ecolink consulting

December 2019

Biodiversity Assessment, 99 Bena Road, Korumburra, Victoria

Prepared for:

Planning Central

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Project number	1774
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Report title	Biodiversity Assessment, 99 Bena Road, Korumburra, Victoria
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Mapping	Stuart Cooney
File name	1774_Biodiversity_Asst_Bena_Rd_Korumburra_Report_25112019

Cover Photograph

A photograph of the study area taken during the current assessment.

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Executive Summary

Ecolink Consulting Pty Ltd was commissioned by Glenn Kell, on behalf of the Planning Central, to undertake a Biodiversity Assessment at 99 Bena Road, Korumburra, Victoria. The assessment is required to support a planning permit application to build a residential development at this location.

The majority of the property was cropped with Rye Grass *Lolium perenne* and Sub Clover *Trifolium subterranean* which had been recently cut for silage. Remaining vegetation within the study area was restricted to fence lines and the creek line which ran through the south west of the paddock. Vegetation along fence lines was generally dominated by exotic grasses including Yorkshire Fog *Holcus lanatus*, Wild Mustard *Brassica rapa,* Cock's-foot *Dactylis glomerata* and Prairie Grass *Bromus catharticus*.

Ten indigenous trees were recorded. Tree one, located in the north west corner of the study area was a Swamp Gum *Eucalyptus ovata*. Surrounding the Swamp Gum was a row of silage bales and an understory dominated by exotic Yorkshire Fog, Curled Dock *Rumex crispus*, Wild Mustard, Rye Grass, Sub Clover and Dandelion *Taraxacum officinale*. The other eight trees (trees two to ten), were Blue Gum *Eucalyptus globulus*, located to the south west of the study area, along the creek line. These Blue Gums were generally surrounded by the exotic species found elsewhere in the study area, incldluing Prairie Grass, Cape Weed, Cleavers *Galium aparine*, Mustard, Rye Grass, and Sub Clover. The creek line was dominated by exotic Creeping Buttercup *Ranunculus repens*, Cut-leaf Crane's-bill *Geranium dissectum*, Hairy Bittercress *Cardamine hirsute,* Cock's-foot, Wild Mustard and the environmental weed Blackberry *Rubus fruticosus* spp. agg., although some indigenous Blackwood *Acacia melanoxylon*, Soft Tree-Fern *Dicksonia antarctica*, and Fireweed Groundsel *Senecio linearifolius* was also present in this location.

Historically the study area is likely to have been dominated by EVC 29: Damp Forest, with an area of EVC 30: Wet Forest replacing this EVC along the creek line in the south-west corner of the study area. The current assessment confirmed, however that there are no extant patches of native vegetation recorded within the study area, although nine scattered indigenous trees were observed.

Only common and widespread flora and fauna species were recorded during the assessment. The highly modified vegetation is unlikely to provide habitats for most threatened flora and fauna species, although it is likely that some threatened species, such as White-throated Needletail *Hirundapus caudacutus,* Grey-headed Flying-fox *Pteropus poliocephalus,* may fly over the study area in search of foraging resources. Giant Gippsland Earthworm *Megascolides australis* may be present within the study area on the basis that there are numerous records of the species near the study area, including along tributaries of Foster Creek.

In this context, and based on the relevant legislation and policies, the following recommendations are made:

- Undertake targeted surveys for Giant Gippsland Earthworm near the creekline. IF this species is shown to occur a referral under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) may be required to determine if the project is considered a controlled action;
- Avoid native vegetation where possible, particularly along the unnamed creekline in the south-west of the study area;

- If native vegetation cannot be avoided, offsets will be required. If all vegetation within the study area is proposed for removal, offsets are likely to comprise:
    - 0.199 General Habitat Units;
    - With a minimum Strategic Biodiversity Value of 0.258; and,
    - Nine Large Trees;
    - Located within the West Gippsland Catchment Management Authority area or within the La Trobe City Council municipality.
- Ensure that the development of the study area does not result in downstream impacts to important wetlands and waterways, such as the Western Port Wetland of International Significance (Ramsar site). This should be achieved through a Construction Environmental Management Plan (or equivalent) that includes protocols and measures to:
    - Maintain vehicle hygiene and vehicle wash-down areas;
    - Use clean fill (if required);
    - Manage noxious that may establish post-construction through appropriate weed management techniques;
    - Maintain sediment and erosion controls to avoid discharge and sedimentation of the nearby drainage lines; and
    - Avoid the use of noxious species during any landscaping of the property.
- Remove all noxious weeds during the development and landscaping of the study area. If any remain after construction has been finished, these species should be targeted and removed. These include the following species:
    - Blackberry *Rubus fruticosus* sp. agg;
    - Hemlock *Conium maculatum*;
    - Common Bindweed *Convolvulus arvensis*;
    - Spear Thistle *Cirsium vulgare*; and
    - Hawthorn *Crataegus monogyna*.

