

**Flora and Fauna Assessment and  
No Net Loss Analysis Recommendations,  
35 Hams Road and 151–229 Anglesea Road  
Wauru Ponds.**



**10 April 2014**

## Flora and Fauna Assessment and No Net Loss Analysis Recommendations, 35 Hams Road and 151–229 Anglesea Road, Waurrn Ponds.

**10 April 2014**

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# 1. INTRODUCTION

Practical Ecology Pty Ltd was commissioned by Melissa Griffin of SMEC urban to prepare a Flora and Fauna Assessment and recommendations to inform a Net Gain Analysis for 35 Hams Road and 151–229 Anglesea Road, Waurin Ponds.

An original due diligence assessment conducted by Practical Ecology in May 2012 revealed areas of vegetation that may have required offsets if cleared. Due to recent changes in legislation and comments received from Greater Geelong City Council, an assessment of the site to document the ecological conditions in relation to new legislation has been undertaken. This report was sought in support of a proposal to re-zone the site, from Farming Zone (FZ) to Residential Zone (RZ).

## 1.1 Project Scope

The scope of works includes

- A review of biodiversity information including:
  - relevant legislation and planning permit requirements
  - reviewing ecological databases such as DEPI's VBA
  - DEPI's biodiversity interactive mapping
- the compilation of a list of all vascular plants, including an assessment of their biological significance, recorded in the development site (and other bushland areas as appropriate) during the site visit
- determination of habitat zones, undertake a habitat hectare assessment and determine the condition score, and/or scattered trees as required by the Biodiversity Assessment Guidelines (DEPI 2013)
- a review of vegetation and habitat condition determined by Nance (2012) based on describing different qualities of remnant and exotic vegetation and types of weed infestation
- photographs of the remnant vegetation (likely to be) proposed for removal
- a description of the existing and/or original Ecological Vegetation Classes found within the site
- mapping any areas that may provide habitat for significant species.
- a review of relevant literature, fauna and flora records and habitat conditions on the site to determine the likelihood of the presence of nationally significant flora and fauna.
- Undertake a brief No Net Loss Analysis to determine vegetation losses associated with the rezoning of the site.
- Provide recommendations on the rezoning and actions that can be undertaken to avoid vegetation and habitat removal.
- the provision of mapping to illustrate existing conditions.

## 1.2 Subject Site

### 1.2.1 Site description

The study site consists of two Lots: 35 Hams Road and 151–229 Anglesea Road, Waurn Ponds (Figure 1). The site is approximately 27 ha in area, is currently used for grazing and contains several internal fences, sheds and dams. Grassland vegetation covers most of the property, with several areas containing weed infestations. The site falls within the Otway Plain bioregion.



**Figure 1.** Site Location Map, 35 Hams Road and 151–229 Anglesea Road, Waurn Ponds

### 1.2.2 Adjacent land

The adjacent land to the south and east contains similar vegetation to that which is on site. However, these areas are subject to different zoning: Special Use Zone (SUZ) to the south (and West) and Urban Growth Zone (UGZ) directly to the east. Residential development exists to the north of the site within a Residential 1 Zone (R1Z) and, to the north-west, low density development is present within a Rural Living Zone (RLZ). The Princes Freeway extension has recently been constructed along the western boundary of the site. A regional railway reserve exists immediately to the south of the site.

### 1.2.3 Zoning and Overlays

The site is zoned Farming Zone (FZ) and is subject to the following overlay and areas:

- Public Acquisition Overlay (PAO) (confined to the western portion of the site); and
- is within an Area of Aboriginal Cultural Heritage Sensitivity (AACHS).

## 2. METHODS

### 2.1 Site assessment

A site assessment was undertaken by Practical Ecology staff on 27<sup>th</sup> February 2014, involving

- consideration and mapping of existing conditions
- mapping and assessing vegetation as per DSE's habitat hectare methodology
- the compilation of a list of vascular plants observed across the study site
- consideration of the site's habitat values for threatened fauna and flora.

### 2.2 Vegetation Categorisation, Classification and Quality

Vegetation was assessed for its categorisation according to *Permitted clearing of native vegetation – Biodiversity assessment guidelines* (Department of Environment & Primary Industries 2013), then its Ecological Vegetation Class and finally, quality, as determined through a Habitat Hectare assessment.

#### 2.2.1 Vegetation Categories

Vegetation in the study area was surveyed for categorisation as per the definitions within *Permitted clearing of native vegetation – Biodiversity assessment guidelines* (Department of Environment & Primary Industries 2013):

- **Native Vegetation**

*Native Vegetation* as per the Victorian Planning Provisions (Clause 72): plants which are indigenous to Victoria, including trees shrubs, herbs and grasses.

- **Remnant Vegetation**

*Remnant patch* of native vegetation is either:

- an area of vegetation where at least 25% of the total perennial understorey plant cover is native
- any area with three or more native canopy trees where the canopy foliage cover is at least 20 % of the area

- **Scattered tree:**

A *scattered tree* is a native canopy tree that does not form part of a remnant patch. A canopy tree is a mature tree that is greater than 3 m in height and is normally found in the upper layer of a vegetation type.

## 2.2.2 Ecological Vegetation Classes

Ecological Vegetation Classes (EVCs) are a method of systematic organisation of plant communities into common types that occur in similar environmental conditions throughout Victoria. Each vegetation type is identified on the basis of its floristic composition (the plant species present), vegetation structure (woodland, grassland, saltmarsh), landform (gully, foothill, plain) and environmental characteristics (soil type, climate).

DEPI EVC mapping (DEPI 2014a) was accessed to assess the EVC likely to occur on the study area. EVCs were then identified in the field according to observable attributes including dominant and characteristic species consistent with the benchmark descriptions (DEPI 2014b).

## 2.2.3 Vegetation Quality Assessment

A habitat hectare assessment was undertaken to determine the condition of areas of native vegetation. This methodology is outlined in *Vegetation Quality Assessment Manual—Guidelines for Applying the Habitat Hectares Scoring Method* (DSE 2004). The habitat hectare method involves making visual and quantitative assessments on various characteristics of native vegetation according to established criteria that are set against an optimum benchmark.

This process begins with the identification of the EVC. Each EVC has a benchmark of optimal values relating to the vegetation conditions. In addition the ecological landscape context is scored, this is assessable via the DEPI Biodiversity Interactive Map (DEPI 2014a). If a site meets or exceeds all benchmark criteria it will receive a total score of 100 %.

## 2.2.4 Large Old Trees

**Large Old Tree (LOT)** is a tree with a DBH equal to, or greater than, the large tree diameter as specified in the relevant EVC benchmark.

## 2.3 Flora

### 2.3.1 Plant taxonomy

Plant taxonomy used in this report are generally in accordance with Walsh & Stajsic (Walsh and Stajsic 2008) and/or Flora Information System (Viridans Biological Databases 2013b).

### 2.3.2 Existing information

Existing database records on the Victorian Biodiversity Atlas (VBA) for a five kilometre radius around the study area was obtained from the online database (DEPI 2014c). Species habitat modelling information was obtained from the DEPI Transition Support (DEPI 2014d).

### 2.3.3 Flora survey

During the assessment, the study area was inspected on foot. A species list (or defined area list) for indigenous or naturalised flora (i.e. not including planted species) over the entire study site was compiled. No systematic surveys were undertaken during this study.

### 2.3.4 Plant identification

Species that could not be identified in the field were recorded to the nearest possible family or genera. These were then collected as per the protocols associated with Practical Ecology's *Flora and Fauna Guarantee (FFG) Act 1988* permit (No. 10006484) for the collection of plant material. In order to assist in the identification of some flora, major features of the specimens were collected where possible, including leaves, parts of branches, fruit and/or flowers.

### 2.3.5 Limitations of flora survey

The following considerations should be made regarding the limitations of the flora survey:

- it was undertaken in late summer which is not the optimal time for plant identification. Many grass species had set seed and did not contain seed material that would normally aid in identification
- it is expected that some other species, particularly orchid, lily and other herbaceous species that can only be observed for a limited period of time may not have been recorded during the present assessment
- flora surveys were undertaken over a short period of time

## 2.4 Fauna

### 2.4.1 Fauna taxonomy

Animal taxonomy is consistent with the Victorian Fauna Database (Viridans Biological Databases 2013a).

### 2.4.2 Existing information

Existing information on the Victorian Biodiversity Atlas (VBA) for a five kilometre radius around the study site was obtained from the online database (DEPI 2014c). Species habitat modelling information was obtained from the DEPI Transition Support (DEPI 2014d).

### 2.4.3 New information

The main focus in regards to fauna was to undertake a habitat assessment. The habitat assessment relies upon making judgements on the suitability of habitat present within the study site for any significant species recorded on existing databases.

## 2.5 Potentially occurring rare or threatened species

Database information was used to determine likelihood of occurrence of rare or threatened species that occur or are predicted to occur within five kilometres of the study area. In determining this ‘likelihood of occurrence’ and utilisation of the study area by national or state significant flora and fauna, the following factors were considered:

- the conservation status of the species and its distribution;
- previous recordings of species in the local area;
- date of last record;
- the habitat requirements of individual species;
- the physical attributes of the site, such as topography, geology, soils, aspect and other habitat features such as trees with hollows, the presence of rocks or boulders, logs on the ground;
- the history of land use at the study site; and
- how fragmented and modified is the environment surrounding the study site.

A basic matrix that describes the justification for the likelihood of occurrence is presented in Table 1.

**Table 1.** Criteria for potential occurrence of significant species

Likelihood of occurrence	Criteria
Nil	Species known to be extinct in local area and/or absent from the site.
Low	Unsuitable habitat at study site; or habitat conditions intermediate and records very limited and dated; or if it were present, it is highly likely to have been observed on site.
Medium	Habitat conditions are intermediate, and/or optimal habitat conditions for species but local records limited or dated and/or if it were present, it is not likely to have been observed on site.
High	Optimal habitat conditions for species or species recorded at site, or intermediate habitat conditions but extensive local records and/or if it were present, it is not likely to have been observed on site.

Mapped data for species distributions was obtained from DEPI Transition Support (DEPI 2014d). This information sets out the list of rare or threatened species habitats mapped at the site, beyond those species for which the impact is above the specific offset threshold.

## 2.6 Mapping

Geographical positioning data collection in the field for the purposes of map display was carried out using a combination of a handheld GPS device, aerial photography and existing site survey plans. Determination of vegetation boundaries was undertaken using a combination of GPS data and ground-truthing with aerial photography. Due to inaccuracy with GPS data, the mapping should be considered approximate only.

