

NEW STREET, BRIGHTON

FLORA AND FAUNA ASSESSMENT

Department of Health and Human Services



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1. INTRODUCTION

The Department of Health and Human Services engaged Brett Lane & Associates Pty Ltd (BL&A) to conduct a flora and fauna assessment of a 1.5 hectare area of land at New Street, Brighton. The specific area investigated, referred to herein as the 'study area', was bounded by Rusden Street to the north, Brickwork Street and housing development to the east, Elster Creek to the south and New Street to the west. Redevelopment for the commission housing estate is proposed for the study area.

This investigation was commissioned to provide information on the extent and condition of native vegetation in the study area according to Victoria's *Biodiversity assessment guidelines* (DEPI 2013a), as well as any potential impacts on flora and fauna matters listed under the state *Flora and Fauna Guarantee Act 1988* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. This report outlines any implications under relevant national, state and local legislation and policy frameworks.

Specifically, the scope of the investigation included:

- Review of existing information on the flora, fauna and native vegetation of the study area and surrounds (up to 10 km), including:
 - Victorian Biodiversity Atlas administered by the Department of Environment, Land, Water and Planning (DELWP);
 - The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Search Tool; and
 - DELWP Native Vegetation Information Management system (NVIM).
- A site survey involving:
 - Characterisation and mapping of remnant native vegetation on the site;
 - Assessment of native vegetation in accordance with Victoria's *Biodiversity assessment guidelines* (the 'Guidelines') including habitat hectare assessment and/or scattered tree assessment;
 - Compilation of flora and fauna species lists for the site;
 - Assessment of the nature and quality of native fauna habitat; and
 - Assessment of the likelihood of occurrence of EPBC Act and *Flora and Fauna Guarantee Act 1988* (FFG Act) listed flora and fauna on the site.

This report is divided into the following sections:

Section 3 provides the legislative background including details of all relevant Commonwealth, State and local legislation and policies.

Section 4 describes the sources of information, including the methods used for the field survey.

Section 5 presents the assessment results, including details of the native vegetation, flora and fauna of the study area.

Section 6 discusses the regulatory implications of findings and presents mitigation recommendations.

This investigation was undertaken by a team from BL&A, comprising Davide Coppolino (Senior Ecologist), Curtis Doughty (Senior Zoologist) and Inga Kulik (Senior Ecologist & Project Manager).

2. PLANNING AND LEGISLATIVE CONSIDERATIONS

This investigation and report addresses the application on the site of relevant legislation and planning policies that protect biodiversity. Local, state and Commonwealth controls are summarised below.

2.1. Local laws and regulations

Section 111, Part 5 of the *Local Government Act 1989* gives authority to local governments to make local laws for or with respect to any act, matter or thing that it has jurisdiction over under any Act.

Consolidated Local Law No. 2 ‘Neighbourhood Amenity’

Clause 28 (Dangerous Land) of this local law requires that an owner or occupier of land must not cause or allow the land to be kept in a manner which is dangerous or likely to cause danger to life or property, including land which is a haven for vermin, Noxious Weeds (as defined under the CaLP Act), or insects.

2.2. Local planning provisions

The study area is located within the Bayside local government area. It is currently zoned General Residential Zone and is subject to Schedule 1 to this zone in the Bayside Planning Scheme. It is not located within a Bushfire-prone Area.

2.2.1. Overlays

No overlays relevant to this investigation cover the study area.

2.3. State planning provisions

State planning provisions are established under the Victorian *Planning and Environment Act 1987*.

Under Clause 52.17 of all Victorian Planning Schemes a planning permit is required for the destruction, lopping or removal of native vegetation on land which has an area of 0.4 hectares or more (together with all contiguous land in single ownership). This includes the removal of dead trees with a DBH (diameter at breast height or 1.3 metres) of 40 centimetres or more and any individual scattered native plants.

Before issuing a planning permit, Responsible Authorities are obligated to refer to Clause 12.01 (Biodiversity) in the Planning Scheme. This refers in turn to the following online tool and document:

- The Native Vegetation Information Management system (NVIM) (DELWP 2016a) – a database administered by DELWP; and
- *Permitted clearing of native vegetation – Biodiversity assessment guidelines* (DEPI 2013a).

A planning permit under Clause 52.17 of the Bayside Planning Scheme would be required for any removal of native vegetation.

The application of the *Native Vegetation Information Management system* (NVIM) (DELWP 2016a) and *Permitted clearing of native vegetation – Biodiversity assessment guidelines* (the ‘Guidelines’) (DEPI 2013a) are explained further in Appendix 1.

Clause 66.02 of the planning scheme determines the role of DELWP in the assessment of native vegetation removal permit applications. If an application is referred, DELWP may make certain recommendations to the responsible authority in relation to the permit application. An application to remove native vegetation must be referred to DELWP in the following circumstances:

- Applications where the native vegetation to be removed is 0.5 hectares or more (this does not apply to removal of scattered trees only);
- All applications in the high risk-based pathway;
- Applications where a property vegetation plan applies to the site; and
- Applications on Crown land which is occupied or managed by the responsible authority.

2.4. EPBC Act

The *Environment Protection and Biodiversity Conservation Act 1999* protects a number of threatened species and ecological communities that are considered to be of national conservation significance. Any significant impacts on these species require the approval of the Australian Minister for the Environment.

2.5. FFG Act

The Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act) lists threatened and protected species and ecological communities (DELWP 2015a, DELWP 2015b). Any removal of threatened flora species or communities (or protected flora) listed under the FFG Act from public land requires a Protected Flora Licence or Permit under the Act, obtained from DELWP.

2.6. EE Act

One or a combination of a number of criteria may trigger a requirement for a Referral to the Victorian Minister for Planning who will determine if an EES is required according to the “Ministerial Guidelines for Assessment of Environmental Effects under the *Environment Effects Act 1978*” (DSE 2006).