  This requirement may be included in a Construction Environmental Management Plan (or equivalent); and

- A wildlife handler should be present when felling any trees to salvage native fauna species that may be present within the study area.

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Introduction

Ecolink Consulting was engaged by Insight Planning to undertake a Biodiversity (Flora and Fauna) Assessment at 99 Bena Road, Korumburra, Victoria (the study area, Figure 1). The assessment is required to assess the ecological constraints of the study area, with the intention facilitate the residential development of the property, consistent with its General Residential Zoning.

Specifically, the scope of this assessment is to:

- Determine the ecological values of the study area;
- Evaluate any impacts that are likely to occur to any ecological values as a result of the potential loss of vegetation at the study area;
- Evaluate the extent and quality of native vegetation within the study area, required under the *Guidelines for the removal, destruction or lopping of native vegetation* (Department of Environment Land Water and Planning 2017); and,
- Make recommendations to minimise or mitigate impacts to these ecological values, based on relevant legislation and policies.

Methods

Desktop Assessment

In order to determine the ecological values that have previously been recorded within the study area, and its vicinity, the following databases and literature were consulted:

- Planning Schemes Online (Department of Environment Land Water and Planning 2019d) to identify the planning zones and overlays relating to environmental matters e.g. Vegetation Protection Overlays, or Environmental Significance Overlays;
- The NatureKit webpage from the Department of Environment, Land, Water and Planning (DELWP) to identify the historic and current Ecological Vegetation Classes (EVCs) (Department of Environment Land Water and Planning 2019c);
- The Victorian Biodiversity Atlas (Department of Environment Land Water and Planning 2019e) for records of threatened[1] flora and fauna within 3 kms of the study area;
- The Native Vegetation Information Management System (NVIM) to determine biodiversity offset requirements (Department of Environment Land Water and Planning 2019b);
- The 'Weeds of National Significance' database (Department of the Environment and Energy 2019b);
- The Protected Matters Search Tool from the Department of the Environment and Energy (DoEE) (Department of the Environment and Energy 2019a) to identify Matters of National Environmental Significance that may occur within three kilometres of the study area; and,
- Relevant legislation and policies (as required).

Field Assessment

Flora and Fauna Assessment

The study area was assessed by Principal Ecologist, Stuart Cooney and Senior Botanist, Ross Dennis on 27 November 2019. Stuart and Ross are suitably experienced at undertaking flora and fauna assessments and Ross holds a Vegetation Quality Assessors Accreditation from DELWP.

All flora species observed within the study area were recorded, with the exception of planted vegetation that was not considered a 'weed' (i.e. planted vegetation that was not spreading or reproducing). Where a species was not able to be confidently identified in the field, a sample was collected and later identified. Plants were identified to species level wherever possible, however, some plants that were planted, cultivars, hybrids, or plants that did not contain suitable fertile material used for identification were recorded to genus level.

Vegetation communities such as EVCs and nationally significant vegetation communities were recorded (if observed) and compared with their corresponding benchmarks or thresholds to ensure that they were accurately assigned.

[1] Threatened flora and fauna includes species listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*, the Victorian *Flora and Fauna Guarantee Act 1988* and the DSE Advisory Lists (Department of Environment and Primary Industries (2009; 2013; 2014a).

A list of all fauna species observed within, and immediately surrounding, the study area was produced. This list consists of species seen, heard, or identified by other evidence of their presence (e.g. feathers, scats). Leica 12 X 50 binoculars and call mimicry/playback were used to assist in the identification species.

The presence of fauna habitat was noted, particularly in relation to potential habitats for threatened species. The greatest amount of time was spent surveying potential fauna habitats (e.g. trees, water bodies, crevices or under ground debris) during the assessment.

Ecological features such as threatened flora and fauna species, vegetation communities, scattered indigenous trees, fauna habitats, or threatened species habitats were recorded onto an iPad mini tablet that has an internal Global Positioning System (GPS) and the GIS Pro application (accuracy +/- five metres).

Guidelines for the removal, destruction or lopping of native vegetation

The *Guidelines for the removal, destruction or lopping of native vegetation* (The Guidelines) (Department of Environment Land Water and Planning 2017) are required to be addressed under Clause 52.17 of the Planning Scheme. The Guidelines require that information regarding the biodiversity values of the site are obtained though:

- Site-based information that can be measured or observed at a site, including:
  - Extent of native vegetation patches;
  - Large trees;
  - Native vegetation condition assessed in accordance with the *Vegetation Quality Assessment Manual – Guidelines for Applying the Habitat Hectares Scoring Method* (Department of Sustainability and Environment 2004);
  - Ecological Vegetation Classes (EVC); and
  - Sensitive wetlands and coastal areas.
- Landscape scale information that cannot be measured or observed at the site and includes maps and models procured from DELWP.

