacted in the habitat zone.

Habitat zone	Habitat hectares	Habitat for rare or threatened species					Specific biodiversity equivalence score (SBES)
		Proportion of habitat zone with specific offset	Species number	Species common name	Species scientific name	Habitat importance score	
1-1-A	0.138	100.000 %	501197	Rough-grain Love-grass	Eragrostis trachycarpa	1.000	0.138
2-2-A	0.033	53.306 %	501197	Rough-grain Love-grass	Eragrostis trachycarpa	1.000	0.017
5-5-A	0.487	100.000 %	501197	Rough-grain Love-grass	Eragrostis trachycarpa	1.000	0.487
12-12-A	4.634	83.484 %	501197	Rough-grain Love-grass	Eragrostis trachycarpa	1.000	3.868

There are habitat zones in your proposal which are not habitat for the species above. A general offset is required for the(se) habitat zone(s).

The general biodiversity equivalence score for the habitat zone(s) is calculated by multiplying the habitat hectares by the strategic biodiversity score.

Habitat zone	Habitat hectares	Proportion of habitat zone with general offset	Strategic biodiversity score	General biodiversity equivalence score (GBES)
2-2-A	0.033	46.694 %	0.882	0.013
3-3-A	0.034	100.000 %	0.860	0.029

# Testing Clearing proposal (modelled)

Habitat zone	Habitat hectares	Proportion of habitat zone with general offset	Strategic biodiversity score	General biodiversity equivalence score (GBES)
4-4-A	0.462	100.000 %	0.527	0.244
6-6-A	0.025	100.000 %	0.677	0.017
7-7-A	0.050	100.000 %	0.664	0.033
8-8-A	0.037	100.000 %	0.643	0.024
9-9-A	0.200	100.000 %	0.763	0.153
10-10-A	0.012	100.000 %	0.764	0.010
11-11-A	0.025	100.000 %	0.722	0.018
12-12-A	4.634	16.516 %	0.712	0.545
13-13-A	0.007	100.000 %	0.506	0.004
14-14-A	0.009	100.000 %	0.373	0.003
15-15-A	0.011	100.000 %	0.103	0.001
16-16-A	0.000	100.000 %	0.100	0.000
17-17-WL	0.016	100.000 %	0.774	0.012
18-18-WL	0.043	100.000 %	0.428	0.019
19-19-WL	0.139	100.000 %	0.100	0.014
20-20-WL	0.067	100.000 %	0.100	0.007
21-21-WL	0.017	100.000 %	0.391	0.007

## Mapped rare or threatened species' habitats on site

This table sets out the list of rare or threatened species' habitats mapped at the site beyond those species for which the impact is above the specific offset threshold. These species habitats do not require a specific offset according to the specific-general offset test.

Species number	Species common name	Species scientific name
10212	Australasian Shoveler	Anas rhynchos
10215	Hardhead	Aythya australis
10220	Grey Goshawk	Accipiter novaehollandiae novaehollandiae
10230	Square-tailed Kite	Lophoictinia isura
10238	Black Falcon	Falco subniger
10498	Chestnut-rumped Heathwren	Calamanthus pyrrhopygius
10598	Painted Honeyeater	Grantiella picta
12283	Lace Monitor	Varanus varius
13117	Brown Toadlet	Pseudophryne bibronii

# Testing Clearing proposal (modelled)

Species number	Species common name	Species scientific name
501084	Purple Diuris	Diuris punctata var. punctata

## Offset requirements

If a permit is granted to remove the marked native vegetation the permit condition will include the requirement to obtain a native vegetation offset.

To calculate the required offset amount required the biodiversity equivalence scores are aggregated to the proposal level and multiplied by the relevant risk multiplier.

Offsets also have required attributes:

- General offsets must be located in the same Catchment Management Authority (CMA) boundary or Local Municipal District (local council) as the clearing and must have a minimum strategic biodiversity score of 80 per cent of the clearing.<sup>2</sup>
- Specific offsets must be located in the same species habitat as that being removed, as determined by the habitat importance map for that species.