3. EXISTING INFORMATION & METHODS

3.1. Existing information

Existing information used for this investigation is described below.

3.1.1. *Existing reporting and documentation*

The Bayside planning scheme was reviewed as part of the current investigation.

3.1.2. *Native vegetation*

Pre-1750 (pre-European settlement) vegetation mapping administered by DELWP was reviewed to determine the type of native vegetation likely to occur in the study area and surrounds. Information on Ecological Vegetation Classes (EVCs) was obtained from published EVC benchmarks. These sources included:

- Relevant EVC benchmarks for the Gippsland Plain bioregion¹ (DELWP 2015c); and
- Biodiversity Interactive Maps (DELWP 2016b).

3.1.3. *Listed matters*

Existing flora and fauna species records and information about the potential occurrence of listed matters was obtained from an area termed the ‘search region’, defined here as an area with a radius of ten kilometres from the approximate centre point of the study area (coordinates: latitude 37° 53’ 20” S and longitude 144° 59’ 51” E).

A list of the flora and fauna species recorded in the search region was obtained from the Victorian Biodiversity Atlas (VBA), a database administered by DELWP (2016c).

The ‘Vegetation/ Modelled FFG Act Communities’ layer in DELWP’s Biodiversity Interactive Map (DELWP 2016a) was consulted to determine which ecological communities listed as threatened under the FFG Act were modelled to potentially occur in or near the study area.

The online *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Search Tool (Department of the Environment and Energy 2016) was consulted to determine whether nationally listed species or communities potentially occurred in the search region based on habitat modelling.

3.2. Field methods

The field assessment was conducted on the 28th November 2016. During this assessment, the study area was surveyed in detail on foot.

3.2.1. *Native vegetation*

Native vegetation is currently defined in the Victoria Planning Provisions as ‘plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses’. The *Biodiversity assessment guidelines* define native vegetation as belonging to two categories (DEPI 2013a):

¹ A bioregion is defined as “a geographic region that captures the patterns of ecological characteristics in the landscape, providing a natural framework for recognising and responding to biodiversity values”. In general bioregions reflect underlying environmental features of the landscape (DNRE 1997).

- Remnant patch; or
- Scattered trees.

The definitions of these categories are provided below, along with the prescribed DELWP methods to assess them.

Remnant patch

A remnant patch of native vegetation is either:

- An area of native vegetation where at least 25 per cent of the total perennial understorey plant cover is native; and/or
- Any area with three or more native canopy trees² where the canopy foliage cover³ is at least 20 per cent of the area.

Remnant patch condition is assessed using the habitat hectare method (Parkes *et al.* 2003; DSE 2004) whereby components of native vegetation (e.g. tree canopy, understorey and ground cover) are assessed against an EVC benchmark. The score effectively measures the percentage resemblance of the vegetation to its original condition.

The NVIM system (DELWP 2016a) provides modelled condition scores for native vegetation to be used in certain circumstances (see Appendix 1). All wetlands mapped on DELWP's native vegetation layer are treated as a remnant patch.

The condition score assists in defining the biodiversity equivalence score of the native vegetation and the offset targets if removal of native vegetation is approved (see Appendix 1 for details of how scoring works).

Scattered trees

The *Biodiversity assessment guidelines* define scattered trees as a native canopy tree² that does not form part of a remnant patch of native vegetation.

Scattered trees are counted, the species identified and their DBH (diameter at breast height or 1.3 metres above ground) measured or estimated.

3.2.2. Flora species and habitats

Records of flora species were made in conjunction with sampling methods used to undertake habitat hectare assessments of native vegetation described above. Specimens requiring identification using laboratory techniques were collected.

Species protected under the FFG Act were determined by crosschecking against the FFG Act Protected Flora List (DELWP 2015a).

The potential for habitats to support listed flora species was assessed based on the criteria outlined below:

- The presence of suitable habitat for flora species such as soil type, floristic associations and landscape context; and

² A canopy tree is a reproductively mature tree that is greater than 3 metres in height and is normally found in the upper layer of the relevant vegetation type.

³ Foliage cover is the proportion of the ground that is shaded by vegetation foliage when lit from directly above.

- The level of disturbance of suitable habitats by anthropogenic disturbances and invasions by pest plants and animals.

Wherever appropriate, a precautionary approach was adopted in determining the likelihood of occurrence of flora listed under the EPBC Act and/or FFG Act. That is, where insufficient evidence was available on the potential occurrence of a listed species, it is assumed that it could be in an area of suitable habitat.

3.2.3. Fauna species and habitats

The techniques below were used to detect fauna species utilising the study area.

- Incidental searches for mammal scats, tracks and signs (e.g. diggings, signs of feeding and nests/burrows).
- Turning over logs/rocks and other ground debris for reptiles, frogs and mammals.
- Bird observation during the day.
- General searches for reptiles and frogs.

Fauna habitats are described using habitat components that include old-growth trees, fallen timber, leaf litter and surface rocks.

The study area's habitat connectivity (i.e. degree of isolation/fragmentation), including linkages to other habitats in the region, was determined using field observations, recent aerial photography and DELWP's Biodiversity Interactive Maps (DELWP 2016b).

Wherever appropriate, a precautionary approach was adopted in determining the likelihood of occurrence of fauna listed under the EPBC Act and FFG Act. That is, where insufficient evidence was available on the potential occurrence of a listed species, it is assumed that it could be in an area of suitable habitat.

3.2.4. Threatened ecological communities

The study area was assessed against published descriptions of relevant listed ecological communities modelled to potentially occur in the study area.

Reviewed ecological community descriptions comprised identification criteria and condition thresholds from listing advice for EPBC Act communities as well as FFG Act listed community descriptions (SAC 2016).