The Guidelines require a Habitat Hectare assessment in instances where the impact is to be assessed under the Detailed Assessment Pathway. Where required, the Habitat Hectare assessment is to be undertaken in accordance with the methodology prescribed within the *Vegetation Quality Assessment Manual – Guidelines for Applying the Habitat Hectares Scoring Method* (Department of Sustainability and Environment 2004) at patches[2] of vegetation. Under this assessment methodology, all indigenous vegetation is to be assessed, and then assigned a Conservation Significance rating based on the Habitat Hectare score, or the likely presence of threatened species (Department of Sustainability and Environment 2004).

In addition, the location and species of indigenous 'scattered trees'[3], and any 'large trees'[4] that are proposed to be removed must also be mapped. The location, extent of native vegetation (patches,

[2] A 'patch' is defined as an area with at least 25% cover abundance of perennial native vegetation, or a group (i.e. three or more) trees forming a continuous canopy.
[3] Scattered trees are defined as a native canopy tree that does not form a patch
[4] Large trees are defined as meeting the size threshold specified in the bioregional EVC Benchmark

scattered trees and large trees) that is proposed for removal is provided to DELWP who produce an offset report that provides details of the required offsets for impacts that vegetation.

Limitations and Qualifications

The following limitations and qualifications apply to this report:

- The results of the desktop assessment are reliant on data obtained from various databases and other reports. The accuracy of these historical data and some of the results provided within these reports cannot be verified.
- Some flora and fauna species may only be recorded during certain times or seasons (e.g. plants that only contain above-ground biomass and are only visible annually, nocturnal mammals and birds, migratory birds, or fauna identified through seasonal breeding calls such as some frog species). The author has made an informed decision about the likely presence of threatened species that may be present, or that may utilise habitats within the study area, based on a detailed desktop assessment, a review of the species' biology, an understanding of the ecological values of the local area, and an assessment of flora and fauna as well as their habitats
- As with all ecological assessments, a greater survey effort is likely to yield additional flora and fauna records. Where these additional flora and fauna records may alter the recommendations made within this report, (e.g. where additional threatened species may utilise habitats within the study area, or where threatened species may be impacted by the proposed development), further assessment may be recommended, depending on the implications of relevant policies and legislation.

Despite these limitations to the assessment, the results gained by both a desktop and a field assessments are adequate to address the purpose of this report.

Results

Study Area

The study area is located at 99 Bena Road, Korumburra, approximately 1 km west of the Korumburra town centre (Figure 1). The study area is approximately 19 ha in size and is bounded by Bena Road along the northern boundary, with private land surrounding the study area on all other aspects. The study area is located on the western edge of the residential parts of Korumburra, and further west, north and south, the landscape is agricultural in nature, with small acreage hobby farms north of the study area, but broad-acre farms located west and south.

The study area is fenced and vacant. It has been regularly cropped, with evidence of the recent crop apparent. The result of this land-use is the almost total removal of native vegetation, including overstorey trees. Despite this, some indigenous Blue Gums *Eucalyptus globulus* remain within the west of the study area, along a creek. The aerial imagery shows a shelter belt near the middle of the study area, however these trees had been removed and burnt at the time of the assessment. The remains of these trees suggest that it largely comprised planted Cypress trees *Cupressus spp.*, which are not native to the study area (Plate 1).

An incised creekline crosses the south-western corner of the study area (Plate 2: Figure 1). This unnamed creek, which is an upper tributary of Foster Creek, contained water at the time of the current assessment. There are no other dams or waterbodies within the study area.

Flora

Flora Species

A total of 54 flora species were recorded during the current assessment. This comprised 39 exotic species and 15 indigenous flora species (Table A1).

The majority of the property was cropped with Rye Grass *Lolium perenne* and Sub Clover *Trifolium subterranean* which had been recently cut for silage. Remaining vegetation within the study area was restricted to fence lines and the creek line which ran through the south west of the paddock. Vegetation along fence lines was generally dominated by exotic grasses including Yorkshire Fog *Holcus lanatus*, Wild Mustard *Brassica rapa,* Cock's-foot *Dactylis glomerata* and Prairie Grass *Bromus catharticus,* (Plate 2).

