32 GRUNDY AVENUE & 18A DAVIS STREET, NYORA

FLORA AND FAUNA ASSESSMENT

Beveridge Williams Pty. Ltd.

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1. EXECUTIVE SUMMARY

Beveridge Williams Pty. Ltd. engaged Brett Lane & Associates Pty. Ltd. (BL&A) to undertake a flora and fauna assessment for a six hectare area of land comprising two neighbouring properties — 32 Grundy Avenue and 18A Davis Street — and their adjoining roadsides in Nyora, approximately 85 kilometres south-east of Melbourne. The specific area investigated, referred to herein as the 'study area' is proposed for residential subdivision.

The majority of the study area supported planted and introduced self-recruited vegetation. Planted vegetation occurred around dwellings, along fence lines and driveways. Many of the planted trees were Australian natives including Spotted Gum, Southern Blue-gum, Giant Honey-myrtle and Flax-leaf Paperbark. Remaining vegetation within the study area was dominated by introduced grasses. One small patch of native remnant vegetation and three scattered trees were present.

Fauna habitat within the study area comprised trees and shrubs, grazing paddocks and a farm dam. The habitat in the study area was highly modified from its original state and was suitable for common occurring native fauna and introduced fauna. The study area was fragmented from natural occurring reserves in the region.

No listed flora or fauna species, or ecological communities were recorded during the assessment.

The proposed development will result in the following impacts:

- The removal of 0.017 hectares of native remnant patch vegetation in the form of Lowland Forest (EVC 16);
- The removal of 3 scattered trees; and
- A loss of a total extent of 0.228 hectares of native vegetation (equating to 0.044 Habitat Hectares and 0.007 General Biodiversity Equivalence Units).

No listed flora or fauna species, or ecological communities will be impacted by the proposed development.

The proposed development will incur the following regulatory implications:

- A planning permit under Clause 52.17 of the South Gippsland Planning Scheme will be required for the removal of native vegetation;
- A general offset of 0.010 general biodiversity equivalence units will be required to compensate for the removal of native vegetation. General offsets must be located within the Port Phillip and Westernport Catchment Management Area or the South Gippsland Shire and have a minimum strategic biodiversity score of 0.123; and
- Offsets must be secured before any native vegetation is removed.

The Guidelines stipulate that the proposal will be assessed under the *low* risk assessment pathway and would not trigger a referral to DELWP.

2. INTRODUCTION

Beveridge Williams Pty Ltd engaged Brett Lane & Associates Pty Ltd (BL&A) to undertake a flora and fauna assessment for a six hectare area of land comprising two neighbouring properties — 32 Grundy Avenue and 18A Davis Street — and their adjoining roadsides in Nyora, approximately 85 kilometres south-east of Melbourne. The study area is proposed for residential subdivision.

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 2013), 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:

- A review of existing information on the biodiversity of the area, 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 investigation was undertaken by a team from BL&A, comprising Curtis Doughty (Zoologist), Verity Fyfe (Botanist) and Alan Brennan (Senior Ecologist & Project Manager).

3. 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.

3.1. 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.

3.2. Local planning provisions

The study area is located within the South Gippsland local government area. It is currently zoned General Residential – Schedule 1 (GRZ1) in the South Gippsland Planning Scheme. It is located within a Bushfire-prone Area.

Local planning provisions apply under the Victorian *Planning and Environment Act 1987*.

3.2.1. Local Planning Policies

Local provisions can override state provisions. No local planning policies relevant to this investigation apply to the study area.

3.2.2. Overlays

The study area is subject to Development Plan Overlay – Schedule 5 (DPO5) in the South Gippsland Planning Scheme, which is relevant to this assessment. The purpose of this overlay is discussed below.

This overlay requires that a development plan be developed that will guide the area's transition to higher density development over an extended period of time. The development plan is to require a flora and fauna report prepared by a suitably qualified person that:

- Identifies vegetation on the land, its health and significance to the locality, measures required to protect vegetation and the identification of any vegetation to be removed.
- Provides a landscape plan for new subdivisions.
- Identifies the location / habitat of the Giant Gippsland Earthworm and any other significant species in the locality, including details of measures to protect significant fauna.
- Appropriate development separation to declared waterways and natural drainage lines.

This Flora and Fauna Assessment — Report 17031 (1.0) — meets the above requirements of the development plan relating to the environment.

3.3. 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 2017a) — a database administered by DELWP; and
- *Permitted clearing of native vegetation – Biodiversity assessment guidelines* (DEPI 2013).

A planning permit under Clause 52.17 of the South Gippsland Planning Scheme is required for the removal of native vegetation.

The application of the *Native Vegetation Information Management system* (NVIM) (DELWP 2017a) and *Permitted clearing of native vegetation – Biodiversity assessment guidelines* (the 'Guidelines') (DEPI 2013) 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.

3.4. 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.

Implications under the EPBC Act for the current proposal are discussed in Section 7.3.

3.5. 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.

Implications under the FFG Act for the current proposal are discussed in Section 7.4.

3.6. 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).

Implications under the EE Act for the current proposal are discussed in Section 7.5.

4. EXISTING INFORMATION & METHODS

4.1. Existing information

Existing information used for this investigation is described below.

4.1.1. Existing reporting and documentation

The reports, planning schemes and/or development plans below, relating to the study area were reviewed.

- South Gippsland Planning Scheme
- Proposed Plan of Subdivision provided by Beveridge Williams Pty Ltd
- Tree Survey and Assessment Report for 32 Grundy Avenue provided by Beveridge Williams Pty Ltd

4.1.2. 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 bioregion[1] (DSE 2004a); and
- Biodiversity Interactive Maps (DELWP 2017b).

4.1.3. 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 38˚ 20' 15" S and longitude 145˚ 40' 25" 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 (2017).

The 'Vegetation/ Modelled FFG Act Communities' layer in DELWP's Biodiversity Interactive Map (DELWP 2017b) 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 (DotEE 2015) was consulted to determine whether nationally listed species or communities potentially occurred in the search region based on habitat modelling.

[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

4.2. Field methods

The field assessment was conducted on the 29th March 2017. During this assessment, areas within the study area supporting remnant native vegetation and/or fauna habitat were inspected in detail on foot.

Sites in the study area found to support native vegetation or with potential to support listed matters were mapped. Mapping was undertaken through a combination of aerial photograph interpretation and ground-truthing using a hand held GPS (accurate to approximately five metres). Species and ecological communities listed as threatened under the EPBC Act or FFG Act (where they occurred on public land) were also mapped using the same method.

4.2.1. 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 2013):

- 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 trees[2] where the canopy foliage cover[3] is at least 20 per cent of the area.

Remnant patch condition is assessed using the habitat hectare method (Parkes *et al*. 2003; DSE 2004b) 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 2015) 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 (DEPI 2013).

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).

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[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.

Scattered trees

The *Biodiversity assessment guidelines* define scattered trees as a native canopy tree[2] 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.

4.2.2. 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 2016b).

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
- 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 or 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.

4.2.3. 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; including identification of frog calls in seasonally wet areas.
- General searches for bat habitat including waterbodies and potential roosting sites such as caves, dead trees with hollows and underneath bark of trees.

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 2017b).

Wherever appropriate, a precautionary approach was adopted in determining the likelihood of occurrence or 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.

4.2.4. Threatened ecological communities

The likelihood of listed threatened ecological communities occurring in the study area was determined by checking general field observations 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 2015).

4.3. Limitations of field assessment

The site assessment was carried out in autumn. 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 and condition of vegetation was otherwise considered suitable to ascertain the extent and condition of native vegetation and fauna habitats.

These limitations were not considered to compromise the validity of the current investigation, which was designed to address the relevant policies and decision guidelines.

Identification of EVCs considers vegetation types which would have naturally occupied the landscape prior to European impacts. Significant past alteration of the study area's land form, hydrology and soil composition as well as past vegetation clearance has resulted in the emergence of an artificial site ecology and the reestablishment of vegetation that is likely to be notably different to what would have naturally occupied the study area. Identification of EVCs in altered areas was therefore based upon consideration of:

- Modelled EVC mapping (DELWP 2017b);
- Observations of adjacent landforms that had not been significantly altered;
- Observations of nearby natural vegetation remnants;
- Any observed indigenous flora species that are useful for determining EVCs; and
- Relevant published EVC benchmark descriptions.

If the above information was not sufficient to allow for a reasonable conclusion to be made on which EVC would have naturally occurred and the observed vegetation resembled an EVC which is likely to have naturally occurred in the region, EVC identification was based upon the structure and floristic composition of current observed vegetation.

5. ASSESSMENT RESULTS

5.1. Site description

The study area for this investigation (Figure 1) was approximately six hectares of private land located at two neighbouring properties — 32 Grundy Avenue and 18A Davis Street — and their adjoining roadsides, in Nyora approximately 85 kilometres south-east of Melbourne.

The study area supported well-draining sedimentary soils on a gently undulating landscape of low relief. One small dam was present in the centre of the Davis Street property. The closest major watercourse was the Bass River, located approximately 2.3 kilometres south of the study area.

Both properties would have supported horses and/or livestock in the past, and four horses were present on the Grundy Avenue property at the time of the assessment. Surrounding immediate land predominantly supported residential development, while the broader area supported larger farming properties. A recreational reserve was located opposite the Grundy Avenue property.

The majority of vegetation in the study area consisted of planted and introduced self-recruited vegetation. Planted vegetation occurred around dwellings and along fence lines and driveways. Many native trees and shrubs were planted in such areas, including Spotted Gum, Tasmanian Blue Gum, Giant Honey-myrtle, Narrow-leaved Paperbark, Bottlebrush, Cootamundra Wattle and Sweet Pittosporum. Planted introduced vegetation included White Poplar, Desert Ash, Willow, Peppercorn, Monterey Pine, False Cypress, a variety of fruit trees, and ornamental understorey plants such as Rose and Agapanthus. Vegetation within paddocks was dominated by introduced grasses such as Couch, Caterpillar Grass, Sweet Vernal Grass, Brown Top Bent and Kikuyu. Blackberry infestations were also present within the study area. Native vegetation was limited to one small remnant patch and three scattered trees.

Fauna habitat within the study area comprised of trees and shrubs, grazing paddocks and a farm dam. The habitat on the study area has been highly modified from its original state and is suitable for common occurring native fauna and introduced fauna. The study area is fragmented from natural occurring reserves in the region.