The offset requirements for your proposal are as follows:

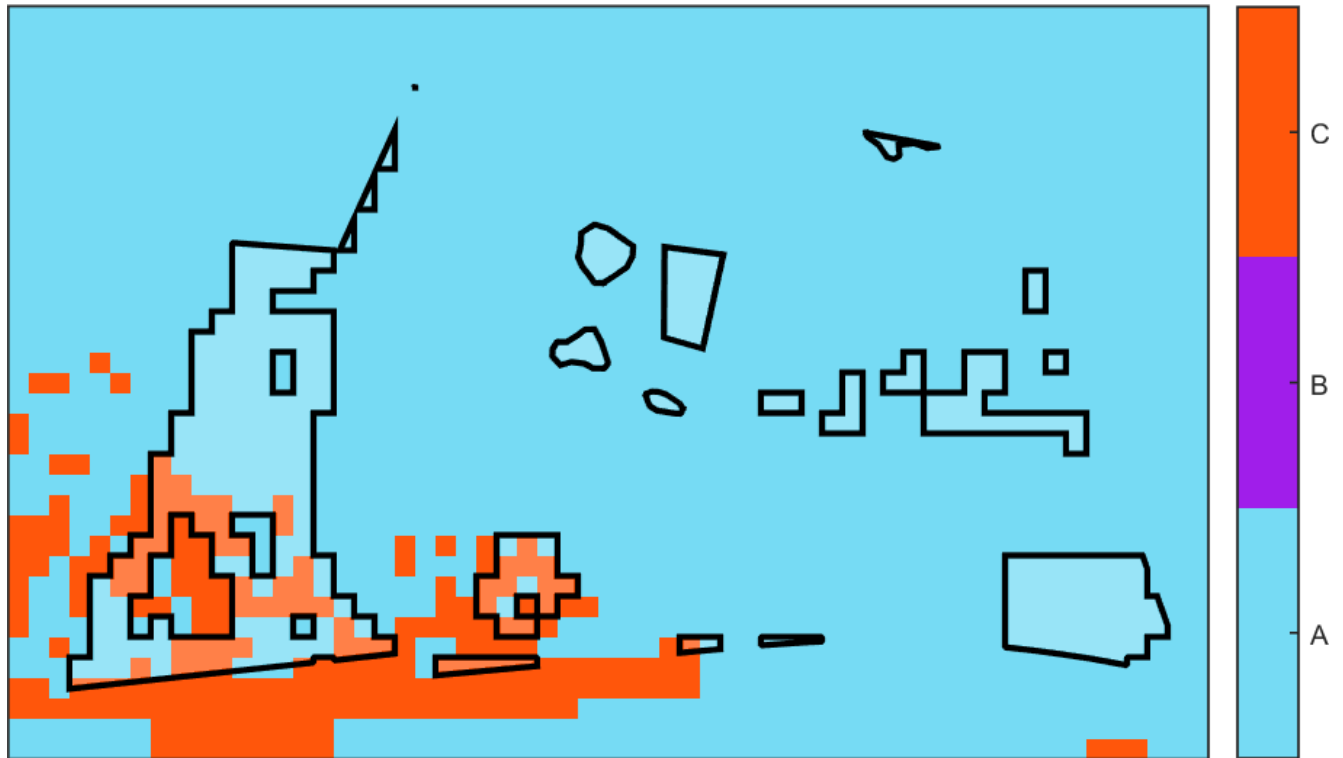
Offset type	Clearing site biodiversity equivalence score	Risk multiplier	Offset requirements	
			Offset amount (biodiversity equivalence units)	Offset attributes
Specific	4.512 SBES	2	9.023 specific units	Offset must provide habitat for 501197, Rough-grain Love-grass, <i>Eragrostis trachycarpa</i>
General	1.152 GBES	1.5	1.728 general units	Offset must be within West Gippsland CMA or Wellington Shire Council Offset must have a minimum strategic biodiversity score of 0.443

<sup>2</sup> Strategic biodiversity score is a weighted average across habitat zones where a general offset is required