Nine large indigenous trees were recorded. Tree one, located in the north west corner of the study area was a Swamp Gum *Eucalyptus ovata*. Surrounding the Swamp Gum was a row of silage bales and an understory dominated by exotic Yorkshire Fog, Curled Dock *Rumex crispus*, Wild Mustard, Rye Grass, Sub Clover and Dandelion *Taraxacum officinale*. The other eight trees (trees two to nine, Figure 1), were Blue Gum *Eucalyptus globulus*, located to the south west of the study area, along the creek line. These Blue Gums were also generally surrounded by exotic Prairie Grass, Cape Weed, Cleavers *Galium aparine*, Mustard, Rye Grass, and Sub Clover (Plate 3). The creek line was dominated by exotic Creeping Buttercup *Ranunculus repens*, Cut-leaf Crane's-bill *Geranium dissectum*, Hairy Bittercress *Cardamine hirsute,* Cock's-foot, Wild Mustard and environmental weed Blackberry *Rubus fruticosus* spp. agg., although some indigenous Blackwood *Acacia melanoxylon*,

Soft Tree-Fern *Dicksonia antarctica*, and Fireweed Groundsel *Senecio linearifolius* was also present in this location (Plate 4).

Flora Habitat/Vegetation Communities

The vegetation within the study area was required to be assessed and classified against the policy and legislation stipulated by three tiers of government:

- *Local* – where various overlays and policies may apply pursuant to the South Gippsland Shire Council Planning Scheme (Department of Environment Land Water and Planning 2019d);
- *State* – which includes DELWP's EVC mapping of vegetation communities (Department of Environment Land Water and Planning 2019a) and consideration under the Guidelines for the Removal, Destruction or Lopping of Native Vegetation (Department of Environment Land Water and Planning 2017); and,
- *Commonwealth* – where vegetation may meet 'thresholds' to be classified as a federally listed community under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Local

The study area is located within the South Gippsland Shire Council municipality and it is zoned General Residential Zone – Schedule 1 (Department of Environment Land Water and Planning 2019d). The study area is not covered by any overlays pertinent to this report (e.g. Environmental Significance or Vegetation Protection Overlay) (Department of Environment Land Water and Planning 2019d).

State

The study area falls within the Strzelecki Ranges bioregion of Victoria. Investigation of DELWP's EVC mapping confirmed that the historic vegetation within the study area is likely to have been dominated by EVC 29: Damp Forest, with an area of EVC 30: Wet Forest replacing this EVC along the creekline in the south-west corner of the study area.

EVC 29: Damp Forest is described as "dominated by a tall eucalypt tree layer to 30 m tall over a medium to tall dense shrub layer of broadleaved species typical of wet forest mixed with elements from dry forest types. The ground layer includes herbs and grasses as well as a variety of moisture-dependent ferns" (Department of Environment Land Water and Planning 2019a). EVC 29: Damp Forest is listed as 'Endangered' within the bioregion.

EVC 30: Wet Forest is modelled by DELWP to occur along waterways and drainage lines within the vicinity of the study area (Department of Environment Land Water and Planning 2019c). EVC 30: Wet Forest is described as "a tall eucalypt overstorey to 30 m tall with scattered understorey trees over a tall broad-leaved shrubby understorey and a moist, shaded, fern-rich ground layer that is usually dominated by tree-ferns… …It is largely restricted to protected sites in gullies and on southern aspects of hills and mountains where rainfall is high and cloud cover at ground level is frequent" (Department of Environment Land Water and Planning 2019a).

DELWP modelling of extant native vegetation suggests that little of this vegetation persists within the study area, but that some native vegetation remains along the creekline and near the middle of

the study area. The site assessment confirmed that there is native vegetation near the creekline in the form of the remnant Blue Gum Trees (described in greater detail below). The modelled native vegetation in the middle of the study area was likely based on the shelter belt, which has since been removed.

Commonwealth

DOEE (2019) modelling does not identify any threatened ecological communities that are likely to occur within 5kms of the study area.

The study area is within 20 km of a designated Wetland of International Importance: Western Port (Department of the Environment and Energy 2019a). This wetland is one of the most important sites in Victoria for migratory shorebirds (Department of the Environment 2017). The unnamed creek within the study area flows into Foster Creek, which discharges into this significant wetland.

Threatened Flora Species

Three threatened flora species have previously been recorded within 5 kms of the study area (Department of Environment Land Water and Planning 2019e). A further seven species are predicted to occur within the study area based on the Protected Matters Search Tool (Department of the Environment and Energy 2019a). A list of these threatened flora species, as well as their conservation status, preferred habitats and likelihood of occurrence for each species is provided in Table A3.

No threatened flora species have previously been recorded within the study area (Figure 2) (Department of Environment Land Water and Planning 2019e). No threatened flora species were recorded during the current assessment and it is unlikely that any threatened flora species persist within the study area due to the highly modified habitats observed during the site assessment.

Habitat Hectare Assessment

There were no patches of native vegetation identified within the study area.

Scattered Tree Assessment

Ten scattered indigenous trees were present within the study area (Table 1).