## 3. RESULTS

### 3.1 Vegetation Categorisation, Classification and Quality

Vegetation across the site was in very poor condition. The dry conditions during the site assessment may have contributed to a lower detection of plant diversity, however the degradation of the site could be determined from a number of factors, including: the high cover of weedy species (established Gorse *\*Ulex europaeus*, African Boxthorn *\*Lycium ferocissimum*, Chilean Needle-grass *\*Nassella neesiana*, Cane Needle-grass *\*Nassella hyalina* and many grassy and herbaceous weeds), the lack of remnant vegetation (limited to colonising grasses) and the long history of grazing.

Native vegetation was mapped on site due to areas of native vegetation exceeding 25 % in foliage cover. Two EVCs were determined to exist across the site: Grassy Woodland (EVC 127) and Creekline Grassy Woodland (EVC 68). These zones had a patchy distribution across the site and were limited to two paddocks and the drainage line, running west to east, along the centre of the site. The flora within these patches consisted of very limited diversity and contained only a few opportunistic species in most instances. Map 1 indicates the distribution of the two Habitat Zones and the scattered distribution of individual patches across the site.

The EVC's on site and their bioregional conservation status are indicated in Table 2 below.

**Table 2.** Bioregional Conservation Status for Extant EVCs at Study Site.

EVC No.	EVC	Bioregional Conservation Status
127	Grassy Woodland	Endangered
68	Creekline Grassy Woodland	Endangered

#### 3.1.1 Habitat Zone 1 (HZ1a–d)

Habitat Zone One consists of degraded Grassy Woodland (EVC 127) with little diversity (Figure 2). Four separate patches were identified on site, zones HZ1a–HZ1d. Indigenous species HZ1 included: Common Wallaby-grass *Rytidosperma caespitosum*, Slender Wallaby-grass *Rytidosperma racemosum* var. *racemosum*, the occasional Finger Rush *Juncus subsecundus* and a small patch of Spear Grass *Austrostipa* spp. that were not able to be identified due to insufficient plant material. Native vegetation cover was between 25 % and up to 80 % in some areas.

Weedy species within this zone included: Brown-top Bent *\*Agrostis capillaris* and Ribwort *\*Plantago lanceolata* which had the highest cover. Squirrel-tail Fescue *\*Vulpia bromoides*, Spear Thistle *\*Cirsium vulgare*, Cocksfoot *\*Dactylis glomerata*, and Toowoomba Canary-grass *\*Phalaris aquatica* were also common within this zone.



**Figure 2.** Habitat Zone One looking north from within HZ1b

### 3.1.2 Habitat Zone 2 (HZ2a–d)

Habitat Zone Two was confined to areas that held water along the drainage line (Figure 3). This included the permanent waterbody (HZ2a) and three other patches that were damp, but did not contain free waterbodies at the time of assessment.

All of these patches contained a high cover of Common Spike-sedge *Eleocharis acuta* and scattered occurrences of Pale Rush *Juncus pallidus* and Finger Rush. The larger waterbody also contained Water Milfoil *Myriophyllum spp.* and Swamp Lily *Ottelia ovalifolia subsp. ovalifolia*.

Weeds within this zone included patchy invasions of Water Couch *\*Paspalum distichum* and Gorse was prevalent along the fringes of the patches and across much of the extent of the drainage line.



**Figure 3.** Habitat Zone Two looking east from edge of HZ2a

### 3.1.3 Scattered Trees

No Scattered Trees were observed to occur within the site during the site inspection. The closest trees to the site were observed within the railway reserve to the south of the site.

### 3.1.4 Habitat hectare assessment

Table 3 below presents the results of the Habitat hectare assessments carried out on site.

**Table 3.** Habitat hectare assessment

Habitat Zone		1	2
Bioregion		OR	OR
EVC Name (initials)		GW	CGW
EVC Number		175	68
EVC Conservation Status		E	E
Size of Zones (ha)		4.550	0.282
		Max Score	Score
Site Condition	Large Old Trees	10	0
	Canopy Cover	5	0
	Understorey	25	5
	Lack of Weeds	15	4
	Recruitment	10	0
	Organic Litter	5	4
	Logs	5	0
	EVC Standardiser		1
	Standardised Site Score	75	13
Landscape value	Patch Size	25	1
	Neighbourhood		
	Distance to Core		
Habitat points		100	14
<b>Habitat Score (habitat points/100)</b>		<b>0.##</b>	<b>0.14</b>
			<b>0.18</b>

## 3.2 Flora

A total of 45 plant taxa were recorded in the study area during this survey of which 11 were indigenous (24 %) and 34 (76 %) were introduced. Appendix 1 lists all flora recorded within the study site. Table 4 below summarises plant taxa recorded in the study area during this survey.

**Table 4.** Summary of flora species recorded

Flora Status	Number of Taxa
Indigenous vascular species	11
Exotic species	34
<b>TOTAL</b>	<b>45</b>

### 3.2.1 State or nationally significant flora

No species of state or national significance were recorded on-site.

A search for state or nationally significant flora species recorded within 5km of the site area in VBA (DEPI 2014c) revealed one species, Bellarine Yellow-gum *Eucalyptus leucoxylon subsp. bellarinensis* (Appendix 2).

This species was considered to have a low likelihood of occurrence due to no individuals being observed on site in conjunction with the site's highly degraded vegetation condition.

#### Modelled Habitat Importance for Flora

DEPI habitat-modelling revealed three species that are considered to have habitat present on site: Clover Glycine *Glycine latrobeana*, Austral Crane's-bill *Geranium solanderi var. solanderi s.s.*, and Pale Swamp Everlasting *Coronidium scorpioides aff. rutidolepis (Lowland Swamp)* (Appendix 2; Appendix 4).

All three species do not have any records within 5 km of the study site. Habitat within the site is highly degraded and the large numbers of rabbits and stocking of cattle provide intense grazing pressure. Herbs are often the first to disappear from areas under such conditions. All three of these species are considered to have a low likelihood of occurring on site.

## 3.3 Fauna

The main focus with regards to fauna during the assessment was the consideration of the site's potential to provide fauna habitat. The habitat observed within the site included:

- Bare soil
- Wallaby, Needle and Spear Grass species present
- Soil cracks
- Some shrubs (although exotic)
- Freshwater waterbodies

- Wet depressions
- Fringing aquatic vegetation

Vegetation on site provides some habitat for fauna, however, much of this is degraded. Some foraging habitat exists for birds of prey, although the grassy vegetation preferred by many of their prey species is sparse. The primary food source for birds of prey in this region would be rabbits, rats and mice.

Cracks in the soil are present which may provide shelter for lizards and frogs. Wallaby, Needle and Spear grasses provide good food for Golden Sun Moth *Synemon plana* larvae and bare soil provides available spaces for this species to breed and lay eggs. The many Gorse plants across the site provide some habitat for bird species, however, they may also provide harbour for pest animals such as foxes, feral cats and rabbits. Apart from one Plum tree, there were no trees identified across the site that could provide nesting habitat or hollows for birds, or other fauna.

Cattle have trampled within, and surrounding, the moist depressions and existing dam, providing unsuitable conditions for a range of native fauna to feed and spawn (frogs/fish) (Figure 4). These areas of vegetation were dominated by Spike Sedge with little to no other diversity. The cover of aquatic vegetation within the dam was less than 1 %, with the dam being muddy at the time of the assessment.



**Figure 4.** Cattle trampling fringing and aquatic vegetation within non-native wetland

### 3.3.1 State or nationally significant fauna

No fauna of state or national significance was recorded during the site inspection.

A total of 13 state or nationally significant fauna species are recorded within a five kilometre radius of the study area in the VBA (DEPI 2014c). Details of these species are given in Appendix 3. Two of these species are considered to have a moderate likelihood of using the habitat on-site: Baillon's Crake *Porzana pusilla palustris* and the Growling Grass Frog *Litoria raniformis*.

The likelihood of these species utilising the site was considered moderate due to the degraded nature of the wetland areas. The persistence of frogs and tadpoles within the fringing vegetation would be moderate due to cattle trampling the vegetation.

The Baillon's Crake generally inhabits freshwater wetlands and floodwaters which usually contain floating plants or tall emergent vegetation; both of these types of vegetation are effectively absent from the site. The Baillon's Crake feeds in shallow water, mud and emergent aquatic plants and has been found to nest in clumps or tussocks of vegetation surrounded by water. While some of this habitat does exist on site, it is highly degraded.

### **Modelled Habitat Importance for Fauna**

DEPI habitat-modelling revealed 23 species in which habitat has been mapped on site (Appendix 3). In addition to the two species listed as having a moderate likelihood of occurrence on site from the VBA, Golden Sun Moth (GSM) habitat has been mapped on site (DEPI 2014d). The Golden Sun Moth is considered to have only a moderate likelihood of occurring on site, due to the presence of some degraded habitat and no local records (Appendix 3).

## 4. RELEVANT POLICY AND LEGISLATION

The following section explores relevant policy and legislation pertaining to ecology from the national level through to the local level.

### 4.1 Environment Protection and Biodiversity Conservation Act

The *EPBC Act 1999* applies to sites where proposed developments or projects may have a significant impact on matters of national environmental significance.

Under the *EPBC Act*, a proponent must refer proposed actions that may require approval to the Commonwealth Environment Minister (or delegate). The Minister then decides which assessment and reporting option is applied. The Minister may approve a ‘controlled action’ allowing the development to proceed provided conditions are applied to mitigate significant impacts protected by this Act. The most likely consideration of the *EPBC Act* on site would be in regards to the removal of habitat for a species listed under the *EPBC Act*. It was determined that no species listed under the *EPBC Act* were considered to have a high likelihood of occurrence on site.

*Development within the study site is not likely to have a significant impact on species, nor any other matters of environmental significance protected under this Act.*

### 4.2 Flora and Fauna Guarantee Act 1988

The *Flora and Fauna Guarantee Act 1988* (FFG Act) was legislated to ensure the continued survival of all Victorian species of flora and fauna and all Victorian communities of plants and animals. The *FFG Act* provides a number of ways to help achieve its objectives including:

- listing of threatened taxa, communities of flora or fauna and potentially threatening processes, and creation of Action Statements and Management Plans for all listed taxa communities of flora or fauna and processes
- declaration of a Critical Habitat if the habitat is critical for the survival of a species or a community of flora or fauna, if listed as Critical Habitat, the Minister for Environment may then make an Interim Conservation Order (ICO) to conserve the Critical Habitat
- protection of flora and fauna through listing offences such as penalties relating to not following an ICO and taking, trading in, keeping, moving or processing protected flora without a licence. Although this does not apply to taking listed flora species from private land.

The Department of Environment and Primary Industries is the referral authority for matters under the *FFG Act*.