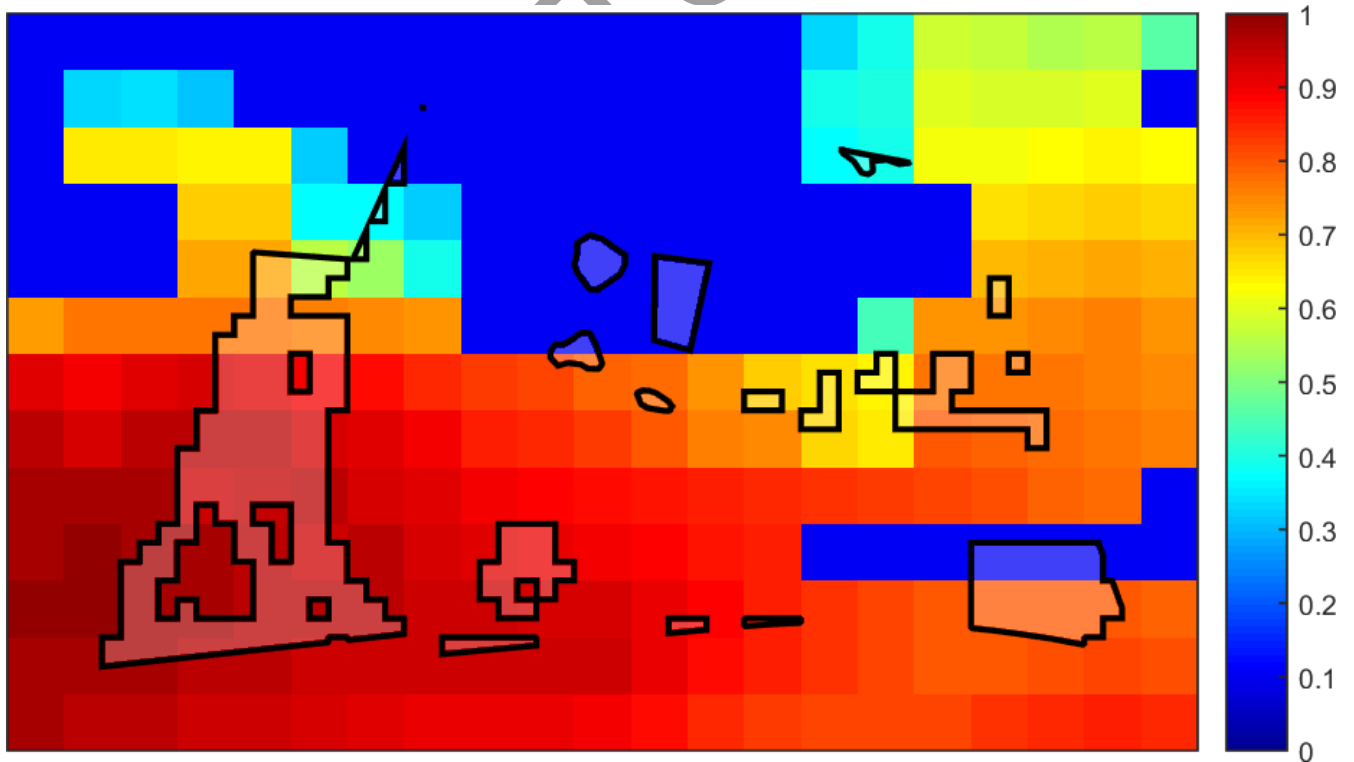
# Testing Clearing proposal (modelled)

## Images of marked native vegetation

### 1. Native vegetation location risk map



### 2. Strategic biodiversity score map



# Testing Clearing proposal (modelled)

## 3. Habitat importance maps

Rough-grain Love-grass  
*Eragrostis trachycarpa*  
501197



Scenario Testing Only

# Testing Clearing proposal (modelled)

## Glossary

**Condition score** This is the site-assessed condition score for the native vegetation. Each habitat zone in the clearing proposal is assigned a condition score according to the habitat hectare assessment method. This information has been provided by or on behalf of the applicant in the GIS file.

**Dispersed habitat** A dispersed species habitat is a habitat for a rare or threatened species whose habitat is spread over a relatively broad geographic area greater than 2,000 hectares.

**General biodiversity equivalence score** The general biodiversity equivalence score quantifies the relative overall contribution that the native vegetation to be removed makes to Victoria's biodiversity. The general biodiversity equivalence score is calculated as follows:

$$\text{General biodiversity equivalence score} = \text{habitat hectares} \times \text{strategic biodiversity score}$$

**General offset amount** This is calculated by multiplying the general biodiversity equivalence score of the native vegetation to be removed by the risk factor for general offsets. This number is expressed in general biodiversity equivalence units and is the amount of offset that is required to be provided should the application be approved. This offset requirement will be a condition to the permit for the removal of native vegetation.

$$\text{Risk adjusted general biodiversity equivalence score} = \text{general biodiversity equivalence score clearing} \times 1.5$$

**General offset attributes** General offset must be located in the same Catchment Management Authority boundary or Municipal District (local council) as the clearing site. They must also have a strategic biodiversity score that is at least 80 per cent of the score of the clearing site.

**Habitat hectares** Habitat hectares is a site-based measure that combines extent and condition of native vegetation. The habitat hectares of native vegetation is equal to the current condition of the vegetation (condition score) multiplied by the extent of native vegetation. Habitat hectares can be calculated for a remnant patch or for scattered trees or a combination of these two vegetation types. This value is calculated for each habitat zone using the following formula:

$$\text{Habitat hectares} = \text{total extent (hectares)} \times \text{condition score}$$

**Habitat importance score** The habitat importance score is a measure of the importance of the habitat located on a site for a particular rare or threatened species. The habitat importance score for a species is a weighted average value calculated from the habitat importance map for that species. The habitat importance score is calculated for each habitat zone where the habitat importance map indicates that species habitat occurs.

**Habitat zone** Habitat zone is a discrete contiguous area of native vegetation that:

- is of a single Ecological Vegetation Class
- has the same measured condition.