Tree Number	Species	Size Class	DBH (cm)	Latitude	Longitude
1	Swamp Gum	Large	260	-38.4346	145.8042
2	Blue Gum	Large	98	-38.4365	145.8044
3	Blue Gum	Large	134	-38.4366	145.8041
4	Blue Gum	Large	162	-38.4368	145.8042
5	Blue Gum	Large	130	-38.437	145.8042
6	Blue Gum	Large	149	-38.437	145.804
7	Blue Gum	Large	109	-38.437	145.8038
8	Blue Gum	Large	149	-38.4373	145.8035
9	Blue Gum	Small	16	-38.4372	145.804
10	Blue Gum	Large	96	-38.438	145.8052

Fauna

Twenty-one fauna species were recorded within the study area during the current assessment (Table A2, Appendix A). This included 18 native birds, five introduced bird and three frog species. Other fauna species would be recorded if greater time was spent on-site.

The bird species are all typical of farmland and peri-urban areas of greater Melbourne. No reptiles were recorded during the assessment, although it is likely that skinks and snakes would utilise the study area, particularly when moving between areas of higher quality habitats. The three frogs were calling from the creekline.

A discussion on the species and their habitat is provided below.

Fauna Habitats

The study area provided limited habitat for the majority of fauna groups due to the general absence of indigenous remnant vegetation. Nonetheless, the large remnant trees, all of which continued hollows are likely to provide birds, bats and arboreal mammals roosting, shelter and foraging substrates habitats. Hollows within the trees are likely to provide roosting and nesting opportunities for hollow-dependant species such as some birds including parrots (such as the Eastern Rosella *Platycercus eximius* and Galah *Eolophus roseicapillus* observed), lorikeets and owls, as well as arboreal mammals such as Common Brushtail Possum *Trichosurus vulpecula* and bats. In one such hollow in tree 2, evidence of a prey item (possibly a Ringtail Possum) was observed, indicating the likely presence of a Powerful Owl *Ninox strenua* occupying the tree at some stage (Plate 5).

The creekline is also likely to provide habitat for a range of species. Although the vegetation within the creek-line, and along the banks was generally dominated by exotic species, this vegetation does provide complex habitat structures that are likely to favour a range of species, including fish, as well as the three frogs species that were observed during the current assessment Spotted Marsh Frogs *Limnodynastes tasmaniensis*, Eastern Banjo Frog *Limnodynastes dumerilii* and Common Froglet *Crinia signifera*. Fish, such as Southern Shortfin Eel *Anguilla australis*, Mountain Galaxias *Galaxias olidus* complex, River Blackfish *Gadopsis marmoratus*, and Australian Smelt *Retropinna semoni* may also use the aquatic habitats within the creekline. The shrubs and other vegetation in these areas provide shelter and foraging habitat for a range of birds including Grey Fantails *Rhipidura albiscapa* which was observed during the current assessment.

The remainder of the study area are now open grasslands that have been disturbed through a history of agricultural land uses, and are now dominated by exotic species; almost exclusively the sewn Perennial Rye-grass. This has reduced the quality of fauna habitats available to native wildlife by reducing the areas for sheltering and foraging. The open grasslands may provide low quality habitat for some native species, when moving between areas of higher quality habitat. Generally, however, this type of habitat supports species such as the introduced Common Starlings *Sturnus vulgaris* and House Sparrows *Passer domesticus*, as well as generalist native species such as Australian Magpies *Cracticus tibicen,* Magpie-larks *Grallina cyanoleuca* and Little Raven *Corvus mellori*.

Threatened Fauna Species and Communities

A consolidated list of the seven threatened fauna species previously recorded on, or within the vicinity of, the study area, as well as a further 17 species that may occur within the study area (based on the Protected Matters Search Tool (Department of the Environment and Energy 2019a)) is provided in Table A4 (see also Figure 2). The conservation status, preferred habitats and likelihood of occurrence for each species is provided within this table.

No threatened species were recorded during the current assessment. The majority of the historical records of threatened fauna species are the Giant Gippsland Earthworm (84 of 95 fauna observations). No evidence of Giant Gippsland Earthworm was observed during the current assessment, however an intensive search for the species, using all the approved methods, was not undertaken. Approved methods for detecting the species include hand digging soil quadrats to examine the soil for Giant Gippsland Earthworm burrows and cast (waste) material, banging a shovel to listen for the gurgling sounds sometimes made by the worms as they retreat down wet burrows, and where exposed, examining cuttings along the embankments of creeks for burrows (Van Praagh 2016).