#### Relevance to proposal

*There are no specific legislated prescriptions under the FFG Act related to Potentially Threatening Processes occurring on this site.*

The *FFG Act* does not apply to any listed flora and fauna species occurring on private land, unless it is listed as critical habitat, which this site is not. It is considered unlikely the proposal will have a significant impact on species listed under this Act.

## 4.3 Planning Scheme

The *Planning and Environment Act 1997* establishes the framework for planning the use, development and protection of land in Victoria in the present and long-term interests of all Victorians. This includes providing the structure for and administering the implementation of Planning Schemes. The following section considers relevant sections of the Planning Scheme.

### 4.3.1 State Planning Policy Framework

#### Clause 12 Environmental and Landscape Values

Clause 12 of the Planning Scheme recognises that planning:

- should help to protect the health of ecological systems and the biodiversity they support (including ecosystems, habitats, species and genetic diversity) and conserve areas with identified environmental and landscape values.
- must implement environmental principles for ecologically sustainable development that have been established by international and national agreements.
- should protect sites and features of nature conservation, biodiversity, geological or landscape value.

Clauses of particular relevance include:

- Clause 12.01–1 Protection of biodiversity
- Clause 12.01–2 Native vegetation management

#### Relevance to proposal

The objectives of these clauses, which are considered in the body of this report, relate to avoiding and minimising impacts to biodiversity. Given the lack of intact native vegetation on site, attempts to conserve these areas of native vegetation could be seen as dubious, when put in context with achieving broad, Council-wide environmental and landscape value benefits.

#### Clause 13 Environmental Risks

This clause recognises that planning should adopt a best practice environmental management and risk management approach which aims to avoid or minimise environmental degradation and hazards. This includes consideration of:

- climate change
- floodplains
- soil degradation
- erosion and landslip
- noise and air
- air quality

- bushfire

### **Clause 13.05–1 Bushfire**

This clause seeks to assist to strengthen community resilience to bushfire. The overarching strategy is to 'prioritise the protection of human life over other policy considerations in planning and decision-making in areas at risk from bushfire and to apply the precautionary principle in decision making'.

### **Relevance to proposal**

Any proposed development of the site will need to ensure that the above factors are considered. Incorporation of the existing drainage line into a design proposal will need to carefully consider hydrology, soil degradation and erosion to satisfy the objectives of this clause.

*As the site is within a Bushfire Prone Area (BPA) appropriate siting of dwellings and allotments in order to achieve appropriate setbacks from unmanaged vegetation will be required.*

### **4.3.2 Zoning**

The proposal aims to re-zone the site from FZ to RZ. Consideration of vegetation legislation is discussed in relation to Clauses 12, 13, and 52.17. At this stage of the proposal, the actual re-zoning of the land will not affect vegetation on site. The change in land-use from FZ to RZ may be beneficial to any retained areas of vegetation, due to reduction, or elimination of grazing and trampling pressure.

### **4.3.3 Overlays**

The site is subject to the following overlays:

- Public Acquisition Overlay (PAO); and
- contains areas of Aboriginal Cultural Heritage Significance (AACHS)

### **Public Acquisition Overlay (PAO3)**

The purpose of this overlay is to reserve land for a public purpose and to ensure that changes to the use or development of the land do not prejudice the purpose for which the land is to be acquired. PAO3 refers to a VicRoads Proposed Road – Category 1.

*No development should occur within this zone due to the objectives and future intended use of this land as outlined under this overlay.*

### **Areas of Aboriginal Cultural Heritage Sensitivity (AACHS)**

Areas of Aboriginal Cultural Heritage Sensitivity are outlined along the drainage line within the site. This site was one of the last areas where the Wathaurong local indigenous people lived in this region. A stone monument just to the south east of this site pays tribute to this group of aborigines, who were given a one acre block to live upon in 1861.

*If significant works are to be undertaken within any of the identified areas of significance then a Cultural Heritage Management Plan (CHMP) will need to be prepared to guide works on the site.*

The results of such a plan will outline where areas of significance are, provide management guidelines for any works and areas where works are to be avoided. A 'significant disturbance' is any activity that disturbs the top layer of soil, including digging, grading and ripping.

#### 4.3.4 Particular Provisions – Clause 52.17

Under Clause 52.17 a permit is required to remove, destroy or lop native vegetation on sites greater than 0.4 hectares. Clause 52.17 requires a planning permit for the removal of native vegetation (exceptions apply). The purpose of the provision (amongst others) is to minimise impacts on Victoria's biodiversity from the removal of native vegetation, and to protect and manage native vegetation, to minimise land and water degradation.

Application requirements and decision guidelines are listed within the Clause. Applications may fall into a low, moderate or high risk pathway depending on the location and extent of vegetation removed. The application requirements and decisions depend on the relevant risk pathway. Referral to DEPI under Clause 66.02 may be required for an application to remove native vegetation; e.g. if clearing is greater than 0.5 ha or the application follows the high-risk pathway.

Subdivisions that create allotments of greater than 0.4 ha in area will not need a permit to remove vegetation. Subsequent permits will need to be attained to remove vegetation within each respective lot. These losses in vegetation will, therefore, not be created at the subdivision stage but further down the track, when landowners intend to build on each lot. This may create additional costs for landowners who intend to purchase and build on a lot; offsets will likely be required to be sourced off-site. If lots are created that are less than 0.4 ha in size then offsets for vegetation loss will need to be procured at the subdivision stage.

*It is recommended that vegetation losses be considered at the re-zoning stage. This will involve planning the design layout to incorporate offsets into the site, preferably along the drainage line. This will also minimise vegetation losses along the drainage line and further degrade habitat which may support significant species.*

### 4.4 Catchment and Land Protection Act 1994

The study area supports four weeds that are declared noxious under the *Catchment and Land Protection (CaLP) Act 1994*. Plants occurring on this list are known to or have the potential to result in detrimental environmental or economic impact. It is the requirement of landowners to control weeds listed under this Act that occur on their site.

Under the *CaLP Act*, declared noxious weeds are categorised into four groups depending on their known and potential impact, and the specific circumstances for each region. These categories are:

- State Prohibited Weeds (S) are either currently absent in Victoria or are restricted enough to be eradicated. The Victorian Government is responsible for their control.
- Regionally Prohibited Weeds (P) in the Corangamite Catchment Management Authority (CMA) area these weeds are not necessarily widespread but have the potential to become widespread. It is expected that weeds that meet this criteria can be eradicated from the region. For weeds considered to be Regionally Prohibited it is the responsibility of the land owner to control these weeds on their land but not on adjacent roadside reserves.
- Regionally Controlled Weeds (C) are usually widespread but it is important to prevent further spread. It is the responsibility of the landowner to control these weeds on their property and on adjacent roadside reserves.

- Restricted Weeds (R) include plants that pose unacceptable risk of spreading in the State or other Australian states and are considered to be a serious threat to primary production, Crown land, the environment and/or community health if they were traded in Victoria. Trade in these weeds and their propagules, either as plants, seeds or contaminants in other material is prohibited.

The following table lists the declared noxious weeds observed on site (which occurs within the Corangamite region).

**Table 5.** Declared Noxious weeds occurring within the Study Area

Scientific Name	Common Name	Control Category
<i>*Cirsium vulgare</i>	Spear Thistle	R
<i>*Lycium ferocissimum</i>	African Boxthorn	C
<i>*Nassella neesiana</i>	Chilean Needle-grass	R
<i>*Nassella trichotoma</i>	Serrated Tussock	C
<i>*Rosa rubiginosa</i>	Sweet Briar	C
<i>*Ulex europaeus</i>	Gorse	C

*Weed infestations should be controlled where areas of open space are to be created. A weed management program will need to be prepared to manage weeds across areas of open space and any areas where offsets are to be established. This should include areas along the drainage line.*

*Weed seed should not be spread onto, or out of, the site during construction works. This requirement should be included in any weed management program that is prepared for the site.*

## 5. Development proposal

The current proposal for the study site is to re-zone 35 Hams Road and 151–229 Anglesea Road, Waurin Ponds from Farming Zone to Residential Zone. As this report was commissioned to support the concept design phase of the re-zoning, vegetation losses are yet to be determined. This report seeks to outline areas which may contain sensitive ecological constraints relating to the development of the site. Recommendations are provided to aid decisions based on locating allotments, infrastructure, open space and the retention of ecological values on-site.

## 6. No Net Loss Analysis Recommendations

This section explores the requirements under clause 52.17 for the removal of native vegetation on site. A formal No Net Loss Analysis has not been undertaken, however, the different components are considered and recommendations have been provided. This has been undertaken in order to understand and design the most ecologically sensitive concept plan for the re-zoning, in consideration of the obligations under Clause 52.17.

A permit is required to remove native vegetation on the site as per Clause 52.17 of the Planning Scheme.

The objective for the permitted clearing of native vegetation is that it results in no net loss to Victoria's biodiversity. Thus where native vegetation is permitted to be removed, an offset is to be provided in a manner that makes a contribution to Victoria's biodiversity that is equivalent to the contribution made by the native vegetation to be removed.

### 6.1 Risk-based Pathway

An application to remove, destroy or lop native vegetation must be classified as one of the following risk-based pathways:

- low
- moderate
- high

as defined in the *Permitted clearing of native vegetation – Biodiversity assessment guidelines* (DEPI 2013a).

The application requirements and decision guidelines in Clause 52.17 must be applied in accordance with the classified pathway.

To determine the risk-based pathway, the following risks are considered in relation to the native vegetation proposed to be removed:

- the location risk
- the extent risk

**Table 6.** Determining risk-based pathway

Extent*	Location		
	Location A	Location B	Location C
< 0.5 hectares	Low	Low	High
≥ 0.5 hectares and < 1 hectare	Low	Moderate	High
≥ 1 hectare	Moderate	High	High

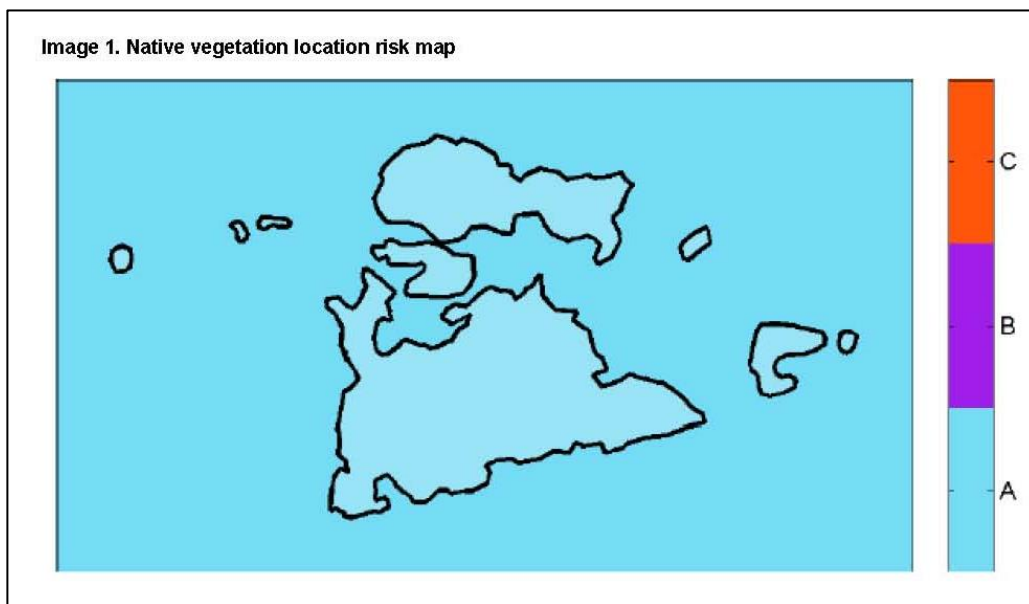
Extent*	Location		
	Location A	Location B	Location C
< 15 scattered trees	Low	Moderate	High
≥ 15 scattered trees	Moderate	High	High

Source: Table 3 and 4, Permitted clearing of native vegetation – Biodiversity assessment guidelines (DEPI 2013a)

### 6.1.1 Location risk

The location risk has been determined by DEPI for all locations in Victoria. Native vegetation will be in either location A, B or C.