The following key fauna habitat areas occurred within the region:

- The Adams Creek Nature Reserve and Wuchester Reserve occurred approximately three kilometres to the north west of the study area. The study area was isolated from this habitat by open grazed land and residential areas.
- The Lang Lang Education area and Bell Park Scout Camp occurred approximately five kilometres to the west of the study area. The study area was isolated from this habitat by open grazed land and residential areas.
- The Nyora Nature Conservation reserve occurred approximately three kilometres to the east of the study area. This reserve is a small isolated reserve that is potential connected to the study area along narrow strips of roadsides.

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

5.2. Remnant patches

Pre–European EVC mapping (DELWP 2017b) indicated that the study area and surrounds would have supported Lowland Forest (EVC 16), Herb-rich Foothill Forest (EVC 23) and Swamp Scrub (EVC 53) prior to European settlement based on modelling of factors including rainfall, aspect, soils and remaining vegetation.

Evidence on site, including floristic composition and soil characteristics, suggested that a highly modified version of Lowland Forest (EVC 16) was present within the study area (Figure 1). A Description of this EVC is provided within the EVC benchmark in Appendix 7.

One remnant patch (herein referred to as Habitat Zone A) comprising the abovementioned EVC was identified in the study area. This habitat zone was only 0.017 hectares in extent and was highly degraded. It consisted of only one indigenous species - Blackwood *Acacia melanoxylon* - which occurred as a single mature tree and a stand of recruited saplings. Remaining vegetation within the habitat zone comprised introduced species such as Blackberry, Kikuyu, Brown Top Bent, Caterpillar Grass, Sweet Vernal Grass, Cat's Ear and Black Nightshade and planted native species such as Giant Honey-myrtle.

The poor quality of Habitat Zone A lead to it having a low condition score of 12.

The detailed habitat scoring results for Habitat Zone A is presented in Appendix 2.

Figure 1: Study area and native vegetation

Project: 18A Davis St and 32 Grundy St, Nyora
Client: Beveridge Williams
Date: 31/03/2017

Legend

- Study area
- Scattered trees
- Lowland Forest (EVC 16)
- Cadastre

N

Metres
0 40

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5.3. Scattered trees

Scattered trees recorded in the study area would have once comprised the canopy component of Lowland Forest (EVC 16). Three scattered trees occurred in the study area (Figure 1), ranging in DBH (diameter at breast height) between 36 and 103 centimetres. Details of the scattered trees recorded are listed in Appendix 3.

Two large scattered trees comprising one Manna Gum (Tree #1) and one Messmate Stringybark (Tree #2) (Figure 1) are considered to provide important habitat for fauna due to their size and age.

One small scattered Swamp Gum tree (Tree #3) (Figure 1) is considered to provide limited habitat value.

5.4. Flora species

5.4.1. Species recorded

During the habitat hectare assessment 40 plant species were recorded. Of these, 4 (10%) were indigenous and 36 (90%) were introduced or non-indigenous native in origin (Appendix 4).

5.4.2. Listed species

VBA records (DELWP 2017c) and the EPBC Protected Matters Search Tool (DotEE 2015) indicated that within the search region there were records of, or there occurred potential suitable habitat for, 10 species listed under the Commonwealth EPBC Act and 9 listed under the state *Flora and Fauna Guarantee Act 1988* (FFG Act), including 9 listed under both Acts. No flora species listed under the EPBC Act were recorded during the field survey.

The likelihood of occurrence in the study area of species listed under the EPBC Act and FFG Act is addressed in Table 1. Species considered 'likely to occur' are those that have a very high chance of being in the study area based on numerous records in the search region and suitable habitat in the study area. Species considered to have the 'potential to occur' are those where suitable habitat exists, but recent records are scarce.

This analysis indicates that no listed flora species are likely to occur or have the potential to occur.

Table 1: FFG Act and EPBC Act listed flora species and likelihood of occurrence

	Scientific name	Conservation status		Habitat	Likelihood of occurrence
		EPBC	FFG		
Clover Glycine	*Glycine latrobeana*	VU	L	Found across south-eastern Australia in native grasslands, dry sclerophyll forests, woodlands and low open woodlands with a grassy ground layer. In Victoria, populations occur in lowland grasslands, grassy woodlands and sometimes in grassy heath.	No suitable habitat - **unlikely to occur.**
Eastern Spider-orchid	*Caladenia orientalis*	EN	L	Heathland and heathy woodland in coastal areas between the Mornington Peninsula and Wilsons Promontory (Jeanes & Backhouse 2006).	No suitable habitat - **unlikely to occur.**
Green-striped Greenhood	*Pterostylis chlorogramma*	VU	L	Occurs in mixed Box-Stringybark forest with a shrubby understorey, often with *Pteridium esculentum* as a major component on sandy or clay loam soils.	No suitable habitat - **unlikely to occur.**
Leafy Greenhood	*Pterostylis cucullata*	VU	L	Tea-tree scrubs on tall sandy and calcareous dunes, in moist, open or even deep shaded locations (Jones 1994).	No suitable habitat - **unlikely to occur.**
Maroon Leek-orchid	*Prasophyllum frenchii*	EN	L	Grows mainly in open sedge swampland or in wet grassland and wet heathland generally bordering swampy regions. Sites are generally low altitude, flat and moist. Soils are generally moderately rich damp sandy or black clay loams. Climate is mild, with an annual rainfall of 600–1100 mm, occurring predominantly in winter and spring.	No suitable habitat - **unlikely to occur.**
Matted Flax-lily	*Dianella amoena*	EN	L	Lowland grassland and grassy woodlands on well-drained to seasonally waterlogged fertile sandy loams to heavy cracking soils derived from sedimentary or volcanic Geology. It is widely distributed from eastern to south-western Victoria (Carter 2010).	No suitable habitat - **unlikely to occur.**
Metallic Sun-orchid	*Thelymitra epipactoides*	EN	L	Grows primarily in mesic coastal heathlands, grasslands and woodlands, but is also found in drier inland heathlands, open forests and woodlands. Substrates may be moist or dry sandy loams or loamy sands. Critical habitat has not been determined but the species is likely to require open conditions, which may be created by soil disturbance or fire, for recruitment.	No suitable habitat - **unlikely to occur.**
River Swamp Wallaby-grass	*Amphibromus fluitans*	VU		River Swamp Wallaby-grass grows mostly in permanent swamps and also lagoons, billabongs, dams and roadside ditches. The species requires moderately fertile soils with some bare ground; conditions that are caused by seasonally-fluctuating water levels.	No suitable habitat - **unlikely to occur.**
Strzelecki Gum	*Eucalyptus strzeleckii*	VU	L	Apparently endemic, confined to across the western section of the Strzelecki Range, from Neerim South in the north, south to Foster. Favours ridges, slopes and streambanks and deep fertile soils.	No suitable habitat - **unlikely to occur.**
Swamp Everlasting	*Xerochrysum palustre*	VU	L	Grows in wetlands including sedge-swamps and shallow freshwater marshes, often on heavy black clay soils. Commonly associated genera include *Amphibromus, Baumea, Carex, Chorizandra, Craspedia, Eleocharis, Isolepis, Lachnagrostis, Lepidosperma, Myriophyllum, Phragmites australis, Themea triandra* and *Villarsia*.	No suitable habitat - **unlikely to occur.**

Notes: EPBC = threatened species status under EPBC Act: EX = presumed extinct in the wild; CR = critically endangered; EN = endangered; VU = vulnerable; **FFG** = threatened species status under the FFG Act: L = listed as threatened under the FFG Act.

5.5. Fauna habitats

The study area supported the three fauna habitat types.

- Trees and shrubs
- Grazing paddocks
- Small farm dam

Trees and shrubs: Trees were generally planted along fence lines and around dwellings in the study area. Almost all planted trees and shrubs were non-indigenous to the area. There were approximately three remnant eucalypts and a stand of Blackwood trees present. Common planted trees included Southern Blue-gum, Spotted Gum, False Cypress, White Poplar and paperbarks. Some of the Blue-gum trees contained hollows suitable for mammals including Common Ringtail Possum and bat species, as well as hollow nesting birds including Sulphur-crested Cockatoo and Galah. Fallen timber was present though rocks were absent. These trees may also be used as roosting sites for birds. A native rat species lived in the undergrowth of these trees which was evident through rat runs and burrows.

Grazing paddocks: This habitat type was the most dominant habitat across the study area. It was dominated entirely by introduced grasses such as Sweet Vernal-grass, Brown-top Bent, Kikyuyu, Caterpillar Grass and Couch. These areas were highly modified from their natural state and did not have a lot of habitat characteristics for native fauna. It has and is currently being used for grazing horses. Evidence of European Rabbit burrows and recent diggings of a Red Fox were also observed here.

Small farm dam: There was a small farm dam in the centre of the study area. The dam was shallow and had willow trees surrounding it that shaded the dam. Due to the shading and overhanging branches the dam was not good quality for waterbirds. A single Striped Marsh Frog was heard calling from the dam and there is potential for other frog species to occur here.

5.6. Fauna species

5.6.1. Species recorded

During the field assessment 25 fauna species were recorded. This included 19 bird (three introduced), four mammal (two introduced), one reptile and one frog species (Appendix 5).

5.6.2. Listed species

The review of existing information indicated that 38 fauna species listed under the state *Flora and Fauna Guarantee Act 1988* (FFG Act) and 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 in Table 2.

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 has the potential to occur. These species is the White-throated Needletail (EPBC Act: migratory).

The susceptibility of this species to impacts from development is discussed in Section 5.6.3.