3.3. Limitations of field assessment

The site assessment was carried out in spring. The short duration and seasonal timing of field assessments can result in some species not being detected when they may occur at other times. Additionally, some flora species and life-forms may be undetectable at the time of the survey or unidentifiable due to a lack of flowers or fruit.

The timing of the survey was otherwise considered suitable to ascertain the extent and condition of native vegetation and fauna habitats.

Flora species occurring as planted ornamentals within formed garden beds were not recorded.

These limitations were not considered to compromise the validity of the current investigation, which was designed to provide an account of biodiversity which may be protected by relevant federal, state and local legislation and policies.

4. ASSESSMENT RESULTS

4.1. Site description

The study area for this investigation (Figure 1) was approximately 1.5 hectares of public land located in Brighton, approximately 8.2 kilometres south east of the Melbourne CBD and bordered by Rusden Street, Brickwork Street, Elster Creek and New Street..

The study area supported somewhat sandy to loamy, much modified soils on a relatively flat landscape. It bore a long-established commission housing complex comprising multi-level apartment blocks as well as associated car parks, playgrounds, shared storage, recreational and facilities areas. Planted trees, managed garden beds and introduced lawn occurred amongst these structures.

Surrounding land predominantly supported residential housing and sporting ovals.

Fauna habitat within the study area comprised of planted trees and garden beds. Port Phillip Bay is a key fauna habitat and is located over one kilometre away from the site. There are no other key fauna habitat areas occurring within the region.

The study area lies within the Gippsland Plain bioregion and falls within the Port Phillip and Westernport catchment.

4.2. Remnant patches

Pre-European EVC mapping (DELWP 2016b) indicated that the study area and surrounds would have supported Swamp Scrub (EVC 53) and Damp Sands Herb-rich Woodland (EVC 3) prior to European settlement based on modelling of factors including rainfall, aspect, soils and remaining vegetation.

No remnant patch native vegetation was present within the study area.

4.3. Scattered trees

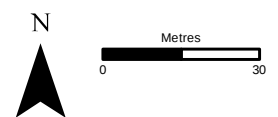
No scattered trees were recorded in the study area.



Figure 1: Study area and native vegetation

Project: Salisbury St, Elwood **Client:** Department of Health and Human Services **Date:** 16/12/2016

Study area



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4.4. Flora species

4.4.1. Species recorded

During the current assessment 44 plant species were recorded. Of these, five (11%) were indigenous and 39 (89%) were introduced or non-indigenous native in origin (Appendix 2).

4.4.2. Listed species

VBA records (VBA 2013) and the EPBC Protected Matters Search Tool (Department of the Environment 2013) indicated that within the search region there were records of, or there occurred potential suitable habitat for, 13 species listed under the Commonwealth EPBC Act and 17 listed under the state *Flora and Fauna Guarantee Act 1988* (FFG Act), including 12 listed under both Acts.

No flora species listed under these Acts were recorded during the field survey. Further, no such species were considered to potentially occur due to the completely modified state of the study area and resulting lack of suitable habitat.

4.5. Fauna habitats

The study area supported the one fauna habitat type listed below.

- Planted trees and garden beds.

Planted trees: All of the trees in the study area had been planted and were deciduous trees and non-indigenous flowering eucalyptus species. These trees attract nectar feeding birds including Rainbow Lorikeet and Red Wattlebird. Other birds that were present in the trees included Noisy Miner, Magpie-lark and Common Blackbird. The Rock Dove, Common Starling and Common Myna were nesting in the buildings.

4.6. Fauna species

4.6.1. Species recorded

During the field assessment 13 fauna species were recorded. This included 11 bird (five introduced) and two mammal species (one introduced) (Appendix 3).

4.6.2. Listed species

The review of existing information indicated that 109 fauna species listed under the state *Flora and Fauna Guarantee Act 1988* (FFG Act) and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) have previously been recorded within the search region or for which potential habitat occurs according to the EPBC Act Protected Matters Search Tool. The likelihood of occurrence of these species in the study area was assessed and the results are presented below.

This analysis of potential occurrence of listed fauna species excludes:

- Marine fauna given that the study area is inland
- Migratory oceanic bird species (such as albatrosses and petrels) and migratory shorebirds given that the study area is inland.

A list of species that have been recorded in the search region and have been considered for likelihood of occurrence can be viewed in Appendix 3.

Species considered ‘likely to occur’ are those that have a very high chance of being in the study area given the existence of numerous records in the search region and suitable habitat in the study area. Using the precautionary approach, species considered to have the ‘potential to occur’ are those where suitable habitat exists, but recent records are scarce. This analysis indicates that one listed fauna species is likely to occur or have the potential to occur as follows.

- **Grey-headed Flying-fox** (EPBC Act: vulnerable FFG Act: listed).

The susceptibility of this species to impacts from development is discussed below.

4.6.3. Susceptibility of listed fauna to impacts

The following analysis identifies the susceptibility to development of listed fauna species which may utilise the study area. This analysis includes consideration of the factors below.

- The mobility of the species
- The availability and extent of other suitable habitat in the region and the degree to which species may rely on habitat in the study area

Targeted surveys will be required to determine the presence or absence of any listed fauna species considered to be susceptible to impacts from development.

Birds

No listed non-migratory bird species are considered to have the potential to occur in the study area. The susceptibility of these species to possible impacts from any development in the study area is negligible.

Migratory Birds

No listed migratory bird species have the potential to occur in the study area. The susceptibility of these species to possible impacts from any development in the study area is negligible.

Mammals

One listed mammal species is considered to have the potential to occur in the study area. The susceptibility of this species to possible impacts from any development in the study area is discussed below.

- **Grey-headed Flying-fox** (EPBC Act: vulnerable; FFG Act: listed)

There is a colony of Grey-headed Flying-Fox that occurs in the Yarra Bend National Park along the Yarra River in Fairfield. The Flying-foxes roost here each day and can travel up to 50 kilometres from their roost each night in search of food. They feed on fruits and nectar from blossoms. The study area had flowering and fruiting trees that have the potential to provide a food source for these bats.

