

Final Report

# Biodiversity Assessment for proposed Cardinia Motorsport, Recreation and Education complex: 21, 75 and 115 Key Lane, and 335 McGregor Road, Pakenham, Victoria

Prepared for

Podium 1

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Ecology and Heritage Partners Pty Ltd

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## SUMMARY

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### Introduction

Ecology and Heritage Partners Pty Ltd was commissioned by Podium 1 to conduct a Biodiversity Assessment at 21, 75 and 115 Key Lane, and 335 McGregor Road, Pakenham, Victoria (the 'study area'). The study area covers the entire area covered by a Development Plan Overlay (DPO16), and the proposed development area is restricted within the broader study area. This assessment was undertaken to identify and characterise the vegetation on-site, determine the presence (or likelihood thereof) of any significant flora and fauna species and/or ecological communities and address any likely implications under Commonwealth and State environmental legislation.

This report is an amended report to the initial report provided in July 2019 with the current report detailing reduced impacts to native vegetation through a refined design.

### Methods

#### *Ecological assessment*

A field assessment was undertaken on 30 August and 1 November 2018 to obtain information on flora and fauna values within the study area. A habitat hectare assessment was undertaken in conjunction with the flora survey. Vegetation within the study area was assessed according to the habitat hectare methodology, which is described in the Vegetation Quality Assessment Manual.

#### *Targeted Growling Grass Frog Survey*

Nocturnal targeted surveys for Growling Grass Frog *Litoria raniformis* were completed during warm (over 15°C) conditions on 1 November, 11 November and 5 December 2018 within the study area by zoologists experienced in amphibian surveys.

Targeted surveys included quiet listening for 15 minutes prior to undertaken call-playback. Active searching focused on the margins of the waterbody and nearby drainage lines and areas providing potential habitat in the form of terrestrial, aquatic and refuge habitat(s).

### Results

#### *Flora*

Remnant native vegetation in the study area is representative of two EVCs: Plains Grassy Wetland (EVC 125) and Swampy Riparian Woodland (EVC 83). Six native scattered trees were recorded in the study area.

Fifty-two (52) flora species (24 indigenous and 28 non-indigenous or introduced) were recorded within the study area during the field assessment. Based on the disturbed habitat present within the study area, landscape context, efforts of previous targeted flora surveys and the proximity of previous records, significant flora species are considered unlikely to occur within the study area.

#### *Fauna*

One nationally significant fauna species was recorded during the field assessment, Latham's Snipe *Gallinago hardwickii*, and habitat is present for Growling Grass Frog. Targeted surveys were undertaken for Growling Grass Frog to confirm the presence/absence of this species, with no individuals recorded within



the study area despite the weather conditions being suitable. Individuals were recorded within close proximity north and south of the study area, and therefore it is considered likely that on occasion the species would utilise the habitat within the study area for either foraging, breeding or as a corridor between external habitat sites.

Potential habitat for Southern Brown Bandicoot *Isoodon obesulus obesulus* was observed within the study area, but outside of the development area. Targeted surveys for Southern Brown Bandicoot are currently being undertaken and due for completion in spring 2019. The presence of additional significant fauna, including Dwarf Galaxias *Galaxiella pusilla*, is considered unlikely within the current development area.

### *Communities*

Vegetation within the study area was not consistent with any of the condition thresholds for any national or state significant ecological communities.

### *Removal of Native Vegetation (the Guidelines)*

The study area is within Location 2, with 9.468 hectares of native vegetation proposed to be impacted. As such, the permit application falls under the Detailed Assessment Pathway. The offset requirement for native vegetation removal is 5.041 General Habitat Units (GHUs).

### **Legislative and Policy Implications**

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

One individual of Latham's Snipe was observed within the study area, however the habitat within the study area does not classify as important habitat for the species. There is suitable habitat for one species, Growling Grass Frog, and potential habitat for Southern Brown Bandicoot. No Growling Grass Frog were recorded within the study area during the targeted survey, but the species was recorded in the broader region, and therefore there is potential that the species could use the habitat on occasion as a dispersal corridor, due to the patches of Plains Grassy Wetland being in a suitable condition to support the species and connectivity to surrounding areas of known habitat. Targeted surveys for Southern Brown Bandicoot are currently being undertaken and are due for completion in spring 2019. A referral to the Commonwealth Environment Minister relating to the relevant species listed under the EPBC Act for is recommended for legal certainty for the project.

#### *Flora and Fauna Guarantee Act 1988 (FFG Act - Victoria)*

There is suitable habitat within the study area for one 'listed' fauna species under the FFG Act, Growling Grass Frog, and one protected flora species, Variable Groundsel. The majority of the study area is located on private land, and therefore is exempt from requiring a permit under the FFG Act for this area. Sections of the study area located along the road reserves of Key Lane and McGregor Road are on public land, however no listed or protected species were observed within these areas, as such a permit under the FFG Act is not required for the proposed development.

#### *Environment Effects Act 1978 (Victoria)*

The final development plan for the proposed development includes impacts to one endangered ecological community, Plains Grassy Wetland. There is 11.12 hectares of Plains Grassy Wetland mapped within the study area, and of this 9.37 hectares is proposed to be impacted. This amount has been reduced through refinement of the proposed design as reflected in the current report, and now falls below the threshold to



trigger a referral under the *Environment Effects Act 1978* as less than 10 hectares of an endangered ecological community is proposed to be removed.

*Planning and Environment Act 1987*

A Planning Permit from Cardinia Shire Council is required to remove, destroy or lop any native vegetation. In addition, the study area is covered by a Development Plan Overlay (DPO16), which has criteria regarding native biodiversity that must be met.

*Other Legislation and Policy*

Implications relating to other local and State policy (*Wildlife Act 1975, Catchment and Land Protection Act 1994*, local government authorities) as well as additional studies or reporting that may be required (targeted surveys, Conservation Management Plan, Weed Management Plan, Construction Environment Managements Plan) are provided in Section 4.

**Table S1.** Application requirements for a permit to remove native vegetation (*Victoria Planning Provisions* Clause 52.17 -3; DELWP 2017a)

No.	Application Requirement	Response
<b>Application requirements under the Detailed Assessment Pathway</b>		
1	Information about the native vegetation to be removed, including: <ul style="list-style-type: none"> <li>The assessment pathway and reason for the assessment pathway. <ul style="list-style-type: none"> <li>A description of the native vegetation to be removed:</li> <li>Maps showing the native vegetation and property in context:</li> </ul> </li> <li>The offset requirement that will apply if the native vegetation is approved to be removed.</li> </ul>	Details provided in Section 3 and NVR report in Appendix 3.
2	Topographic and land information relating to the native vegetation to be removed, showing ridges, crests and hilltops, wetlands and waterways, slopes of more than 20 percent, drainage lines, low lying areas, saline discharge areas, and areas of existing erosion, as appropriate.	Details provided in Section 1.3 and Figure 3.
3	Recent, dated photographs of the native vegetation to be removed.	Details provided in Section 3.
4	Details of any other native vegetation approved to be removed, or that was removed without the required approvals, on the same property or on contiguous land in the same ownership as the applicant, in the five year period before the application for a permit is lodged.	Not Applicable.
5	An avoid and minimise statement. The statement describes any efforts to avoid the removal of and minimise the impacts on the biodiversity and other values of native vegetation, and how these efforts focussed on areas of native vegetation that have the most value.	Details provided in Section 5.1.
6	A copy of any Property Vegetation Plan contained within an agreement made pursuant to section 69 of the <i>Conservation, Forests and Lands Act 1987</i> that applies to the native vegetation to be removed.	Not Applicable.
7	Where the removal of native vegetation is to create defensible space, a written statement explaining why the removal of native vegetation is necessary. This statement must have regard to other available bushfire risk mitigation measures. This statement is not required when the creation of defensible space is in conjunction with an application under the Bushfire Management Overlay.	Not applicable.
8	If the application is under Clause 52.16, a statement that explains how the proposal responds to the Native Vegetation Precinct Plan considerations at decision guideline 8.	Not applicable.
9	An offset statement providing evidence that an offset that meets the offset requirements for the native vegetation to be removed has been identified and can be secured in accordance with the Guidelines.	Details provided in Section 5.3
10	A site assessment report of the native vegetation to be removed, including: <ul style="list-style-type: none"> <li>A habitat hectare assessment of any patches of native vegetation, including the condition, extent (in hectares), Ecological Vegetation Class and bioregional conservation status.</li> <li>The location, number, circumference (in centimetres measured at 1.3 metres above ground level) and species of any large trees within patches.</li> <li>The location, number, circumference (in centimetres measured at 1.3 metres above ground level) and species of any scattered trees, and whether each tree is small or large.</li> </ul>	See Section 3.3; Appendix 1.3.
11	Information about impacts on rare or threatened species habitat, including:	Details provided in Section 3.4 and Appendix 3.

	<ul style="list-style-type: none"><li>• The relevant section of the Habitat importance map for each rare or threatened species requiring a species offset.</li><li>• For each rare or threatened species that the native vegetation to be removed is habitat for, according to the Habitat importance maps:<ul style="list-style-type: none"><li>- the species' conservation status</li><li>- the proportional impact of the removal of native vegetation on the total habitat for that species</li><li>- whether their habitats are highly localised habitats, dispersed habitats, or important areas of habitat within a dispersed species habitat</li></ul></li></ul>	
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# 1 INTRODUCTION

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## 1.1 Background

Ecology and Heritage Partners Pty Ltd was commissioned by Podium 1 to conduct a Biodiversity Assessment at 21, 75 and 115 Key Lane, and 335 McGregor Road, Pakenham, Victoria (the study area; Figure 1). The study area is the proposed location for the Cardinia Motorsport Recreation and Education Complex. A Development Plan Overlay (DPO) applies to the study area, DPO16, which specifically addresses three key fauna species that require consideration; Growling Grass Frog *Litoria raniformis*, Dwarf Galaxias *Galaxiella pusilla* and Southern Brown Bandicoot *Isoodon obesulus obesulus*. The likelihood of each species being impacted by the proposed development of the study area is addressed within the current report.

Previous ecological assessments, including targeted flora and fauna surveys for significant species, have been undertaken within the current study area (Ecology and Heritage Partners 2010; 2012). These assessments identified two matters of National Environmental Significance (NES) as present; one fauna species, Growling Grass Frog, and one ecological community, *Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains*. Due to the previous assessments occurring between six and eight years ago, the study area was re-assessed for its potential to support the two matters of NES, along with the extent and type of native vegetation present within the study area, and to determine the presence of any additional significant flora and fauna species and/or ecological communities.

The purpose of the assessment was to identify the extent and type of remnant native vegetation present within the development area and to determine the presence of significant flora and fauna species and/or ecological communities. This report presents the results of the assessment and discusses the potential ecological and legislative implications associated with the proposed action. The report also provides recommendations to address or reduce impacts and, where necessary, highlights components that require further investigation.

## 1.2 Objectives

The objectives of the ecological assessment were to:

- Review the relevant flora and fauna databases and available literature (Section 3);
- Conduct a field assessment by a qualified ecologist to identify flora and fauna values within the study area (Section 3);
- Undertake targeted surveys for Growling Grass Frog within the study area;
- Provide maps showing any areas of native vegetation and locations of any significant flora and fauna species, and/or fauna habitat (if present) (Figure 2);
- Classify any flora and fauna species and vegetation communities identified or considered likely to occur within the study area in accordance with Commonwealth and State legislation (Section 3.4);
- Document relevant environmental legislation and policy (Section 4);
- Document any opportunities and constraints associated with the proposed works (Section 5); and,

- Advise whether any additional flora and/or fauna surveys are required prior to works commencing (e.g. targeted surveys for significant flora and fauna species) (Section 6).

Where areas of native vegetation were present, the following tasks were completed to address requirements under the '*Guidelines for the removal, destruction or lopping of native vegetation*' (the Guidelines) (DELWP 2017a):

- A habitat hectare assessment of any areas of native vegetation within the study area; and,
- Recommendations to address requirements under the Guidelines to minimise impacts to native vegetation.

### 1.3 Study Area

The study area is located at 21, 75 and 115 Key Lane, and 335 McGregor Road, Pakenham, Victoria, approximately 60 kilometres south-east of Melbourne's CBD (Figure 1). The study area is directly adjacent to, but outside of the Melbourne Strategic Assessment Area. The study area covers approximately 128 hectares and is bound by Key Lane to the north, McGregor Road to the east, and private agricultural land to the south and west. The road reserves of Key Lane and McGregor Road are included in the current assessment, due to being covered by the DPO16.

The land within and surrounding the study area predominantly supports agricultural and recreational activities, in the form of grazing and a motorbike trail. Cattle were present across the study area during the field assessment. The study area contains a gradual slope from north-east to south-west. Eight artificial dams and a drainage line are present within the study area and Toomuc Creek runs through the western end of the study area. The location of waterbodies is shown in Figure 2.

According to the Department of Environment, Land, Water and Planning (DELWP) Native Vegetation Information Management (NVIM) Tool (DELWP 2019a), the study area occurs within the Gippsland Plain bioregion. It is located within the jurisdiction of the Port Philip and Westernport Catchment Management Authority (CMA) and the Cardinia Shire Council municipality. Section 4.4.1 discusses zoning and overlays relevant to the study area.



## 2 METHODS

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### 2.1 Desktop Assessment

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

- The DELWP NatureKit Map (DELWP 2019a) and Native Vegetation Information Management (NVIM) Tool (DELWP 2019b) for:
  - Modelled data for location risk, remnant vegetation patches, scattered trees and habitat for rare or threatened species; and,
  - The extent of historic and current Ecological Vegetation Classes (EVCs).
- EVC benchmarks (DELWP 2019c) 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 2018a);
- 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 2019);
- Relevant listings under the Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act), including the latest Threatened and Protected Lists (DELWP 2018b; DELWP 2017a);
- The online VicPlan Map (DELWP 2019d) to ascertain current zoning and environmental overlays in the study area;
- Aerial photography of the study area; and,
- Previous ecological or other relevant assessments of the study area, including:
  - Ecology and Heritage Partners 2012. Cardinia Motor Recreation and Education Park: Detailed Flora and Fauna Assessment, and Targeted Growling Grass Frog Survey, 335 McGregor Road, Pakenham, Victoria.
  - Ecology Partners 2010. Cardinia Motor Recreation and Education Park: Detailed Flora and Fauna Assessment, and Targeted Growling Grass Frog Survey, 335 McGregor Road, Pakenham, Victoria.

## 2.2 Field Assessment

### 2.2.1 Ecological assessment

A detailed field assessment was undertaken on 30 August 2018 and 1 November 2018 to obtain information on flora and fauna values within the study area. The study area was walked, with all observed vascular flora and fauna species recorded, any significant records mapped and the overall condition of vegetation and habitats noted. Ecological Vegetation Classes (EVCs) were determined with reference to DELWP pre-1750 and extant EVC mapping (DELWP 2019b) and their published descriptions (DELWP 2019c).

Where native patch vegetation was identified a habitat hectare assessment was undertaken following methodology described in the Vegetation Quality Assessment Manual (DSE 2004).

### 2.2.2 Targeted survey for Growling Grass Frog

Nocturnal targeted surveys for Growling Grass Frog were completed during warm (over 15°C) conditions on 1 November, 11 November and 5 December 2018 within the study area by a zoologist experienced in amphibian surveys. Growling Grass Frog Surveys were undertaken in accordance with the methods outlined in the *Significant Impact Guidelines for the Vulnerable Growling Grass Frog* (DEWHA 2009b).