Table 2: Listed fauna species from the search region and likelihood of occurrence in the study area

Common Name	Scientific name	EPBC-T	EPBC-M	FFG-T	DELWP	Habitat	Number of records	Date of last record	Likelihood of occurrence
Birds									
Australasian Bittern	*Botaurus poiciloptilus*	EN		L	e	Terrestrial wetlands, including a range of wetland types but prefers permanent water bodies with tall dense vegetation, particularly those dominated by sedges, rush, reeds or cutting grass (Marchant and Higgins 1990).	None	N/A	No suitable habitat - **unlikely to occur.**
Australian Painted Snipe	*Rostratula australis*	EN		L	cr	Generally inhabits shallow terrestrial freshwater wetlands, including temporary and permanent lakes, swamps and claypans. They also use inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains. Typical sites include those with rank emergent tussocks of grass, sedges, rushes or reeds, or samphire; often with scattered clumps of lignum Muehlenbeckia or canegrass or sometimes tea-tree (Melaleuca). Sometimes utilises areas that are lined with trees, or that have some scattered fallen or washed-up timber (DotE 2016a).	None	N/A	No suitable habitat - **unlikely to occur.**
Barking Owl	*Ninox connivens connivens*			L	e	Eucalyptus dominated forests and woodlands, commonly near water-bodies, such as streams and rivers, and requires hollow trees for nesting and trees with dense foliage for roosting (Higgins 1999).	1	1/01/1999	No suitable habitat - **unlikely to occur.**
Black-faced Monarch	*Monarcha melanopsis*		M (Bonn Convention (A2H))			Rainforests, eucalypt woodlands, coastal scrub and damp gullies (Higgins et al. 2006)	None	N/A	No suitable habitat - **unlikely to occur.**
Common Greenshank	*Tringa nebularia*		M (JAMBA, CAMBA, ROKAMBA, Bonn Convention (A2H))		v	Inhabits wide range of coastal or inland wetlands with varying levels of salinity; mainly muddy margins or rocky shores of wetlands (Higgins and Davies 1996).	None	N/A	No suitable habitat - **unlikely to occur.**
Curlew Sandpiper	*Calidris ferruginea*	CR	M (JAMBA, CAMBA, ROKAMBA, Bonn Convention (A2H))		e	Inhabits wide range of coastal or inland wetlands with varying levels of salinity; mainly muddy margins or rocky shores of wetlands (Higgins and Davies 1996).	None	N/A	No suitable habitat - **unlikely to occur.**
Eastern Curlew	*Numenius madagascariensis*	CR	M (JAMBA, CAMBA, ROKAMBA, Bonn (A2H)		v	Inhabits sheltered coasts, especially estuaries, embayment, harbours, inlets and coastal lagoons with large intertidal mudflats or sandflats, often with beds of sea grass (Higgins and Davies 1996).	None	N/A	No suitable habitat - **unlikely to occur.**
Eastern Great Egret	*Ardea modesta*			L	v	Occurs in a variety of wetlands including: permanent water bodies on flood plains; shallows of deep permanent lakes, either open or vegetated with shrubs or trees; semi-permanent swamps with tall emergent vegetation (e.g. bulrush) and herb dominated seasonal swamps with abundant aquatic flora (Marchant and Higgins 1990).	2	1/01/1981	No suitable habitat - **unlikely to occur.**
Fork-tailed Swift	*Apus pacificus*		M (JAMBA,CAMBA, ROKAMBA)			The species can occur in wet sclerophyll forest but mainly prefers open forest or plains. It is almost exclusively aerial and feeds up to hundreds on metres above the ground, but can feed among open forest canopy. The species breeds internationally and seldom roosts in trees and is unlikely to be impacted by the development (Higgins et al 2006b).	None	N/A	No suitable habitat - **unlikely to occur.**

Common Name	Scientific name	EPBC-T	EPBC-M	FFG-T	DELWP	Habitat	Number of records	Date of last record	Likelihood of occurrence
Glossy Ibis	*Plegadis falcinellus*		M (CAMBA, Bonn (A2S))		nt	Prefer freshwater inland wetlands, in particular, permanent or ephemeral water bodies and swamps with abundant vegetation (Marchant and Higgins 1990).	2	1/04/1999	No suitable habitat - **unlikely to occur.**
Latham's Snipe	*Gallinago hardwickii*		M (JAMBA, CAMBA, ROKAMBA, Bonn A2H)		nt	Occurs in wide variety of permanent and ephemeral wetlands; it prefers open freshwater wetlands with dense cover nearby, such as the edges of rivers and creeks, bogs, swamps, waterholes. The species is wide spread in southeast Australia and most of its population occurs in Vic. Except in the northwest of the state. (Naarding 1983; Higgins and Davies 1996).	4	26/09/2008	No suitable habitat - **unlikely to occur.**
Orange-bellied Parrot	*Neophema chrysogaster*	CE	M (JAMBA)	L	cr	The Orange-bellied Parrot is endemic to south-eastern Australia. Its current non-breeding mainland distribution is from the mouth of the Murray River in South Australia, along the coast, to the east of Jack Smith Lake in South Gippsland, Victoria, covering approximately 1000 km of coastline. The most used sites in Victoria are around Port Phillip Bay and Bellarine Peninsula. In South Australia, Carpenter Rocks is the main site. During winter on the mainland, found mostly within 3 km of the coast. In Victoria, they mostly occur in sheltered coastal habitats, such as bays, lagoons and estuaries, or, rarely, saltworks. They are also found in low samphire herbland dominated by Beaded Glasswort (Sarcocornia quinqueflora), Sea Heath (Frankenia pauciflora) or Sea-blite (Suaeda australis), and in taller shrubland dominated by Shrubby Glasswort (Sclerostegia arbuscula). They are sometimes found in low samphire dominated by Grey Glasswort (Halosarcia halocnemoides) or in Chenopodium herbfields. Breeds at Melaleuca in Tas during spring/summer months (DotE 2016b).	None	N/A	No suitable habitat - **unlikely to occur.**
Osprey	*Pandion cristatus*		M (Bonn Convention (A2S))			Rare vagrant to Victoria (Marchant & Higgins 1993). Littoral and coastal habitats and terrestrial wetlands. They are mostly found in coastal areas but occasionally travel inland along major rivers (Johnstone & Storr 1998; Marchant & Higgins 1993; Olsen 1995). They require extensive areas of open fresh, brackish or saline water for foraging (Marchant & Higgins 1993).	None	N/A	No suitable habitat - **unlikely to occur.**
Painted Honeyeater	*Grantiella picta*	VU		L	v	Inhabits box-ironbark forests and woodlands and mainly feeds on the fruits of mistletoe. Strongly associated with mistletoe around the margins of open forests and woodlands. Occurs at few localities. Uncommon breeding migrant from further north, arriving in October and leaving in February. (Higgins et al. 2001; Tzaros 2005).	None	N/A	No suitable habitat - **unlikely to occur.**
Powerful Owl	*Ninox strenua*			L	v	Open and tall wet sclerophyll forests with sheltered gullies and old growth forest with dense understorey. They are also found in dry forests with box and ironbark eucalypts and River Red Gum. Large old trees with hollows are required by this species for nesting. In Victoria, the Powerful Owl is widespread, having been recorded from most of the state. However, throughout its range it is uncommon and occurs in low densities. (Higgins 1999; Soderquist et al. 2002).	4	3/05/2005	No suitable habitat - **unlikely to occur.**

Common Name	Scientific name	EPBC-T	EPBC-M	FFG-T	DELWP	Habitat	Number of records	Date of last record	Likelihood of occurrence
Red-necked Stint	*Calidris ruficollis*		M (JAMBA, CAMBA, ROKAMBA, Bonn Convention (A2H))			Inhabit shallow fresh to saline wetlands, usually coastal to near-coastal, but occasionally farther inland. Wetlands often have open fringing mudflats and low emergent or fringing vegetation (Higgins and Davies 1996).	4	29/11/1974	No suitable habitat - **unlikely to occur.**
Regent Honeyeater	*Anthochaera phrygia*	CR	M (JAMBA)	L	cr	Inhabits dry box-ironbark eucalypt forests near rivers and creeks on inland slopes of the Great Dividing Range. It could also occur in small remnant patches or in mature trees in farmland or partly cleared agricultural land (Higgins et al. 2001).	None	N/A	No suitable habitat - **unlikely to occur.**
Rufous Fantail	*Rhipidura rufifrons*		M (Bonn Convention (A2H))			Primarily found in dense, moist habitats. Less often present in dry sclerophyll forests and woodlands (Higgins et al. 2006).	4	27/01/2011	No suitable habitat - **unlikely to occur.**
Satin Flycatcher	*Myiagra cyanoleuca*		M (Bonn Convention (A2H))			Tall forests and woodlands in wetter habitats but not in rainforest (Higgins et al. 2006)	4	30/10/2007	No suitable habitat - **unlikely to occur.**
Swift Parrot	*Lathamus discolor*	CR		L	e	Prefers a narrow range of eucalypts in Victoria, including White Box, Red Ironbark and Yellow Gum as well as River Red Gum when this species supports abundant 'lerp'. Breeds in Tasmania and migrates to the mainland of Australia for the autumn, winter and early spring months. It lives mostly north of the Great Dividing Range, passing through two areas of Victoria on migration: the Port Phillip district and Gippsland. (Emison et al. 1987; Higgins 1999; Kennedy and Tzaros 2005).	1	26/09/2008	There is suitable foraging habitat in some of the planted euclalyptus trees however due to lack of recent and regular records it is considered **unlikely to occur.**
White-bellied Sea-Eagle	*Haliaeetus leucogaster*			L	v	Maritime habitats, terrestrial large wetlands and coastal lands of tropical and temperate Australia and offshore islands, ranging far inland only over large rivers and wetlands. The eagles usually breed on coast and offshore islands and inland beside large lakes or rivers, usually in tall trees in or near water, also in cliffs, rock pinnacles and escarpments. (Marchant and Higgins 1993).	1	7/03/2009	No suitable habitat - **unlikely to occur.**
White-throated Needletail	*Hirundapus caudacutus*		M (JAMBA, CAMBA, ROKAMBA)		v	Aerial, over all habitats, but probably more over wooded areas, including open forest and rainforest. Often over heathland and less often above treeless areas such as grassland and swamps or farmland (Higgins 1999).	6	1/01/1981	This species may fly over the study area during the summer months - **potential to occur.**
Yellow Wagtail	*Motacilla flava*		M (JAMBA, CAMBA, ROKAMBA)			Extremely uncommon migrant. Few sightings in Victoria. Mostly occurs in well-watered open grasslands on the fringes of wetlands. Roosts in mangroves and other dense vegetation (DotE 2015).	None	N/A	No suitable habitat - **unlikely to occur.**
Mammals									
Broad-toothed Rat	*Mastacomys fuscus mordicus*	VU		L	e	Alpine sedges and heaths, wet sedge and grass patches in forest in eastern highlands, south gippsland highland and Otways (Menkhorst 1995).	None	N/A	No suitable habitat - **unlikely to occur.**
Greater Glider	*Petauroides volans*	VU		L	v	Forest habitats including peppermint, stringybark, ash and gum dominated (Menkhorst 1995).	None	N/A	No suitable habitat - **unlikely to occur.**