The removal of planted flowering eucalypt trees has the potential to remove some potential foraging habitat for this species. However, since there are many potential foraging trees in the region the potential removal of a few trees in the study area will not have a significant impact on the species.

Reptiles

No listed reptile species are considered to have the potential to occur in the study area. The susceptibility of these species to possible impacts from any development in the study area is negligible.

Frogs

No listed frog species are considered to have the potential to occur in the study area. The susceptibility of these species to possible impacts from any development in the study area is negligible.

Fish

No listed fish species are considered to have the potential to occur in the study area. The susceptibility of these species to possible impacts from any development in the study area is negligible.

Invertebrates

No listed invertebrate species are considered to have the potential to occur in the study area. The susceptibility of these species to possible impacts from any development in the study area is negligible.

4.7. Listed ecological communities

Based on an assessment of native vegetation in the study area against published descriptions and condition thresholds, the following communities were found not to occur in the study area due to the lack of native vegetation.

- Grassy Eucalypt Woodland of the Victorian Volcanic Plain – listed as critically endangered under the EPBC Act.
- Natural Damp Grassland of the Victorian Coastal Plains – listed as critically endangered under the EPBC Act.
- Natural Temperate Grassland of the Victorian Volcanic Plain – listed as critically endangered under the EPBC Act.
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – listed as critically endangered under the EPBC Act.

5. IMPLICATIONS AND RECOMMENDATIONS

5.1. Regulatory requirements

A permit under Clause 52.17 of the Bayside Planning Scheme would be required for any proposed native vegetation removal, including scattered plants which do not constitute scattered trees or remnant patches.

Such a permit application would be assessed under the low-risk assessment pathway, due to the absence of scattered trees and remnant patches, and would not incur any offset requirement.

The provisions of the EPBC Act, EE Act and FFG Act, as they pertain to biodiversity, would not apply to any proposed development of the study area. This is due to the lack of listed threatened values and the very limited extant biodiversity values.

Clause 28 of the City of Bayside's Consolidated Local Law No. 2 'Neighbourhood Amenity' has no bearing on the study area given no noxious weeds were recorded therein.

5.2. Mitigation recommendations

Environmental impact mitigation measures for any proposed development of the study area should be aimed at protecting the water quality within the abutting Elster Creek canal. Detailed measures should be explored and developed during the project design stage.

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Appendix 1: Details of the Guidelines assessment process

Native Vegetation Information Management system (NVIM)

The online Native Vegetation Information Management system (NVIM) is an interactive mapping tool, which provides some of the information required to accompany a permit to remove native vegetation. It does not replace the application process.

The information provided by NVIM can include the following (described in more detail below):

- The *location risk* of the native vegetation;
- The *condition* of the native vegetation – used for the low-risk assessment pathway only;
- The *strategic biodiversity score* of the native vegetation proposed to be removed; and
- The *native vegetation offset* requirement – used for the low risk assessment pathway only.

Biodiversity assessment guidelines

Guidelines objective

As set out in *Permitted clearing of native vegetation – Biodiversity assessment guidelines* ('the Guidelines') the objective for permitted clearing of native vegetation in Victoria is 'No net loss in the contribution made by native vegetation to Victoria's biodiversity'. The key strategies for ensuring this outcome when considering an application to remove native vegetation are:

- Avoiding the removal of native vegetation that makes a significant contribution to Victoria's biodiversity;
- Minimising impacts on Victoria's biodiversity from the removal of native vegetation; and
- Where native vegetation is permitted to be removed, ensuring it is offset in a manner that makes an equivalent contribution to Victoria's biodiversity made by the native vegetation to be removed.

Note: if native vegetation does not meet the definition of either a remnant patch or scattered trees, the Guidelines are not required to be applied.

Risk-based assessment pathways

The first step in determining the type of assessment required for any site in Victoria is to determine the risk to biodiversity associated with the proposed native vegetation removal and therefore the risk-based assessment pathway for the proposed native vegetation removal. There are three risk-based pathways for assessing an application to remove native vegetation, below.

- Low risk
- Moderate risk
- High risk

This risk-based assessment pathway is determined by two factors, outlined below.

Extent risk – the area in hectares proposed to be removed or the number of scattered trees. *Note:* extent risk also includes any native vegetation clearing for which permission has been granted in the last five years.

Location risk – the likelihood that removing native vegetation in a location will have an impact on the persistence of a rare or threatened species classified into three categories: Location A, Location B and Location C.

The risk-based pathway for assessing an application to remove native vegetation is determined by the following matrices for remnant patches and scattered trees:

Extent (remnant patches)	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 (scattered trees)	Location A	Location B	Location C
< 15 scattered trees	Low	Moderate	High
≥ 15 scattered trees	Moderate	High	High

All native vegetation within any subdivision plot of less than 0.4 hectares is deemed to be lost; For applications with combined removal of both remnant patch and scattered trees, the extent of the scattered trees is converted to an area by assigning a standard area of 0.070 hectares per tree – the total extent is then used to determine the risk-based pathway.

The presence of any Location B or Location C risk categories within an area of proposed native vegetation removal means this whole area of removal is considered to belong to that category for the purpose of determining the risk-based assessment pathway.

Strategic biodiversity score

The strategic biodiversity score generated by NVIM acts as a measure of the site's importance for Victoria's biodiversity relative to other locations across the landscape. It is calculated based on a weighted average of scores across an area of native vegetation proposed for removal on a site.

Habitat importance

Habitat importance mapping produced by DELWP is based on one or a combination of habitat importance models, habitat distribution models or site record data. It identifies the following:

- *Habitat importance for dispersed species* – based on habitat distribution models and assigned a habitat importance score ranging from 0 to 1; and
- *Highly localised habitats* – considered to be equally important for a particular species and assigned a habitat importance score of 1.