Zoologists searched fringing, emergent and floating vegetation within and adjacent to the watercourse/waterbody with 30 watt 12-volt hand-held spotlights and used call-playback to initiate a response from any males that may have been present.

Call-playback was undertaken by playing the advertisement call of a male Growling Grass Frog for 15 minutes to elicit a response from other individuals which may have been present within each site. Confirmation of calling Growling Grass Frog at a known reference site ('T-Section Lagoon', Western Treatment Plant, Point Wilson Road Werribee) prior to each targeted survey demonstrates that conditions were conducive to detecting the species and initiation of the call-playback survey methodology.

Active searching focused on the margins of the waterbodies and nearby drainage lines and areas providing potential habitat in the form of terrestrial, aquatic and refuge habitat(s). Suitable refuge sites such as logs, rocks and other ground debris were lifted opportunistically to locate inactive frogs throughout the study area.

## 2.3 Removal of Native Vegetation (the Guidelines)

Under the *Planning and Environment Act 1987*, Clause 52.17 of the Cardinia Shire Planning Scheme requires a planning permit from Cardinia Shire Council to remove, destroy or lop native vegetation. The assessment process for the clearing of vegetation follows the '*Guidelines for the removal, destruction or lopping of native vegetation*' (the Guidelines) (DELWP 2017a). The '*Assessor's handbook – Applications to remove, destroy or lop native vegetation*' (the Handbook) provides clarification regarding the application of the Guidelines (DELWP 2017b).

### 2.3.1 Assessment Pathway

The Guidelines manage the impacts on biodiversity from native vegetation removal using an assessment based approach. Two factors – extent risk and location category – are used to determine the risk associated with an application for a permit to remove native vegetation. The location category (1, 2 or 3) has been

determined for all areas in Victoria and is available on DELWP's Native Vegetation Information Management (NVIM) Tool (DELWP 2019a). Determination of assessment pathway is summarised in Table 1.

**Table 1.** Assessment pathways for applications to remove native vegetation (DELWP2017a)

Extent		Location		
		1	2	3
Native Vegetation	< 0.5 hectares, and not including any large trees	Basic	Intermediate	Detailed
	Less than 0.5 hectares, and including one or more large trees	Intermediate	Intermediate	Detailed
	0.5 hectares or more	Detailed	Detailed	Detailed

**Notes:** For the purpose of determining the assessment 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.

### 2.3.2 Vegetation Assessment

Native vegetation (as defined in Table 2) is assessed using two key parameters: extent (in hectares) and condition. For the purposes of this assessment, both condition and extent were determined as part of the habitat hectare assessment.

**Table 2.** Determination of a patch of native vegetation (DELWP 2017a)

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 drip line of each tree touches the drip line of at least one other tree, forming a continuous canopy; OR any mapped wetland included in the <i>Current Wetlands map</i> , available in DELWP systems and tools.	Measured in hectares. Based on hectare area of the remnant patch.	Vegetation Quality Assessment Manual (DSE 2004).  Modelled condition for <i>Current Wetlands</i> .
Scattered tree	A native canopy tree that does not form part of a remnant patch.	Measured in hectares. Each Large scattered tree is assigned an extent of 0.071 hectares (30m diameter). Each Small scattered tree is assigned a default extent of 0.31 hectares (10 metre diameter)	Scattered trees are assigned a default condition score of 0.2 (outside a patch).

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



### 2.3.3 Impact Avoidance and Minimisation

All applications to remove native vegetation must demonstrate the three-step approach of avoid, minimise and offset. This is a precautionary approach that aims to ensure that the removal of native vegetation is restricted to what is reasonably necessary, and that biodiversity is appropriately compensated for any native vegetation removal that is approved.

### 2.3.4 Offsets

Biodiversity offsets are required to compensate for the permitted removal of native vegetation. Offsets are divided into two categories: General and Specific. Offset obligations and offset site criteria are determined in accordance with the Guidelines (DELWP 2017a).

The offset requirements for native vegetation removal are calculated by DELWP, based on the vegetation condition scores determined during the biodiversity assessment. A Native Vegetation Removal Report produced by DELWP is provided in Appendix 3.

## 2.4 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.

Ecological values identified on site were recorded using a hand-held GPS or tablet with an accuracy of +/-5 metres. This level of accuracy is considered adequate to provide an accurate assessment of the ecological values present within the study area; however, this data should not be used for detailed surveying purposes.

The field assessment was undertaken during a sub-optimal season for the identification of flora and fauna species (late-winter). The 'snap shot' nature of a standard biodiversity assessment, along with sub-optimal timing of the survey, meant that migratory, transitory or uncommon fauna species may have been absent from typically occupied habitats at the time of the field assessment. In addition, annual or cryptic flora species such as those that persist via underground tubers may also be absent. Nevertheless, the flora and fauna data collected during the field assessment when considered in combination with information obtained from relevant desktop sources is considered adequate to provide an accurate assessment of the ecological values present within the study area.

Fauna surveys were conducted under the Ecology and Heritage Partners Pty Ltd research permit (#10005952) issued by DELWP under the *Wildlife Act 1975*.

## 3 RESULTS

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### 3.1 Vegetation Condition

#### 3.1.1 Native Vegetation Patches

Native vegetation within the study area is representative of two EVCs: Plains Grassy Wetland (EVC 125) and Swampy Riparian Woodland (EVC 83). Both EVCs are listed as Endangered within the Gippsland Plain bioregion. Plains Grassy Wetland is not modelled as present by the pre-1750s or extant (2005) native vegetation mapping (DELWP 2019b), however, the landform and hydrological influences that shape the vegetation composition have resulted in the Plains Grassy Wetland EVC being present along the McGregor Road drain at a local scale that is too fine to be modelled at the scale used by DELWP. Further, the Plains Grassy Wetland EVC description is the best match to describe the species and structure of the patch of native vegetation recorded within the study area.

Swampy Riparian Woodland is modelled along creek lines within close proximity to the study area. Toomuc Creek, which runs through the western portion of the study area, is bounded by vegetation that is representative of this EVC.

The remainder of the study area comprises introduced and planted vegetation, present as crop, pasture, windrows and ornamental plantings. Specific details relating to observed EVCs are provided below.

##### 3.1.1.1 Plains Grassy Wetland (PGWe 1)

Plains Grassy Wetland is generally described as a treeless EVC, with the ground cover dominated by grasses, small sedges and herbs. The vegetation is typically species-rich on the outer verges but is usually species-poor in the wetter central areas (DELWP 2019c).

One habitat zone of Plains Grassy Wetland, which comprised of three patches, were recorded within the study area surrounding the McGregor Road drainage line and western dams (Figure 2). Within these patches, Tall Rush *Juncus procerus* was dominant (Plate 1), with several wetland species present in the ground-layer including Swamp Lily *Ottelia ovalifolia*, Slender Knotweed *Persicaria decipiens*, Common Spike-sedge *Eleocharis acuta*, Water Ribbons *Cynogeton procerum* and Soft Crane's-bill *Geranium potentilloides* (Plate 2).

Weeds were common throughout the patches, with the dominant weed species being Creeping Buttercup *Ranunculus repens*, Sweet Vernal-grass *Anthoxanthum odoratum* and Yorkshire Fog *Holcus lanatus*.

##### 3.1.1.2 Swampy Riparian Woodland (SRW 1)

One habitat zone of Swampy Riparian Woodland was present within the study area, along the banks of Toomuc Creek (Figure 2). The habitat zone was present in three patches, and each patch was characterised by a sub-canopy of Silver Wattle *Acacia dealbata* with a highly modified understory (Plate 3). Native diversity in the understory was limited to a few species, primarily Swamp Paperback *Melaleuca ericifolia*, Variable Groundsel *Senecio pinnatifolius* and Kidney-weed *Dichondra repens*. Introduced vegetation was common within this EVC, with Willow *Salix* sp. contributing to the canopy and Gorse *Ulex europaeus* prevalent in the understory. Sweet Vernal-grass dominated the ground layer.



**Plate 1.** Plains Grassy Wetland within the study area (Ecology and Heritage Partners Pty Ltd 30/08/2018).



**Plate 2.** Plains Grassy Wetland within the study area (Ecology and Heritage Partners Pty Ltd 30/08/2018).



**Plate 3.** Swampy Riparian Wetland and exotic vegetation along Toomuc Creek within the study area (Ecology and Heritage Partners Pty Ltd 30/08/2018).

### 3.1.2 Scattered trees

Six scattered trees, four small River Red-gum *Eucalyptus camaldulensis* and two large Bundy *Eucalyptus goniocalyx*, were recorded within the study area. These trees would have once been part of the Plains Grassland/Plains Grassy Woodland EVC modelled to occur within the eastern section of the study area (DELWP 2019b), however the understory vegetation currently consists of introduced pasture grass and the trees no longer form part of a patch of native vegetation (Plate 4; Figure 2).

### 3.1.3 Introduced and Planted Vegetation

#### 3.1.3.1 Introduced Vegetation

Areas not supporting native vegetation had a high cover (>90%) of exotic grass and herb species. Disturbed areas were dominated by Yorkshire Fog, Sweet Vernal-grass, Annual Meadow-grass *Poa annua*, Slender Bird's-foot Trefoil *Lotus angustissimus*, Cocksfoot *Dactylis glomerata* and Onion-grass *Romulea rosea* (Plate 5).



Noxious weeds were present throughout the study area (Figure 2), with common species being Spear Thistle *Cirsium vulgare*, African Boxthorn *Lycium ferocissimum*, Blackberry *Rubus sp.* and Gorse, with the latter three listed as Weeds of National Significance (WoNS).



**Plate 4.** Scattered River Red-gums within the study area (Ecology and Heritage Partners Pty Ltd 30/08/2018).



**Plate 5.** Exotic pasture vegetation within the study area (Ecology and Heritage Partners Pty Ltd 30/08/2018).

### Planted Vegetation

Planted vegetation in the study area consisted of introduced trees (Monterey cypress *Cupressus macrocarpa*) planted around dams and along the drainage line (Plate 6; Plate 7).



**Plate 6.** Introduced grassland around a disturbed dam present within the study area (Ecology and Heritage Partners Pty Ltd 30/08/2018).



**Plate 7.** Planted vegetation within the study area (Ecology and Heritage Partners Pty Ltd 30/08/2018).

## 3.2 Fauna Habitat

Five broad habitat types are present within the study area; exotic grassland, drainage lines, farm dams, scattered/planted trees and Toomuc Creek. In a broader context, the habitat within the study area is relatively isolated from surrounding areas of remnant vegetation. The only potential habitat corridor is

Toomuc Creek, which forms a narrow linear reserve running north to south. Limited native vegetation is present along this creek line, predominately being Silver Wattle, with introduced vegetation prevalent.

A description of each habitat type identified within the study area and the species likely to occur within them is given below.

### 3.2.1 Exotic grassland

Introduced, modified grassland is the dominant fauna habitat present within the study area, occurring primarily within the eastern and north western section of the site. This habitat occurs where native vegetation has been cleared or modified as a result of agricultural practices. Introduced grassland supports relatively few fauna species, none of which are dependent on such habitat. Given the extent of the modification of grassland habitat within the study area, and the number of introduced species, the value of this habitat for native fauna within the study area is generally low.

### 3.2.2 Drainage line and adjoining Plains Grassy Wetland

There is one main drainage line that runs north to south across the study area, McGregor Road drain, which has a few smaller offshoots. This drainage line has been impacted by cattle, which has broadened a section and created an ephemeral wetland area (Plate 8). Water quality appears moderate, being relatively clear and slow flowing throughout the site, however it has been prone to disturbance through pugging due to the presence of cattle. Cattle were removed from the property in October 2018.

This drainage line provides habitat for Latham's Snipe, which was observed in the wetland during the field assessment and is likely used as a habitat corridor for Growling Grass Frog, which has been previously recorded within this area (Ecology Partners 2010). A variety of common frogs and birds, such as Common Eastern Froglet *Crinia signifera*, Verreaux's Frog *Litoria verreauxii*, Superb Fairy Wren *Malurus cyaneus* and White-faced Heron *Egretta novaehollandiae*, were recorded during the field assessment.

### 3.2.3 Farm Dams

There are eight artificial dams present within the study area (Figure 2). All were holding water during the time of assessment. Of the dams present, six located within the eastern section of the study area were highly impacted by cattle and contained little to no fringing vegetation. Exotic grasses present within modified paddocks surrounded these six dams.

Two of the dams located in the western side of the study area were surrounded by Plains Grassy Wetland vegetation and held large amounts of water. Aquatic and fringing vegetation was present at both dams and have the potential to support Growling Grass Frog, along with other native fauna including fish and waterbirds.

### 3.2.4 Scattered/planted trees

Six native scattered trees and rows of planted Monterey Cypress occur within the study area. The understory surrounding these trees consists of exotic vegetation modified through cattle grazing. It is likely that native fauna may use these trees, primarily woodland birds and birds adapted to modified areas, as they provide roosting, nesting and foraging sites. Despite this, it is unlikely that these trees provide a valuable habitat resource for any native animal.



### 3.2.5 Toomuc Creek

Toomuc Creek traverses the western section of the study area and was flowing at the time of survey (Plate 9). The primary EVC surrounding the creek is Swampy Riparian Woodland, with large patches of Gorse occurring in the surrounding paddocks. Fauna observed within the Swampy Riparian Woodland habitat surrounding the creek included Grey Fantail *Rhipidura albiscapa*, White-fronted Chat *Epthianura albifrons* and Red-bellied Black Snake *Pseudechis porphyriacus*. Directly north of the study area, Toomuc Creek is listed as a Category 1 protection area for Growling Grass Frog within the Sub-regional Species Strategy for Growling Grass Frog (DEPI 2013b), with records of the species adjacent to and within the study area (VBA 2018; Figure 5). Within the study area, Toomuc Creek is recognised as potentially important habitat for Growling Grass Frog (DEPI 2013a). In addition, the habitat along Toomuc Creek, and surrounding Gorse patches, provides potential habitat for Southern Brown Bandicoot, and may be used as a corridor by the species (Figure 2). The quality of the vegetation within the study area along Toomuc creek is considered to be of low quality to the species, but does provide connectivity to areas of suitable habitat outside of the study area, and therefore there is the potential that the species would use the area along Toomuc creek within the study area on occasion.



**Plate 8.** McGregor Road drain within the study area (Ecology and Heritage Partners Pty Ltd 30/08/2018).



**Plate 9.** Toomuc Creek within the study area (Ecology and Heritage Partners Pty Ltd 30/08/2018).

## 3.3 Removal of Native Vegetation (the Guidelines)

The below clearing scenario is based on the final masterplan layout provided by Podium 1 on 17 June 2019, and refinements to the wetland design area as provided by Stormy Water Solutions on 14 November 2019. It is understood that all vegetation within Lot 3 will be removed, which includes patches of Plains Grassy Wetland and one scattered tree (Figure 2). Vegetation within Lot 2 will also be removed, which includes two additional scattered trees and areas of Plains Grassy Wetland. Sections of Plains Grassy Wetland will be retained within Lot 2 where able. A section of Swampy Riparian Woodland located along Toomuc creek in Lot 2 will be avoided, and no works are currently proposed in Lot 1.

### 3.3.1 Vegetation proposed to be removed

The study area is located within Location Category 2, with a total of 9.468 hectares of native vegetation (comprising three scattered trees and 9.37 hectares of native vegetation patches) proposed to be removed (Table 3). As such, the permit application falls under the Detailed Assessment Pathway.

To inform the application requirements of the Detailed Assessment pathway, a habitat hectare assessment was completed to determine condition scores of vegetation proposed to be removed, with condition scores provided in Appendix 1.3.