Common Name	Scientific name	EPBC-T	EPBC-M	FFG-T	DELWP	Habitat	Number of records	Date of last record	Likelihood of occurrence
Grey-headed Flying-fox	*Pteropus poliocephalus*	VU		L	v	Brisbane, Newcastle, Sydney and Melbourne are occupied continuously. Elsewhere, during spring, they are uncommon south of Nowra and widespread in other areas of their range. Roosts in aggregations of various sizes on exposed branches. Roost sites are typically located near water, such as lakes, rivers or the coast. Roost vegetation includes rainforest patches, stands of Melaleuca, mangroves and riparian vegetation, but colonies also use highly modified vegetation in urban and suburban (DotE 2016c)	None	N/A	No suitable habitat - **unlikely to occur.**
Leadbeater's Possum	*Gymnobelideus leadbeateri*	CR		L	e	Ash forest with critical requirements of abundant nest sites in old hollow-bearing trees, a structurally dense canopy or secondary tree layer, an understorey containing Acacia spp.. (Menkhorst 1995).	1	31/12/1900	No suitable habitat - **unlikely to occur.**
Smoky Mouse	*Pseudomys fumeus*	EN		L	e	The Konoom occurs in a wide variety of habitats, from heath to dry sclerophyll forest, especially along ridgetops with a heath understorey, and occasionally adjacent wetter habitats such as fern gullies. A characteristic of many localities, except those in wet gullies, is a floristically diverse shrub layer with members of the plant families Epacridaceae, Fabaceae and Mimosaceae well represented (DotE 2016d).	None	N/A	No suitable habitat - **unlikely to occur.**
Southern Brown Bandicoot	*Isoodon obesulus obesulus*	EN		L	nt	Species experts define suitable habitat for Southern Brown Bandicoots (eastern) to be any patches of native or exotic vegetation, within their distribution, which contains understorey vegetation structure with 50–80% average foliage density in the 0.2–1 m height range. In areas where native habitats have been degraded or diminished, exotic vegetation, such as Blackberry (Rubus spp.), can and often does, provide important habitat (DotE 2016e).	32	27/05/2013	No suitable habitat - **unlikely to occur.**
Spot-tailed Quoll	*Dasyurus maculatus maculatus*	EN		L	e	Rainforest, wet and dry forest, coastal heath and scrub and River Red-gum woodlands along inland rivers (Menkhorst 1995).	None	N/A	No suitable habitat - **unlikely to occur.**
Swamp Antechinus	*Antechinus minimus maritimus*	VU		L	nt	Dense wet heath, tussock grassland, sedgeland heathy woodland and coastal heath and scrub (Menkhorst 1995).	1	23/10/1998	No suitable habitat - **unlikely to occur.**
White-footed Dunnart	*Sminthopsis leucopus*			L	nt	Coastal tussock grassland and sedgeland, wet heath, and forest or woodland with a dense heathy understorey or mid-storey vegetation (Menkhorst 1995).	2	13/04/2012	No suitable habitat - **unlikely to occur.**
Frogs									
Growling Grass Frog	*Litoria raniformis*	VU		L	e	Permanent, still or slow flowing water with fringing and emergent vegetation in streams, swamps, lagoons and artificial wetlands such as farm dams and abandoned quarries (Clemann and Gillespie 2004).	1	1/01/1981	No suitable habitat - **unlikely to occur.**
Fish									
Australian Grayling	*Prototroctes maraena*	VU		L	v	Large and small coastal streams and rivers with cool, clear waters with a gravel substrate and altering pools and riffles (Cadwallader and Backhouse 1983).	None	N/A	No suitable habitat - **unlikely to occur.**
Dwarf Galaxias	*Galaxiella pusilla*	VU		L	e	Barwon River to Mitchell River. Vegetated margins of still water, ditches, swamps and backwaters of creeks, both ephemeral and permanent (Allen et al. 2002).	None	N/A	No suitable habitat - **unlikely to occur.**

Common Name	Scientific name	EPBC-T	EPBC-M	FFG-T	DELWP	Habitat	Number of records	Date of last record	Likelihood of occurrence
Invertebrates									
Giant Gippsland Earthworm	*Megascolides australis*	VU		L	e	It is generally found in the deep blue-grey clay-like soils over cretaceous rocks in the western Strezlecki Ranges and in the alluvial soils in depositional zones to the north and south-west (Smith & Peterson 1982, Yen & Van Praagh 1994).	101	27/07/2010	Different soil types occur at the study area to where this species has been recorded in the surrounding region, therefore no suitable habitat - **unlikely to occur.**
Golden Sun Moth	*Synemon plana*	CR		L	cr	Areas that are, or have been native grasslands or grassy woodlands. It is known to inhabit degraded grasslands with introduced grasses being dominant, with a preference for the native wallaby grass being present (DEWHA 2009).	None	N/A	No suitable habitat - **unlikely to occur.**
Narracan Burrowing Crayfish	*Engaeus phyllocercus*			L	e	Typically found in the flood bed region of fern tree gullies in wet sclerophyll forest. The Crayfish appears to be confined primarily to blue-grey clay soils, however, a site at Darlimurla State Forest had a brown to light grey soil with relatively high coarse sand component (Van Praagh & Hinkley 1999).	2	23/11/1950	No suitable habitat - **unlikely to occur.**

Notes: EPBC-T = threatened species status under EPBC Act; CR = 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 2009; DSE 2013); cr = critically endangered; e = endangered; v = vulnerable; nt = lower risk near threatened.

5.6.3. 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 each 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. No threatened bird species are considered susceptible to possible impacts from any development in the study area.

Migratory Birds

One listed migratory bird species has 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.

- **White-throated Needletail** (EPBC Act: migratory)

  The White-throated Needletail is a summer visitor to south east Australia. It spends the majority of its lilfe on the wing only coming down to land when nesting in south east Asia. This species is often observed in large flocks flying ahead of storm fronts catching insects escaping the rain. This species has the potential to fly over the study area. The potential sub-division and development of the study area will not impact this species.

Mammals

No listed mammal species are considered to have the potential to occur in the study area. As such, no listed mammal species are considered susceptible to possible impacts from any development in the study area.

Reptiles

No listed reptile species are considered to have the potential to occur in the study area. As such, no listed reptile species are considered susceptible to possible impacts from any development in the study area.

Frogs

No listed frog species are considered to have the potential to occur in the study area. As such, no listed frog species are considered susceptible to possible impacts from any development in the study area.

Fish

No listed fish species are considered to have the potential to occur in the study area. As such, no listed fish species are considered susceptible to possible impacts from any development in the study area.

Invertebrates

No listed invertebrate species are considered to have the potential to occur in the study area. As such, no listed invertebrate species are considered susceptible to possible impacts from any development in the study area.

5.7. 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 based on the factors described below.

- Natural Damp Grassland of the Victorian Coastal Plains Ecological community – listed as critically endangered under the EPBC Act.

6. IMPACTS OF PROPOSED DEVELOPMENT

6.1. Proposed development

The current proposal will involve subdivision of the entire study area for a residential estate.

The extent of the area of impact for the current proposal was considered to include the outer-most boundaries of the following:

- The study area presented in Figure 1.

6.2. Impacts of proposed development

Impacts have been identified for the proposed development following implementation of the above mitigation measures in the design process. These impacts on ecological values are outlined below and shown in Figure 2.

6.2.1. Native vegetation

The current proposal will result in the loss of a total 'extent' of 0.228 hectares of native vegetation as represented in Figure 2 and documented in the Test Clearing Proposal report generated by BL&A using the Ensym Native Vegetation Regulations Tool (DELWP 2017d) (Appendix 8). This comprised:

- The loss of 0.017 hectares of native vegetation from remnant patches; and
- The loss of 3 scattered trees. Scattered tree losses have been converted to an extent of loss (Appendix 8) by multiplying the number of trees by a standard area of 0.070 hectares; equating to a loss of 0.042 hectares.

It is understood that no native vegetation has been approved for removal on the property within the last five years.

6.2.2. Modelled species important habitat

The current proposal footprint will not have a proportional impact on modelled habitat above the specific offset threshold any rare or threatened species listed on DELWP's advisory lists as determined by DELWP and presented in Appendix 8.

6.2.3. Listed flora species

The analysis of the likelihood of occurrence of listed flora species presented in Section 5.4.2 identified that no listed flora species could be impacted by any development in the study area.

6.2.4. Fauna habitat

There is very limited remnant habitat on site and the vast majority of fauna habitat has been highly modified. The planted trees provide limited fauna habitat to common occurring fauna species. The removal of this habitat will result on the loss of some foraging and roosting sites for common occurring fauna species.

6.2.5. Listed fauna species

The analysis of susceptibility of listed fauna species to impacts presented in Section 5.6.3 identified that no listed fauna species could be impacted by any development in the study area.

6.2.6. Threatened ecological communities

The proposed development footprint will not result in an impact on any threatened listed ecological communities.

6.3. Further mitigation recommendations

The following recommendations for mitigation in the *design phase* would address the 'avoid and minimise' strategies outlined in the Guidelines.

- Consideration should be given to retaining the remnant Manna Gum (Tree #1) and some of the large Blue-Gum trees to provide habitat for native fauna.
- Consideration should be given to retaining the wetland and associated scattered Messmate Stringybark tree (Tree #2) and Swamp Gum tree (Tree #3).

Implementing these mitigation measures would also reduce the requirements to offset native vegetation removal.

Figure 2: Native vegetation to be removed

Project: 18A Davis St and 32 Grundy St, Nyora
Client: Beveridge Williams
Date: 31/03/2017

Legend

- Study area
- Scattered trees
- Lowland Forest (EVC 16)
- Cadastre
- Scattered trees to be removed
- Native vegetation to be removed

N

Metres
0 40

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7. IMPLICATIONS UNDER LEGISLATION AND POLICY

7.1. Summary of planning implications

A permit is required under DPO5 for the proposed subdivision within the study area. The permit must not be issued for the proposed subdivision until the land can be serviced by reticulated sewerage. The Responsible Authority will consider whether to grant the permit based on a development plan addressing the specific criteria outlined in the South Gippsland Planning Scheme.