Vegetation at the subject site is located in location ‘A’ as shown in the Figure 5 below



**Figure 5.** Location risk at subject site

Source: *DEPI Transition Support* (DEPI 2014d).

### 6.1.2 Proposed losses from re-zoning and subsequent development

The losses that are likely to occur across the site will be within the degraded Grassy Woodland vegetation (HZ1; Map 1). These areas are of low priority for conservation and the protection of an offset elsewhere, or increasing vegetation quality and habitat along the drainage line would be a better ecological outcome than leaving it in its current state.

*Residential development should avoid areas in close proximity to the drainage line.*

*Development of all other areas across the site is not likely to impact on any significant ecological values.*

### 6.1.3 High Risk–based Pathway

The Native Vegetation Location Risk Map, V2 (Figure 5), determines the site as being within location ‘A’. The area of clearing proposed for the site is likely to be greater than 1.0 ha. Therefore, the proposed clearing within the site is determined to have a risk based pathway of ‘Moderate’, see Table 7, below.

**Table 7.** Risk-based pathways for proposed vegetation removal on site

Extent*	Location		
	Location A	Location B	Location C
< 0.5 hectares	Low	Low	High
≥ 0.5 hectares and < 1 hectare	Low	Moderate	High
≥ 1 hectare	Moderate	High	High

Source: Table 3 – Permitted clearing of native vegetation Biodiversity assessment guidelines (DEPI 2013a).

Vegetation removal on-site is likely to be within the moderate risk based pathway. An application must include:

- A statement outlining what steps have been taken to minimise the impacts of the removal of native vegetation on biodiversity.
- An assessment of whether the proposed removal of native vegetation will have a significant impact on Victoria’s biodiversity, with specific regard to the proportional impact on habitat for any rare or threatened species.
- An offset strategy that details how a compliant offset will be secured to offset the biodiversity impacts of the removal of native vegetation.

The following sections briefly comment on these requirements.

## 6.2 Minimising impacts to biodiversity

A moderate risk–based pathway application must provide a statement outlining what steps have been taken, to ensure that impacts on biodiversity from the removal of native vegetation have been minimised. The steps taken should have regard to the contribution the native vegetation to be removed, and the native vegetation to be retained, makes to biodiversity. Some guiding recommendations into the design of the concept plan to fulfil this requirement are as follows:

- Attempt to incorporate existing patches of vegetation into areas of open space
- Avoid designing buildings or works that impact on the drainage line
- Avoid placing lots and/or dwellings too close to vegetation that may need to be subsequently cleared to accommodate defensible space requirements under the BPA
- Avoid excessive earthworks within and adjacent to the drainage line
- Avoid creating situations that may increase erosion

## 6.3 Biodiversity Assessment Report

The Biodiversity Assessment Report provided by DEPI Transition Support (DEPI 2014d) summarises the extent of potential vegetation removal on site. Site data has been sent to DEPI who have assessed this base data and produced a report on the values of the site. This report has been generated in order to gain an understanding of the likely impacts and offset requirements of potential future clearing on site. A summary is given in Table 8, below, and the full report is provided in Appendix 4.

**Table 8.** Summary of marked native vegetation

Summary Item	Result
Risk-based pathway	Moderate
Total extent	4.833 ha
Remnant patches	4.833 ha
Scattered trees	0 trees
Location risk	A
Strategic biodiversity score of all marked native vegetation	0.386

If a permit is granted to remove all of the marked native vegetation, a requirement to obtain a native vegetation offset will be included in the permit conditions. The offset must meet the following requirements (Table 9):

**Table 9.** Offsets required if all vegetation is cleared

Offset type	General offset
General offset amount (general biodiversity equivalence units)	0.392 general units
General offset attributes	
Vicinity	Corangamite Catchment Management Authority (CMA) or the Local Municipal District where clearing takes place
Minimum strategic biodiversity score	0.308

The Biodiversity Impact and Offset Report (BIOR) has outlined that only a general offset amount is required for the removal of all vegetation on site. This implies that removal of this vegetation and habitat is not likely to cause a significant impact to the decline of the species listed in the BIOR.

## 6.4 Offset Strategy

As defined by DEPI (2013a) applications that follow the moderate risk-based pathway must include an offset strategy in the application for a permit to remove native vegetation.

Offsets can be either:

- First party – located on land owned by the landholder who is proposing to remove the native vegetation
- Third party – located on land owned by a third party

Depending on the outcomes of the concept design, there may be scope to locate the offsets on-site and incorporate them into enhancement works along the drainage line.

Minimum requirements for revegetation offsets must be met in order to be eligible for an offset. The following requirements must be met:

- Revegetation must be done in accordance with the minimum planting standard specified in Appendix 2 of the *Native Vegetation Gain Scoring Manual* – version 1 (DEPI 2013b) and revegetation sites must meet the following size requirements:
  - At least 1 hectare in size
  - Have an average width of at least 20 metres
  - Have a perimeter to area ratio of 1:20. Perimeter to area ratio can be calculated by dividing the area (metres<sup>2</sup>) by the perimeter (metres).

In addition, a ten-year offset plan must be prepared for the offset site.

After a brief analysis of the likely gains from revegetation offsets, an area of between 6.5 to 12 ha would be required to offset the total vegetation losses on site. In addition, any proposed building envelopes will require appropriate setbacks to areas of revegetation or retained vegetation on site if the vegetation is considered classifiable vegetation. That is, if it does not constitute excludable vegetation under AS3959. Therefore, if an area of revegetation greater than 1 ha in area is proposed on site then dwellings will need appropriate setbacks and require BAL ratings accordingly.

It is recommended that ecological enhancement works be undertaken along the drainage line that do not create areas of classifiable vegetation. Revegetation offsets, if intended to be created on site, may not account for the total offset required. Therefore, offsets for the loss of vegetation on site are recommended to be sourced off site, through native vegetation credit traders.

### 6.4.1 SOURCING NATIVE VEGETATION (OFFSET) CREDITS

There are several methods for acquiring Native Vegetation Credits when they are not available on your development site, although all credits need to fulfil the offset requirement criteria to offset permitted losses (Table 9). The following sections briefly present methods available.

#### **Creating credits through protection and management of native vegetation**

If you own other land parcels or are aware of other land parcels where the owners would be interested in providing credits; credits can be achieved through protection and rehabilitation of native vegetation. Rehabilitation of existing vegetation as offsets for native vegetation needs to occur for a ten year period, and protection of vegetation in perpetuity.

#### **Purchasing offset credits**

Where proponents do not have or know of land available to create the required offset gains, it may be easiest to purchase existing credits directly from a credit holder. A credit holder is someone who has or is preparing to create offset credits through the methods described above and is now looking to sell them to planning permit proponents who require them.

BushBroker, operated by the DEPI, facilitates the location of sites that could generate Native Vegetation Credits to be provided as offsets for clearing elsewhere. The proposed third party offset site must meet the required offset requirements of the vegetation losses.

Credits in the form of habitat hectares are able to be purchased from a third party landowner. The transaction is between the purchaser and offset provider and as such price negotiation is between these parties but facilitated by DEPI. Additional expenses include DEPI charges to facilitate the transaction.

For further information on BushBroker, contact the DEPI Customer Service Centre on 136 186 or visit the DEPI website at: [www.depi.vic.gov.au/nativevegetation](http://www.depi.vic.gov.au/nativevegetation). BushBroker Information Sheets are also available on the website. Native Vegetation credits are also available through independent accredited bodies, such as Trust for Nature.

## 6.5 Summary

This report has outlined relevant considerations for the rezoning of the site in relation to relevant native vegetation legislation. The following points and recommendations summarise the findings of this assessment:

### Summary of Findings

- The site contained patches of low quality vegetation with little habitat value for significant species
- There was a high cover of invasive weeds across the site
- The drainage line contains the most environmentally sensitive areas within the site and requires careful consideration to avoid adverse impacts at the design stage

### Summary of Recommendations

- As the site is within a Bushfire Prone Area (BPA) appropriate siting of dwellings and allotments in order to achieve appropriate setbacks from unmanaged vegetation will be required.
- No development should occur within the PAO due to the objectives and future intended use of this land as outlined under this overlay.
- Attempt to incorporate existing patches of remnant indigenous vegetation into areas of open space
- Avoid designing buildings or works that impact on the drainage line
- Avoid placing lots and/or dwellings too close to vegetation that may need to be subsequently cleared to accommodate defensible space requirements under the BPA
- Avoid excessive earthworks within and adjacent to the drainage line
- Avoid creating situations that may increase erosion
- Consider the need to meet the minimum area and dimension requirements for offset plantings, if offsets are to be located on site
- It is recommended that ecological enhancement works be undertaken along the drainage line that do not create areas of classifiable vegetation.
- Revegetation offsets, if intended to be created on site, may not account for the total offset required. Therefore, offsets for the loss of vegetation on site are recommended to be sourced off site, through native vegetation credit traders.
- Weed infestations should be controlled where areas of open space are to be created. A weed management program will need to be prepared to manage weeds across areas of open space and any areas where offsets are to be established. This should include areas along the drainage line.
- Weed seed should not be spread onto, or out of, the site during construction works. This requirement should be included in any weed management program that is prepared for the site.

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## Appendix 1. Flora recorded at study site

Flora species recorded in the study area during fieldwork.