Habitat importance mapping is used to determine the type of offset required under the moderate and high risk assessment pathways.

Biodiversity equivalence

Biodiversity equivalence scores are used to quantify losses in the contribution to Victoria's biodiversity from removing native vegetation and gains in this contribution from a native vegetation offset.

There are two types of biodiversity equivalence scores depending on whether or not the site makes a contribution to the habitat of a Victorian rare or threatened species.

- A *general* biodiversity equivalence score is a measure of the contribution native vegetation on a site makes to Victoria's biodiversity overall and applies when no habitat importance scores are applicable according to the equation:

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

- A *specific* biodiversity equivalence score is a measure of the contribution that native vegetation on a site makes to the habitat of a particular rare or threatened species – calculated for each such species for which the site provides important habitat (using habitat importance scores provided by DELWP) according to the equation:

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

Offset requirements

A native vegetation offset is required for the approved removal of native vegetation. Offsets conform to one of two types and each type incorporates a risk factor to address the risk of offset failing:

- A *general* offset applies if the removal of native vegetation impacts Victoria's overall biodiversity and has an offset risk factor of 1.5 applied according to the equation:

$$\text{General risk-adjusted offset requirement} = \text{general biodiversity equivalence score (clearing site)} \times 1.5$$

- A *specific* offset applies if the native vegetation makes a significant impact to habitat for a rare or threatened species determined by a *specific-general offset test*. It applies to each species impacted and has an offset risk factor of 2 applied according to the equation:

$$\text{Specific risk-adjusted offset requirement} = \text{specific biodiversity equivalence score (clearing site)} \times 2$$

Note: if native vegetation does not meet the definition of either a remnant patch or scattered trees an offset is not required.

Summary of the Guidelines assessment process

Decision guidelines	Offset requirements
Low-risk assessment pathway	
An application for removal cannot be refused on biodiversity grounds (unless it is not in accordance with any property vegetation plan that applies to the site). <i>Note: this guideline also applies to native vegetation that does not meet the definition of either a remnant patch or scattered trees.</i>	General offset applies: - General offset = general biodiversity equivalence score (clearing site) x 1.5 - Offset must be located in the same CMA^ or Local Government Area as the removal - Offset must have a strategic biodiversity score at least 80% of the native vegetation removed Offsets must be secured before the removal of native vegetation.
Moderate-risk assessment pathway	
The responsible authority will consider: - The strategic biodiversity score and habitat importance score of the native vegetation proposed to be removed - Any property vegetation plan that applies to the site - Whether reasonable steps have been taken to ensure that impacts of the proposed removal of native vegetation on biodiversity have been minimised with regard to the contribution to biodiversity made by the native vegetation to be removed and the native vegetation to be retained - Whether an offset has been identified that meets the requirements - The need to remove native vegetation to create defensible space to reduce the risk of bushfire	If the proportional impact on modelled habitat for a rare or threatened species is above a predetermined threshold, a specific offset applies for that species: - Specific offset = specific biodiversity equivalence score (clearing site) x 2 - Offset must be located in the same species habitat anywhere in Victoria as determined by DELWP habitat importance mapping General offsets apply where the specific offset threshold is not exceeded. Offsets must be secured before the removal of native vegetation.

High-risk assessment pathway	
In addition to the considerations for the moderate pathway the responsible authority will determine whether the native vegetation to be removed makes a significant contribution to Victoria's biodiversity. This includes considering: ▪ Impacts on important habitat for rare or threatened species, particularly highly localised habitat ▪ Proportional impacts on remaining habitat for rare or threatened species ▪ If the removal of the native vegetation will contribute to a cumulative impact that is a significant threat to the persistence of a rare or threatened species ▪ The availability of, and potential for, gain from offsets	As for the moderate pathway

* Habitat hectares = condition score (out of 1) x extent (hectares)

^ Catchment Management Authority

Note: All applications must provide information about the vegetation to be removed such as location and address of the property, description of the vegetation, maps and recent dated photographs.

Appendix 2: Flora species recorded in the study area and listed species known (or with the potential) to occur in the search region

Origin	Common name	Scientific name	Conservation status				Weed status			Recorded
			EPBC-T	FFG-T	FFG-P	DELWP	CaLP Act	WONS	GS Target	
	Anglesea Grevillea	<i>Grevillea infecunda</i>	VU	L	p	v				
*	Annual Meadow-grass	<i>Poa annua</i>								X
	Austral Tobacco	<i>Nicotiana suaveolens</i>				r				
	Australian Grass-wrack	<i>Heterozostera nigricaulis</i>				r				
*	Barley Grass	<i>Hordeum spp.</i>								X
	Basalt Peppergrass	<i>Lepidium hyssopifolium</i>	EN	L	p	e				
*	Black Nightshade	<i>Solanum nigrum s.l.</i>								X
*	Blue Pimpernel	<i>Lysimachia arvensis</i> (Blue-flowered variant)								X
	Bottlebrush	<i>Callistemon spp.</i>								X
	Broad-lip Diuris	<i>Diuris X palachila</i>			p	r				
#	Buxton Gum	<i>Eucalyptus crenulata</i>	EN	L	p	e				
*	Cape weed	<i>Arctotheca calendula</i>								X
*	Chickweed	<i>Stellaria media</i>								X
	Clover Glycine	<i>Glycine latrobeana</i>	VU	L	p	v				
	Coast Banksia	<i>Banksia integrifolia subsp. integrifolia</i>								X
	Coast Saltwort	<i>Salsola tragus subsp. pontica</i>				r				
	Coast Stackhousia	<i>Stackhousia spathulata</i>				k				
	Coast Thread-petal	<i>Stenopetalum lineare var. canescens</i>				k				
*	Common Sow-thistle	<i>Sonchus oleraceus</i>								X
	Couch	<i>Cynodon dactylon</i>								X
*	Dove's Foot	<i>Geranium molle</i>								X
*	Elm	<i>Ulmus spp.</i>								X
*	English Ivy	<i>Hedera helix</i>								X