A planning permit under Clause 52.17 of the South Gippsland Planning Scheme is required for the removal of native vegetation from within the study area.

7.2. Implications under the Guidelines

7.2.1. Risk–based assessment pathway for the site

The risk-based assessment pathway is determined on the basis of 'extent risk' and 'location risk'. The extent risk was found to be 0.228 hectares and the study area contained mapped areas of the following *location risk* categories:

- Location Risk A – covering the majority of this area;
- Location Risk B –associated a highly localised area in the central part of the Davis Street property coinciding with the remnant patch.

Based on the details above and the criteria outlined in Section 3.3 the Guidelines stipulate that the proposal will be assessed under the *low* risk assessment pathway and that a general offset applies to any approved native vegetation removal.

The current proposal would trigger a referral to DELWP as it meets the criteria specified in Section 3.3.

7.2.2. Offset requirements

Offsets required to compensate for the proposed removal of native vegetation from the study area have been determined using DELWP's Ensym Native Vegetation Regulations Tool (Appendix 8). A summary of the required offsets is provided below.

- 0.010 *general* biodiversity equivalence units with a minimum strategic biodiversity score of 0.123 within the Port Phillip and Westernport Catchment Management Authority area or the South Gippsland Shire Council.

Under the Guidelines *all* offsets must be secured prior to the removal of native vegetation.

7.2.3. Offset strategy

The offset target for the current proposal is unlikely to be achievable within the study area given the above requirements and the proposal involving removal of all the native vegetation present.

The offsets strategy involves identifying and securing third party (offsite) offsets through a native vegetation broker.

7.3. 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.

If there is a possibility of a significant impact on nationally threatened species or communities or listed migratory species, a Referral under the EPBC Act should be considered. The Minister will decide after 20 business days whether the project will be a 'controlled action' under the EPBC Act, in which case it cannot be undertaken without the approval of the Minister. This approval depends on a further assessment and approval process (lasting between three and nine months, depending on the level of assessment).

Based on the relevant guidelines and the likelihood of occurrence assessment, the proposed development is unlikely to result in a significant impact on any EPBC Act listed values.

Therefore, there are no implications under the EPBC Act.

7.4. FFG Act

The Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act) lists threatened and protected species and ecological communities (DELWP 2016a, DELWP 2016b). Any removal of threatened flora species or communities (or protected flora) listed under the FFG Act from public land requires a Protected Flora Permit under the Act, obtained from DELWP.

The FFG Act only applies to private land in relation to the commercial collection of grasstrees, tree-ferns and sphagnum moss.

No FFG Act values listed as threatened or protected are susceptible to impacts from the current proposed development on public land.

7.5. EE Act

The "Ministerial Guidelines for Assessment of Environmental Effects under the *Environment Effects Act 1978"* (DSE 2006), identifies criteria which trigger a Referral to the State Minister for Planning. The criteria related to flora, fauna and native vegetation are outlined below.

<u>One or more</u> of the following would trigger a Referral:

- Potential clearing of 10 ha or more of native vegetation from an area that:
    - Is of an Ecological Vegetation Class identified as endangered by the Department of Sustainability and Environment (in accordance with Appendix 2 of Victoria's Native Vegetation Management Framework); or
    - Is, or is likely to be, of very high conservation significance (as defined in accordance with Appendix 3 of Victoria's Native Vegetation Management Framework); and
    - Is not authorised under an approved Forest Management Plan or Fire Protection Plan

- Potential long-term loss of a significant proportion (e.g. 1 to 5 percent depending on the conservation status of the species) of known remaining habitat or population of a threatened species within Victoria
- Potential long-term change to the ecological character of a wetland listed under the Ramsar Convention or in 'A Directory of Important Wetlands in Australia'
- Potential extensive or major effects on the health or biodiversity of aquatic, estuarine or marine ecosystems, over the long term

Two or more of the following would also trigger a Referral:

- Potential clearing of 10 ha or more of native vegetation, unless authorised under an approved Forest Management Plan or Fire Protection Plan
- Matters listed under the Flora and Fauna Guarantee Act 1988:
    - Potential loss of a significant area of a listed ecological community; or
    - Potential loss of a genetically important population of an endangered or threatened species (listed or nominated for listing), including as a result of loss or fragmentation of habitats; or
    - Potential loss of critical habitat; or
    - Potential significant effects on habitat values of a wetland supporting migratory bird species.

Based on these criteria, a Referral to the state Minister for Planning will not be required under the EE Act for the aspects covered by the current investigation.

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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:

General biodiversity equivalence score =
habitat hectares x 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:

Specific biodiversity equivalence score =
habitat hectares x 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:

General risk-adjusted offset requirement =
general biodiversity equivalence score (clearing site) x 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:

Specific risk-adjusted offset requirement =
specific biodiversity equivalence score (clearing site) x 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). *Note: this guideline also applies to native vegetation that does not meet the definition of either a remnant patch or scattered trees.*	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 defendable 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: Detailed habitat hectare assessment results

Habitat Zone			A
Bioregion			Gippsland Plain
EVC Number			16
Total area of Habitat Zone (ha)			0.017
Site Condition	Large Old Trees	/10	0
	Tree Canopy Cover	/5	0
	Lack of Weeds	/15	0
	Understorey	/25	5
	Recruitment	/10	5
	Organic Matter	/5	0
	Logs	/5	0
		Site condition standardising multiplier*	1.00
		Site Condition subtotal	*10*
Landscape Context	Patch Size	/10	1
	Neighbourhood	/10	0
	Distance to Core	/5	1
Total Condition Score		**/100**	**12**

* Modified approach to habitat scoring - refer to Table 14 of DELWP's Vegetation Quality Assessment Manual (DSE, 2004)

Appendix 3: Scattered trees in the study area

Tree no.	Common name	Scientific name	DBH (cm)	Habitat category	Radius of TRZ (m)	Remove/Retain
1	Manna Gum	*Eucalyptus viminalis*	103	High quality	12.36	Remove
2	Messmate Stringybark	*Eucalyptus obliqua*	79	Moderate quality	9.48	Remove
3	Swamp Gum	*Eucalyptus ovata*	36	Low quality	4.32	Remove

Notes:

DBH = Diameter at breast height (130 cm from the ground); **TRZ** = Tree Retention Zone (see below)

DELWP guidelines (DSE 2010) provide definitions regarding tree losses. These are outlined below, and it is considered that they should be applied to scattered trees and edges of treed remnant patches when determining the proximity of development to retained native vegetation.

Any tree is deemed lost when:

- Earthworks encroach on more than 10% of its Tree Retention Zone (TRZ) during construction activities. Tree Retention Zones:
    - Are defined as the area from the respective tree within a radius of 12 times the DBH of the respective tree, including the area above and below ground, notwithstanding it can be a minimum of two metres and a maximum of 15 metres radius around the respective tree
- Directional drilling within its TRZ occurs at less than 600 millimetres below the surface, or is not confirmed to be appropriate (including considerations concerning bore hole width) by a qualified arborist
- Lopping removes more than 1/3 of its crown

Appendix 4: 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	EPBC-thrt	FFG-thrt	FFG-prot	Recorded
*	Agapanthus	*Agapanthus praecox* subsp. *orientalis*				X
*	Aleppo Pine	*Pinus halepensis*				X
*	Aloe	*Aloe* spp.				X
	Annual Fireweed	*Senecio glomeratus*			p	
*	Apple	*Malus pumila*				X
	Apple	*Angophora* spp.				X
	Austral Bear's-ear	*Cymbonotus preissianus*			p	
	Austral Grass-tree	*Xanthorrhoea australis*			p	
	Austral King-fern	*Todea barbara*			p	
	Autumn Wasp-orchid	*Chiloglottis reflexa*			p	
	Bat's Wing Fern	*Histiopteris incisa*			p	
	Beaked Fireweed	*Senecio prenanthoides*			p	
	Beard Heath	*Leucopogon* spp.			p	
	Bird Orchid	*Chiloglottis* spp.			p	
*	Black Nightshade	*Solanum nigrum* s.l.				X
	Black Wattle	*Acacia mearnsii*			p	
*	Blackberry	*Rubus fruticosus* spp. agg.				X
	Black-tongue Hood-orchid	*Caladenia congesta*			p	
	Blackwood	*Acacia melanoxylon*				X
	Bottle Daisy	*Lagenophora* spp.			p	
	Broom Heath	*Monotoca* spp.			p	
*	Brown-top Bent	*Agrostis capillaris* var. *capillaris*				X
	Button Everlasting	*Coronidium scorpioides* s.s.			p	

Origin	Common Name	Scientific Name	EPBC-thrt	FFG-thrt	FFG-prot	Recorded
	Caladenia	*Caladenia* spp.			p	
*	Cape Ivy	*Delairea odorata*				X
	Cassinia	*Cassinia* spp.			p	
	Cinnamon Bells	*Gastrodia sesamoides* s.s.			p	
	Clover Glycine	*Glycine latrobeana*	VU	L	p	
#	Coast Wattle	*Acacia longifolia* subsp. *sophorae*			p	
	Cobra Greenhood	*Pterostylis grandiflora*			p	
*	Cocksfoot	*Dactylis glomerata*				X
	Common Beard-heath	*Leucopogon virgatus*			p	
	Common Bird-orchid	*Chiloglottis gunnii* s.l.			p	
	Common Bird-orchid	*Chiloglottis valida*			p	
	Common Bottle-daisy	*Lagenophora stipitata*			p	
	Common Cassinia	*Cassinia aculeata* subsp. *aculeata*			p	
	Common Cotula	*Cotula australis*			p	
	Common Cudweed	*Euchiton involucratus* s.l.			p	
	Common Ground-fern	*Calochlaena dubia*			p	
	Common Heath	*Epacris impressa*			p	
	Common Maidenhair	*Adiantum aethiopicum*			p	
	Common Rasp-fern	*Doodia australis*			p	
	Common Triggerplant	*Stylidium armeria*			p	
*	Cootamundra Wattle	*Acacia baileyana*				X
	Coral Fern	*Gleichenia* spp.			p	
	Cotton Fireweed	*Senecio quadridentatus*			p	
	Cotula	*Cotula* spp.			p	
	Cranberry Heath	*Astroloma humifusum*			p	