# Testing Clearing proposal (modelled)

<b>Highly localised habitat</b>	<p>A highly localised habitat is habitat for a rare or threatened species that is spread across a very restricted area (less than 2,000 hectares). This can also be applied to a similarly limited sub-habitat that is disproportionately important for a wide-ranging rare or threatened species. Highly localised habitats have the highest habitat importance score (1) for all locations where they are present.</p>
<b>Minimum strategic biodiversity score</b>	<p>The minimum strategic biodiversity score is an attribute for a general offset.</p> <p>The strategic biodiversity score of the offset site must be at least 80 per cent of the strategic biodiversity score of the native vegetation to be removed. This is to ensure offsets are located in areas with a strategic value that is comparable to, or better than, the native vegetation to be removed. Where a specific and general offset is required, the minimum strategic biodiversity score relates only to the habitat zones that require the general offset.</p>
<b>Offset risk factor</b>	<p>There is a risk that the gain from undertaking the offset will not adequately compensate for the loss from the removal of native vegetation. If this were to occur, despite obtaining an offset, the overall impact from removing native vegetation would result in a loss in the contribution that native vegetation makes to Victoria's biodiversity.</p> <p>To address the risk of offsets failing, an offset risk factor is applied to the calculated loss to biodiversity value from removing native vegetation.</p> <p style="text-align: center;"><b><i>Risk factor for general offsets = 1.5</i></b></p> <p style="text-align: center;"><b><i>Risk factor for specific offset = 2</i></b></p>
<b>Offset type</b>	<p>The specific-general offset test determines the offset type required.</p> <p>When the specific-general offset test determines that the native vegetation removal will have an impact on one or more rare or threatened species habitat above the set threshold of 0.005 per cent, a specific offset is required. This test is done at the permit application level.</p> <p>A general offset is required when a proposal to remove native vegetation is not deemed, by application of the specific-general offset test, to have an impact on any habitat for any rare or threatened species above the set threshold of 0.005 per cent. All habitat zones that do not require a specific offset will require a general offset.</p>
<b>Proportional impact on species</b>	<p>This is the outcome of the specific-general offset test. The specific-general offset test is calculated across the entire proposal for each species on the native vegetation permitted clearing species list. If the proportional impact on a species is above the set threshold of 0.005 per cent then a specific offset is required for that species.</p>
<b>Specific offset amount</b>	<p>The specific offset amount is calculated by multiplying the specific biodiversity equivalence score of the native vegetation to be removed by the risk factor for specific offsets. This number is expressed in specific biodiversity equivalence units and is the amount of offset that is required to be provided should the application be approved. This offset requirement will be a condition to the permit for the removal of native vegetation.</p> <p style="text-align: center;"><b><i>Risk adjusted specific biodiversity equivalence score</i></b> <b><i>= specific biodiversity equivalence score clearing × 2</i></b></p>

# Testing Clearing proposal (modelled)

**Specific offset attributes** Specific offsets must be located in the modelled habitat for the species that has triggered the specific offset requirement.

**Specific biodiversity equivalence score** The specific biodiversity equivalence score quantifies the relative overall contribution that the native vegetation to be removed makes to the habitat of the relevant rare or threatened species. It is calculated for each habitat zone where one or more species habitats require a specific offset as a result of the specific-general offset test as follows:

$$\text{Specific biodiversity equivalence score} = \text{habitat hectares} \times \text{habitat importance score}$$

**Strategic biodiversity score** This is the weighted average strategic biodiversity score of the marked native vegetation. The strategic biodiversity score has been calculated from the *Strategic biodiversity map* for each habitat zone.

The strategic biodiversity score of native vegetation is a measure of the native vegetation's importance for Victoria's biodiversity, relative to other locations across the landscape. The *Strategic biodiversity map* is a modelled layer that prioritises locations on the basis of rarity and level of depletion of the types of vegetation, species habitats, and condition and connectivity of native vegetation.

**Total extent (hectares) for calculating habitat hectares** This is the total area of the marked native vegetation in hectares. The total extent of native vegetation is an input to calculating the habitat hectares of a site and in calculating the general biodiversity equivalence score. Where the marked native vegetation includes scattered trees, each tree is converted to hectares using a standard area calculation of 0.071 hectares per tree. This information has been provided by or on behalf of the applicant in the GIS file.

**Vicinity** The vicinity is an attribute for a general offset. The offset site must be located within the same Catchment Management Authority boundary or Local Municipal District as the native vegetation to be removed.

# Testing Clearing proposal (modelled)

This report provides biodiversity information associated with the proposed native vegetation clearing. PLEASE NOTE: This report used modelled condition scores. A habitat hectare assessment is required before the shapefiles are submitted to DELWP for processing.