\* denotes exotic species

# denotes native species extended beyond natural range

### MONOCOTYLEDONS

#### Cyperaceae

\* *Cyperus eragrostis*

Drain Flat-sedge

*Eleocharis acuta*

Common Spike-sedge

#### Hydrocharitaceae

*Ottelia ovalifolia* subsp. *ovalifolia*

Swamp Lily

#### Juncaceae

\* *Juncus articulatus* subsp. *articulatus*

Jointed Rush

*Juncus bufonius*

Toad Rush

*Juncus pallidus*

Pale Rush

*Juncus subsecundus*

Finger Rush

#### Poaceae

*Austrostipa* spp.

Spear Grass

\* *Avena barbata*

Bearded Oat

\* *Bromus rubens*

Red Brome

\* *Cenchrus clandestinus*

Kikuyu

\* *Cynodon dactylon* var. *dactylon*

Couch

\* *Cynosurus echinatus*

Rough Dog's-tail

\* *Dactylis glomerata*

Cocksfoot

\* *Holcus lanatus*

Yorkshire Fog

\* *Hordeum secalinum*

Knotted Barley-grass

*Lachnagrostis filiformis* s.l.

Common Blown-grass

\* *Lolium perenne*

Perennial Rye-grass

\* *Nassella hyalina*

Cane Needle-grass

\* *Nassella neesiana*

Chilean Needle-grass

\* *Nassella trichotoma*

Serrated Tussock

\* *Paspalum dilatatum*

Paspalum

\* *Paspalum distichum*

Water Couch

\* *Phalaris aquatica*

Toowoomba Canary-grass

*Rytidosperma caespitosum*

Common Wallaby-grass

*Rytidosperma racemosum* var. *racemosum*

Slender Wallaby-grass

\* *Sporobolus africanus*

Rat-tail Grass

\* *Vulpia bromoides*

Squirrel-tail Fescue

### DICOTYLEDONS

#### Asteraceae

\* *Cirsium vulgare*

Spear Thistle

\* *Helminthotheca echioides*

Ox-tongue

\* *Leontodon taraxacoides* subsp. *taraxacoides*

Hairy Hawkbit

\* *Sonchus asper* s.l.

Rough Sow-thistle

\* *Sonchus oleraceus*

Common Sow-thistle

#### Brassicaceae

\* *Hirschfeldia incana*

Buchan Weed

#### Caryophyllaceae

\* *Sagina procumbens*

Spreading Pearlwort

**Fabaceae**

\* *Lotus angustissimus*

Slender Bird's-foot Trefoil

\* *Trifolium angustifolium* var. *angustifolium*

Narrow-leaf Clover

\* *Ulex europaeus*

Gorse

**Haloragaceae**

*Myriophyllum* spp.

Water Milfoil

**Lythraceae**

*Lythrum hyssopifolia*

Small Loosestrife

**Plantaginaceae**

\* *Plantago lanceolata*

Ribwort

**Polygonaceae**

\* *Rumex pulcher* subsp. *pulcher*

Fiddle Dock

**Rosaceae**

\* *Prunus* spp.

Prunus

\* *Rosa rubiginosa*

Sweet Briar

**Solanaceae**

\* *Lycium ferocissimum*

African Box-thorn

## Appendix 2. Potentially occurring significant flora species

Table 10. Potentially occurring State and Nationally Significant flora species within 5 km (VBA 2014)

			<u>Status Code</u>							
			<b>Victorian Rare or Threatened Species (VROTS) (DEPI 2013)</b> EX: Extinct, RX: Regionally Extinct, WX: Extinct in the Wild, CR: Critically Endangered, EN: Endangered, VU: Vulnerable, NT: Near Threatened, DD: Data Deficient				<b>EPBC Act 1999 conservation status</b> EX: Extinct, CR: Critically endangered, EN: Endangered, VU: Vulnerable and CD: Conservation dependant. <b>FFG Act 1988 status</b> L: Listed, N: Nominated, I: Invalid or ineligible and D: Delisted			
EPBC	FFG	VROT	Scientific name	Common name	Source Database	No. records	Date last record	Likelihood of occurrence	Habitat/species notes	Likelihood Reasoning
f	e		<i>Eucalyptus leucoxylon subsp. bellarinensis</i>	Bellarine Yellow-gum	VBA	6	2010	Low	Endemic to Victoria. The Bellarine Peninsula supports the only known locations of this subspecies. It occurs in dry coastal and near coastal habitats and in the Grassy Woodland EVC. It prefers heavy clay soils that are waterlogged in winter. (DSE 2003)	None recorded on site. Unlikely that species was overlooked
V	f	v	<i>Glycine latrobeana</i>	Clover Glycine	DEPI	0	none	Low	Widespread, infrequent populations in southern Victoria (Walsh and Entwisle 1996). Plains Grassland and Woodlands in moist well drained soils (Australian Plants Society Maroondah 2001).	No records within 5km, very degraded habitat on site, high herbivore pressure
		v	<i>Geranium solanderi var. solanderi s.s.</i>	Austral Crane's-bill	DEPI	0	none	Low	An uncommon species of damp to dryish usually sheltered sites in grassy woodlands. Often along drainage line or in seepage areas (Walsh and Entwisle 1999, p. 224).	No records within 5km, very degraded habitat on site, high herbivore pressure
		v	<i>Coronidium scorpioides 'aff. rutidolepis (Lowland Swamp</i>	Pale Swamp Everlasting	DEPI	0	none	Low	Moist well drained sites in open grassy forest or woodland. Frequent, widespread populations across much of Victoria, excluding the north-west (Walsh and Entwisle 1999).	No records within 5km, very degraded habitat on site, high herbivore pressure habitat on site

## Appendix 3. Potentially occurring significant fauna species

Table 11. Potentially occurring State and Nationally Significant fauna species

<u>Status Code</u>												
<b>International Treaty</b> JAMBA / CAMBA, ROKAMBA and/or Bonn Convention Listed Species						<b>FFG Act 1988 status</b> L: Listed, N: Nominated, I: Invalid or ineligible and D: Delisted						
<b>Migratory/Marine (EPBC Act)</b> M1: Migratory Listed Species under the EPBC Act; M2: Marine Listed Species under the EPBC Act.						<b>Victorian Rare or Threatened Species (VROTS) (DSE 2013)</b> EX: Extinct, RX: Regionally Extinct, WX: Extinct in the Wild, CR: Critically Endangered, EN: Endangered, VU: Vulnerable, NT: Near Threatened, DD: Data Deficient						
<b>EPBC Act 1999 conservation status</b> EX: Extinct, CR: Critically endangered, EN: Endangered, VU: Vulnerable and CD: Conservation dependant.						*database records are from the Victorian Biodiversity Atlas (VBA) or from DEPI Transition Support (DEPI)						
Int Treaty	Mig/Mar	EPBC	FFG	VROT	Scientific name	Common name	Database*	No. local records	Date last record	Likelihood occurrence	Habitat notes	Likelihood Reasoning
			L	VU	<i>Accipiter novaehollandiae novaehollandiae</i>	Grey Goshawk	VBA/DEPI	2	2001	Low	The Grey Goshawk has a stronghold in Victoria, particularly the white form, in the Otway Ranges, where wet forests and gullies containing Mountain Grey Gum adjoin partly cleared farmlands. They occur in lower densities in similar habitats in the Strzelecki Ranges, Gippsland Plains and Otway Plains. Elsewhere in the State they are occasionally seen in woodlands, dry forests, suburban parks and wooded farmlands (Marchant and Higgins 1993).	Has the potential to use the site for foraging, low quality habitat
				VU	<i>Anas rhynchos</i>	Australasian Shoveler	DEPI	0	none	Low	The Australasian Shoveler occurs mainly on large well vegetated wetlands and lakes, occasionally including areas with saline waters. Populations are found in higher numbers on permanent, well-vegetated freshwater swamps with areas of open water. This species nests in grass nests on the ground, usually in dense cover and near water (Marchant and Higgins 1990; Pizzey and Knight 2007).	No records within 5km, degraded habitat on site

Int Treaty	Mig/Mar	EPBC	FFG	VROT	Scientific name	Common name	Database*	No. local records	Date last record	Likelihood occurrence	Habitat notes	Likelihood Reasoning
			L	EN	<i>Ardea intermedia</i>	Intermediate Egret	DEPI	0	none	Low	The Intermediate Egret occurs in the shallows of mainly grassy inland wetlands, flooded pastures or grasslands. They only occasionally visit coastal wetlands and are generally rare in Victoria. They are sometimes seen foraging in pastures with grazing cattle. This species builds platform nests which are built in trees in riverine forest, swamp woodland and mangroves (Pizzey and Knight 2007).	No records within 5km, degraded habitat on site
C, J	M1, M2		L	VU	<i>Ardea modesta</i>	Eastern Great Egret	VBA/DEPI	1	1974	Low	Eastern Great Egret is widespread in Australia and has been observed in a wide range of wetland habitats including swamps and marshes; margins of rivers and lakes; damp or flooded grasslands, pastures or agricultural lands; reservoirs; sewage treatment ponds; drainage channels; salt pans and salt lakes; salt marshes; estuarine mudflats, tidal streams; mangrove swamps; coastal lagoons; and offshore reefs (DEWHA 2010).	Low number of records within 5km, degraded habitat on site
				VU	<i>Aythya australis</i>	Hardhead	DEPI	0	none	Low	Hardheads inhabit deep to shallow wetlands with open water and fringing emergent vegetation (Pizzey and Knight 2007). The species feeds by diving in deep water and occasionally by dabbling just under the water surface (Rogers 1990). Nests are built in thick vegetation (e.g. reeds, lignum, cumbungi), usually over water (Halse <i>et al.</i> 2005; Rogers 1990). These birds are most common in the wetland systems of inland Australia (Halse <i>et al.</i> 2005). Birds do visit Victoria from these areas in spring and summer, returning as the northern wetlands is replenished by rain (Halse <i>et al.</i> 2005). However, some birds are present in Victoria all year round depending on the suitability of the wetland (Pizzey and Knight 2007).	No records within 5km, degraded habitat on site