Origin	Common Name	Scientific Name	EPBC-thrt	FFG-thrt	FFG-prot	Recorded
	Creeping Cotula	*Leptinella reptans* s.l.			p	
	Creeping Cotula	*Leptinella reptans* s.s.			p	
	Creeping Cudweed	*Euchiton japonicus* s.s.			p	
*	Curled Dock	*Rumex crispus*				X
	Dandelion	*Taraxacum* spp.			p	
*	Douglas Fir	*Pseudotsuga menziesii* var. *menziesii*				X
	Drooping Cassinia	*Cassinia* sp. aff. *arcuata (Midlands)*			p	
	Early Hood-orchid	*Caladenia praecox*			p	
	Eastern Spider-orchid	*Caladenia orientalis*	EN	L	p	
*	English Ash	*Fraxinus excelsior*				X
	Everlasting	*Coronidium* spp.			p	
	Fireweed Groundsel	*Senecio linearifolius*			p	
	Fishbone Water-fern	*Blechnum nudum*			p	
*	Flatweed	*Hypochaeris radicata*				X
*	Flax-leaf Paperbark	*Melaleuca linariifolia*				X
	Forest Sun-orchid	*Thelymitra arenaria*			p	
	Forked Comb-fern	*Schizaea bifida* s.s.			p	
	Fringed Brachyloma	*Brachyloma ciliatum*			p	
	Gnat Orchid	*Acianthus exsertus* s.l.			p	
	Grass Tree	*Xanthorrhoea* spp.			p	
	Grass Triggerplant	*Stylidium graminifolium* s.l.			p	
	Grass Triggerplant	*Stylidium graminifolium* s.s.			p	
	Green Bird-orchid	*Chiloglottis cornuta*			p	
	Greenhood	*Pterostylis* spp.			p	
	Green-striped Greenhood	*Pterostylis chlorogramma*	VU	L	p	

Origin	Common Name	Scientific Name	EPBC-thrt	FFG-thrt	FFG-prot	Recorded
	Gristle Fern	*Blechnum cartilagineum*			p	
	Ground Fern	*Hypolepis* spp.			p	
	Groundsel	*Senecio* spp.			p	
	Hard Water-fern	*Blechnum wattsii*			p	
	Harsh Ground-fern	*Hypolepis muelleri*			p	
*	Hawthorn	*Crataegus monogyna*				X
	Heath	*Epacris* spp.			p	
	Heath Wattle	*Acacia brownii*			p	
*	Honey Locust	*Gleditsia triacanthos*				X
	Honey-pots	*Acrotriche serrulata*			p	
	Hop Wattle	*Acacia stricta*			p	
	Indian Weed	*Sigesbeckia orientalis* subsp. *orientalis*			p	
	Jagged Fireweed	*Senecio biserratus*			p	
	Kangaroo Fern	*Microsorum pustulatum* subsp. *pustulatum*			p	
	Large Duck-orchid	*Caleana major*			p	
	Large Sickle Greenhood	*Pterostylis falcata* s.s.			p	
	Large Tongue-orchid	*Cryptostylis subulata*			p	
	Large-leaf Cinnamon-wattle	*Acacia leprosa* var. *uninervia*			p	
	Leafy Greenhood	*Pterostylis cucullata*	VU	L	p	
*	Lemon	*Citrus*X *limon*				X
#	Lilly Pilly	*Syzygium smithii*				X
*	Loquat	*Eriobotrya japonica*				X
	Manna Gum	*Eucalyptus viminalis*				X
	Maroon Leek-orchid	*Prasophyllum frenchii*	EN	L	p	
	Maroonhood	*Pterostylis pedunculata*			p	

Origin	Common Name	Scientific Name	EPBC-thrt	FFG-thrt	FFG-prot	Recorded
	Matted Flax-lily	*Dianella amoena*	EN	L	p	
	Mauve-tuft Sun-orchid	*Thelymitra malvina*			p	
	Mayfly Orchid	*Acianthus caudatus*			p	
	Messmate Stringybark	*Eucalyptus obliqua*				X
	Metallic Sun-orchid	*Thelymitra epipactoides*	EN	L	p	
*	Mirror Bush	*Coprosma repens*				X
	Mosquito Orchid	*Acianthus* spp.			p	
	Mother Shield-fern	*Polystichum proliferum*			p	
	Narrow-leaf Wattle	*Acacia mucronata* subsp. *longifolia*			p	
	Necklace Fern	*Asplenium flabellifolium*			p	
	Nodding Greenhood	*Pterostylis nutans*			p	
*	Oleander	*Nerium oleander*				X
	Onion Orchid	*Microtis* spp.			p	
	Orange-tip Finger-orchid	*Caladenia aurantiaca*			p	
	Orchid	*Orchidaceae* spp.			p	
	Pacific Azolla	*Azolla filiculoides*			p	
*	Panic Veldt-grass	*Ehrharta erecta* var. *erecta*				X
*	Paspalum	*Paspalum dilatatum*				X
*	Pepper Tree	*Schinus molle*				X
	Pink Beard-heath	*Leucopogon ericoides*			p	
	Pink Sun-orchid	*Thelymitra carnea*			p	
	Pouched Coral-fern	*Gleichenia dicarpa*			p	
	Prickly Broom-heath	*Monotoca scoparia*			p	
	Prickly Moses	*Acacia verticillata*			p	
	Prickly Moses	*Acacia verticillata* subsp. *verticillata*			p	

Origin	Common Name	Scientific Name	EPBC-thrt	FFG-thrt	FFG-prot	Recorded
	Purple Beard-orchid	*Calochilus robertsonii* s.l.			p	
*	Radiata Pine	*Pinus radiata*				X
	Red-beaks	*Pyrorchis nigricans*			p	
*	Ribwort	*Plantago lanceolata*				X
	River Swamp Wallaby-grass	*Amphibromus fluitans*	VU			
	Rosy Hyacinth-orchid	*Dipodium roseum* s.s.			p	
	Rough Comb-fern	*Schizaea asperula*			p	
	Rough Fireweed	*Senecio hispidulus* s.l.			p	
	Rough Fireweed	*Senecio hispidulus* s.s.			p	
	Rough Tree-fern	*Cyathea australis*			p	
	Ruddy Ground-fern	*Hypolepis rugosula*			p	
#	Sallow Wattle	*Acacia longifolia* subsp. *longifolia*			p	
	Scrambling Coral-fern	*Gleichenia microphylla*			p	
	Screw Fern	*Lindsaea linearis*			p	
	Shiny Cassinia	*Cassinia longifolia*			p	
	Shiny Shield-fern	*Lastreopsis acuminata*			p	
	Shrubby Fireweed	*Senecio minimus*			p	
	Slender Bottle-daisy	*Lagenophora gracilis*			p	
	Slender Clubmoss	*Lycopodiella lateralis*			p	
	Slender Fireweed	*Senecio tenuiflorus* spp. agg.			p	
	Slender Onion-orchid	*Microtis parviflora*			p	
	Slender Sun-orchid	*Thelymitra pauciflora* s.l.			p	
	Slender Sword-sedge	*Lepidosperma gunnii*				X
	Small Grass-tree	*Xanthorrhoea minor* subsp. *lutea*			p	
	Small Mosquito-orchid	*Acianthus pusillus*			p	

Origin	Common Name	Scientific Name	EPBC-thrt	FFG-thrt	FFG-prot	Recorded
	Small Pelican-orchid	*Corybas unguiculatus*			p	
	Smooth Solenogyne	*Solenogyne dominii*			p	
	Snowy Daisy-bush	*Olearia lirata*			p	
	Soft Tree-fern	*Dicksonia antarctica*			p	
	Soft Water-fern	*Blechnum minus*			p	
#	Southern Blue-gum	*Eucalyptus globulus*				X
	Sow Thistle	*Sonchus* spp.			p	
	Spike Beard-heath	*Leucopogon australis*			p	
#	Spotted Gum	*Corymbia maculata*				X
	Spurred Helmet-orchid	*Corybas aconitiflorus*			p	
	Star Cudweed	*Euchiton involucratus* s.s.			p	
	Stately Helmet-orchid	*Corybas diemenicus* s.s.			p	
	Strzelecki Gum	*Eucalyptus strzeleckii*	VU	L	p	
	Sun Orchid	*Thelymitra* spp.			p	
	Swamp Everlasting	*Xerochrysum palustre*	VU	L	p	
	Swamp Gum	*Eucalyptus ovata*				X
	Swamp Onion-orchid	*Hydrorchis orbicularis*			p	
	Swamp Selaginella	*Selaginella uliginosa*			p	
#	Sweet Pittosporum	*Pittosporum undulatum*				X
*	Sweet Vernal-grass	*Anthoxanthum odoratum*				X
	Sweet Wattle	*Acacia suaveolens*			p	
	Tall Greenhood	*Pterostylis longifolia* s.l.			p	
	Tall Greenhood	*Pterostylis melagramma*			p	
	Tender Brake	*Pteris tremula*			p	
	Tiny Greenhood	*Pterostylis parviflora* s.l.			p	

Origin	Common Name	Scientific Name	EPBC-thrt	FFG-thrt	FFG-prot	Recorded
	Tiny Greenhood	*Pterostylis parviflora* s.s.			p	
*	Toowoomba Canary-grass	*Phalaris aquatica*				X
*	Tortured Willow	*Salix matsudana 'Tortuosa'*				X
	Trailing Ground-berry	*Acrotriche prostrata*			p	
	Tree Everlasting	*Ozothamnus ferrugineus*			p	
	Trim Greenhood	*Pterostylis concinna*			p	
	Twiggy Daisy-bush	*Olearia ramulosa*			p	
	Twining Fringe-lily	*Thysanotus patersonii*			p	
	Twisted Sun-orchid	*Thelymitra flexuosa*			p	
	Victorian Christmas-bush	*Prostanthera lasianthos*			p	
	Water Fern	*Blechnum* spp.			p	
	Wattle	*Acacia* spp.			p	
	Wax-lip Orchid	*Glossodia major*			p	
*	Weeping Willow	*Salix babylonica* s.l.				X
*	White Poplar	*Populus alba*				X
#	Wirilda	*Acacia provincialis*			p	
	Wiry Buttons	*Leptorhynchos tenuifolius*			p	
	Yellow Onion-orchid	*Microtidium atratum*			p	