Date of issue: 02/08/2017

Time of issue: 3:02 pm

Ref: Scenario Testing

Project ID	EHP9353_Sale_SA3_VG94
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## Summary of marked native vegetation

Risk-based pathway	Moderate
Total extent	14.101 ha
Remnant patches	14.101 ha
Scattered trees	0 trees
Location risk	A

Strategic biodiversity score of all marked native vegetation	0.111
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## Offset requirements

If the marked vegetation was cleared, using modelled scores, the following offsets would be applicable.

Offset type	General offset
General offset amount (general biodiversity equivalence units)	0.471 general units
General offset attributes	
Vicinity	West Gippsland Catchment Management Authority (CMA) or Wellington Shire Council
Minimum strategic biodiversity score	0.089 <sup>1</sup>

NB: values presented in tables throughout this document may not add to totals due to rounding

<sup>1</sup> Minimum strategic biodiversity score is 80 per cent of the weighted average score across habitat zones where a general offset is required

# Testing Clearing proposal (modelled)

## Next steps

Any proposal to remove native vegetation must meet the application requirements of the moderate risk-based pathway and it will be assessed under the moderate risk-based pathway.

If you wish to remove the marked native vegetation, you must complete the required habitat hectare assessment to determine the condition score of the native vegetation and then submit the related shapefiles to the Department of Environment, Land, Water and Planning (DELWP) for processing, by email to [nativevegetation.support@delwp.vic.gov.au](mailto:nativevegetation.support@delwp.vic.gov.au). DELWP will provide a Biodiversity impact and offset requirements report that is required to meet the permit application requirements.

## Biodiversity impact of removal of native vegetation

### Habitat hectares

Habitat hectares are calculated for each habitat zone within your proposal using the extent in the GIS data you provided and modelled condition scores.

Habitat zone	Modelled condition score	Extent (ha)	Habitat hectares
1-1-A	0.200	0.000	0.000
2-2-A	0.200	0.009	0.002
3-3-A	0.200	7.221	1.444
4-4-A	0.200	0.125	0.025
5-5-A	0.200	0.125	0.025
6-6-A	0.200	0.125	0.025
7-7-A	0.200	0.062	0.012
8-8-A	0.200	0.375	0.075
9-9-A	0.200	0.125	0.025
10-10-B	0.200	0.062	0.012
11-11-B	0.200	0.062	0.012
12-12-B	0.200	0.037	0.007
13-13-B	0.200	0.249	0.050
14-14-B	0.200	0.063	0.013
15-15-B	0.200	0.063	0.013
16-16-B	0.200	0.006	0.001
17-17-B	0.200	5.162	1.032
18-18-WL	0.200	0.083	0.017
19-19-WL	0.200	0.093	0.019
20-20-WL	0.200	0.054	0.011
<b>TOTAL</b>			<b>2.820</b>

# Testing Clearing proposal (modelled)

## Impacts on rare or threatened species habitat above specific offset threshold

The specific-general offset test was applied to your proposal. The test determines if the proposed removal of native vegetation has a proportional impact on any rare or threatened species habitats above the specific offset threshold. The threshold is set at 0.005 per cent of the total habitat for a species. When the proportional impact is above the specific offset threshold a specific offset for that species' habitat is required.

The specific-general offset test found your proposal does not have a proportional impact on any rare or threatened species' habitats above the specific offset threshold. No specific offsets are required. A general offset is required as set out below.

## Clearing site biodiversity equivalence score(s)

The general biodiversity equivalence score for the habitat zone(s) is calculated by multiplying the habitat hectares by the strategic biodiversity score.

Habitat zone	Habitat hectares	Proportion of habitat zone with general offset	Strategic biodiversity score	General biodiversity equivalence score (GBES)
1-1-A	0.000	100.000 %	0.100	0.000
2-2-A	0.002	100.000 %	0.100	0.000
3-3-A	1.444	100.000 %	0.100	0.144
4-4-A	0.025	100.000 %	0.100	0.003
5-5-A	0.025	100.000 %	0.706	0.018
6-6-A	0.025	100.000 %	0.100	0.003
7-7-A	0.012	100.000 %	0.100	0.001
8-8-A	0.075	100.000 %	0.100	0.008
9-9-A	0.025	100.000 %	0.100	0.003
10-10-B	0.012	100.000 %	0.100	0.001
11-11-B	0.012	100.000 %	0.100	0.001
12-12-B	0.007	100.000 %	0.100	0.001
13-13-B	0.050	100.000 %	0.441	0.022
14-14-B	0.013	100.000 %	0.100	0.001
15-15-B	0.013	100.000 %	0.100	0.001
16-16-B	0.001	100.000 %	0.100	0.000
17-17-B	1.032	100.000 %	0.100	0.103
18-18-WL	0.017	100.000 %	0.100	0.002
19-19-WL	0.019	100.000 %	0.100	0.002
20-20-WL	0.011	100.000 %	0.100	0.001

## Mapped rare or threatened species' habitats on site

# Testing Clearing proposal (modelled)

This table sets out the list of rare or threatened species' habitats mapped at the site beyond those species for which the impact is above the specific offset threshold. These species habitats do not require a specific offset according to the specific-general offset test.