**Table 3.** Removal of Native Vegetation (the Guidelines)

Assessment pathway	Detailed
Total Extent ha (past and current removals)	9.468
Total Extent ha (current removals)	9.468
Large Trees (no.)	0
Location Category	2

### 3.3.2 Offset Targets

The offset requirement for native vegetation removal is 5.041 General Habitat Units (HUs).

A Native Vegetation Removal Report generated by DELWP is presented in Appendix 4 and summarised in Table 4.

**Table 4.** Offset targets

General Offsets Required	5.041 General HUs
Large Trees	0
Vicinity (catchment / LGA)	Port Phillip and Westernport CMA / Cardinia Shire Council
Minimum Strategic Biodiversity Value*	0.342

**Note:** HU = Habitat Units; \* Minimum strategic biodiversity value is 80% of the weighted average score across the habitat zone where a general offset is required.

## 3.4 Significance Assessment

### 3.4.1 Flora

Fifty-two (52) flora species (24 indigenous and 28 non-indigenous or introduced) were recorded within the study area during the field assessment. One flora species listed as protected under the FFG Act was recorded in the study area during the current assessment; Variable Groundsel. A consolidated list of flora species recorded is provided in Appendix 1.1.

The VBA contains records of two nationally significant and 39 State significant flora species previously recorded within 10 kilometres of the study area (DELWP 2018a) (Appendix 1.2; Figure 4). The PMST nominated an additional nine nationally significant species which have not been previously recorded but have the potential to occur in the locality (DoEE 2019).

Significant flora species are considered unlikely to occur within the study area due to the landscape context, location of previous records and historical agricultural land-use and cattle grazing that have been undertaken within the study area and surrounds. In addition, no significant flora species were detected during the initial biodiversity assessments undertaken by Ecology and Heritage Partners (2010; 2012), or the current assessment (Appendix 1.2).

### 3.4.2 Fauna

The VBA contains records of two nationally significant, 25 State significant and 10 regionally significant fauna species previously recorded within 10 kilometres of the study area (DELWP 2018a) (Appendix 2.1; Figure 5). The PMST nominated an additional 20 nationally significant species which have not been previously recorded but have the potential to occur in the locality (DoEE 2019).

Of these species, Latham’s Snipe was observed during the field survey along with potential habitat identified for Growling Grass Frog and Southern Brown Bandicoot.

The DPO16 specifically addresses that three significant fauna species be considered; Growling Grass Frog, Southern Brown Bandicoot and Dwarf Galaxias. While the latter two species are considered unlikely to occur within the development area, Southern Brown Bandicoot has the potential to use habitat within the broader study area located along Toomuc Creek, as a habitat corridor. Targeted surveys were undertaken for Growling Grass Frog, with the results provided below. A description of species requirements and likelihood of occurrence for additional significant species that were either recorded or listed in the DPO16 are given below. No additional significant fauna species are considered likely to occur or rely on the study area for foraging or breeding habitat.

#### 3.4.2.1 Growling Grass Frog targeted survey

A total of 260 Growling Grass Frog records have been recorded within 10 kilometres of the study area (DELWP 2018a). Although the weather conditions during the site surveys were conducive for frogs to be active, no Growling Grass Frogs were detected during the targeted surveys within the study area. During the surveys, common frog species, such as Striped Marsh Frog *Limnodynastes peronii*, Verreaux’s Frog *Litoria verreauxii verreauxii* and Common Eastern Froglet *Crinia signifera* were recorded within the study area. Incidental records of Growling Grass Frog were recorded approximately one kilometre north and 400 meters south of the study area, in dams located close to Toomuc Creek and a small drain that runs along McGregor Road. These individuals were recorded during the targeted surveys that occurred in November and December 2018 (current survey efforts), during a broader search of the area to identify if the species utilised near-by waterbodies.

Despite not recording individuals during the targeted survey (Table 5), habitat within the study area has the potential to support the species, and due to the locations of records and suitable habitat (e.g. large dam directly to the east of Toomuc Creek north of the study area) above and below the study area, it is possible that the species uses the study area on occasion, either for breeding, foraging or as a corridor between external suitable sites. Due to this, Toomuc Creek, and the Plains Grassy Wetland and associated McGregor Road drain present within the study area is considered likely to form part of a dispersal corridor for the species.

**Table 5.** Results of targeted Growing Grass Frog nocturnal assessments

Survey/ Date	Weather conditions <sup>1</sup>						No. GGF
	Survey Temp C° (max/min)	Wind direction	Wind speed (km/hr)	Relative Humidity (%)	Cloud Cover (%)	Rain	
01/11/2018	27.9	NNE	5	25	25	0	0
11/11/2018	15.4	SE	11	15	0	0	0
05/12/2018	18	N	13	88	5	0	0



### 3.4.2.2 Growling Grass Frog

#### Conservation Status

Growling Grass Frog (Plate 10) is listed as vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), endangered under the DSE Advisory List (DSE 2013), and is listed as Threatened under the FFG Act.

Although previously widely distributed across south eastern Australia, including Tasmania (Littlejohn 1963, 1982; Hero *et al.* 1991), the species has declined markedly across most of its former range. The decline has been most evident over the past two decades and in many areas, particularly in south and central Victoria, where populations have experienced apparent declines and local extinctions due extensively to loss and degradation of habitat and barriers to movement (Mahoney 1999; A. Organ. pers. obs.).



**Plate 10.** Growling Grass Frog *Litoria raniformis* (Ecology and Heritage Partners Pty Ltd).

#### Habitat requirements

This species is largely associated with permanent or semi-permanent still or slow flowing waterbodies (i.e. streams, lagoons, farm dams and old quarry sites) (Hero *et al.* 1991; Barker *et al.* 1995; Cogger 1996; Ashworth 1998). Frogs can also utilise temporarily inundated waterbodies for breeding purposes provided they contain water over the breeding season (Organ 2003).

Based on previous investigations there is a strong correlation between the presence of the species and key habitat attributes at a given water body. For example, the species is typically associated with waterbodies supporting extensive cover of emergent, submerged and floating vegetation (Robertson *et al.* 2002, Organ 2004c, 2005b). Emergent vegetation provides basking sites for frogs and protection from predators. Whilst floating vegetation provides suitable calling stages for adult males, and breeding and oviposition (egg deposition) sites. Terrestrial vegetation (grasses, sedges), rocks and other ground debris around wetland perimeters also provide foraging, dispersal and over-wintering sites for frogs.

Waterbodies supporting the above-mentioned habitat characteristics and those that are located within at least 500 metres of each other, are more likely to support a population of Growling Grass Frog, compared to isolated sites lacking important habitat features. Recent studies have revealed that the spatial orientation of waterbodies across the landscape is one of the most important habitat determinants influencing the presence of the species at a given site (Robertson *et al.* 2002; Heard *et al.* 2004, 2010).

For example, studies have shown there is a positive correlation between the presence of the species and the distance of freestanding waterbodies to another occupied site. This is comparable to the spatial dynamics of many amphibian populations, including the closely related Green and Golden Bell Frog *Litoria aurea* (Hamer *et al.* 2002).

### Known populations and/or habitat

There are a high number of records of Growling Grass Frog within 10 kilometres of the study area (Figure 5). The species was previously detected within the study area during targeted surveys by Ecology and Heritage Partners (formerly Ecology Partners) in 2010.

### 3.4.2.3 Latham's Snipe

#### Conservation Status

Latham's Snipe (Plate 11) is listed as migratory shorebird under the EPBC Act and near threatened under the DSE advisory List (DSE 2013). Latham's Snipe is also listed on the following international migratory bird treaties to which Australia is a signatory:

- Japan – Australian Migratory Bird Agreement (JAMBA);
- China – Australia Migratory Bird Agreement (CAMBA);
- Republic of Korea – Australia Migratory Bird Agreement (ROKAMBA); and,
- Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention).



**Plate 11.** Latham's Snipe *Gallinago hardwickii* (BirdLife Australia 2018).

The primary threat to Latham's Snipe is habitat loss through development, change in hydrology and agriculture (Garnett and Crowley 2000).

#### Habitat requirements

Latham's Snipe breeds in the northern hemisphere, around Japan, during the winter period of Australia, May – August, then migrates south to the east coast of Australia over spring and summer (Higgins and Davies 1996). Current estimates for the population are 30,000 individuals (Hansen *et al.* 2016).

Latham's Snipe occur in a wide variety of permanent and ephemeral wetlands, preferring open freshwater wetlands with nearby cover, but have also been recorded on the edges of creeks, rivers and floodplains (Higgins and Davies 1996). Structure and composition do not appear to be a determining factor in the selection of habitat for the species, which have been found to occur in coastal heathlands, tussock grasslands, and wetlands dominated by either rushes, reeds and sedges (Naarding 1983). In addition, they have previously been recorded in disturbed sites, or areas located close to human activity (Naarding 1983).

### Known populations and/or habitat

There are seven records of Latham's Snipe within 10 kilometres of the study area (Figure 5), and one individual of the species was observed within the Plains Grassy Wetland EVC of the study area during the field assessment.

#### Significant Impact assessment

The following criteria and reference documents have been used to inform the definition of a 'significant migratory shorebird movement'.

- DoE 2013. Significant Impact Guidelines 1.1. Matters of National Environmental Significance. Commonwealth Department of the Environment, Canberra, ACT.
- DoE 2015a. EPBC Act Policy statement 3.21 Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species. Australian Government Department of the Environment, Canberra
- Hansen et al. 2017. Revision of the East Asian-Australasian Flyway Population Estimates for 37 listed Migratory Shorebird Species. Australian Government Department of the Environment and Energy, Canberra.

Based on the above literature, a given site is considered to be of international conservation significance (or international importance) when it is supporting:

- 1 per cent or more of the individuals of a flyway population of one species or subspecies of waterbird (shorebird); or,
- a total abundance of >20,000 waterbirds (shorebirds).

Sites are considered to be of national conservation significance (or national importance) for migratory shorebirds using a similar approach to the international criteria, i.e. when it is supporting:

- 0.1 per cent or more of the flyway population of a single species of migratory shorebird; or
- 2,000 migratory shorebirds; or,
- 15 migratory shorebird species.

While Latham's Snipe is likely to occasionally utilise habitat within the study area, the study area would not be classed as an 'important habitat' as defined under the EPBC Act Policy Statement 1.1 Principle Significant Impact Guidelines (DoE 2013) for Latham's Snipe, or any other migratory species.

#### **3.4.2.4 Southern Brown Bandicoot**

##### **Conservation status**

Southern Brown Bandicoot is listed as Endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and threatened under the Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act). In early 2015, the Department of the Environment and Energy (DoEE) sought public comment on a consultation paper concerning the eligibility of the species' classification under the EPBC Act. The Threatened Species Science Committee recommended that Southern Brown Bandicoot retain its current listing status of Endangered in the list referred to in Section 178 of the EPBC Act (TSSP 2016).



**Plate 12.** Southern Brown Bandicoot (Ecology and Heritage Partners Pty Ltd)

##### **Habitat requirement**

In Victoria, the species is predominantly coastal and exhibits a disjunct and patchy distribution across the state. Records are clustered around six general regions: far-east Gippsland lowlands, western Gippsland Plain, Warrnambool Plain, Otway Plain, Glenelg Plain, and the Greater Grampians (Coates *et al.* 2008). As in

other states, the species is generally associated with sites supporting heaths, heathy woodlands and forests or other vegetation communities providing a thick ground cover over sandy well-drained soils (Coates *et al.* 2008, Menkhorst and Seebeck 1990). Species experts define suitable habitat for Southern Brown Bandicoot to be any patches of native or exotic vegetation, within their distribution, which contains understorey vegetation structure with 50–80% average foliage density in the 0.2–1 metre height range. In areas where native habitats have been degraded or diminished, exotic vegetation, such as Blackberry (*Rubus* spp.), can and often does, provide important habitat (DSEWPaC 2011a).

#### Known populations and/or habitat

Within the study area, potential habitat for Southern Brown Bandicoot occurs in the western section along Toomuc creek and where large patches of Gorse and Blackberry occur. Despite the poor quality of the vegetation, this habitat structure (dense understorey) has been known to support populations of Southern Brown Bandicoot in the local region (Monarc 2018a).

#### Recommendations

Targeted surveys for Southern Brown Bandicoot are scheduled to occur within areas surrounding Toomuc creek, in areas of Swampy Riparian Woodland and Gorse patches. A separate report will be provided that details the outcomes of the targeted survey.

### 3.4.2.5 Dwarf Galaxias

#### Conservation Status

Dwarf Galaxias are listed as Vulnerable on the IUCN Red List of Threatened Animals (IUCN 2016), Vulnerable under the EPBC Act, Endangered on the DSE Advisory List (DSE 2013) and threatened under the FFG Act. Overall, the species is of national conservation significance and a National Recovery Plan identifying key priorities for protection and enhancement of the species has prepared (Saddler *et al.* 2010).



Plate 13. Dwarf Galaxias (Ecology and Heritage Partners Pty Ltd).

#### Habitat requirements

In Victoria, the distribution of Dwarf Galaxias is patchy. The majority of populations occur within the Glenelg and Hopkins River Basins, with populations scattered through waterways of the Gippsland region. Dwarf Galaxias are typically sedentary species living their complete life cycle within the same water body. They occur in slow flowing and still water areas such as swamps, billabongs, drains, and backwaters of creeks and usually in shallow water with abundant aquatic vegetation (McDowall 1996). This species is the only Galaxias species known to exhibit sexual dimorphism (variation between the sexes; males are smaller and more brightly coloured than females).

Dwarf Galaxias may also aestivate (i.e. become dormant) for several months in habitats which seasonally dry up (Beck 1985; Saddler *et al.* 2010), potentially using burrowing crayfish or other burrows as shelter (Beck 1985; Saddler *et al.* 2010) as well as within mud or under logs and stones.

The range of Dwarf Galaxias has declined to now occur only in small fragmented populations. The major causes of this decline are wetland drainage and alteration, reduced inundation frequency, unlimited stock

access, riparian vegetation removal and predation by other exotic species (particularly Plague Minnow *Gambusia holbrooki*) (Saddler *et al.* 2010).

#### Known populations and/or habitat

Targeted surveys for Dwarf Galaxias have previously been undertaken within and close to the study area, with no individuals recorded (Monarc 2018b; Ecology and Heritage Partners 2012). As a result, the species is considered unlikely to occur within the study area due to the absence of records from past survey attempts.

### 3.4.3 Communities

Two nationally listed ecological communities are predicted to occur within 10 kilometres of the study area (DoEE 2019):

- Natural Damp Grassland of the Victorian Coastal Plains; and,
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland.

Vegetation within the study area did not meet the condition thresholds that define either of these national communities.

A previous assessment completed by Ecology and Heritage Partners (2012) reported that one nationally significant ecological community, *Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains*, was present within the study area. This community was not recorded in the current assessment. A summary of this community and key criteria are given below. No state significant communities were recorded.

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

The following details the criteria for the classification of *Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains* (TSSC 2012):

- Limited to the temperate zone of mainland south-eastern Australia;
- On flat plains grading into slopes, 500 m asl;
- Associated soils are generally fertile but poorly draining clays;
- In rainfall zones with a winter seasonal rainfall pattern, mean annual rainfall usually 400 to 800 mm/year;
- On isolated drainage lines or depressions with are seasonally inundated during winter-spring and subsequently dry by late summer;
- Rainfall is the main water source;
- Salinity is fresh to slightly brackish;
- Trees are sparse to absent;
- Vegetation cover is dominated by a range of native wetland graminoids and/or forbs; and,
- At least one native wetland forb species is present.