Origin	Common name	Scientific name	Conservation status				Weed status			Recorded
			EPBC-T	FFG-T	FFG-P	DELWP	CaLP Act	WONS	GS Target	
*	Fig	<i>Ficus carica</i>								X
*	Flatweed	<i>Hypochaeris radicata</i>								X
*	Four-leaved Allseed	<i>Polycarpon tetraphyllum</i>								X
	Frankston Spider-orchid	<i>Caladenia robinsonii</i>	EN	L	p	e				
	Fringed Midge-orchid	<i>Corunastylis ciliata</i>			p	k				
*	Garden Dandelion	<i>Taraxacum Sect. Erythrosperma</i>								X
#	Giant Honey-myrtle	<i>Melaleuca armillaris subsp. armillaris</i>				r				X
	Golden Cowslips	<i>Diuris behrii</i>			p	v				
	Green Leek-orchid	<i>Prasophyllum lindleyanum</i>			p	v				
	Grey Mangrove	<i>Avicennia marina subsp. australasica</i>				r				
*	Kikuyu	<i>Cenchrus clandestinus</i>							A	X
	Lanky Buttons	<i>Leptorhynchus elongatus</i>			p	e				
	Large White Spider-orchid	<i>Caladenia venusta</i>			p	r				
	Leafy Greenhood	<i>Pterostylis cucullata</i>	VU	L	p	P				
#	Lilly Pilly	<i>Syzygium smithii</i>								X
	Lizard Orchid	<i>Burnettia cuneata</i>			p	r				
*	Loquat	<i>Eriobotrya japonica</i>								X
	Maroon Leek-orchid	<i>Prasophyllum frenchii</i>	EN	L	p	e				
	Matted Flax-lily	<i>Dianella amoena</i>	EN	L	p	e				
*	Medic	<i>Medicago spp.</i>								X
	Melbourne Yellow-gum	<i>Eucalyptus leucoxylon subsp. connata</i>				v				
	Mentone Greenhood	<i>Pterostylis X toveyana</i>			p	v				
	Merran's Sun-orchid	<i>Thelymitra X merraniae</i>		L	p	e				
	Metallic Sun-orchid	<i>Thelymitra epipactoides</i>	EN	L	p	e				
*	Mirror Bush	<i>Coprosma repens</i>								X

Origin	Common name	Scientific name	Conservation status				Weed status			Recorded
			EPBC-T	FFG-T	FFG-P	DELWP	CaLP Act	WONS	GS Target	
	Narrow-lip Spider-orchid	<i>Caladenia leptochila</i>			p	k				
	Native Peppercress	<i>Lepidium pseudohyssopifolium</i>				k				
*	Olive	<i>Olea europaea</i>								X
#	Paddock Love-grass	<i>Eragrostis leptostachya</i>				k				
*	Panic Veldt-grass	<i>Ehrharta erecta</i> var. <i>erecta</i>							B	X
*	Passion Flower	<i>Passiflora</i> spp.								X
*	Pepper Tree	<i>Schinus molle</i>								X
*	Prairie Grass	<i>Bromus catharticus</i>								X
	Prawn Greenhood	<i>Pterostylis pedoglossa</i>			p	v				
*	Prickly Paperbark	<i>Melaleuca styphelioides</i>								X
*	Prunus	<i>Prunus</i> spp.								X
	Purple Eyebright	<i>Euphrasia collina</i> subsp. <i>muelleri</i>	EN	L	p	e				
*	Red-flower Mallow	<i>Modiola caroliniana</i>								X
*	Ribwort	<i>Plantago lanceolata</i>								X
	River Swamp Wallaby-grass	<i>Amphibromus fluitans</i>	VU							
#	Rosemary Grevillea	<i>Grevillea rosmarinifolia</i>			p	P				
	Rough Eyebright	<i>Euphrasia scabra</i>		L	p	e				
*	Rye Grass	<i>Lolium</i> spp.								X
	Salt Lawrencia	<i>Lawrencia spicata</i>				r				
*	Shepherd's Purse	<i>Capsella bursa-pastoris</i>								X
	Short Purple-flag	<i>Patersonia fragilis</i>								X
	Small Milkwort	<i>Comesperma polygaloides</i>		L	p	v				
*	Small Nettle	<i>Urtica urens</i>								X
#	Snowy Mint-bush	<i>Prostanthera nivea</i> var. <i>nivea</i>			p	r				
#	Southern Blue-gum	<i>Eucalyptus globulus</i> subsp. <i>globulus</i>				r				

Origin	Common name	Scientific name	Conservation status				Weed status			Recorded
			EPBC-T	FFG-T	FFG-P	DELWP	CaLP Act	WONS	GS Target	
	Southern Spider-orchid	<i>Caladenia australis</i>			p	k				
	Southern Xanthosia	<i>Xanthosia tasmanica</i>				r				
	Spiny Peppercress	<i>Lepidium aschersonii</i>	VU	L	p	e				
#	Spotted Gum	<i>Corymbia maculata</i>				v				
	Sunshine Diuris	<i>Diuris fragrantissima</i>	EN	L	p	e				
*	Swamp Oak	<i>Casuarina glauca</i>								X
*	Swamp Water-starwort	<i>Callitriche palustris</i> var. <i>palustris</i>				k				
*	Tall Mallow	<i>Malva sylvestris</i>								X
	Tasman Grass-wrack	<i>Heterozostera tasmanica</i>				r				
	Tiny Arrowgrass	<i>Triglochin minutissima</i>				r				
	Tough Scurf-pea	<i>Cullen tenax</i>		L	p	e				
#	Venus-hair Fern	<i>Adiantum capillus-veneris</i>		L	p	e				
	Water Blinks	<i>Montia fontana</i> subsp. <i>amporitana</i>				k				
	Water Parsnip	<i>Berula erecta</i>				k				
*	White Clover	<i>Trifolium repens</i> var. <i>repens</i>								X
*	White Poplar	<i>Populus alba</i>								X
*	Willow Myrtle	<i>Agonis flexuosa</i>								X
	Winged Water-starwort	<i>Callitriche umbonata</i>				r				
*	Wingless Jo-jo	<i>Soliva valdiviana</i>								X
	Wonga Vine	<i>Pandorea pandorana</i> subsp. <i>pandorana</i>								X
	Woolly Waterlily	<i>Philydrum lanuginosum</i>				v				
	Yarra Gum	<i>Eucalyptus yarraensis</i>				r				
#	Yellow Gum	<i>Eucalyptus leucoxylon</i>								X