Species number	Species common name	Species scientific name
10195	Australian Little Bittern	<i>Ixobrychus minutus dubius</i>
10215	Hardhead	<i>Aythya australis</i>
10230	Square-tailed Kite	<i>Lophoictinia isura</i>
10238	Black Falcon	<i>Falco subniger</i>
10598	Painted Honeyeater	<i>Grantiella picta</i>
12283	Lace Monitor	<i>Varanus varius</i>
501084	Purple Diuris	<i>Diuris punctata</i> var. <i>punctata</i>

## Offset requirements

If a permit is granted to remove the marked native vegetation the permit condition will include the requirement to obtain a native vegetation offset.

To calculate the required offset amount required the biodiversity equivalence scores are aggregated to the proposal level and multiplied by the relevant risk multiplier.

Offsets also have required attributes:

- General offsets must be located in the same Catchment Management Authority (CMA) boundary or Local Municipal District (local council) as the clearing and must have a minimum strategic biodiversity score of 80 per cent of the clearing.<sup>2</sup>

The offset requirements for your proposal are as follows:

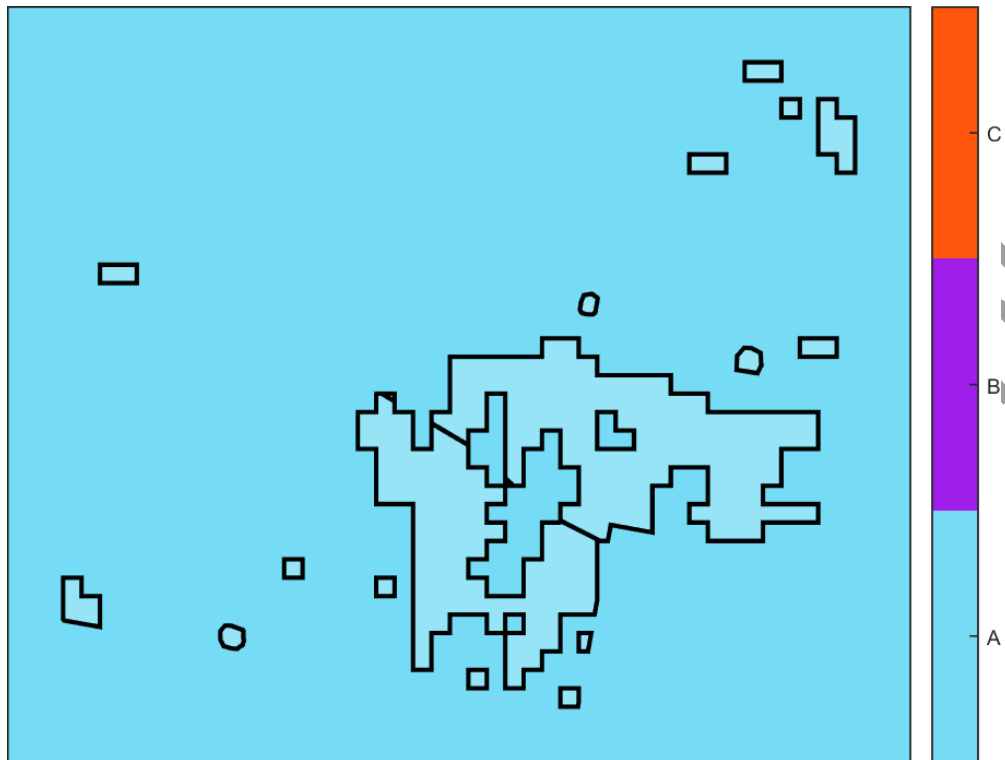
Offset type	Clearing site biodiversity equivalence score	Risk multiplier	Offset requirements	
			Offset amount (biodiversity equivalence units)	Offset attributes
General	0.314 GBES	1.5	0.471 general units	Offset must be within West Gippsland CMA or Wellington Shire Council Offset must have a minimum strategic biodiversity score of 0.089

<sup>2</sup> Strategic biodiversity score is a weighted average across habitat zones where a general offset is required