Int Treaty	Mig/Mar	EPBC	FFG	VROT	Scientific name	Common name	Database*	No. local records	Date last record	Likelihood occurrence	Habitat notes	Likelihood Reasoning
				VU	<i>Biziura lobata</i>	Musk Duck	VBA/DEPI	1	1974	Low	Usually seen in small numbers on the deep waters of well vegetated fresh to saline lakes, swamps and occasionally shallow inlets and bays. Nests formed in low vegetation in areas sheltered by surrounding vegetation (Marchant and Higgins 1990; Pizzey and Knight 2007).	Low number of records within 5km, no recent records, degraded habitat on site
		EN	L	EN	<i>Botaurus poiciloptilus</i>	Australasian Bittern	VBA/DEPI	1	1974	Low	This species is part nocturnal and forages over water in dense cover, sometimes from platforms in wetland vegetation. Habitat is usually tall reedbeds, sedges, rushes, cumbungi or lignum. Also occurs on rice fields, drains in tussocky paddocks and occasionally on saltmarshes and brackish wetlands. Nests are shallow saucers on trampled water plants (Pizzey and Knight 2007).	Low number of records within 5km, no recent records, degraded habitat on site
			L	VU	<i>Calamanthus pyrrhopygius</i>	Chestnut-rumped Heathwren	DEPI	0	none	Low	Found in heathy woodlands, scrublands and box/ironbark forests in coastal south east Australia (Pizzey and Knight 2007).	No records within 5km, no habitat on site
				VU	<i>Falco subniger</i>	Black Falcon	DEPI	0	none	Low	The Black Falcon has a stronghold in inland Australia. Most Victorian records come from the lowlands and only occasionally from the foothills. It occurs mainly over croplands, grasslands and wooded farmlands. To catch flushed prey, they sweep low over croplands and grasslands and are often attracted by smoke from grassfires and late-summer burning off. This species nests in trees in old stick-nests of other birds (Marchant and Higgins 1993; Pizzey and Knight 2007).	Has the potential to use the site for foraging, low quality habitat, no records within 5km
		VU	L	EN	<i>Galaxiella pusilla</i>	Dwarf Galaxias	DEPI	0	none	Low	Occurs in vegetated margins of slow-flowing coastal creek backwaters, drains and swamps, often with dense aquatic macrophytes. Ephemeral sites require seasonal flooding and linkages to other more	No records within 5km, degraded habitat on

Int Treaty	Mig/Mar	EPBC	FFG	VROT	Scientific name	Common name	Database*	No. local records	Date last record	Likelihood occurrence	Habitat notes	Likelihood Reasoning
											permanent populations for population replenishment, therefore wetland connectivity may be critical to survival. They occur across most of southern Victoria, however are sparse in the landscape and more abundant in the south-east of the state, most specifically in Mornington Peninsula & Western Port areas (Allen <i>et al.</i> 2002; Museum Victoria 2006).	site
			L	VU	<i>Grantiella picta</i>	Painted Honeyeater	DEPI	0	none	Low	The Painted Honeyeater is a summer migrants to Victoria. They are generally found to inhabit box-ironbark, Broad-leaved Peppermint and Red Stringybark forests and box-buloke woodlands in the northern foothills of the great Divide. May also occur in Red Ironbark, Red Box forests in southern Victoria. They are occasionally found along Murray River valley to Hattah-Kulkyne NP where they inhabit Black Box woodlands. This species is usually found in open stands of old eucalypts that are infested with mistletoes (Higgins <i>et al.</i> 2001).	No records within 5km, degraded habitat on site
		EN	L	NT	<i>Isoodon obesulus obesulus</i>	Southern Brown Bandicoot	VBA	1	1981	Low	The Southern Brown Bandicoot is both active during the day and night. It is found in forest, heath and shrub communities. It shelters in a nest of vegetation beneath dense cover, it eats fungi, tubers and arthropods (Menkhorst and Knight 2001; Paull 2008).	Low number of local records, no suitable habitat on site
				EN	<i>Ixobrychus dubius</i>	Little Bittern	DEPI	0	none	Low	Occurs mainly in dense emergent vegetation in freshwater swamps, lakes and watercourses, where forage in shallow water or from supporting emergent or aquatic vegetation over deep water. Tolerate brackish-saline waters in mangrove swamps, Juncus-dominated saltmarsh, and wooded margins of coastal lagoons. Nests in densely vegetated freshwater wetlands; invariably over water; in sedge, reeds or rush, either in pure stands or interspersed in	No records within 5km, degraded habitat on site

Int Treaty	Mig/Mar	EPBC	FFG	VROT	Scientific name	Common name	Database*	No. local records	Date last record	Likelihood occurrence	Habitat notes	Likelihood Reasoning
		EN	L	EN	<i>Lathamus discolor</i>	Swift Parrot	VBA	6	1996	Low	woodland thickets. Most records from the Murray-Darling Basin (Marchant and Higgins 1990, p. 1040). The Swift Parrot is a winter migrant to Victoria (Swift Parrot Recovery Team 2001). Arriving from their breeding areas in Tasmania, however small numbers of non-breeding birds may remain here during summer (Higgins 1999; Swift Parrot Recovery Team 2001). They are nomadic, and follow the flowering of trees and psyllid infestations. In Victoria their distribution is centred on box-ironbark forests, but they are often seen in town parks and occur sporadically elsewhere in dry forests, dry woodlands and wooded farmlands but are seldom seen in treeless areas, rainforests or wet forests (Higgins 1999; Pizzey and Knight 2007). Feed mainly in winter-flowering plants, especially Red Ironbarks and ornamental trees and shrubs (Higgins 1999; Swift Parrot Recovery Team 2001).	No trees on site, low quality foraging habitat.
			L	VU	<i>Lewinia pectoralis</i>	Lewin's Rail	DEPI	0	none	Low	Inhabits densely vegetated, fresh, brackish or saline wetlands, usually with areas of standing water. Use long tussocky grass, reeds, rushes, sedges or bracken and are occasionally found amongst tangled clumps of weeds such as Blackberries and Lantana (Marchant and Higgins 1993).	No records within 5km, degraded habitat on site
		VU	L	EN	<i>Litoria raniformis</i>	Growling Grass Frog	VBA/DEPI	1	1788	Low	The species often inhabits water bodies with a diverse assemblage of aquatic vegetation, including emergent species such as sedges ( <i>Gahnia</i> spp.), submergent species such as curly pondweed ( <i>Potamogeton</i> spp.), floating species such as water ribbon ( <i>Triglochin</i> spp.) and filamentous algae (Hamer and Organ 2006; Heard <i>et al.</i> 2004). The aquatic vegetation provides sites for male frogs to call from, sites for eggs to be deposited and	No recent records, degraded habitat on site - may be present during seasonal movement

Int Treaty	Mig/Mar	EPBC	FFG	VROT	Scientific name	Common name	Database*	No. local records	Date last record	Likelihood occurrence	Habitat notes	Likelihood Reasoning
											relatively safe development, and food and shelter for tadpoles. Dense submergent vegetation is especially important to protect eggs and tadpoles from predation (Heard <i>et al.</i> 2004). However, it is also known to occur in ditches, dams and swamps or sheltering under discarded debris near those sites (Tyler and Knight 2009, pp. 38-39).	
			L	VU	<i>Lophoictinia isura</i>	Square-tailed Kite	DEPI	0	none	Low	Found in heathlands, woodlands, forests; tropical and sub tropical rainforest; timbered watercourses; hills and gorges. Nest are large and loose made of sticks 15-25m up in leafy tree. Range in coastal and sub-coastal south east Australia including Murray River region in SA. (Pizzey and Knight 2007)	No records within 5km, no suitable habitat
		VU	L	VU	<i>Nannoperca obscura</i>	Yarra Pigmy Perch	VBA	3	1989	Low	Inhabits small lakes and streams, preferring habitats with flowing water and abundant aquatic vegetation for shelter. It is found in coastal drainages from southern SA to Frankston, Victoria (Allen <i>et al.</i> 2002).	No suitable habitat on site, low number of local records
			L	EN	<i>Ninox connivens connivens</i>	Barking Owl	VBA/DEPI	1	1993	Low	Occurs in dry woodlands, wooded farmlands and dry forests in the 500-800mm annual rainfall zone and extend into semi-arid areas in River Red Gum forests along the Murray River. Hollow dependent species (Higgins 1999; Pizzey and Knight 2007).	Has the potential to use the site for foraging, no habitat, one record within 5km
			L	EN	<i>Oxyura australis</i>	Blue-billed Duck	VBA/DEPI	14	1978	Low	This species inhabits deep, permanent, well-vegetated swamps, but at times (especially in winter) may occur in large numbers on large open wetlands. The Blue-billed Duck catches food while diving or occasionally by feeding from the water surface. Their nests are built on trampled swamp vegetation around the base of established stands of reeds/rushes, often over water or on small islands (Marchant and Higgins 1990; Pizzey and Knight 2007).	Many outdated local records, habitat not well vegetated, degraded habitat

Int Treaty	Mig/Mar	EPBC	FFG	VROT	Scientific name	Common name	Database*	No. local records	Date last record	Likelihood occurrence	Habitat notes	Likelihood Reasoning
			L	VU	<i>Porzana pusilla palustris</i>	Baillon's Crake	VBA/DEPI	6	1985	Low-Moderate	This species returns to northern Victoria in spring, but few details on migration. It inhabits freshwater wetlands and floodwaters usually containing floating plants or tall emergent vegetation. The Baillon's Crake feeds in shallow water, mud and emergent aquatic plants. It has been found to nest in clumps or tussocks of vegetation surrounded by water (Marchant and Higgins 1993; Pizey and Knight 2007).	Many local records, degraded habitat
				VU	<i>Pseudemoia rawlinsoni</i>	Glossy Grass Skink	DEPI	0	none	Low	Inhabits swamp and lake edges, salt-marshes and boggy creeks with dense vegetation (Wilson and Swan 2008).	No records within 5km, degraded habitat
			L	EN	<i>Pseudophryne bibronii</i>	Brown Toadlet	DEPI	0	none	Low	Frequent dry forest, woodland, shrubland and grassland; sheltering under leaf-litter and other debris in moist soaks and depressions. Eggs are spawned in shallow burrows (or nets) under litter, in low areas, near water, that will later be flooded. Tadpoles are aquatic in ponds, flooded grassland and roadside ditches (Hero <i>et al.</i> 1991).	No records within 5km, degraded habitat
				VU	<i>Pseudophryne semimarmorata</i>	Southern Toadlet	DEPI	0	none	Low	The Southern Toadlet can be found in dry forest, woodland, shrubland, grassland and heaths. It shelters under leaf litter and other debris in moist soaks and depressions. Their eggs are spawned in shallow burrows under organic litter in low areas close to water (Hero <i>et al.</i> 1991).	No records within 5km, degraded habitat
		VU	L	VU	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	VBA	1	1973	Low	Eastern coastal Australia from Gladstone in Qld to South Gippsland and Melbourne in Vic, rare influxes further west and south. Rarely more than 200km inland. In warmer months gathers in very large camps, usually in dense forest in gullies; population more dispersed in winter. Size of camps fluctuates in response to local food supplies; in south numbers	Outdated record within 5km, no habitat on site