The study area may provide air space over which some threatened fauna species, such as White-throated Needletail *Hirundapus caudacutus* and Grey-headed Flying-fox *Pteropus poliocephalus,* may occasionally fly, when moving around the landscape, however the study area itself does not provide important resources to these species, and the development of the study area is unlikely to impact either of these species. Other species are likely to be excluded from the study area by modification of natural habitats and historic removal of native vegetation. It is therefore unlikely that any threatened fauna species persist within the study area, or that the study area provides significant resources to any threatened fauna species.

No fauna communities listed under the Victorian *Flora and Fauna Guarantee Act 1988* were recorded within the study area and none are likely to occur.

Discussion

A detailed summary of the legislation that was considered when preparing this report is provided in Appendix 2. The discussion presented in this section of the report does not re-iterate information provided in Appendix 2, but summarises the results and recommendations arising from the interpretation of this legislation.

Environment Protection and Biodiversity Conservation Act 1999 (Cth)

The desktop assessment identified eight threatened flora and 21 threatened fauna, listed under the EPBC Act that may occur within the study area. The site assessment, however, confirmed that none of these species are likely to persist within the study area due to absence of suitable habitats or the degraded nature of those habitats within the study area.

The Western Port Wetland of International Significance (Ramsar) is connected to the study area via the Foster Creek and the tributary that flows through the study area. It is important that indirect impacts from the development of the study area do not have a detrimental impact on this wetland. This can be achieved by ensuring that impacts are constrained to the development site and that construction works do not result in downstream sediment flows or dust away from the study area. Measures to control downstream impacts during construction are recommended to be prescribed within a Construction Environment Management Plan.

There are 84 records of Giant Gippsland Earthworms within 5 kms of the study area, although the species has not been recorded within the study area itself. The Giant Gippsland Earthworm is listed a Vulnerable on the EPBC Act, it is also listed on the FFG Act and is classified as Endangered on the DELWP *Advisory List of Threatened Invertebrate Fauna in Victoria* (Department of Sustainability and Environment 2009). The Giant Gippsland Earthworm is a large earthworm, that can reach in excess of 1.5 metres in length and weight more than 400 grams (Van Praagh 1992). Although the species is found over a wide geographical area, factors such as slope, micro-topography, nature and depth of the soil and hydrological processes determine suitable habitat for the species (Van Praagh 2007). The Giant Gippsland Earthworm is most commonly found in association with creeks and drainage lines, usually above areas prone to flooding (Van Praagh 2007). In more elevated areas, they tend to associate with underground springs and soaks, in gullies or south-facing slopes with terracettes (Van Praagh 2007). They are generally found in cleared areas supporting pasture grasses that are adjacent to native vegetation (Department of the Environment and Energy 2017). In the western Strzelecki Ranges the Giant Gippsland Earthworm is generally found in the deep blue-grey clay-like soils over cretaceous rocks (Department of the Environment and Energy 2017) or red clayey soils (Van Praagh 1992). Throughout much of the South Gippsland Shire, areas of suitable habitat have been identified by the application of an ESO9 through the planning scheme. This ESO9 applies to other tributaries of the Foster Creek, further downstream of the study area, but is not applicable to the study area (Department of Environment Land Water and Planning 2019d). Nonetheless, the south-western corner of the study area may provide habitat to the species, and it is recommended that a targeted assessment of this area is undertaken for the species.

A referral to the Commonwealth Department of Energy and the Environment is unlikely to be required for the proposed development of the study area assuming the implementation of an approved Construction Environment Management Plan to prevent indirect impacts to the Western

Port Wetland of International Significance, and following consideration of the results of the targeted Giant Gippsland Earthworm assessment. If the latter surveys indicate that Giant Gippsland Earthworms are present within the study area, and that development of areas of suitable habitat are proposed, it may be necessary to refer the project for determination by the Department of Energy and the Environment.

Flora and Fauna Guarantee Act 1988 (Vic)

The desktop assessment identified four flora and 19 fauna species listed under the FFG Act that may occur within the study area (Tables A3 and A4). However, no species listed as threatened under the FFG Act were recorded within the study area and one species is likely to occur on the basis of the modification of the vegetation within the study area, and limited fauna habitat that it supports (Giant Gippsland Earthworm, discussed above).

In addition, the FFG Act also lists 'protected flora'. Protected flora includes whole families or genera, not just plant species, such as daisies, heaths, orchids, and most Acacias. These species and genera are not necessarily regarded as threatened, but require an approved *Permit to Take Protected Flora* from DELWP, prior to their removal from *public* land. As the proposed development is not likely to impact any threated species or vegetation communities on public land, there are no statutory obligations for further assessment and approvals under this Act.

Planning and Environment Act 1987 (Vic)

The proposed development will require a planning permit approval from the South Gippsland Shire Council prior to the removal, destruction or lopping of native vegetation, pursuant to Clause 52.17 of the planning scheme (Department of Environment Land Water and Planning 2019d).