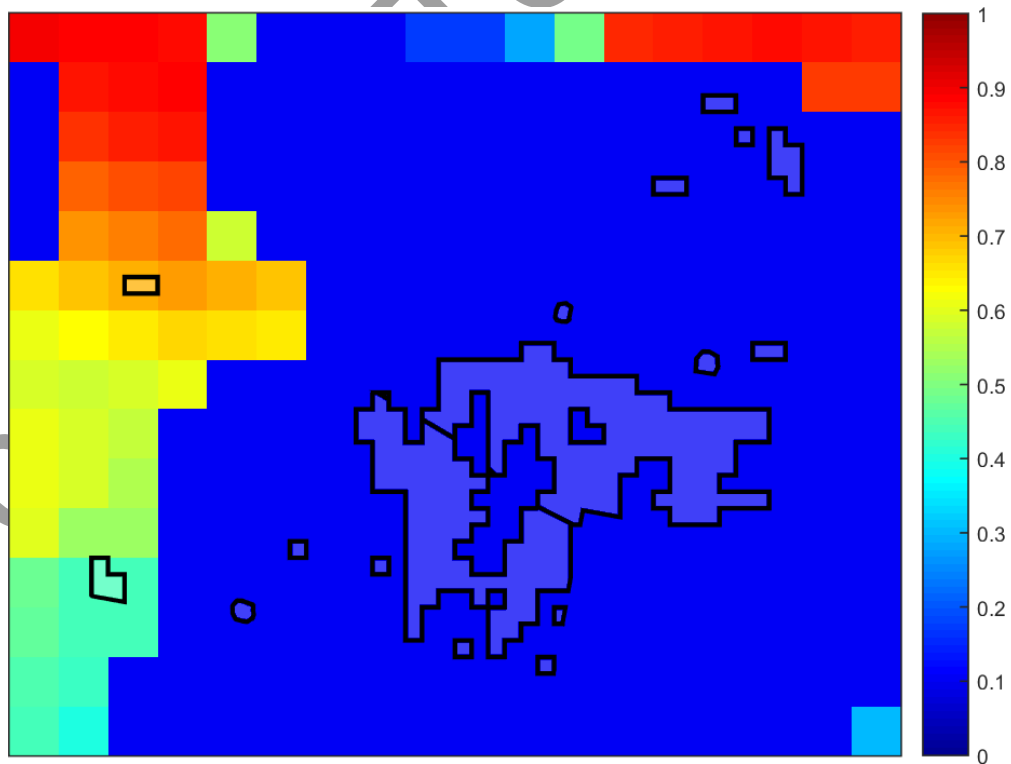
# Testing Clearing proposal (modelled)

## Images of marked native vegetation

### 1. Native vegetation location risk map



### 2. Strategic biodiversity score map



# Testing Clearing proposal (modelled)

## Glossary

**Condition score** This is the site-assessed condition score for the native vegetation. Each habitat zone in the clearing proposal is assigned a condition score according to the habitat hectare assessment method. This information has been provided by or on behalf of the applicant in the GIS file.

**Dispersed habitat** A dispersed species habitat is a habitat for a rare or threatened species whose habitat is spread over a relatively broad geographic area greater than 2,000 hectares.

**General biodiversity equivalence score** The general biodiversity equivalence score quantifies the relative overall contribution that the native vegetation to be removed makes to Victoria's biodiversity. The general biodiversity equivalence score is calculated as follows:

$$\text{General biodiversity equivalence score} = \text{habitat hectares} \times \text{strategic biodiversity score}$$

**General offset amount** This is calculated by multiplying the general biodiversity equivalence score of the native vegetation to be removed by the risk factor for general offsets. This number is expressed in general biodiversity equivalence units and is the amount of offset that is required to be provided should the application be approved. This offset requirement will be a condition to the permit for the removal of native vegetation.

$$\text{Risk adjusted general biodiversity equivalence score} = \text{general biodiversity equivalence score clearing} \times 1.5$$

**General offset attributes** General offset must be located in the same Catchment Management Authority boundary or Municipal District (local council) as the clearing site. They must also have a strategic biodiversity score that is at least 80 per cent of the score of the clearing site.

**Habitat hectares** Habitat hectares is a site-based measure that combines extent and condition of native vegetation. The habitat hectares of native vegetation is equal to the current condition of the vegetation (condition score) multiplied by the extent of native vegetation. Habitat hectares can be calculated for a remnant patch or for scattered trees or a combination of these two vegetation types. This value is calculated for each habitat zone using the following formula:

$$\text{Habitat hectares} = \text{total extent (hectares)} \times \text{condition score}$$

**Habitat importance score** The habitat importance score is a measure of the importance of the habitat located on a site for a particular rare or threatened species. The habitat importance score for a species is a weighted average value calculated from the habitat importance map for that species. The habitat importance score is calculated for each habitat zone where the habitat importance map indicates that species habitat occurs.