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;

X = recorded in the study area

* = introduced to Victoria

= Victorian native taxa occurring outside their natural range

Appendix 5: Terrestrial vertebrate fauna species recorded and listed species that have the potential to occur in the study area

Common Name	Scientific Name	EPBC-thrt	EPBC-mig	FFG-thrt	DELWP	Recorded
Birds						
Australian Hobby	*Falco longipennis*					
Australian King-Parrot	*Alisterus scapularis*					X
Australian Magpie	*Gymnorhina tibicen*					X
Australian Raven	*Corvus coronoides*					
Australian Shelduck	*Tadorna tadornoides*					
Australian White Ibis	*Threskiornis molucca*					
Australian Wood Duck	*Chenonetta jubata*					
Black-faced Cuckoo-shrike	*Coracina novaehollandiae*					
Black-shouldered Kite	*Elanus axillaris*					
Brown Falcon	*Falco berigora*					
Brown Goshawk	*Accipiter fasciatus*					
Brown Thornbill	*Acanthiza pusilla*					X
Brown-headed Honeyeater	*Melithreptus brevirostris*					X
Cattle Egret	*Ardea ibis*					
Collared Sparrowhawk	*Accipiter cirrhocephalus*					
Common Blackbird	*Turdus merula*				*	X
Common Bronzewing	*Phaps chalcoptera*					
Common Myna	*Acridotheres tristis*				*	
Common Starling	*Sturnus vulgaris*				*	X
Crested Pigeon	*Ocyphaps lophotes*					X
Crimson Rosella	*Platycercus elegans*					X
Eastern Rosella	*Platycercus eximius*					
Eastern Spinebill	*Acanthorhynchus tenuirostris*					

Common Name	Scientific Name	EPBC-thrt	EPBC-mig	FFG-thrt	DELWP	Recorded
European Goldfinch	*Carduelis carduelis*					
European Greenfinch	*Carduelis chloris*				*	
Fan-tailed Cuckoo	*Cacomantis flabelliformis*					
Galah	*Eolophus roseicapilla*					X
Gang-gang Cockatoo	*Callocephalon fimbriatum*					
Golden-headed Cisticola	*Cisticola exilis*					
Grey Butcherbird	*Cracticus torquatus*					X
Grey Currawong	*Strepera versicolor*					
Grey Fantail	*Rhipidura albiscarpa*					X
Grey Shrike-thrush	*Colluricincla harmonica*					
Horsfield's Bronze-Cuckoo	*Chrysococcyx basalis*					
Horsfield's Bushlark	*Mirafra javanica*					
House Sparrow	*Passer domesticus*				*	
Laughing Kookaburra	*Dacelo novaeguineae*					
Little Corella	*Cacatua sanguinea*					
Little Raven	*Corvus mellori*					X
Little Wattlebird	*Anthochaera chrysoptera*					
Long-billed Corella	*Cacatua tenuirostris*					
Magpie-lark	*Grallina cyanoleuca*					
Musk Lorikeet	*Glossopsitta concinna*					
Nankeen Kestrel	*Falco cenchroides*					
New Holland Honeyeater	*Phylidonyris novaehollandiae*					
Noisy Miner	*Manorina melanocephala*					X
Pacific Barn Owl	*Tyto javanica*					
Pallid Cuckoo	*Cuculus pallidus*					

Common Name	Scientific Name	EPBC-thrt	EPBC-mig	FFG-thrt	DELWP	Recorded
Peregrine Falcon	*Falco peregrinus*					X
Pied Currawong	*Strepera graculina*					
Rainbow Lorikeet	*Trichoglossus haematodus*					X
Red Wattlebird	*Anthochaera carunculata*					
Red-browed Finch	*Neochmia temporalis*					X
Shining Bronze-Cuckoo	*Chrysococcyx lucidus*					
Silvereye	*Zosterops lateralis*					
Southern Boobook	*Ninox novaeseelandiae*					
Spotted Pardalote	*Pardalotus punctatus*					
Spotted Turtle-Dove	*Streptopelia chinensis*				*	X
Straw-necked Ibis	*Threskiornis spinicollis*					
Striated Pardalote	*Pardalotus striatus*					
Sulphur-crested Cockatoo	*Cacatua galerita*					X
Superb Fairy-wren	*Malurus cyaneus*					
Swift Parrot	*Lathamus discolor*	CR		L	e	
Tawny Frogmouth	*Podargus strigoides*					
Tree Martin	*Petrochelidon nigricans*					
Wedge-tailed Eagle	*Aquila audax*					
Welcome Swallow	*Petrochelidon neoxena*					
Whistling Kite	*Haliastur sphenurus*					
White-browed Scrubwren	*Sericornis frontalis*					
White-faced Heron	*Egretta novaehollandiae*					
White-naped Honeyeater	*Melithreptus lunatus*					
White-plumed Honeyeater	*Lichenostomus penicillatus*					
White-throated Needletail	*Hirundapus caudacutus*		M (JAMBA, CAMBA, ROKAMBA)		v	

Common Name	Scientific Name	EPBC-thrt	EPBC-mig	FFG-thrt	DELWP	Recorded
Willie Wagtail	*Rhipidura leucophrys*					
Yellow-faced Honeyeater	*Lichenostomus chrysops*					X
Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*					
Yellow-tailed Black-Cockatoo	*Calyptorhynchus funereus*					
Mammals						
Black Rat	*Rattus rattus*				*	
Bush Rat	*Rattus fuscipes*					
Cat	*Felis catus*				*	
Chocolate Wattled Bat	*Chalinolobus morio*					
Common Brushtail Possum	*Trichosurus vulpecula*					
Common Ringtail Possum	*Pseudocheirus peregrinus*					X
Eastern False Pipistrelle	*Falsistrellus tasmaniensis*					
Eastern Grey Kangaroo	*Macropus giganteus*					
European Hare	*Lepus europeaus*				*	
European Rabbit	*Oryctolagus cuniculus*				*	X
House Mouse	*Mus musculus*				*	
Koala	*Phascolarctos cinereus*					
Lesser Long-eared Bat	*Nyctophilus geoffroyi*					
Little Forest Bat	*Vespadelus vulturnus*					
Red Fox	*Vulpes vulpes*				*	X
Short-beaked Echidna	*Tachyglossus aculeatus*					
Southern Forest Bat	*Vespadelus regulus*					
Sugar Glider	*Petaurus breviceps*					
Swamp Rat	*Rattus lutreolus*					X
White-striped Freetail Bat	*Tadarida australis*					

Common Name	Scientific Name	EPBC-thrt	EPBC-mig	FFG-thrt	DELWP	Recorded
Reptiles						
Blotched Blue-tongued Lizard	*Tiliqua nigrolutea*					
Eastern Brown Snake	*Pseudonaja textilis*					
Eastern Three-lined Skink	*Acritoscincus duperreyi*					
Garden Skink	*Lampropholis guichenoti*					X
Lowland Copperhead	*Austrelaps superbus*					
Tiger Snake	*Notechis scutatus*					
Weasel Skink	*Saproscincus mustelinus*					
Frogs						
Common Froglet	*Crinia signifera*					
Pobblebonk Frog	*Limnodynastes dumerilii dumerilii*					
Southern Brown Tree Frog	*Litoria ewingii*					
Southern Bullfrog	*Limnodynastes dumerilii*					
Spotted Marsh Frog	*Limnodynastes tasmaniensis*					
Striped Marsh Frog	*Limnodynastes peronii*					X
Verreaux's Tree Frog	*Litoria verreauxii verreauxii*					

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;

Appendix 6: Photographs of native vegetation proposed for removal

Scattered Tree #1 – Manna Gum

Scattered Tree #2 – Messmate Stringybark

Habitat Zone A

Appendix 7: EVC benchmarks

Lowland Forest (EVC 16) – Gippsland Plain bioregion

Department of Sustainability and Environment

EVC/Bioregion Benchmark for Vegetation Quality Assessment

Gippsland Plain bioregion

EVC 16: Lowland Forest

Description:
Eucalypt forest to 20 m tall on relatively fertile, moderately well-drained soils in areas of relatively high rainfall. Characterised by the diversity of life forms and species in the understorey including a range of shrubs, grasses and herbs.

Large trees:

Species	DBH(cm)	#/ha
Eucalyptus spp.	70 cm	20 / ha

Tree Canopy Cover:

%cover	Character Species	Common Name
30%	*Eucalyptus obliqua*	Messmate Stringybark
	Eucalyptus radiata s.l.	Narrow-leaf Peppermint
	Eucalyptus consideniana	Yertchuk

Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Understorey Tree or Large Shrub	2	10%	T
Medium Shrub	7	30%	MS
Small Shrub	5	10%	SS
Prostrate Shrub	2	5%	PS
Large Herb	1	1%	LH
Medium Herb	7	10%	MH
Small or Prostrate Herb	7	5%	SH
Large Tufted Graminoid	2	15%	LTG
Large Non-tufted Graminoid	1	5%	LNG
Medium to Small Tufted Graminoid	7	15%	MTG
Medium to Tiny Non-tufted Graminoid	1	1%	MNG
Ground Fern	2	15%	GF
Scrambler or Climber	3	1%	SC
Bryophytes/Lichens	na	10%	BL

LF Code	Species typical of at least part of EVC range	Common Name
T	*Acacia melanoxylon*	Blackwood
MS	*Epacris impressa*	Common Heath
MS	*Leptospermum continentale*	Prickly Tea-tree
MS	*Banksia marginata*	Silver Banksia
MS	*Leptospermum myrsinoides*	Heath Tea-tree
SS	*Amperea xiphoclada var. xiphoclada*	Broom Spurge
PS	*Acrotriche serrulata*	Honey-pots
MH	*Gonocarpus tetragynus*	Common Raspwort
MH	*Drosera peltata ssp. auriculata*	Tall Sundew
MH	*Viola hederacea sensu Willis (1972)*	Ivy-leaf Violet
SH	*Opercularia varia*	Variable Stinkweed
LTG	*Xanthorrhoea minor ssp. lutea*	Small Grass-tree
LTG	*Lomandra longifolia*	Spiny-headed Mat-rush
LNG	*Gahnia radula*	Thatch Saw-sedge
MTG	*Lomandra filiformis*	Wattle Mat-rush
MTG	*Poa australis spp. agg.*	Tussock Grass
MNG	*Microlaena stipoides var. stipoides*	Weeping Grass
GF	*Pteridium esculentum*	Austral Bracken
SC	*Billardiera scandens*	Common Apple-berry

Recruitment:
Continuous

Organic Litter:
40 % cover

Logs:
20 m/0.1 ha.