Condition thresholds: following Part A – ‘typical’ wet/dry cycle (i.e.) not drought):

A1: Is the wetland consistent with the key diagnostic characteristics above? **Yes**

A2: Is 50% or more of the total cover of plants in the ground layer dominated by native species characteristic of the Seasonal Herbaceous Wetland ecological community? **No** – the wetland no longer retains sufficient natural values to be considered part of the national ecological community. Although some floristic components of the Plains Grassy Wetland EVC do align with the Seasonally Herbaceous Wetland, the species composition does not represent that listed in the key criteria (TSSC 2012). Pale Rush is the dominant species present, which is specifically listed in the Approved Conservation Advice for the community as a genus that may be present but is never dominant (TSSC 2012).

Although there are other species present associated with the nationally significant community, due to the dominance of Pale Rush, Plains Grassy Wetland does not meet the condition thresholds for classification as the nationally significant Seasonal Herbaceous Wetland ecological community.



## 4 LEGISLATIVE AND POLICY IMPLICATIONS

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

The *Environment Protection and Biodiversity Conservation Act 1999* (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 6.** 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 2019): Western Port, which is within 10 kilometres of the study area. Provided management practices and construction techniques are consistent with Construction Techniques for Sediment Pollution Control (EPA 1991) and Environmental Guidelines for Major Construction Sites (EPA 1996), the proposed action is unlikely to impact the ecological character of any Ramsar wetland.
Threatened species and ecological communities	There is suitable habitat within the study area for one fauna species listed under the EPBC Act, Growling Grass Frog and potential habitat for Southern Brown Bandicoot (Section 3.2 and 3.4.2). No other species or ecological communities are likely to be impacted by the proposed action.
Migratory and marine species	Latham's Snipe was recorded during the field assessment, and a further fifteen Migratory and/or Marine species have been recorded within 10 kilometres of the study area (DoEE 2019; Appendix 2.1). However, the study area would not be classed as an 'important habitat' as defined under the EPBC Act Policy Statement 1.1 Principal Significant Impact Guidelines (DoE 2013).
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

One individual of Latham's Snipe was observed within the study area, however the habitat within the study area does not classify as important habitat for the species. There is suitable habitat for one species, Growling Grass Frog, and potential habitat for Southern Brown Bandicoot. No Growling Grass Frog were recorded within the study area during the targeted survey, but the species was recorded in the broader region, and therefore there is potential that the species could use the habitat on occasion as a dispersal corridor, due to the patches of Plains Grassy Wetland being in a suitable condition to support the species

and connectivity to surrounding areas of known habitat. Targeted surveys for Southern Brown Bandicoot are currently being undertaken and are due for completion in spring 2019. A referral to the Commonwealth Environment Minister relating to the relevant species listed under the EPBC Act for is recommended for legal certainty for the project.

## 4.2 *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.

### 4.2.1 Implications

There is suitable habitat within the study area for one 'listed' fauna species under the FFG Act, Growling Grass Frog, and one protected flora species, Variable Groundsel. The majority of the study area is located on private land, and therefore is exempt from requiring a permit under the FFG Act for this area. Sections of the study area located along the road reserves of Key Lane and McGregor Road are on public land, however no listed or protected species were observed within these areas, as such a permit under the FFG Act is not required for the proposed development.

## 4.3 *Environment Effects Act 1978 (Victoria)*

The *Environment Effects Act 1978* 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.
- Potential exposure of a human community to severe or chronic health hazards or safety hazards over the short or long term, due to emissions to air or water or noise or chemical hazards or associated transport;
- Potential extensive or major effects on land stability, acid sulphate soils or highly erodible soils over the short or long term;
- Potential significant effects on the amenity of a substantial number of residents, due to extensive, or major long term changes in visual, noise and traffic conditions.

#### 4.3.1 Implications

The final development plan for the proposed development includes impacts to one endangered ecological community, Plains Grassy Wetland. All Plains Grassy Wetland present within Lot 3 is proposed to be impacted, and a portion of Plains Grassy Wetland within Lot 2 will be impacted as a result of the development, totalling 9.37 hectares impacted. This falls below the threshold that automatically triggers the recommendation to refer the project under the *Environment Effects Act 1978* as less than 10 hectares of an endangered ecological community is proposed to be removed through the current refined development of the wetlands proposed within Lot 2.

Podium 1 should consider other potential impacts to amenity, noise, emissions etc., to ensure that all environmental impacts are considered and mitigated in an appropriate manner prior to development.

#### 4.4 *Planning and Environment Act 1987* (Victoria)

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.

##### 4.4.1 Local Planning Schemes

The study area is located within the Cardinia Shire Council municipality. The following zoning and overlays apply (DELWP 2019d):

- Special Use Zone;
- Development Plan Overlay – Schedule 16;

- Land Subject to Inundation Overlay; and,
- Public Acquisition Overlay 1 (Lot 2).

#### **Development Plan Overlay – Schedule 16**

The Development Plan Overlay – Schedule 16 (DPO16) relates to the development of the Cardinia Motor Recreation and Education Park. The development plan must incorporate a section on native biodiversity, which includes a flora and fauna assessment. Key considerations of the flora and fauna assessment to be addressed are:

- Corridors for Growling Grass Frog habitat;
- Dwarf Galaxias habitat;
- Corridors for Southern Brown Bandicoot habitat; and,
- Adequate waterway setbacks.

In addition, the DPO16 requires that an Environmental Management Plan be prepared that addresses the impacts to native flora and fauna, areas of retention, mitigation techniques, revegetation methods, and a Growling Grass Frog management plan.

#### **Corridors for Growling Grass Frog habitat**

Toomuc Creek and the McGregor Road drain provide suitable habitat and may act as movement corridors for Growling Grass Frog. The Sub-regional Species Strategy for Growling Grass Frog (DEPI 2013b) identifies both Toomuc Creek and the McGregor Road drain as Growling Grass Frog Corridors in the land directly to the north of the study area and have mapped land within the study area as potentially important habitat. The Sub-regional Species Strategy applies only to areas within the Biodiversity Conservation Strategy (BCS) (DEPI 2013a) but should be taken into consideration when referring to the current project, in reference to management techniques and habitat design standards.

Targeted surveys for Growling Grass Frog were undertaken between November and December 2018. While no individuals were recorded within the study area, individuals were identified within close proximity to the north and south of the study area. Therefore, there is a potential that the species could occupy habitats (i.e. Plains Grassy Wetland and farm dams) within the study area.

#### **Dwarf Galaxias habitat**

Dwarf Galaxias is listed as Vulnerable under the EPBC Act. The presence of Dwarf Galaxias is considered unlikely within the study area. Previous targeted survey efforts for the species did not record any individuals (Ecology and Heritage Partners 2012; Monarc 2018b), and no database records within a 10 kilometre radius were identified (Figure 5).

#### **Corridors for Southern Brown Bandicoot**

Southern Brown Bandicoot is listed as Endangered under the EPBC Act. The study area is situated within the Southern Brown Bandicoot management area (DEPI 2014), however, habitat within the current proposed development area is generally not consistent with the preferred habitat of Southern Brown Bandicoot. A small number of Southern Brown Bandicoot records were identified within a 10 kilometre radius of the study area are to the south, towards areas of more suitable habitat, as described in Section 3.4.2.3 (Figure 5). The vegetation along and surrounding Toomuc creek may act as a corridor for the species, and targeted

surveys are scheduled to determine if the species is present in these areas. It should be noted that the current proposed development does not impact upon Toomuc creek or the vegetation surrounding the creek, but consideration of impacts will be required if the species is found to be present.

#### **Adequate waterway setbacks**

The DPO16 specifies adequate waterway setback requirements that must be met, unless agreed upon with Melbourne Water. These conditions include:

- A minimum of 20 meters from the top bank of Toomuc Creek;
- A minimum of 20 meters from the McGregor Road drain; and,
- The nearest 10 meters to the waterway must support core riparian habitat only.

The 20 meter buffer from the top bank of Toomuc creek is met in the current development plan, and written agreement with Melbourne Water has been granted for the current development plan which includes a diversion of the McGregor road drain.

#### **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 '*Guidelines for the removal, destruction and lopping of native vegetation*' (the Guidelines) (DELWP 2017a).

#### **4.4.3 Implications**

The study area is located within Location Category 2, with a total of 9.468 hectares of native vegetation (comprising three scattered trees and 9.37 hectares of native vegetation patches) proposed to be removed. As such, the permit application falls under the Detailed Assessment Pathway.

The offset requirement for native vegetation removal is 5.041 General Habitat Units (HUs).

### **4.5 *Wildlife Act 1975* and *Wildlife Regulations 2013* (Victoria)**

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*. Any persons engaged to remove, salvage, hold or relocate native fauna during construction must hold a current Management Authorisation under the *Wildlife Act 1975*, issued by DELWP.

### **4.6 *Water Act 1989* (Victoria)**

The purposes of the *Water Act 1989* are manifold but (in part) relate to the orderly, equitable, efficient and sustainable use of water resources within Victoria. This includes the provision of a formal means of protecting and enhancing environmental qualities of waterways and their in-stream uses as well as catchment conditions that may affect water quality and the ecological environments within them.

Two waterways, Toomuc Creek and McGregor Road drainage line, are present within the study area. Toomuc creek runs along the western edge of the study area. The McGregor Road drainage line connects with Toomuc creek approximately 300 metres from the southern boundary of the study area.

A 'works on waterways' permit from Melbourne Water is likely to be required where any action impacts on waterways within the study area. Additionally, where structures are installed within or across waterways that potentially interfere with the passage of fish or the quality of aquatic habitat, these activities should be referred to DELWP with Melbourne Water included for comment.

#### **4.7 Catchment and Land Protection Act 1994 (Victoria)**

The *Catchment and Land Protection Act 1994* (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.

Weeds listed as noxious under the CaLP Act were recorded during the assessment; Spear Thistle, Hawthorn *Crataegus monogyna*, African Boxthorn, Gorse, and Blackberry *Rubus* sp., with the latter three also listed as Weeds of National Significance (WoNS). Similarly, there is evidence that the study area is currently occupied by several pest fauna species listed under the CaLP Act; European Rabbit *Oryctolagus cuniculus* and Red Fox *Vulpes vulpes*. Weed and pest animal management actions should be included in the Construction Environmental Management Plan (CEMP) prepared for the project.



## 5 IMPACT MITIGATION MEASURES

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For the removal of native vegetation that falls under all assessment pathways, the Guidelines (DELWP 2017a) require the responsible authority to consider whether the applicant has demonstrated avoidance and minimisation of impacts to native vegetation.

### 5.1 Avoid and Minimise Impacts

The proposed Cardinia Motor Recreation and Education Park development is expected to impact upon a large proportion of the study area (Figure 3), which includes impacts to a large portion of the mapped patches of Plains Grassy Wetland and three scattered trees. The proposed use of the site is as a world-class motor sport precinct involves the construction of racing circuits, grandstands, parking, a shooting range, commercial areas and a hotel. The proposed development aims to utilise all the land within Lot 3 (as shown on Figure 3) however restricts impacts to the additional Lots (being Lot 1 and Lot 2). Overall, the condition of the broader study area is poor. The total study area covers 128 hectares, of which the majority contains pasture paddocks dominated by exotic grasses or weed infestations. The cover of native vegetation within the study area is limited to the two waterways present, one of which is being avoided (Toomuc creek), and the other, McGregor road drain, is impacted.

Within Lot 3, the McGregor road drain is present which crosses north to south through the Lot, dividing it into two sections. Avoidance of the drain would greatly impede the development of the site, due to the location of the drain. The development plan proposes to divert the McGregor Road drain along the northern and eastern boundaries of the study area, and then diverting back through Lot 2 to re-connect with Toomuc creek. The McGregor road drain supports Plains Grassy Wetland vegetation, which is proposed to be entirely removed. The proposed diverted drain will be constructed with an open plan design, with native species established along the banks of the waterway, in an effort to maintain a similar floristic structure to the removed drain to create a similar habitat for fauna likely to use the waterway.

All impacted vegetation will be offset accordingly, and additional measures to mitigate impacts to significant fauna will be implemented through preparation and implementation of an Environmental Management Plan for the development.

A summary of the potential ecological impacts are listed below:

- Removal of 9.37 hectares of Plains Grassy Wetland EVC, listed at endangered in the Gippsland Plains bioregion;
- Removal of 9.37 hectares of habitat for a significant fauna species, Growling Grass Frog;
- Removal of three native scattered trees; and,
- Potential impacts to Southern Brown Bandicoot movement corridor (avoidance of vegetation surrounding Toomuc Creek will mitigate risk to SBB).

### 5.2 Best Practice Mitigation Measures

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

- Avoid any works within close proximity to Toomuc Creek through the establishment of No-Go zones (as detailed in the Environmental Management Plan (Ecology and Heritage Partners 2019)). This will reduce impacts to areas identified as potential Southern Brown Bandicoot habitat.
- 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;
- 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 Authority 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.; and,
- 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 (i.e. Growling Grass Frog), and may include a salvage and translocation plan; and,
- 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, such as within the McGregor Road drain and surrounding dams and wetland.

### **5.3 Offset Strategy**

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

We have been assisting permit holders to meet their native vegetation offset obligations since 2006. Ecology and Heritage Partners broker native vegetation credits between permit holders and credit holders across all CMAs, and have an excellent knowledge of the type and extent of available credits in the marketplace.

Ecology and Heritage Partners can confirm that the offset obligations generated by this proposal can be satisfied through existing credits registered in DELWPs Native Vegetation Credit Register. If requested, Ecology and Heritage Partners can provide a quote to Podium 1 for the purchase of these credits. As such, it is confirmed that the relevant offset obligations generated by this proposal can be secured through an OTC scheme.

## 6 FURTHER REQUIREMENTS

Further requirements associated with development of the study area, as well as additional studies or reporting that may be required are provided below (Table 7).

**Table 7.** Further requirements associated with development of the study area.

Relevant Legislation	Implications	Further Action
<i>Environment Protection and Biodiversity Conservation Act 1999</i>	One individual of Latham's Snipe was observed within the study area, however the habitat within the study area does not classify as important habitat for the species. There is suitable habitat for one species, Growling Grass Frog, and potential habitat for Southern Brown Bandicoot. No Growling Grass Frog were recorded within the study area during the targeted survey, but the species was recorded in the broader region, and therefore there is potential that the species could use the habitat on occasion as a dispersal corridor, due to the patches of Plains Grassy Wetland being in a suitable condition to support the species and connectivity to surrounding areas of known habitat. Targeted surveys for Southern Brown Bandicoot are currently being undertaken and are due for completion in spring 2019. A referral to the Commonwealth Environment Minister relating to the relevant species listed under the EPBC Act for is recommended for legal certainty for the project.	Prepare and submit an EPBC Act referral to the Commonwealth Environment Minister for risk mitigation to species listed under the Act.
<i>Flora and Fauna Guarantee Act 1988</i>	There is suitable habitat within the study area for one 'listed' fauna species under the FFG Act, Growling Grass Frog, and one protected flora species, Variable Groundsel. The majority of the study area is located on private land, and therefore is exempt from requiring a permit under the FFG Act for this area. Sections of the study area located along the road reserves of Key Lane and McGregor Road are on public land, however no listed or protected species were observed within these areas, as such a permit under the FFG Act is not required for the proposed development.	No further action required.
<i>Environmental Effects Act 1978</i>	The final development plan for the proposed development includes impacts to one endangered ecological community, Plains Grassy Wetland. There is 11.12 hectares of Plains Grassy Wetland mapped within the study area, and of this 9.37 hectares is proposed to be impacted. This amount has been reduced through refinement of the proposed design as reflected in the current report, and now falls below the threshold to trigger a referral under the <i>Environment Effects Act 1978</i> as less than 10 hectares of an endangered ecological community is proposed to be removed.	No further action required.