Notes: **EPBC** = threatened species status under EPBC Act: EX = presumed extinct in the wild; CR = critically endangered; EN = endangered; VU = vulnerable; **FFG-T** = threatened species status under the FFG Act: L = listed as threatened under the FFG Act; **FFG-P** = protected species status under the FFG Act: p = listed as protected; **DELWP** = status under DELWP's Advisory List (DEPI 2014a); x = presumed extinct in the wild; cr = critically endangered; e = endangered; v = vulnerable; r = rare; k = insufficiently known; **CaLP Act** = declared noxious weeds status under the CaLP Act; S = State Prohibited Weeds (any infestations are to be reported to DELWP. DELWP is responsible for control of State Prohibited Weeds); P = Regionally Prohibited Weeds (Land owners must take all reasonable steps to eradicate regionally prohibited weeds on their land); C = Regionally Controlled Weeds (Land owners have the responsibility to take all reasonable steps to prevent the growth and spread of Regionally controlled weeds on their land); R = Restricted Weeds (Trade in these weeds and their propagules, either as plants, seeds or contaminants in other materials is prohibited); **WONS** = Weeds of National Significance

X = recorded in the study area

* = introduced to Victoria

= Victorian native taxa occurring outside their natural range

Appendix 3: Terrestrial vertebrate fauna species recorded in the study area and listed species known (or with the potential) to occur in the search region

Common name	Scientific name	EPBC-T	EPBC-M	FFG-T	DELWP	Recorded
Birds						
King Quail	<i>Coturnix chinensis victoriae</i>			L	e	
Red-chested Button-quail	<i>Turnix pyrrhonorax</i>			L	v	
Plains-wanderer	<i>Pedionomus torquatus</i>	CR		L	cr	
Diamond Dove	<i>Geopelia cuneata</i>			L	nt	
Lewin's Rail	<i>Lewinia pectoralis pectoralis</i>			L	v	
Baillon's Crake	<i>Porzana pusilla palustris</i>			L	v	
Black-faced Cormorant	<i>Phalacrocorax fuscescens</i>				nt	
Pied Cormorant	<i>Phalacrocorax varius</i>				nt	
Broad-billed Sandpiper	<i>Limicola falcinellus</i>		M (JAMBA, CAMBA, Bonn Convention (A2H))			
Latham's Snipe	<i>Gallinago hardwickii</i>		M (JAMBA, CAMBA, ROKAMBA, Bonn A2H)		nt	
Australian Painted Snipe	<i>Rostratula australis</i>	EN		L	cr	
Australian Bustard	<i>Ardeotis australis</i>			L	cr	
Glossy Ibis	<i>Plegadis falcinellus</i>		M (CAMBA, Bonn (A2S))		nt	
Royal Spoonbill	<i>Platalea regia</i>				nt	
Little Egret	<i>Egretta garzetta nigripes</i>			L	e	
Intermediate Egret	<i>Ardea intermedia</i>			L	e	
Eastern Great Egret	<i>Ardea modesta</i>			L	v	
Nankeen Night Heron	<i>Nycticorax caledonicus hillii</i>				nt	
Little Bittern	<i>Ixobrychus minutus dubius</i>			L	e	
Australasian Bittern	<i>Botaurus poiciloptilus</i>	EN		L	e	
Magpie Goose	<i>Anseranas semipalmata</i>			L	nt	
Australasian Shoveler	<i>Anas rhynchos</i>				v	
Freckled Duck	<i>Stictonetta naevosa</i>			L	e	

Common name	Scientific name	EPBC-T	EPBC-M	FFG-T	DELWP	Recorded
Hardhead	<i>Aythya australis</i>				v	
Blue-billed Duck	<i>Oxyura australis</i>			L	e	
Musk Duck	<i>Biziura lobata</i>				v	
Spotted Harrier	<i>Circus assimilis</i>				nt	
Swamp Harrier	<i>Circus approximans</i>					
Grey Goshawk	<i>Accipiter novaehollandiae novaehollandiae</i>			L	v	
Square-tailed Kite	<i>Lophoictinia isura</i>			L	v	
Black Falcon	<i>Falco subniger</i>				v	
Barking Owl	<i>Ninox connivens connivens</i>			L	e	
Powerful Owl	<i>Ninox strenua</i>			L	v	
Rainbow Lorikeet	<i>Trichoglossus haematodus</i>					X
Major Mitchell's Cockatoo	<i>Lophocroa leadbeateri</i>			L	v	
Superb Parrot	<i>Polytelis swainsonii</i>	VU		L	e	
Regent Parrot	<i>Polytelis anthopeplus monarchoides</i>	VU		L	v	
Orange-bellied Parrot	<i>Neophema chrysogaster</i>	CE	M (JAMBA)	L	cr	
Swift Parrot	<i>Lathamus discolor</i>	CR		L	e	
Azure Kingfisher	<i>Alcedo azurea</i>				nt	
White-throated Needletail	<i>Hirundapus caudacutus</i>		M (JAMBA, CAMBA, ROKAMBA)		v	
Fork-tailed Swift	<i>Apus pacificus</i>		M (JAMBA, CAMBA, ROKAMBA)			
Welcome Swallow	<i>Petrochelidon neoxena</i>					X
Rufous Fantail	<i>Rhipidura rufifrons</i>		M (Bonn Convention (A2H))			
Satin Flycatcher	<i>Myiagra cyanoleuca</i>		M (Bonn Convention (A2H))			
Magpie-lark	<i>Grallina cyanoleuca</i>					X
Grey-crowned Babbler	<i>Pomatostomus temporalis temporalis</i>			L	e	
Painted Honeyeater	<i>Grantiella picta</i>	VU		L	v	
Regent Honeyeater	<i>Anthochaera phrygia</i>	CR	M (JAMBA)	L	cr	
Noisy Miner	<i>Manorina melanocephala</i>					X