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
MH	*Hypochoeris radicata*	Cat's Ear	high	low

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Appendix 8: Ensym Test Clearing Proposal Report (DELWP)

Testing Clearing proposal

This report provides offset requirements for proposed clearing. **It DOES NOT represent a Biodiversity Impact and Offset Requirements report** required to support applications for permits to remove native vegetation under clause 52.16 or 52.17 of planning schemes in Victoria. It can be used for internal testing of different clearing proposals. Final clearing shapefiles must be submitted to DELWP for processing.

Date of issue: **30/03/2017** **Ref: Scenario Testing**
Time of issue: **12:31 pm**

Project ID	BLA_17031_Ensym_170330

Summary of marked native vegetation

Risk-based pathway	Low
Total extent	0.228 ha
Remnant patches	0.017 ha
Scattered trees	3 trees
Location risk	B

Strategic biodiversity score of all marked native vegetation	0.154

Offset requirements if a permit is granted

If the marked vegetation was cleared the following offsets would be applicable.

Offset type	**General offset**
General offset amount (general biodiversity equivalence units)	0.010 general units
General offset attributes	
Vicinity	Port Phillip and Westernport Catchment Management Authority (CMA) or South Gippsland Shire Council
Minimum strategic biodiversity score	0.123[1]

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

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

Testing Clearing proposal

Next steps

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

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

Biodiversity impact of removal of native vegetation

Habitat hectares

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

Habitat zone	Site assessed condition score	Extent (ha)	Habitat hectares
1-1-A	0.120	0.017	0.002
2-1-1	0.200	0.070	0.014
3-1-2	0.200	0.070	0.014
4-1-3	0.200	0.070	0.014
TOTAL			**0.044**

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)
1-1-A	0.002	0.158	0.000
2-1-1	0.014	0.159	0.002
3-1-2	0.014	0.145	0.002
4-1-3	0.014	0.158	0.002

Testing Clearing proposal

Offset requirements

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

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

Offsets also have required attributes:

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

The offset requirements for your proposal are as follows:

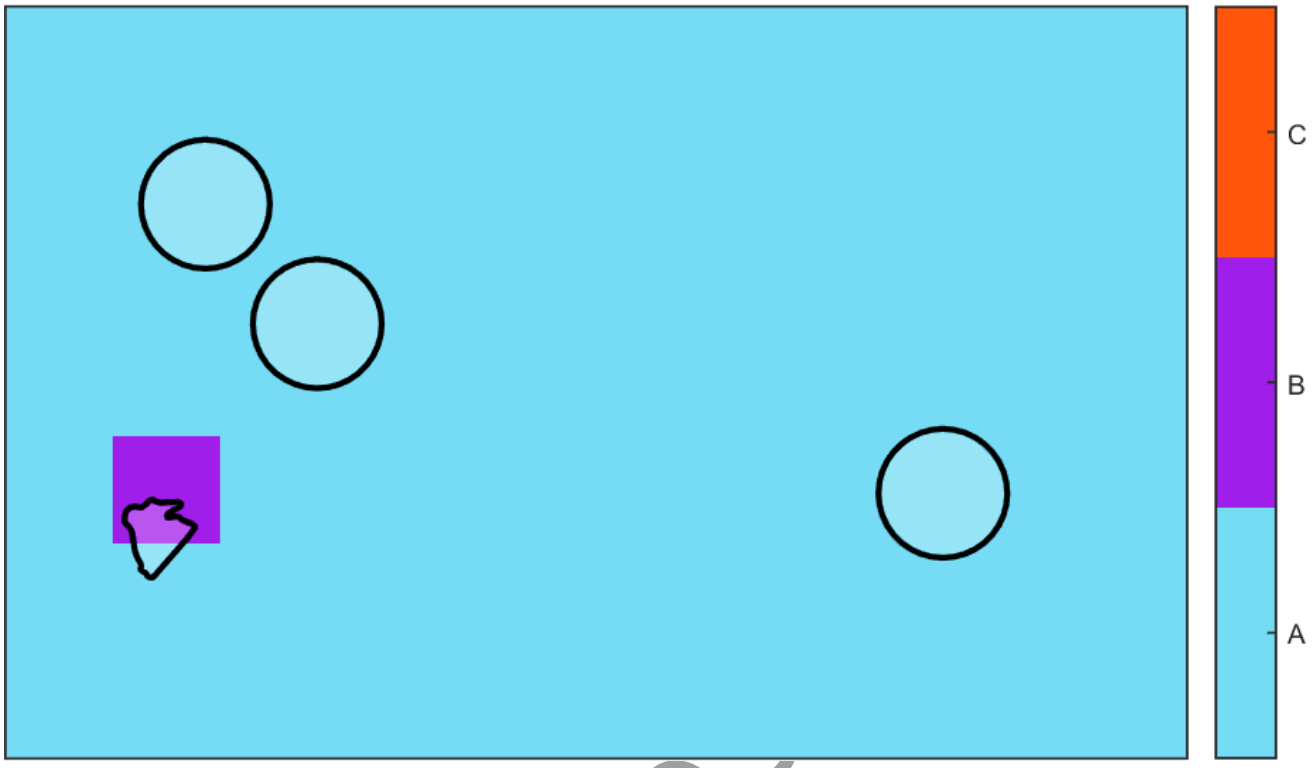
Offset type	Clearing site biodiversity equivalence score	Risk multiplier	Offset requirements	
			Offset amount (biodiversity equivalence units)	Offset attributes
General	0.007 GBES	1.5	0.010 general units	Offset must be within Port Phillip And Westernport CMA or South Gippsland Shire Council Offset must have a minimum strategic biodiversity score of 0.123

[2] Strategic biodiversity score is a weighted average across habitat zones where a general offset is required

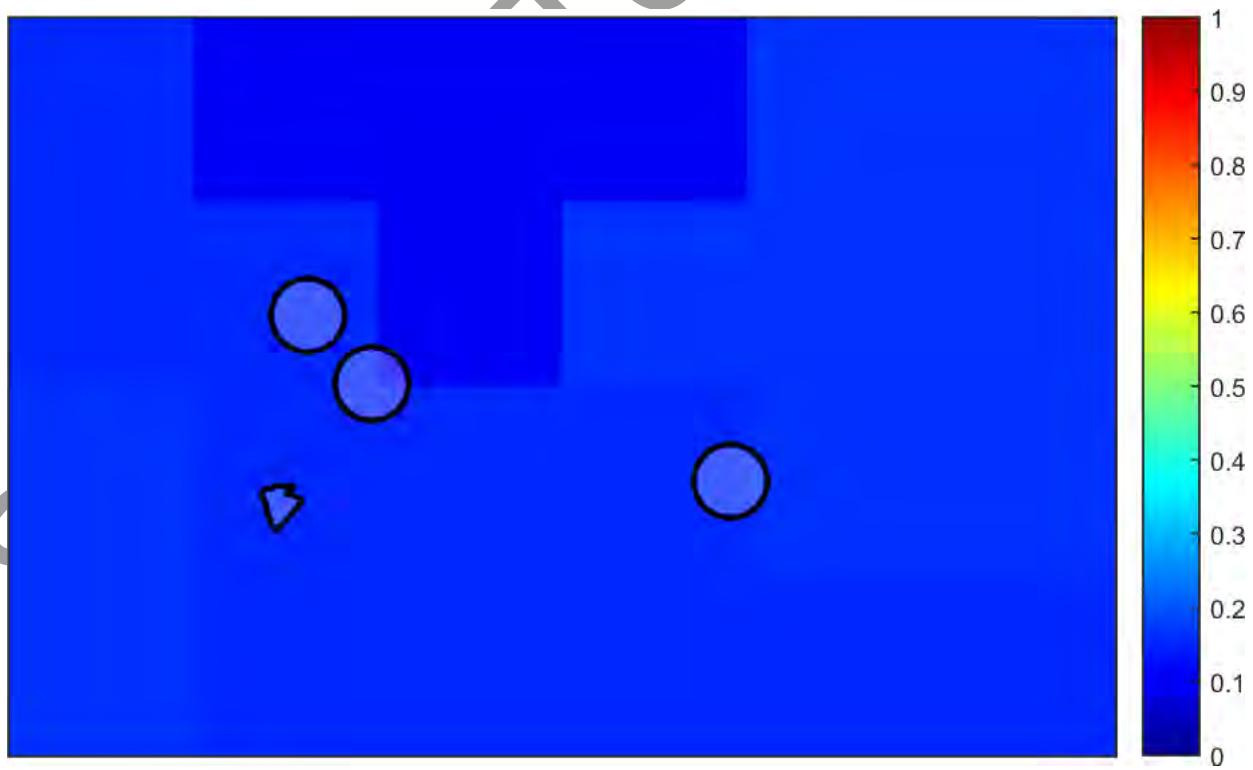
Testing Clearing proposal

Images of marked native vegetation

1. Native vegetation location risk map



2. Strategic biodiversity score map



Testing Clearing proposal

Glossary

Condition score

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

Dispersed habitat

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

General biodiversity equivalence score

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

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

General offset amount

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

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

General offset attributes

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

Habitat hectares

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

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

Habitat importance score

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

Habitat zone

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

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

Testing Clearing proposal

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.

$$\boldsymbol{Risk\ factor\ for\ general\ offsets} = \mathbf{1.5}$$

$$\boldsymbol{Risk\ factor\ for\ specific\ offset} = \mathbf{2}$$

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.

$$\boldsymbol{Risk\ adjusted\ specific\ biodiversity\ equivalence\ score} = \boldsymbol{specific\ biodiversity\ equivalence\ score\ clearing} \times \mathbf{2}$$

Testing Clearing proposal

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:

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

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.