Relevant Legislation	Implications	Further Action
<i>Planning and Environment Act 1987</i>	<p>The study area is located within Location Category 2, with a total of 9.468 hectares of native vegetation (comprising three scattered trees and 9.37 hectares of native vegetation patches) proposed to be removed. As such, the permit application falls under the Detailed Assessment Pathway.</p> <p>The offset requirement for native vegetation removal is 5.041 General Habitat Units (HUs).</p> <p>The property is covered by three overlays:</p> <ul style="list-style-type: none"> <li>• Development Plan Overlay – Schedule 16;</li> <li>• Land Subject to Inundation Overlay; and,</li> <li>• Public Acquisition Overlay 1 (Lot 2).</li> </ul>	Prepare a Planning Permit
<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.	Planning Permit conditions are likely to include a requirement for a Weed Management Plan.
<i>Water Act 1989</i>	A ‘works on waterways’ permit is likely to be required from Melbourne Water where any action impacts on waterways within the study area.	Obtain a ‘works on waterways’ permit from Melbourne Water.
<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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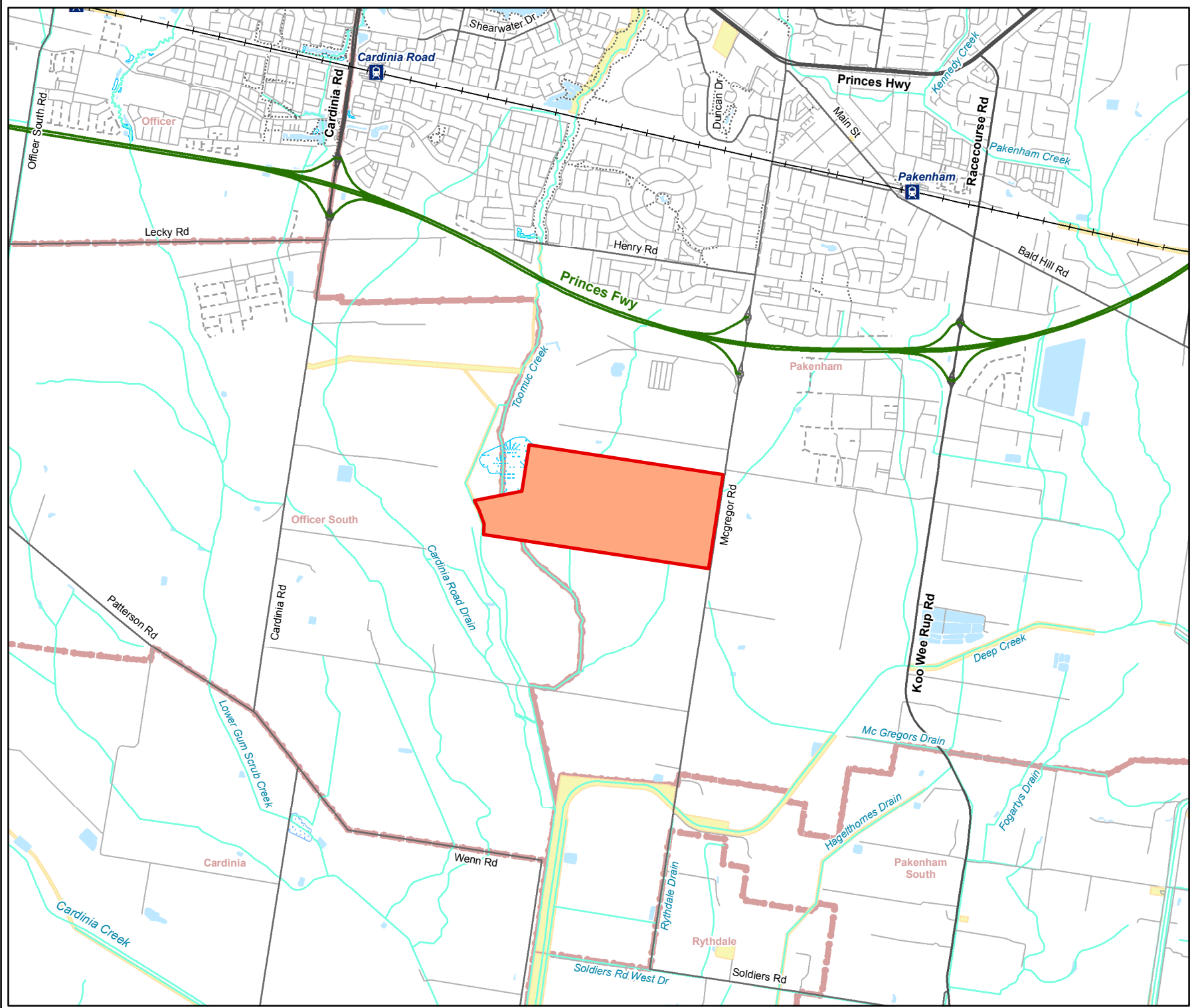
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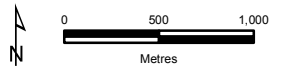
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- Legend**
- Study Area
  - Railway
  - Freeway
  - Major Road
  - Collector Road
  - Minor Road
  - Proposed Road
  - Walking Track
  - Minor Watercourse
  - Permanent Waterbody
  - Land Subject to Inundation
  - Wetland/Swamp
  - Crown Land
  - Localities

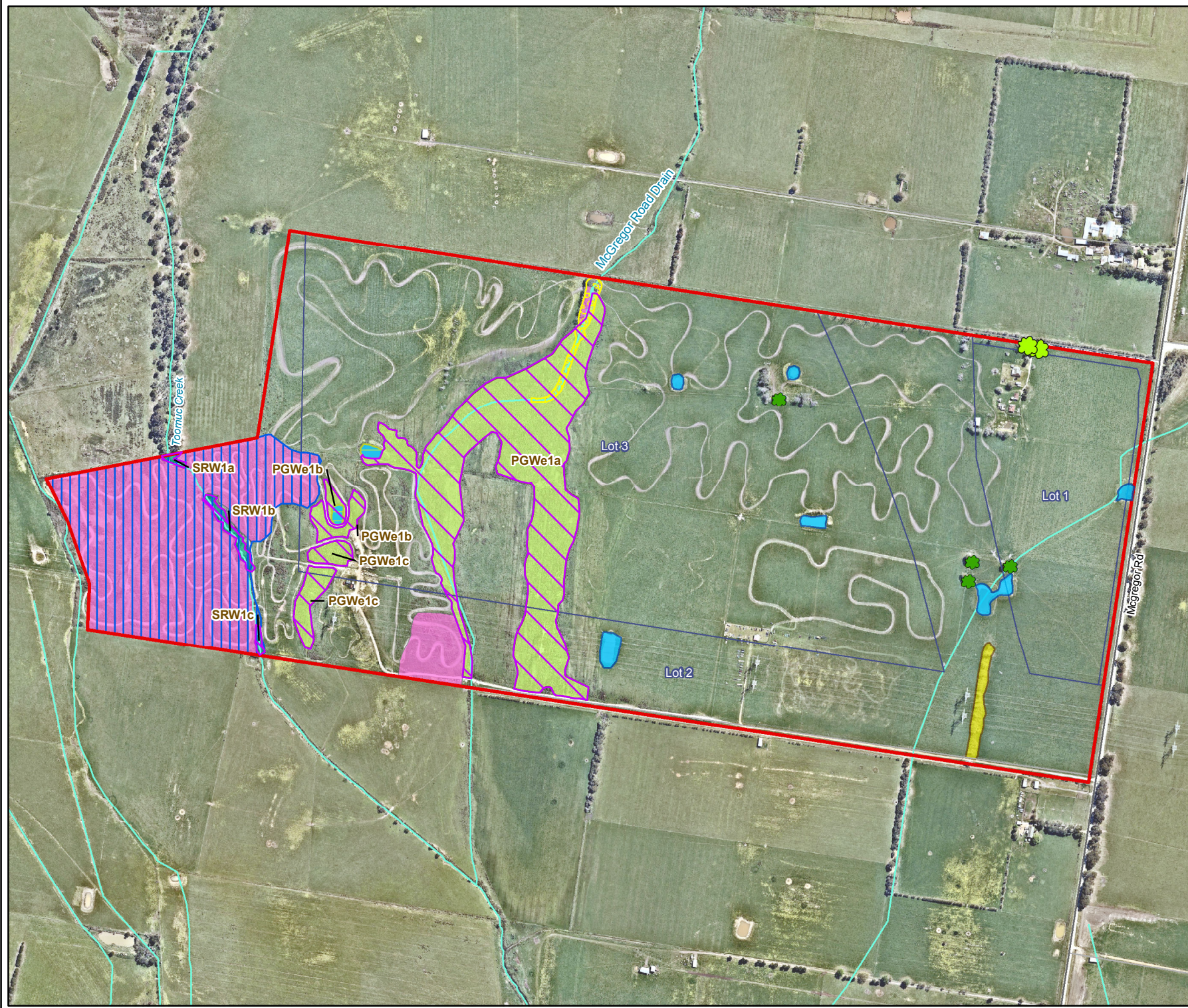


**Figure 1**  
**Location of the study area**  
*Biodiversity Assessment for*  
**21, 75 and 115 Key Lane,**  
**Pakenham**



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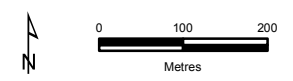




- Legend**
- Study Area
  - Lot boundaries
  - Potential habitat for Southern Brown Bandicoot
  - Habitat for Growing Grass Frog
  - Juvenile & adult Growing Grass Frog located 2010
  - Dams
  - ✿ Scattered Large Tree
  - ✿ Scattered Small Tree
  - Gorse/Blackberry patch
  - Planted vegetation
- Ecological Vegetation Class**
- Plains Grassy Wetland
  - Swampy Riparian Woodland

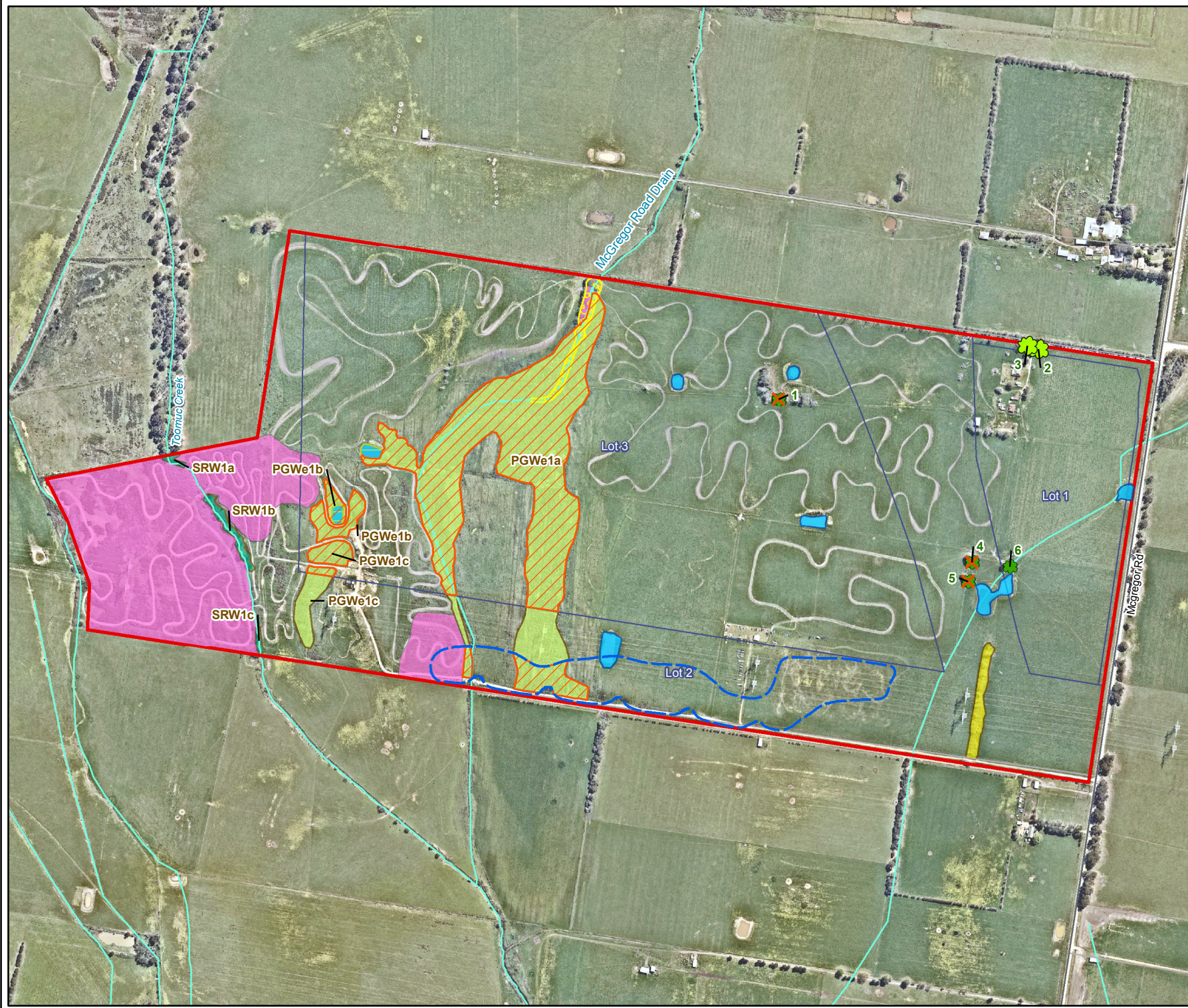


**Figure 2**  
**Potential fauna habitat**  
*Biodiversity Assessment for 21, 75 and 115 Key Lane, Pakenham*



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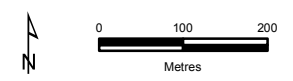




- Legend**
- Study Area
  - Lot boundaries
  - Proposed wetland
  - ✪ Scattered Large Tree
  - ✪ Scattered Small Tree
  - ✕ Trees impacted (River Red-gums)
  - Dams
  - Juvenile & adult Growing Grass Frog located 2010
  - Gorse/Blackberry patch
  - Planted vegetation
- Ecological Vegetation Class**
- Plains Grassy Wetland
  - Swampy Riparian Woodland
  - Vegetation impacted