Applicants who propose to remove native vegetation must generally demonstrate how the application meets the three-step approach to:

1. Avoid the removal, destruction or lopping of native vegetation.
2. Minimise impacts from the removal, destruction or lopping of native vegetation that cannot be avoided; and
3. Provide an offset to compensate for the biodiversity impact from the removal, destruction or lopping of native vegetation (Department of Environment Land Water and Planning 2017).

Catchment and Land Protection Act 1994 (Vic)

The primary considerations of the *Catchment and Land Protection Act 1994* (Vic) relate to soil and water conservation, as well as the management of pest plants and animals.

The study area contains five weed species that are listed as 'noxious' within the West Gippsland Catchment Management Authority area (Table A1). These include Blackberry, Hemlock *Conium maculatum*, Common Bindweed *Convolvulus arvensis*, Hawthorn *Crataegus monogyna* and Spear Thistle *Cirsium vulgare* which are listed as 'Regionally Controlled'. The proponent is required to 'control the spread' of all 'regionally controlled' species from their property (Melville 2008).

Blackberry is also Weeds of National Significance, although there are no legislative obligations to manage these species under this listing (Department of the Environment and Energy 2019b).

The proposed development should aim to remove these plants when construction commences, and ensure they do not re-establish during the future the landscaping and maintenance of the study area. It is expected that weed management would form part of Construction Environment Management Plan (or equivalent).

The Construction Environment Management Plan should manage the potential spread of noxious weeds during the development and remove any weeds that establish post-construction. As a minimum, this should include:

- Maintain vehicle hygiene and vehicle wash-down areas;
- Using clean fill (if required);
- Manage noxious that may establish post-construction through appropriate weed management techniques;
- Maintain sediment and erosion controls to avoid discharge and sedimentation of the nearby drainage lines; and
- Avoiding the use of noxious species during any landscaping of the property.

Wildlife Act 1975 (Vic)

It is likely that some locally common species of fauna will be displaced by the proposed development. All native vertebrate wildlife is protected under the *Wildlife Act 1975* (Vic), and therefore contractors must use due care when removing vegetation from the study area. In the event trees are to be removed, a wildlife handler should be present during the felling of any trees that may contain resident fauna.

Guidelines for the Removal, Destruction or Lopping of Native Vegetation

Applicants who wish to remove native vegetation must generally demonstrate how the application meets the three-step approach to avoid and minimise impacts to native vegetation, as discussed above.

In this case, we recommend that the large Blue Gum trees and the creekline are avoided and incorporated into open space areas within the development. These areas support the highest ecological values of the site and may hold amenity value for any future development. However tree health, safety and design restrictions may result in the loss of some of these trees. The worst case scenario, from an ecological perspective, would result in the loss of all native vegetation within the study area. Should this occur, we have calculated offsets under this scenario for planning purposes. An application to remove these trees would be assessed under the Detailed Risk Pathway. Substantial justification for the removal of this vegetation would be required by council, and it is likely that council would request a revised development plan that retains some of this vegetation. Therefore the offset scenario presented below is likely to change as the development progresses and we can update this report with a final offset scenario, once it is known.

Offsets were calculated using the DELWP offset calculator (EnSym), and creating a Scenario Test Vegetation Removal report (Appendix 3). This report uses the native vegetation polygons collected

during the current assessment and modelled vegetation quality scores to determine offset requirements. The Native Vegetation Removal report includes the species specific offset test, which determines if the proposed vegetation removal will have a proportional impact on any Victorian rare or threatened species habitat above a specific offset threshold, which is set at 0.005 per cent of total habitat for each species. This test was applied to current proposal, and it was determined that species specific offsets were not required. The results of the Native Vegetation Removal report are summarised in Table 4.

Table 4. Biodiversity Offsets for impacted native vegetation within the study area.

Offset Parameter	Result
Location Risk	Location 2
Risk Based Pathway	Detailed
Total Extent Removed	0.599 ha (includes 10 scattered trees)
General Offset Requirements	0.119 General Habitat Units; and, 9 Large Trees
Species Specific Offset Requirements	Nil
Minimum Strategic Biodiversity Score	0.258
Offset Location	West Gippsland Catchment Management Authority area or within the La Trobe City Council municipality

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Figures

Figure 1: Results of the current assessment

99 Bena Road, Korumburra, Victoria

Legend

- Study Area
- Cypress Wind Row (Now removed)