Int Treaty	Mig/Mar	EPBC	FFG	VROT	Scientific name	Common name	Database*	No. local records	Date last record	Likelihood occurrence	Habitat notes	Likelihood Reasoning
											fluctuate in regular pattern, being highest in late summer-autumn and lowest in winter (Menkhorst and Knight 2001).	
		VU	L	EN	<i>Sternula nereis nereis</i>	Fairy Tern	VBA	1	1974	Low	Mostly sheltered coastal embayments, including harbours, lagoons, inlets, bays, estuaries and on ocean beaches. Also fresh or saline near-coastal terrestrial wetlands, including lakes and salt-ponds. Nests above high-water mark on sheltered beaches, spits, bars, banks and ridges, usually of sand but also of shell-grit or coral; either on mainland or on inshore islands (Higgins and Davies 1996).	Low number of outdated local records, degraded habitat
		CR	L	EN	<i>Synemon plana</i>	Golden Sun Moth	DEPI	0	none	Low - Moderate	It is generally found in temperate grasslands and open grassy woodlands where the ground layer is dominated by native Wallaby Grass. Optimal habitat is dominated by wallaby grasses <i>Austrodanthonia</i> spp with an open tussock structure. It has also been recorded in grasslands dominated by Kangaroo Grass <i>Themeda triandra</i> and exotic dominated grasslands (i.e. Chilean Needlegrass)(O'Dwyer and Attiwill 2000).	No records within 5km, degraded habitat on site
				EN	<i>Varanus varius</i>	Lace Monitor	DEPI	0	none	Low	Occurs in well-timbered areas, from dry woodlands to cool temperate southern forests. Arboreal, ascending large trees when disturbed. Forages widely. Clutches of eggs are laid in arboreal or terrestrial termite mounds (Wilson and Swan 2008).	No records within 5km, no suitable habitat

## Appendix 4. Biodiversity assessment report provided by DEPI Transition Support (DEPI 2014d).

### Biodiversity impact and offset requirements report

This report provides additional biodiversity information for moderate and high risk-based pathway applications for permits to remove native vegetation under clause 52.16 or 52.17 of the planning schemes in Victoria

**Date of issue:** 14/03/2014  
**Time of issue:** 2:40 pm

<b>Project ID</b>	35_Hams_rd
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#### Summary of marked native vegetation

<b>Risk-based pathway</b>	Moderate
<b>Total extent</b>	4.833 ha
Remnant patches	4.833 ha
Scattered trees	0 trees
<b>Location risk</b>	A
<b>Strategic biodiversity score of all marked native vegetation</b>	0.386

#### Offset requirements if a permit is granted

If a permit is granted to remove the marked native vegetation, a requirement to obtain a native vegetation offset will be included in the permit conditions. The offset must meet the following requirements:

<b>Offset type</b>	<b>General offset</b>
<b>General offset amount (general biodiversity equivalence units)</b>	0.392 general units
<b>General offset attributes</b>	
Vicinity	<b>Corangamite Catchment Management Authority (CMA) or the Local Municipal District where clearing takes place</b>
Minimum strategic biodiversity score	0.308 <sup>1</sup>

See Appendices 1 and 2 for details in how offset requirements were determined.

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

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

## Next steps

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

If you wish to remove the marked native vegetation you are required to apply for a permit from your local council. The biodiversity assessment report from NVIM and this biodiversity impact and offset report should be submitted with your application for a permit to remove native vegetation you plan to remove, lop or destroy.

The Biodiversity assessment report generated by the tool within NVIM provides the following information:

- The location of the site where native vegetation is to be removed.
- The area of the patch of native vegetation and/or the number of any scattered trees to be removed.
- Maps or plans containing information set out in the *Permitted clearing of native vegetation – Biodiversity assessment guidelines*
- The risk-based pathway of the application for a permit to remove native vegetation

This report provides the following information to meet application requirements for a permit to remove native vegetation:

- Confirmation of the risk-based pathway of the application for a permit to remove native vegetation
- The strategic biodiversity score of the native vegetation to be removed
- Information to inform the assessment of whether the proposed removal of native vegetation will have a significant impact on Victoria's biodiversity, with specific regard to the proportional impact on habitat for any rare or threatened species.
- The offset requirements should a permit be granted to remove native vegetation.

Additional application requirements must be provided with an application for a permit to remove native vegetation in the moderate or high risk-based pathways. These include:

- A habitat hectare assessment report of the native vegetation that is to be removed
- A statement outlining what steps have been taken to ensure that impacts on biodiversity from the removal of native vegetation have been minimised
- An offset strategy that details how a compliant offset will be secured to offset the biodiversity impacts of the removal of native vegetation.

Refer to the *Permitted clearing of native vegetation – Biodiversity assessment guidelines* and for a full list and details of application requirements.

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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 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.

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## Appendix 1 – Biodiversity impact of removal of native vegetation

### Habitat hectares

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

Habitat zone	Site assessed condition score	Extent (ha)	Habitat hectares
HZ1a	0.140	1.143	0.160
HZ1b	0.140	3.158	0.442
HZ2a	0.140	0.227	0.032
HZ1c	0.140	0.034	0.005
HZ1d	0.140	0.197	0.028
HZ1e	0.140	0.018	0.003
HZ2d	0.180	0.027	0.005
HZ2c	0.180	0.012	0.002
HZ2b	0.180	0.016	0.003
<b>TOTAL</b>			<b>0.679</b>

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

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

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



### Clearing site biodiversity equivalence score(s)

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

Habitat zone	Habitat hectares	Strategic biodiversity score	General biodiversity equivalence score (GBES)
HZ1a	0.160	0.396	0.063
HZ1b	0.442	0.362	0.160
HZ2a	0.032	0.480	0.015
HZ1c	0.005	0.547	0.003
HZ1d	0.028	0.575	0.016
HZ1e	0.003	0.614	0.002
HZ2d	0.005	0.343	0.002
HZ2c	0.002	0.100	0.000
HZ2b	0.003	0.302	0.001

### Mapped rare or threatened species' habitats on site

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

Species number	Species common name	Species scientific name
10045	Lewin's Rail	<i>Lewinia pectoralis pectoralis</i>
10050	Baillon's Crake	<i>Porzana pusilla palustris</i>
10186	Intermediate Egret	<i>Ardea intermedia</i>
10187	Eastern Great Egret	<i>Ardea modesta</i>
10195	Little Bittern	<i>Ixobrychus minutus dubius</i>
10197	Australasian Bittern	<i>Botaurus poiciloptilus</i>
10212	Australasian Shoveler	<i>Anas rhynchotis</i>
10215	Hardhead	<i>Aythya australis</i>
10216	Blue-billed Duck	<i>Oxyura australis</i>
10217	Musk Duck	<i>Biziura lobata</i>
10220	Grey Goshawk	<i>Accipiter novaehollandiae novaehollandiae</i>
10230	Square-tailed Kite	<i>Lophoictinia isura</i>
10238	Black Falcon	<i>Falco subniger</i>
10246	Barking Owl	<i>Ninox connivens connivens</i>
10498	Chestnut-rumped Heathwren	<i>Calamanthus pyrrhopygius</i>
10598	Painted Honeyeater	<i>Grantiella picta</i>
12283	Lace Monitor	<i>Varanus varius</i>
12683	Glossy Grass Skink	<i>Pseudemoia rawlinsoni</i>
13117	Brown Toadlet	<i>Pseudophryne bibronii</i>
13125	Southern Toadlet	<i>Pseudophryne semimarmorata</i>
13207	Growling Grass Frog	<i>Litoria raniformis</i>
15021	Golden Sun Moth	<i>Synemon plana</i>
4701	Dwarf Galaxias	<i>Galaxiella pusilla</i>
501456	Clover Glycine	<i>Glycine latrobeana</i>
502145	Giant Honey-myrtle	<i>Melaleuca armillaris subsp. armillaris</i>
504655	Pale Swamp Everlasting	Coronidium scorpioides 'aff. rutidolepis (Lowland Swamps)' variant
505337	Austral Crane's-bill	<i>Geranium solanderi var. solanderi s.s.</i>

## Appendix 2 – Offset requirements detail

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

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

Offsets also have required attributes:

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

The offset requirements for your proposal are as follows:

Offset type	Clearing site biodiversity equivalence score	Risk multiplier	Offset requirements	
			Offset amount (biodiversity equivalence units)	Offset attributes
General	0.262 GBES	1.5	0.392 general units	Offset must be within Corangamite CMA or the same Municipal District as the vegetation removal Offset must have a minimum strategic biodiversity score of 0.308