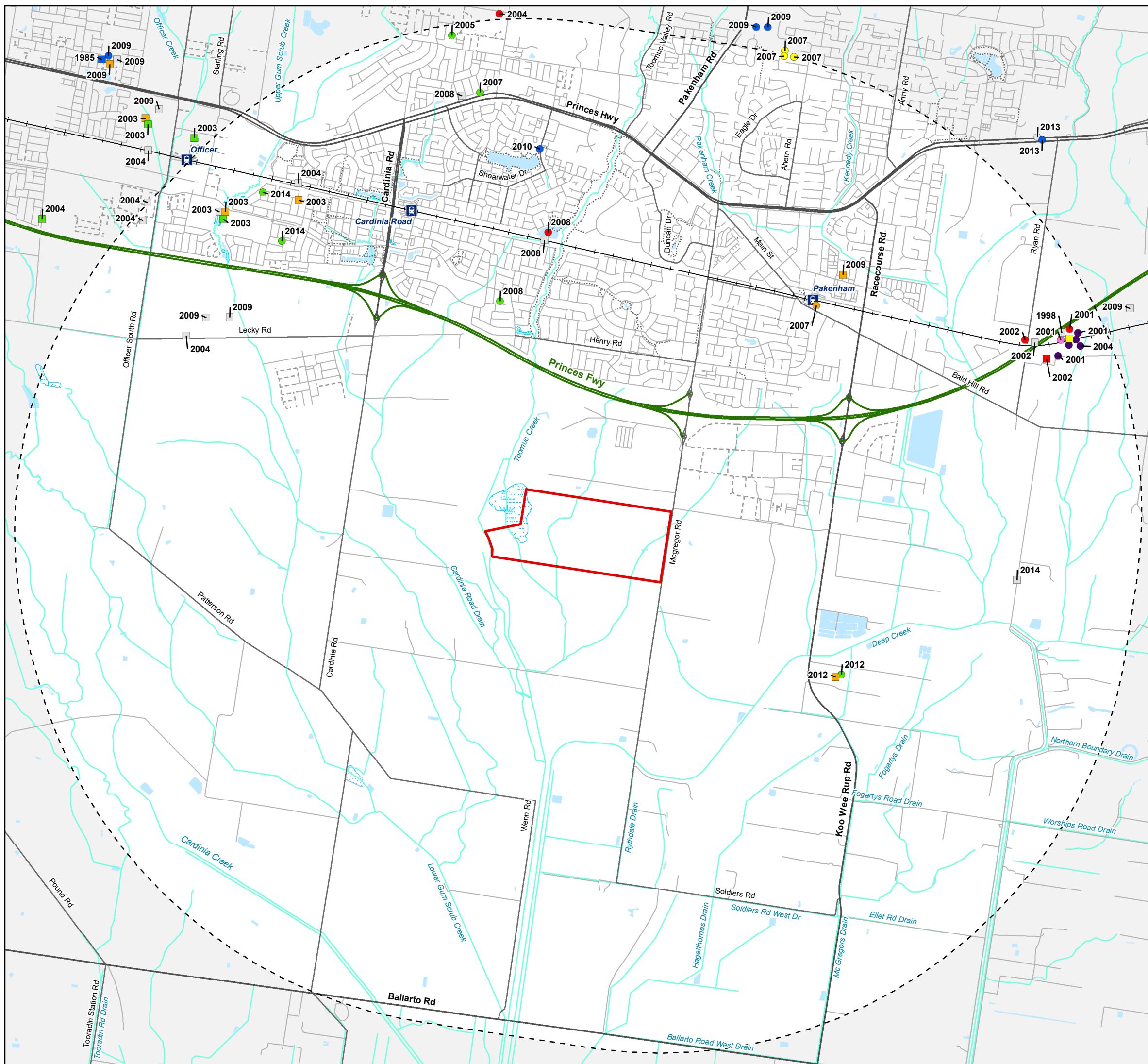


**Figure 3**  
**Ecological features**  
*Biodiversity Assessment for 21, 75 and 115 Key Lane, Pakenham*



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





**Legend**

Study Area

**Significant flora**

- Arching Flax-lily
- Austral Crane's-bill
- Buxton Gum
- Cobra Greenhood
- Giant Honey-myrtle
- Green Scentbark
- Grey Billy-buttons
- Maroon Leek-orchid
- Matted Flax-lily
- Purple Blown-grass
- River Red-gum
- Valley Crane's-bill
- Veined Spear-grass
- Wine-lipped Spider-orchid

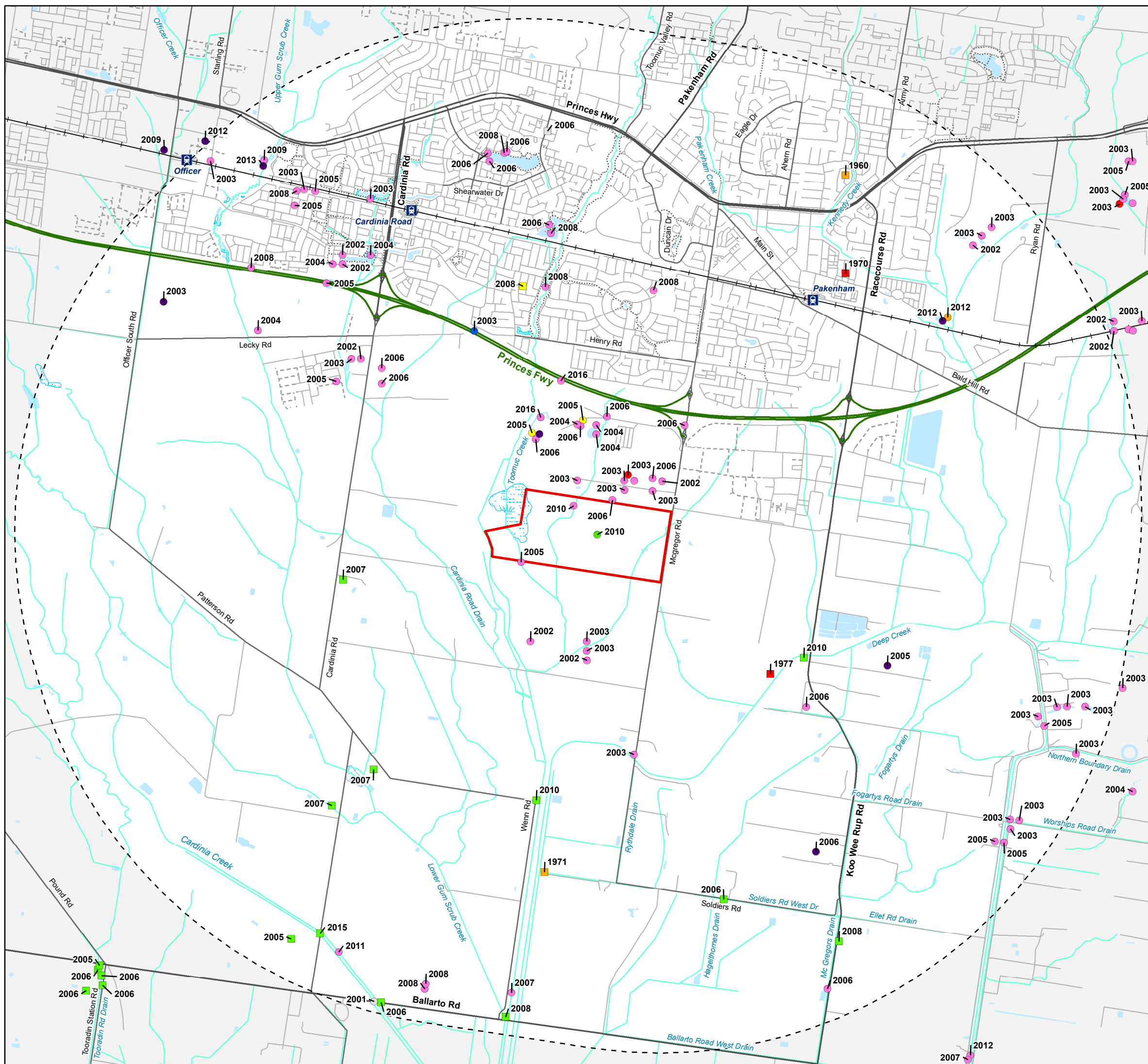


**Figure 4**  
 Previously documented significant flora records within 5km of the study area  
*Biodiversity Assessment for 21, 75 and 115 Key Lane, Pakenham*



VBA 2018. Victorian Biodiversity Atlas // Sourced from: 'VBA\_FLORA25', 'VBA\_FLORA100', 'VBA\_FAUNA25' and 'VBA\_FAUNA100'. January 2018 © The State of Victoria, Department of Environment, Land, Water and Planning. Records prior to 1949 not shown.

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**Legend**

Study Area

**Significant fauna**

- Australian Grayling
- Baillon's Crake
- Eastern Great Egret
- Eastern Snake-necked Turtle
- Glossy Grass Skink
- Grey-headed Flying-fox
- Growling Grass Frog
- Latham's Snipe
- Little Bittern
- Macquarie Perch
- Murray Cod
- Nankeen Night Heron
- Southern Brown Bandicoot



**Figure 5**  
 Previously documented significant fauna records within 5km of the study area  
*Biodiversity Assessment for 21, 75 and 115 Key Lane, Pakenham*



VBA 2018. Victorian Biodiversity Atlas // Sourced from: 'VBA\_FLORA25', 'VBA\_FLORA100', 'VBA\_FAUNA25' and 'VBA\_FAUNA100'. January 2018 © The State of Victoria, Department of Environment, Land, Water and Planning. Records prior to 1949 not shown.

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## APPENDICES

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## APPENDIX 1 - FLORA

### Appendix 1.1 – Flora Results

**Legend:**

- I** Listed as protected under the FFG Act;
- \*** Listed as a noxious weed under the CaLP Act;
- W** Weed of National Significance;
- Not applicable

**Table A1.1.** Flora recorded within the study area.

Scientific Name	Common Name	Conservation Status/Notes
<b>INDIGENOUS SPECIES</b>		
<i>Acacia dealbata</i>	Silver Wattle	-
<i>Alisma plantago-aquatica</i>	Water Plantain	-
<i>Carex gaudichaudiana</i>	Fen Sedge	-
<i>Cycnogeton procerum</i>	Water Ribbons	-
<i>Dichondra repens</i>	Kidney-weed	-
<i>Eleocharis acuta</i>	Common Spike-sedge	-
<i>Eucalyptus camaldulensis</i>	River Red-gum	-
<i>Eucalyptus goniocalyx</i>	Bundy	-
<i>Geranium potentilloides</i>	Soft Crane's-bill	-
<i>Ficinia nodosa</i>	Knobby Club-sedge	-
<i>Juncus pallidus</i>	Pale Rush	-
<i>Juncus procerus</i>	Tall Rush	-
<i>Lemna disperma</i>	Common Duckweed	-
<i>Luzula meridionalis</i>	Field Woodrush	-
<i>Lythrum</i> sp.	Loosestrife	-
<i>Melaleuca ericifolia</i>	Swamp Paperbark	-
<i>Ottelia ovalifolia</i>	Swamp Lily	-
<i>Persicaria decipiens</i>	Slender Knotweed	-
<i>Phragmites australis</i>	Common Reed	-
<i>Potamogeton</i> sp.	Pondweed	-
<i>Senecio pinnatifolius</i>	Variable Groundsel	<b>I</b>
<i>Triglochin striata</i>	Streaked Arrow-grass	-
<i>Typha domingensis</i>	Narrowleaf Cumbungi	-
<b>NON-INDIGENOUS OR INTRODUCED SPECIES</b>		

Scientific Name	Common Name	Conservation Status/Notes
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	-
<i>Callitriche stagnalis</i>	Common Water-starwort	-
<i>Cirsium vulgare</i>	Spear Thistle	*
<i>Cotula coronopifolia</i>	Water Buttons	-
<i>Crataegus monogyna</i>	Hawthorn	*
<i>Cupressus macrocarpa</i>	Monterey Cypress	-
<i>Cyperus eragrostis</i>	Drain Flat-sedge	-
<i>Dactylis glomerata</i>	Cocksfoot	-
<i>Galium aparine</i>	Cleavers	-
<i>Holcus lanatus</i>	Yorkshire Fog	-
<i>Lolium sp.</i>	Ryegrass	-
<i>Lotus angustissimus</i>	Slender Bird's-foot Trefoil	-
<i>Lycium ferocissimum</i>	African Boxthorn	<b>w *</b>
<i>Lysimachia arvensis</i>	Pimpernel	-
<i>Malva parviflora</i>	Small-flowered Mallow	-
<i>Phalaris aquatica</i>	Toowoomba Canary-grass	-
<i>Plantago lanceolata</i>	Ribwort	-
<i>Polygonum aviculare</i>	Wireweed	-
<i>Ranunculus repens</i>	Creeping Buttercup	-
<i>Romulea rosea</i>	Onion-grass	-
<i>Rosa rubiginosa</i>	Sweet Briar	<b>w *</b>
<i>Rubus sp.</i>	Blackberry	<b>w *</b>
<i>Rumex conglomeratus</i>	Clustered Dock	-
<i>Salix sp.</i>	Willow	-
<i>Sonchus oleraceus</i>	Sow Thistle	-
<i>Trifolium repens var. repens</i>	White Clover	-
<i>Trifolium subterraneum</i>	Subterranean Clover	-
<i>Ulex europaeus</i>	Gorse	<b>w *</b>
<i>Watsonia meriana var. bulbifera</i>	Watsonia	*

## Appendix 1.2 – Significant Flora Species

**Table A1.2** 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.

**1 - Known occurrence**

- Recorded within the study area recently (i.e. within ten years)

**2 - High Likelihood**

- Previous records of the species in the local vicinity; and/or,
- The study area contains areas of high quality habitat.

**3 - Moderate Likelihood**

- Limited previous records of the species in the local vicinity; and/or,
- The study area contains poor or limited habitat.

**4 - Low Likelihood**

- 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.

**5 – Unlikely**

- No suitable habitat and/or outside the species range.

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	-	-	VU	-	-	4
<i>Dianella amoena</i> #	Matted Flax-lily	23	2014	EN	L	e	4
<i>Eucalyptus crenulata</i>	Buxton Gum	1	2007	EN	L	e	5
<i>Glycine latrobeana</i> #	Clover Glycine	1	2003	VU	L	v	5
<i>Pomaderris vacciniifolia</i> #	Round-leaf Pomaderris	0	0	CR	L	e	5
<i>Prasophyllum frenchii</i> #	Maroon Leek-orchid	23	2016	EN	L	e	5
<i>Pterostylis chlorogramma</i> #	Green-striped Greenhood	0	0	VU	L	v	5
<i>Pterostylis cucullata</i> #	Leafy Greenhood	0	0	VU	L	e	5

Scientific name	Common name	Total # of documented records	Last documented record	EPBC	FFG	DEPI	Likely occurrence in study area
<i>Senecio psilocarpus</i>	Swamp Fireweed	1	2005	VU	-	v	5
<i>Thelymitra epipactoides</i> #	Metallic Sun-orchid	0	0	EN	L	e	5
<i>Xerochrysum palustre</i> #	Swamp Everlasting	2	2005	VU	L	v	5
<b>STATE SIGNIFICANCE</b>							
<i>Acacia stictophylla</i>	Dandenong Wattle	13	2006	-	-	r	5
<i>Adiantum diaphanum</i>	Filmy Maidenhair	1	1972	-	L	e	5
<i>Atriplex paludosa</i> subsp. <i>paludosa</i>	Marsh Saltbush	4	2009	-	-	r	5
<i>Austrostipa rudis</i> subsp. <i>australis</i>	Veined Spear-grass	6	2009	-	-	r	4
<i>Avicennia marina</i> subsp. <i>australasica</i>	Grey Mangrove	4	2009	-	-	r	5
<i>Bossiaea cordigera</i>	Wiry Bossiaea	1	2011	-	-	r	5
<i>Caladenia maritima</i>	Angahook Pink-fingers	1	2000	-	L	e	5
<i>Caladenia oenochila</i>	Wine-lipped Spider-orchid	3	2003	-	-	v	5
<i>Cardamine tenuifolia</i>	Slender Bitter-cress	2	1906	-	-	P	5
<i>Carex alsophila</i>	Forest Sedge	1	1980	-	-	r	5
<i>Carex chlorantha</i>	Green-top Sedge	1	1903	-	-	k	5
<i>Coronidium gunnianum</i>	Pale Swamp Everlasting	2	1994	-	-	v	5
<i>Correa reflexa</i> var. <i>lobata</i>	Powelltown Correa	1	2006	-	-	r	5
<i>Craspedia canens</i>	Grey Billy-buttons	1	2001	-	L	e	5
<i>Desmodium varians</i>	Slender Tick-trefoil	3	1999	-	-	k	5
<i>Dianella</i> sp. aff. <i>longifolia</i> ( <i>Benambra</i> )	Arching Flax-lily	1	2013	-	-	v	5
<i>Discaria pubescens</i>	Australian Anchor Plant	1	1999	-	L	r	5
<i>Diuris punctata</i>	Purple Diuris	11	1969	-	L	v	5