Common name	Scientific name	EPBC-T	EPBC-M	FFG-T	DELWP	Recorded
Red Wattlebird	<i>Anthochaera carunculata</i>					X
Diamond Firetail	<i>Stagonopleura guttata</i>			L	nt	
Chestnut-breasted Mannikin	<i>Lonchura castaneothorax</i>				*	
Red-necked Phalarope	<i>Phalaropus lobatus</i>		M (JAMBA, CAMBA, ROKAMBA, Bonn Convention (A2H))			
Little Raven	<i>Corvus mellori</i>					X
Rock Dove	<i>Columba livia</i>				*	X
Spotted Turtle-Dove	<i>Streptopelia chinensis</i>				*	X
Common Blackbird	<i>Turdus merula</i>				*	X
Black-faced Monarch	<i>Monarcha melanopsis</i>		M (Bonn Convention (A2H))			
Yellow Wagtail	<i>Motacilla flava</i>		M (JAMBA, CAMBA, ROKAMBA)			
Osprey	<i>Pandion cristatus</i>		M (Bonn Convention (A2S))			
Common Myna	<i>Acridotheres tristis</i>				*	X
Painted Honeyeater	<i>Grantiella picta</i>	VU		L	v	
Common Starling	<i>Sturnus vulgaris</i>				*	X
Brown Treecreeper (south-eastern ssp.)	<i>Climacteris picumnus victoriae</i>				nt	
Mammals						
Eastern Quoll	<i>Dasyurus viverrinus</i>			L	rx	
Common Ringtail Possum	<i>Pseudocheirus peregrinus</i>					X
Southern Bettong	<i>Bettongia gaimardi</i>	EX		L	x	
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	VU		L	v	
Yellow-bellied Sheath-tail Bat	<i>Saccolaimus flaviventris</i>			L	dd	
Black Rat	<i>Rattus rattus</i>				*	X
Swamp Antechinus	<i>Antechinus minimus maritimus</i>	VU		L	nt	
Greater Glider	<i>Petauroides volans</i>	VU		L	v	
Smoky Mouse	<i>Pseudomys fumeus</i>	EN		L	e	
Southern Brown Bandicoot	<i>Isodon obesulus obesulus</i>	EN		L	nt	

Common name	Scientific name	EPBC-T	EPBC-M	FFG-T	DELWP	Recorded
Common Bent-wing Bat	<i>Miniopterus schreibersii</i> GROUP			L		
Common Bent-wing Bat (eastern ssp.)	<i>Miniopterus schreibersii oceanensis</i>			L	v	
Reptiles						
Common Long-necked Turtle	<i>Chelodina longicollis</i>				dd	
Murray River Turtle	<i>Emydura macquarii</i>				v	
Striped Legless Lizard	<i>Delma impar</i>	VU		L	e	
Glossy Grass Skink	<i>Pseudemoia rawlinsoni</i>				v	
Grassland Earless Dragon	<i>Tympanocryptis pinguicolla</i>	EN		L	cr	
Frogs						
Brown Toadlet	<i>Pseudophryne bibronii</i>			L	e	
Southern Toadlet	<i>Pseudophryne semimarmorata</i>				v	
Growling Grass Frog	<i>Litoria raniformis</i>	VU		L	e	
Fish						
Australian Grayling	<i>Prototroctes maraena</i>	VU		L	v	
Bluenose Cod (Trout Cod)	<i>Maccullochella macquariensis</i>	EN		L	cr	
Murray Cod	<i>Maccullochella peelii</i>	VU		L	v	
Golden Perch	<i>Macquaria ambigua</i>				nt	
Macquarie Perch	<i>Macquaria australasica</i>	EN		L	e	
Yarra Pygmy Perch	<i>Nannoperca obscura</i>	VU		L	v	
Grey Nurse Shark	<i>Carcharias taurus</i>	CR		L	dd	
Dwarf Galaxias	<i>Galaxiella pusilla</i>	VU		L	e	
Invertebrates						
Golden Sun Moth	<i>Synemon plana</i>	CR		L	cr	

Notes: **EPBC-T** = threatened species status under EPBC Act; EX = presumed extinct in the wild; CE = critically endangered; EN = endangered; VU = vulnerable; **EPBC-M** = migratory status under the EPBC Act; M = listed migratory taxa; Bonn Convention (A2H) - Convention on the Conservation of Migratory Species of Wild Animals – listed as a member of a family; Bonn Convention (A2S) - Convention on the Conservation of Migratory Species of Wild Animals - species listed explicitly; CAMBA - China- Australia Migratory Birds Agreement; JAMBA - Japan-Australia Migratory Birds Agreement; ROKAMBA - Republic of Korea Australia Migratory Birds Agreement; **FFG** = threatened species status under the FFG Act; L = listed as threatened under the FFG Act; **DELWP** = status under DELWP's Advisory List (DSE 2013); x = presumed extinct in the wild; cr = critically endangered; e = endangered; v = vulnerable; nt = lower risk near threatened; dd = data deficient; * - introduced species; X – Recorded in the study area.