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

### Appendix 3 – Images of marked native vegetation

Image 1. Native vegetation location risk map

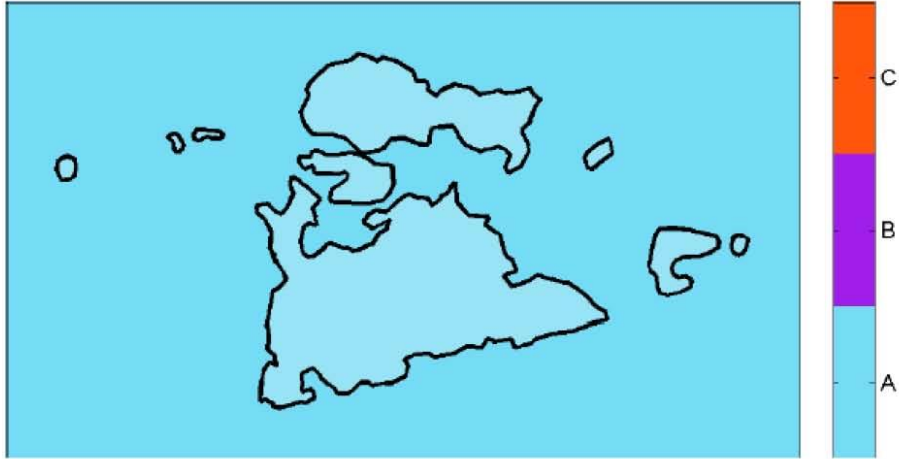


Image 2. Strategic biodiversity score map

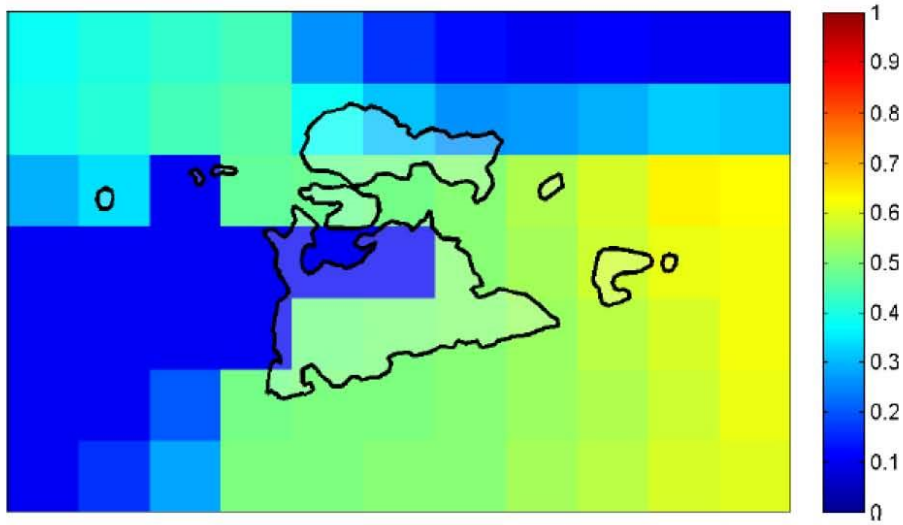




Image 3. Aerial photograph showing marked native vegetation



## Glossary

<b>Condition score</b>	This is the site-assessed condition score for the native vegetation. Each habitat zone in the clearing proposal is assigned a condition score according to the habitat hectare assessment method. This information has been provided by or on behalf of the applicant in the GIS file.
<b>Dispersed habitat</b>	A dispersed species habitat is a habitat for a rare or threatened species whose habitat is spread over a relatively broad geographic area greater than 2,000 hectares.
<b>General biodiversity equivalence score</b>	<p>The general biodiversity equivalence score quantifies the relative overall contribution that the native vegetation to be removed makes to Victoria's biodiversity. The general biodiversity equivalence score is calculated as follows:</p> $\text{General biodiversity equivalence score} = \text{habitat hectares} \times \text{strategic biodiversity score}$
<b>General offset amount</b>	<p>This is calculated by multiplying the general biodiversity equivalence score of the native vegetation to be removed by the risk factor for general offsets. This number is expressed in general biodiversity equivalence units and is the amount of offset that is required to be provided should the application be approved. This offset requirement will be a condition to the permit for the removal of native vegetation.</p> $\text{Risk adjusted general biodiversity equivalence score} = \text{general biodiversity equivalence score clearing} \times 1.5$
<b>General offset attributes</b>	General offset must be located in the same Catchment Management Authority boundary or Municipal District (local council) as the clearing site. They must also have a strategic biodiversity score that is at least 80 per cent of the score of the clearing site.
<b>Habitat hectares</b>	<p>Habitat hectares is a site-based measure that combines extent and condition of native vegetation. The habitat hectares of native vegetation is equal to the current condition of the vegetation (condition score) multiplied by the extent of native vegetation. Habitat hectares can be calculated for a remnant patch or for scattered trees or a combination of these two vegetation types. This value is calculated for each habitat zone using the following formula:</p> $\text{Habitat hectares} = \text{total extent (hectares)} \times \text{condition score}$
<b>Habitat importance score</b>	The habitat importance score is a measure of the importance of the habitat located on a site for a particular rare or threatened species. The habitat importance score for a species is a weighted average value calculated from the habitat importance map for that species. The habitat importance score is calculated for each habitat zone where the habitat importance map indicates that species habitat occurs.
<b>Habitat zone</b>	<p>Habitat zone is a discrete contiguous area of native vegetation that:</p> <ul style="list-style-type: none"> <li>• is of a single Ecological Vegetation Class</li> <li>• has the same measured condition.</li> </ul>



**Highly localised habitat** A highly localised habitat is habitat for a rare or threatened species that is spread across a very restricted area (less than 2,000 hectares). This can also be applied to a similarly limited sub-habitat that is disproportionately important for a wide-ranging rare or threatened species. Highly localised habitats have the highest habitat importance score (1) for all locations where they are present.

**Minimum strategic biodiversity score** The minimum strategic biodiversity score is an attribute for a general offset. The strategic biodiversity score of the offset site must be at least 80 per cent of the strategic biodiversity score of the native vegetation to be removed. This is to ensure offsets are located in areas with a strategic value that is comparable to, or better than, the native vegetation to be removed. Where a specific and general offset is required, the minimum strategic biodiversity score relates only to the habitat zones that require the general offset.

**Offset risk factor** There is a risk that the gain from undertaking the offset will not adequately compensate for the loss from the removal of native vegetation. If this were to occur, despite obtaining an offset, the overall impact from removing native vegetation would result in a loss in the contribution that native vegetation makes to Victoria's biodiversity. To address the risk of offsets failing, an offset risk factor is applied to the calculated loss to biodiversity value from removing native vegetation.

$$\text{Risk factor for general offsets} = 1.5$$

$$\text{Risk factor for specific offset} = 2$$

**Offset type** The specific-general offset test determines the offset type required. When the specific-general offset test determines that the native vegetation removal will have an impact on one or more rare or threatened species habitat above the set threshold of 0.005 per cent, a specific offset is required. This test is done at the permit application level. A general offset is required when a proposal to remove native vegetation is not deemed, by application of the specific-general offset test, to have an impact on any habitat for any rare or threatened species above the set threshold of 0.005 per cent. All habitat zones that do not require a specific offset will require a general offset.

**Proportional impact on species** This is the outcome of the specific-general offset test. The specific-general offset test is calculated across the entire proposal for each species on the native vegetation permitted clearing species list. If the proportional impact on a species is above the set threshold of 0.005 per cent then a specific offset is required for that species.

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

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



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

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

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

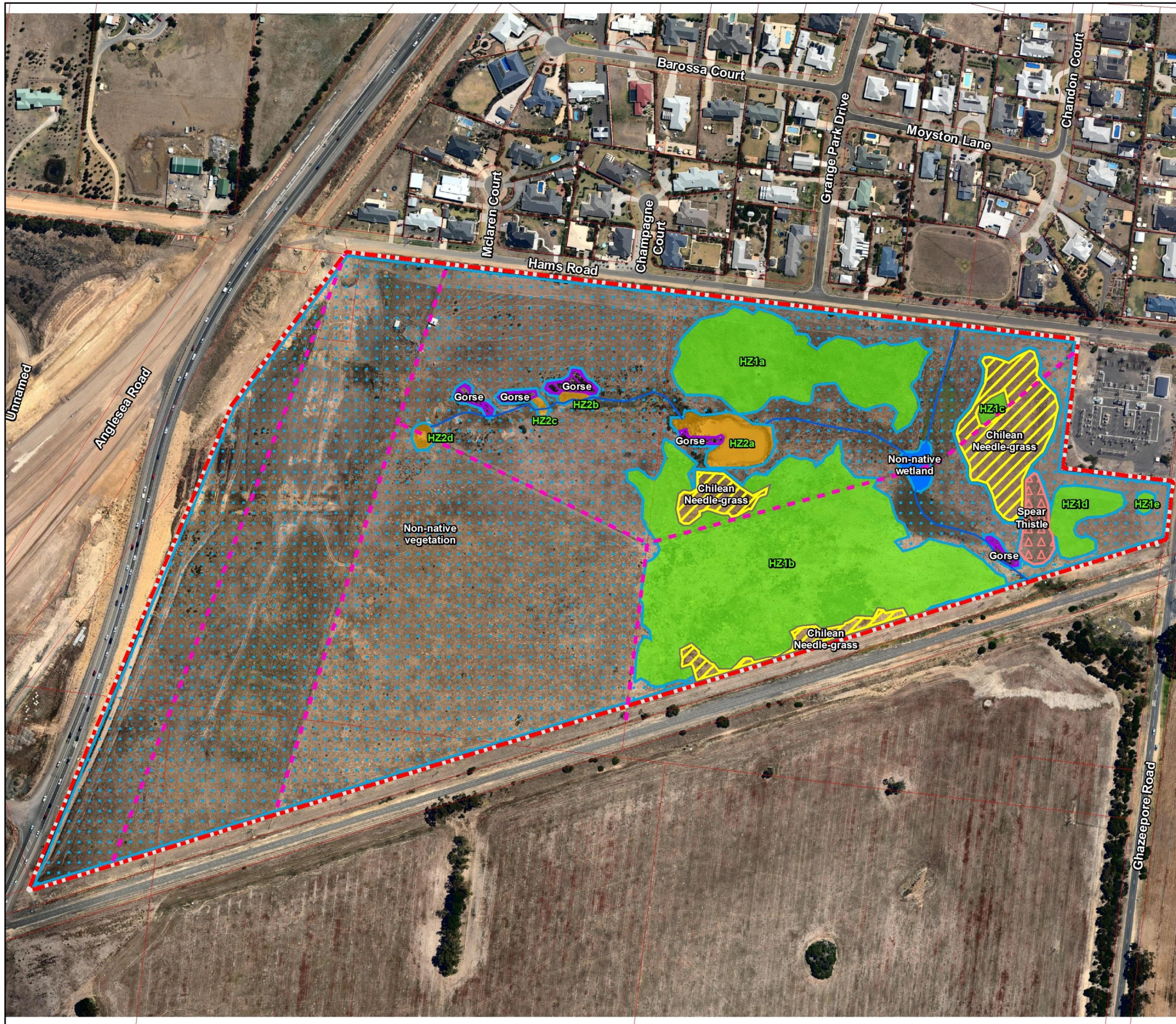
**Strategic biodiversity score** This is the weighted average strategic biodiversity score of the marked native vegetation. The strategic biodiversity score has been calculated from the *Strategic biodiversity map* for each habitat zone .  
The strategic biodiversity score of native vegetation is a measure of the native vegetation's importance for Victoria's biodiversity, relative to other locations across the landscape. The *Strategic biodiversity map* is a modelled layer that prioritises locations on the basis of rarity and level of depletion of the types of vegetation, species habitats, and condition and connectivity of native vegetation.

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

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

# Map 1. Existing conditions

35 Hams Rd, Waurin Ponds

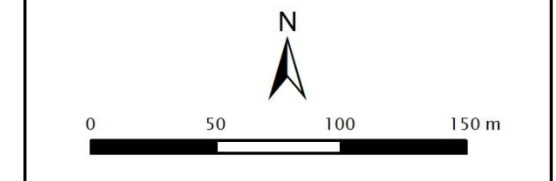


**Legend**

- Waterway
- Internal fence
- Study site
- Parcels
- Non-native wetland
- Non-native vegetation
- Chilean Needle-grass
- Gorse
- Spear Thistle
- Grassy Woodland Habitat Zone
- Sedgy Wetland Habitat Zone

**Details**  
 Mapping by: Colin Broughton & Karen McGregor  
 Data Source: Aerial photography courtesy of NearMap

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Scale 1:3,000 (Page size A3)

**Disclaimer**  
 Practical Ecology bears no responsibility for the accuracy and completeness of this information and any decisions or actions taken on the basis of the map. While information appears accurate at publication, nature and circumstances are constantly changing.

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