Scientific name	Common name	Total # of documented records	Last documented record	EPBC	FFG	DEPI	Likely occurrence in study area
<i>Eucalyptus fulgens</i>	Green Scentbark	24	2013	-	-	r	4
<i>Eucalyptus globulus</i> subsp. <i>globulus</i>	Southern Blue-gum	1	2004	-	-	r	5
<i>Geranium potentilloides</i> var. 1	Soft Crane's-bill	1	2010	-	-	k	5
<i>Geranium solanderi</i> var. <i>solanderi</i> s.s.	Austral Crane's-bill	5	2008	-	-	v	4
<i>Geranium</i> sp. aff. <i>retrorsum</i> ( <i>Nillumbik</i> )	Valley Crane's-bill	2	2001	-	-	k	5
<i>Lachnagrostis punicea</i> subsp. <i>filifolia</i>	Purple Blown-grass	2	1994	-	L	r	5
<i>Lachnagrostis punicea</i> subsp. <i>punicea</i>	Purple Blown-grass	2	2005	-	-	r	5
<i>Limonium australe</i> var. <i>australe</i>	Yellow Sea-lavender	1	1970	-	-	r	5
<i>Melaleuca armillaris</i> subsp. <i>armillaris</i>	Giant Honey-myrtle	11	2014	-	-	r	5
<i>Microseris scapigera</i> s.s.	Plains Yam-daisy	2	1994	-	-	v	4
<i>Ozothamnus alpinus</i>	Alpine Everlasting	1	1999	-	-	r	5
<i>Pterostylis grandiflora</i>	Cobra Greenhood	13	2012	-	-	r	4
<i>Pterostylis</i> sp. aff. <i>parviflora</i> ( <i>Southern Victoria</i> )	Red-tip Greenhood	3	2011	-	-	r	5
<i>Pterostylis X ingens</i>	Sharp Greenhood	1	1770	-	-	r	5
<i>Pterostylis X toveyana</i>	Mentone Greenhood	1	1896	-	-	v	5
<i>Pultenaea weindorferi</i>	Swamp Bush-pea	1	1994	-	X	r	5
<i>Scleranthus fasciculatus</i>	Spreading Knawel	2	1999	-	-	r	5
<i>Senecio campylocarpus</i>	Floodplain Fireweed	1	2010	-	-	r	5
<i>Tetralthea stenocarpa</i>	Long Pink-bells	1	1935	-	-	r	5
<i>Thelymitra hiemalis</i>	Winter Sun-orchid	1	2012	-	L	e	5
<i>Thelymitra X irregularis</i>	Crested Sun-orchid	1	1770	-	-	r	5



**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 2018a); Protected Matters Search Tool (DoEE 2019). Order: Alphabetical.

## Appendix 1.3 – Habitat Hectares

**Table A2.3.** Habitat Hectares results for remnant vegetation recorded within the study area.

Vegetation Zone		PGWe 1	SRW 1
Bioregion		Gippsland Plain	Gippsland Plain
EVC / Tree		Plains Grassy Wetland	Swampy Riparian Woodland
EVC Number		125	83
EVC Conservation Status		Endangered	Endangered
Patch Condition	Large Old Trees /10	na	0
	Canopy Cover /5	na	2
	Under storey /25	15	5
	Lack of Weeds /15	9	4
	Recruitment /10	6	5
	Organic Matter /5	3	2
	Logs /5	na	2
	Treeless EVC Multiplier	1.36	1.00
	Subtotal =	44.88	20.00
	Landscape Value /25		5
Habitat Points /100		50	25
<b>Habitat Score</b>		<b>0.50</b>	<b>0.25</b>

## APPENDIX 2 – FAUNA

### Appendix 2.1 – Significant Fauna Species

**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 2018d); 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  
poorly known

RX Regionally extinct

CR Critically endangered

# Listed on the Protected Matters Search Tool

VU Vulnerable

LC least concern

DD Data deficient (insufficiently or

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)	Likelihood
<b>NATIONAL SIGNIFICANCE</b>							
Swamp Antechinus	<i>Antechinus minimus maritimus</i> #	-	1	VU	L	NT	3
Regent Honeyeater	<i>Anthochaera phrygia</i> #	-	1	CR	L	CR	3
Australasian Bittern	<i>Botaurus poiciloptilus</i> #	-	1	EN	L	EN	4
Red Knot	<i>Calidris canutus</i> #	-	1	EN	-	EN	4
Curlew Sandpiper	<i>Calidris ferruginea</i> #	1999	2	CR	-	EN	3
Spot-tailed Quoll	<i>Dasyurus maculatus maculatus</i> #	-	1	EN	L	EN	3
Dwarf Galaxias	<i>Galaxiella pusilla</i> #	2010	25	VU	L	EN	3
Painted Honeyeater	<i>Grantiella picta</i> #	-	1	VU	L	VU	4
Southern Brown Bandicoot	<i>Isoodon obesulus obesulus</i> #	2015	109	EN	L	NT	2
Swift Parrot	<i>Lathamus discolor</i> #	1989	3	CR	L	EN	3
Helmeted Honeyeater	<i>Lichenostomus melanops cassidix</i>	1932	5	EN	L	CR	3
Growling Grass Frog	<i>Litoria raniformis</i> #	2016	261	VU	L	EN	2
Murray Cod	<i>Maccullochella peelii</i> #	1970	4	VU	L	VU	4
Macquarie Perch	<i>Macquaria australasica</i>	1976	2	EN	L	EN	4
Broad-toothed Rat	<i>Mastacomys fuscus mordicus</i> #	-	1	VU	L	EN	4
Eastern Curlew	<i>Numenius madagascariensis</i> #	-	1	CR	-	VU	4
Greater Glider	<i>Petauroides volans</i> #	1925	3	VU	-	VU	4
Long-nosed Potoroo	<i>Potorous tridactylus tridactylus</i> #	-	1	VU	L	NT	4
Australian Grayling	<i>Prototroctes maraena</i> #	2014	89	VU	L	VU	3
Smoky Mouse	<i>Pseudomys fumeus</i> #	-	1	EN	L	EN	4
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i> #	2017	5	VU	L	VU	4
Australian Painted Snipe	<i>Rostratula australis</i> #	-	1	VU	L	CR	4

Common Name	Scientific Name	Last Documented Record (VBA)	# Records (VBA)	EPBC Act	FFG ACT	DSE (2013)	Likelihood
<b>STATE SIGNIFICANCE</b>							
Common Sandpiper	<i>Actitis hypoleucos</i> #	1998	2	-	-	VU	4
Australasian Shoveler	<i>Anas rhynchos</i>	2005	19	-	-	VU	3
New Zealand Fur Seal	<i>Arctocephalus forsteri</i>	1977	1	-	-	VU	4
Eastern Great Egret	<i>Ardea modesta</i>	2016	12	-	L	VU	4
Hardhead	<i>Aythya australis</i>	2006	21	-	-	VU	3
Musk Duck	<i>Biziura lobata</i>	2006	6	-	-	VU	4
Brown Treecreeper (south-eastern ssp.)	<i>Climacteris picumnus victoriae</i>	2000	1	-	-	NT	4
Little Egret	<i>Egretta garzetta nigripes</i>	1998	1	-	L	EN	4
Foothill Burrowing Crayfish	<i>Engaeus victoriensis</i>	1911	1	-	-	EN	4
Black Falcon	<i>Falco subniger</i>	1987	1	-	-	VU	4
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i> #	2016	2	-	L	VU	4
White-throated Needletail	<i>Hirundapus caudacutus</i> #	2016	10	-	-	VU	3
Caspian Tern	<i>Hydroprogne caspia</i>	1997	1	-	L	NT	4
Little Bittern	<i>Ixobrychus minutus dubius</i>	2006	4	-	L	EN	4
Swamp Skink	<i>Lissolepis coventryi</i>	1983	1	-	L	VU	4
Barking Owl	<i>Ninox connivens connivens</i>	1999	1	-	L	EN	4
Powerful Owl	<i>Ninox strenua</i>	2017	7	-	L	VU	4
Blue-billed Duck	<i>Oxyura australis</i>	2006	13	-	L	EN	3
Baillon's Crake	<i>Porzana pusilla palustris</i>	2016	5	-	L	VU	4
Glossy Grass Skink	<i>Pseudemoia rawlinsoni</i>	2010	1	-	-	VU	4
Southern Toadlet	<i>Pseudophryne semimarmorata</i>	2009	86	-	-	VU	3
Freckled Duck	<i>Stictonetta naevosa</i>	2002	1	-	L	EN	4



Common Name	Scientific Name	Last Documented Record (VBA)	# Records (VBA)	EPBC Act	FFG ACT	DSE (2013)	Likelihood
Common Greenshank	<i>Tringa nebularia</i> #	-	1	-	-	VU	4
Marsh Sandpiper	<i>Tringa stagnatilis</i>	2004	1	-	-	VU	4
Sooty Owl	<i>Tyto tenebricosa tenebricosa</i>	1992	1	-	L	VU	4
<b>REGIONAL SIGNIFICANCE</b>							
Azure Kingfisher	<i>Alcedo azurea</i>	1981	1	-	-	NT	4
Pectoral Sandpiper	<i>Calidris melanotos</i> #	1998	2	-	-	NT	4
Eastern Pygmy-possum	<i>Cercartetus nanus</i>	1986	2	-	-	NT	4
Whiskered Tern	<i>Chlidonias hybridus javanicus</i>	2004	2	-	-	NT	4
Black-eared Cuckoo	<i>Chrysococcyx osculans</i> #	-	1	-	-	NT	4
Spotted Harrier	<i>Circus assimilis</i>	2004	1	-	-	NT	4
Latham's Snipe	<i>Gallinago hardwickii</i>	2016	31	-	-	NT	1
Nankeen Night Heron	<i>Nycticorax caledonicus hillii</i>	2008	4	-	-	NT	4
Pied Cormorant	<i>Phalacrocorax varius</i>	1997	1	-	-	NT	4
Royal Spoonbill	<i>Platalea regia</i>	2005	5	-	-	NT	4

**Data source:** Victorian Biodiversity Atlas (DELWP 2018a); Protected Matters Search Tool (DoEE 2019).

**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 – NVR REPORT**

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

Date of issue: 19/11/2019

Report ID: EHP\_2019\_254

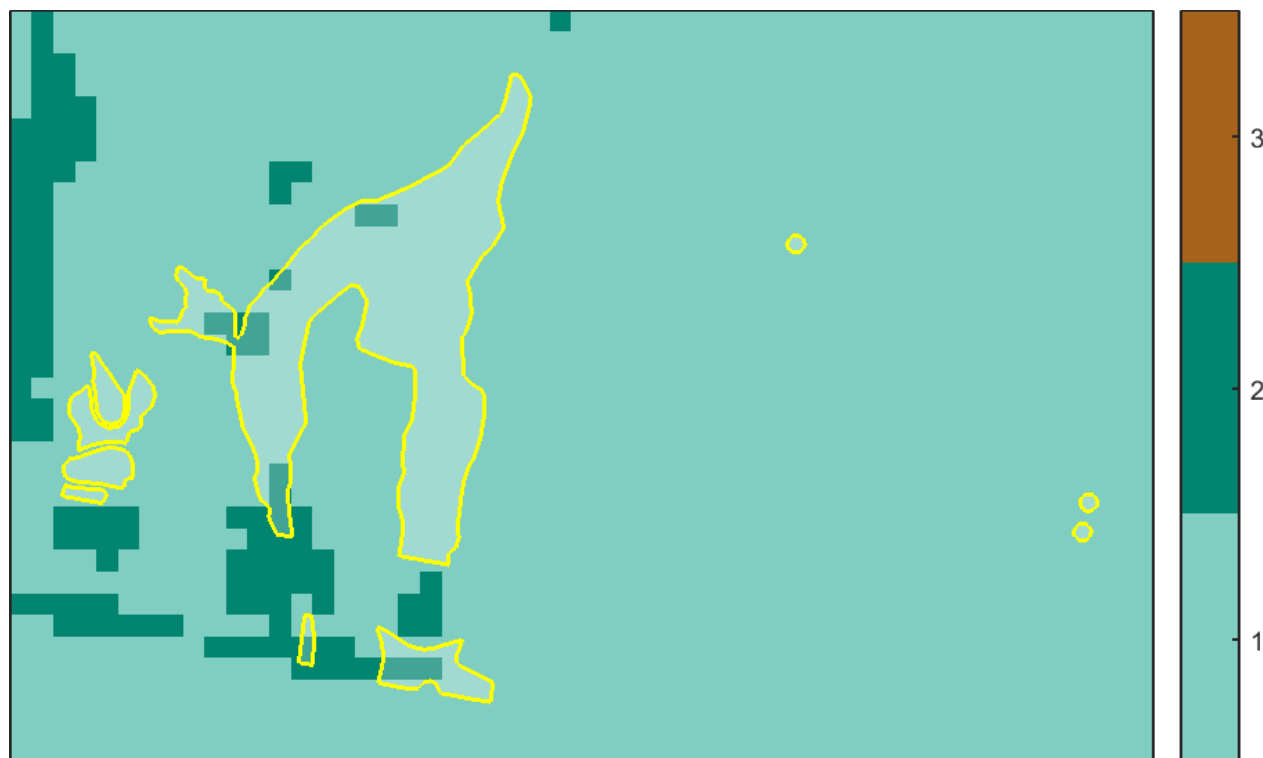
Time of issue: 4:56 pm

Project ID	EHP11399_KeyLane
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## Assessment pathway

Assessment pathway	Detailed Assessment Pathway
Extent including past and proposed	9.468 ha
Extent of past removal	0.000 ha
Extent of proposed removal	9.468 ha
No. Large trees proposed to be removed	0
Location category of proposed removal	Location 2 The native vegetation is in an area mapped as an endangered Ecological Vegetation Class (as per the statewide EVC map). Removal of less than 0.5 hectares of native vegetation in this location will not have a significant impact on any habitat for a rare or threatened species.

### 1. Location map



## Offset requirements if a permit is granted

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

<b>General offset amount<sup>1</sup></b>	5.041 general habitat units
Vicinity	Port Phillip and Westernport Catchment Management Authority (CMA) or Cardinia Shire Council
Minimum strategic biodiversity value score <sup>2</sup>	0.342
Large trees	0 large trees

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

Appendix 1 includes information about the native vegetation to be removed

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

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

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

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

## Next steps

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

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

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

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

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

Additional application requirements must be met including:

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

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For more information contact the DELWP Customer Service Centre 136 186

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### Disclaimer

This publication may be of assistance to you but the State of Victoria and its employees do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.

Obtaining this publication does not guarantee that an application will meet the requirements of Clauses 52.16 or 52.17 of the Victoria Planning Provisions and Victorian planning schemes or that a permit to remove native vegetation will be granted.

Notwithstanding anything else contained in this publication, you must ensure that you comply with all relevant laws, legislation, awards or orders and that you obtain and comply with all permits, approvals and the like that affect, are applicable or are necessary to undertake any action to remove, lop or destroy or otherwise deal with any native vegetation or that apply to matters within the scope of Clauses 52.16 or 52.17 of the Victoria Planning Provisions and Victorian planning schemes.