# Testing Clearing proposal (modelled)

<b>Habitat zone</b>	<p>Habitat zone is a discrete contiguous area of native vegetation that:</p> <ul style="list-style-type: none"><li>• is of a single Ecological Vegetation Class</li><li>• has the same measured condition.</li></ul>
<b>Highly localised habitat</b>	<p>A highly localised habitat is habitat for a rare or threatened species that is spread across a very restricted area (less than 2,000 hectares). This can also be applied to a similarly limited sub-habitat that is disproportionately important for a wide-ranging rare or threatened species. Highly localised habitats have the highest habitat importance score (1) for all locations where they are present.</p>
<b>Minimum strategic biodiversity score</b>	<p>The minimum strategic biodiversity score is an attribute for a general offset.</p> <p>The strategic biodiversity score of the offset site must be at least 80 per cent of the strategic biodiversity score of the native vegetation to be removed. This is to ensure offsets are located in areas with a strategic value that is comparable to, or better than, the native vegetation to be removed. Where a specific and general offset is required, the minimum strategic biodiversity score relates only to the habitat zones that require the general offset.</p>
<b>Offset risk factor</b>	<p>There is a risk that the gain from undertaking the offset will not adequately compensate for the loss from the removal of native vegetation. If this were to occur, despite obtaining an offset, the overall impact from removing native vegetation would result in a loss in the contribution that native vegetation makes to Victoria's biodiversity.</p> <p>To address the risk of offsets failing, an offset risk factor is applied to the calculated loss to biodiversity value from removing native vegetation.</p> <p><b><i>Risk factor for general offsets = 1.5</i></b></p> <p><b><i>Risk factor for specific offset = 2</i></b></p>
<b>Offset type</b>	<p>The specific-general offset test determines the offset type required.</p> <p>When the specific-general offset test determines that the native vegetation removal will have an impact on one or more rare or threatened species habitat above the set threshold of 0.005 per cent, a specific offset is required. This test is done at the permit application level.</p> <p>A general offset is required when a proposal to remove native vegetation is not deemed, by application of the specific-general offset test, to have an impact on any habitat for any rare or threatened species above the set threshold of 0.005 per cent. All habitat zones that do not require a specific offset will require a general offset.</p>
<b>Proportional impact on species</b>	<p>This is the outcome of the specific-general offset test. The specific-general offset test is calculated across the entire proposal for each species on the native vegetation permitted clearing species list. If the proportional impact on a species is above the set threshold of 0.005 per cent then a specific offset is required for that species.</p>

# Testing Clearing proposal (modelled)

**Specific offset amount** The specific offset amount is calculated by multiplying the specific biodiversity equivalence score of the native vegetation to be removed by the risk factor for specific offsets. This number is expressed in specific biodiversity equivalence units and is the amount of offset that is required to be provided should the application be approved. This offset requirement will be a condition to the permit for the removal of native vegetation.

$$\begin{aligned} & \text{Risk adjusted specific biodiversity equivalence score} \\ &= \text{specific biodiversity equivalence score clearing} \times 2 \end{aligned}$$

**Specific offset attributes** Specific offsets must be located in the modelled habitat for the species that has triggered the specific offset requirement.

**Specific biodiversity equivalence score** The specific biodiversity equivalence score quantifies the relative overall contribution that the native vegetation to be removed makes to the habitat of the relevant rare or threatened species. It is calculated for each habitat zone where one or more species habitats require a specific offset as a result of the specific-general offset test as follows:

$$\begin{aligned} & \text{Specific biodiversity equivalence score} \\ &= \text{habitat hectares} \times \text{habitat importance score} \end{aligned}$$

**Strategic biodiversity score** This is the weighted average strategic biodiversity score of the marked native vegetation. The strategic biodiversity score has been calculated from the *Strategic biodiversity map* for each habitat zone.

The strategic biodiversity score of native vegetation is a measure of the native vegetation's importance for Victoria's biodiversity, relative to other locations across the landscape. The *Strategic biodiversity map* is a modelled layer that prioritises locations on the basis of rarity and level of depletion of the types of vegetation, species habitats, and condition and connectivity of native vegetation.

**Total extent (hectares) for calculating habitat hectares** This is the total area of the marked native vegetation in hectares.

The total extent of native vegetation is an input to calculating the habitat hectares of a site and in calculating the general biodiversity equivalence score. Where the marked native vegetation includes scattered trees, each tree is converted to hectares using a standard area calculation of 0.071 hectares per tree. This information has been provided by or on behalf of the applicant in the GIS file.

**Vicinity** The vicinity is an attribute for a general offset.

The offset site must be located within the same Catchment Management Authority boundary or Local Municipal District as the native vegetation to be removed.