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

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

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

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

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

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

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

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

### Native vegetation to be removed

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
1-A	Patch	gipp0125	Endangered	0	no	0.500	7.817	7.817	0.416		4.149	General
2-A	Patch	gipp0125	Endangered	0	no	0.500	0.587	0.587	0.449		0.319	General
3-A	Patch	gipp0125	Endangered	0	no	0.500	0.076	0.076	0.450		0.041	General
4-C	Patch	gipp0125	Endangered	0	no	0.500	0.274	0.274	0.536		0.158	General
5-B	Patch	gipp0125	Endangered	0	no	0.500	0.368	0.368	0.542		0.213	General
6-B	Patch	gipp0125	Endangered	0	no	0.500	0.187	0.187	0.440		0.101	General
7-C	Patch	gipp0125	Endangered	0	no	0.500	0.066	0.066	0.657		0.041	General
8-T	Scattered Tree	gipp0125	Endangered	0	no	0.200	0.031	0.031	0.350		0.006	General
9-T	Scattered Tree	gipp0125	Endangered	0	no	0.200	0.031	0.031	0.342		0.006	General
10-T	Scattered Tree	gipp0125	Endangered	0	no	0.200	0.031	0.031	0.350		0.006	General



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

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

Species common name	Species scientific name	Species number	Conservation status	Group	Habitat impacted	% habitat value affected
Australian Grayling	<i>Prototroctes maraena</i>	4686	Vulnerable	Dispersed	Habitat importance map	0.0010
Grey Billy-buttons	<i>Craspedia canens</i>	504643	Endangered	Dispersed	Habitat importance map	0.0004
Glossy Grass Skink	<i>Pseudemoia rawlinsoni</i>	12683	Vulnerable	Dispersed	Habitat importance map	0.0003
Growling Grass Frog	<i>Litoria raniformis</i>	13207	Endangered	Dispersed	Habitat importance map ; special site	0.0002
Swamp Everlasting	<i>Xerochrysum palustre</i>	503763	Vulnerable	Dispersed	Habitat importance map	0.0002
Maroon Leek-orchid	<i>Prasophyllum frenchii</i>	502709	Endangered	Dispersed	Habitat importance map	0.0001
Green Scentbark	<i>Eucalyptus fulgens</i>	505175	Rare	Dispersed	Habitat importance map	0.0001
Lewin's Rail	<i>Lewinia pectoralis pectoralis</i>	10045	Vulnerable	Dispersed	Habitat importance map	0.0001
Plains Yam-daisy	<i>Microseris scapigera s.s.</i>	504657	Vulnerable	Dispersed	Habitat importance map	0.0001
Matted Flax-lily	<i>Dianella amoena</i>	505084	Endangered	Dispersed	Habitat importance map	0.0001
Purple Blown-grass	<i>Lachnagrostis punicea subsp. punicea</i>	504206	Rare	Dispersed	Habitat importance map	0.0001
Floodplain Fireweed	<i>Senecio campylocarpus</i>	507136	Rare	Dispersed	Habitat importance map	0.0001
Swamp Fireweed	<i>Senecio psilocarpus</i>	504659	Vulnerable	Dispersed	Habitat importance map	0.0001
Hardhead	<i>Aythya australis</i>	10215	Vulnerable	Dispersed	Habitat importance map	0.0001
Pale Swamp Everlasting	<i>Coronidium gunnianum</i>	504655	Vulnerable	Dispersed	Habitat importance map	0.0001
Purple Blown-grass	<i>Lachnagrostis punicea subsp. filifolia</i>	504222	Rare	Dispersed	Habitat importance map	0.0001
Purple Diuris	<i>Diuris punctata</i>	501084	Vulnerable	Dispersed	Habitat importance map	0.0001
Australasian Shoveler	<i>Anas rhynchotis</i>	10212	Vulnerable	Dispersed	Habitat importance map	0.0001
Eastern Great Egret	<i>Ardea modesta</i>	10187	Vulnerable	Dispersed	Habitat importance map	0.0001

Black Falcon	<i>Falco subniger</i>	10238	Vulnerable	Dispersed	Habitat importance map	0.0000
Salt Blown-grass	<i>Lachnagrostis robusta</i>	504223	Rare	Dispersed	Habitat importance map	0.0000

**Habitat group**

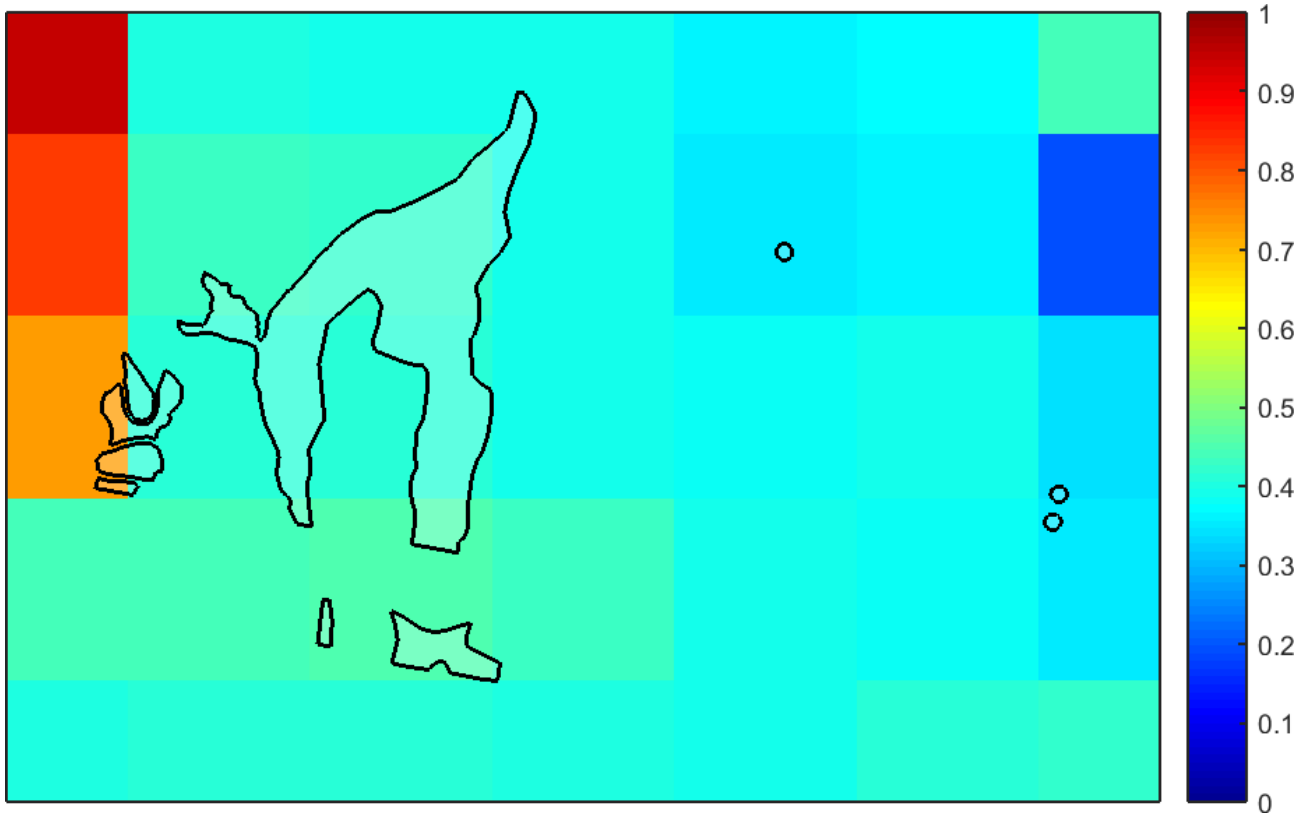
- Highly localised habitat means there is 2000 hectares or less mapped habitat for the species
- Dispersed habitat means there is more than 2000 hectares of mapped habitat for the species

**Habitat impacted**

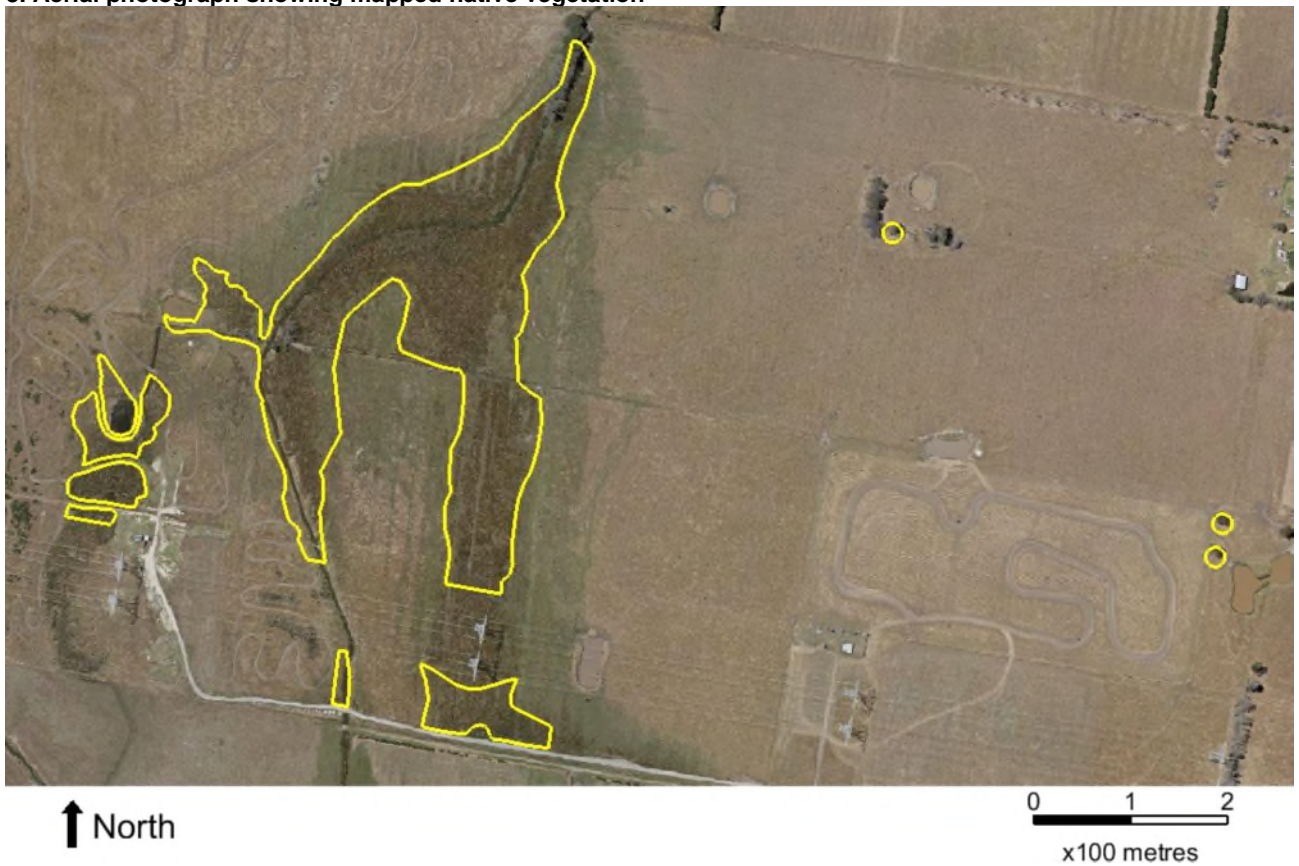
- Habitat importance maps are the maps defined in the Guidelines that include all the mapped habitat for a rare or threatened species
- Top ranking maps are the maps defined in the Guidelines that depict the important areas of a dispersed species habitat, developed from the highest habitat importance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

# Appendix 3 – Images of mapped native vegetation

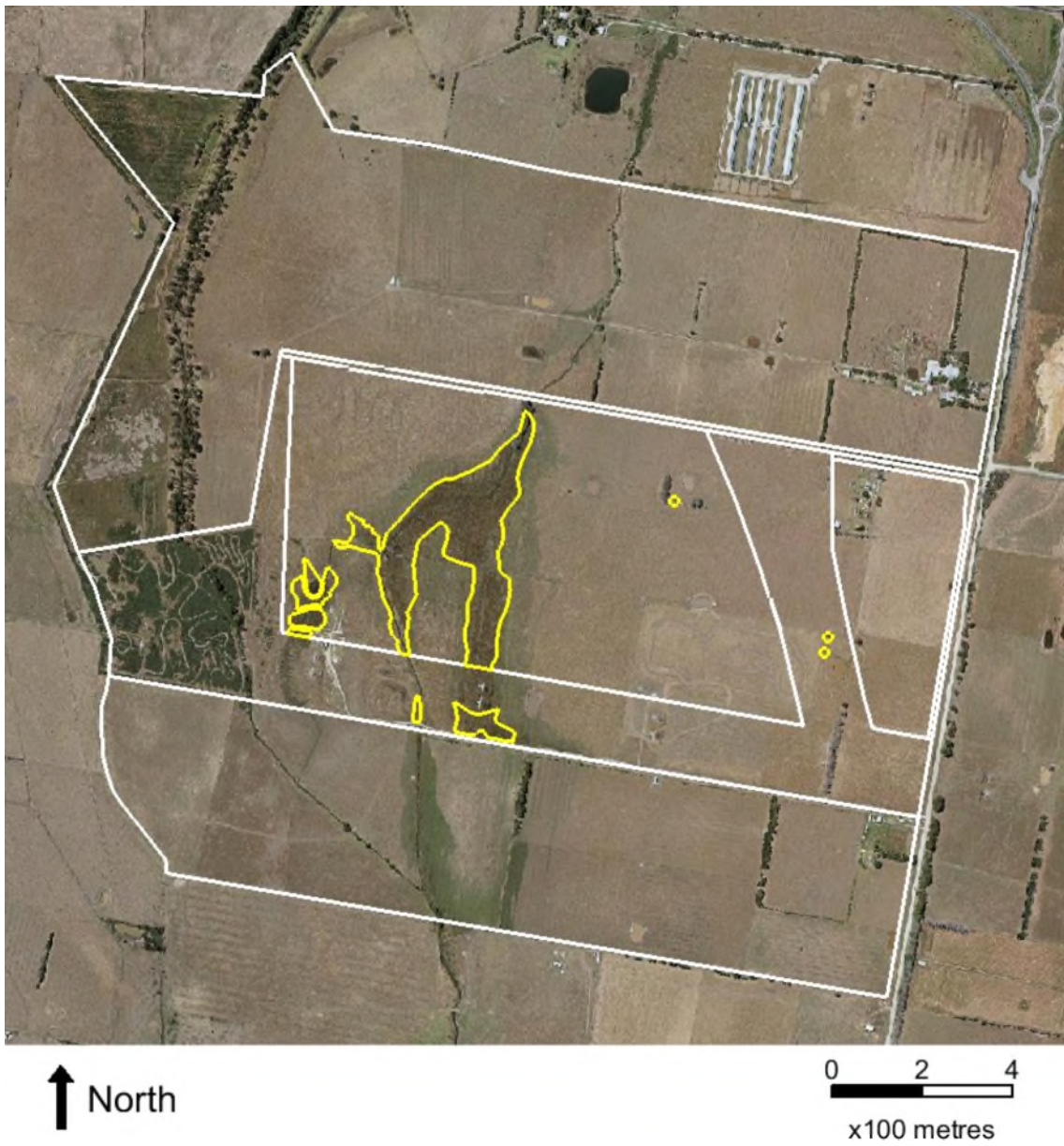
## 2. Strategic biodiversity values map



## 3. Aerial photograph showing mapped native vegetation



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



Yellow boundaries denote areas of proposed native vegetation removal.