Scattered Trees

- Blue Gum
- Swamp Gum

0 35 70 105 140 Meters

ecolink consulting

P/N 1774 Figure 1. November 2019

Figure 2: Threatened flora and fauna within 5kms of the study area

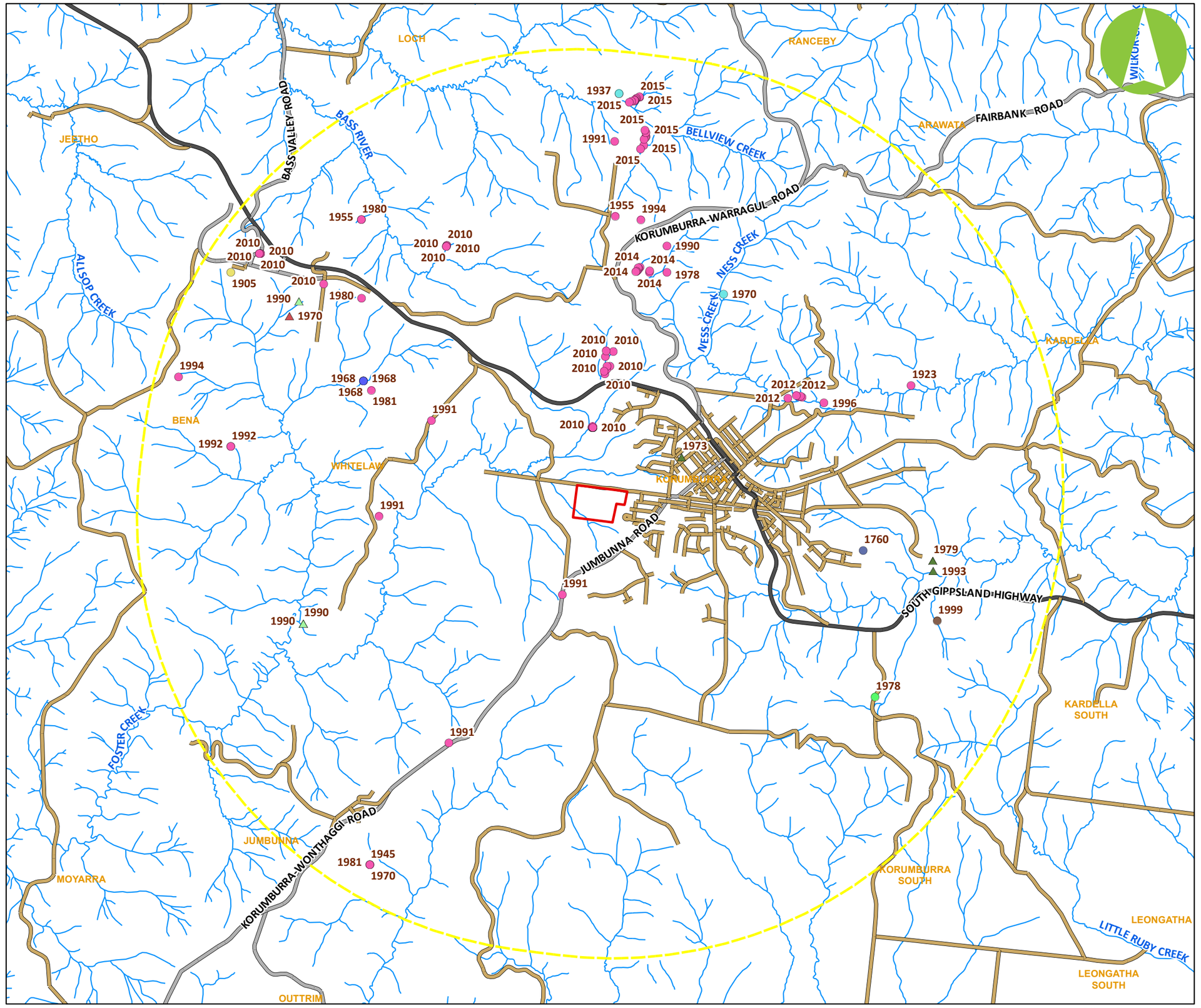
99 Bena Road, Korumburra, Victoria

Legend

- Study Area
- 5km Study Area Buffer

Common Name

- Blue-billed Duck
- Swamp Antechinus
- Southern Toadlet
- Macquarie Perch
- Giant Gippsland Earthworm
- Gippsland Burrowing Crayfish
- Narracan Burrowing Crayfish
- Filmy Maidenhair
- Rosemary Grevillea
- Strzelecki Gum



0 500 1,000 1,500 2,000 Meters

ecolink consulting

P/N 1774 Figure 2. November 2019

Plates

Plate 1. Remains of the burnt Cypress wind row

Plate 2. Vegetation typical over majority of paddock was cropped with Rye Grass recently cut for silage.

Plate 3. Scattered Blue Gums surrounded by exotic understory adjacent to unnamed tributary in south west of study area.

Plate 4. The unnamed tributary to Foster Creek, in the south-west of the study area

Plate 5. Probable evidence of Owl occupation of hollows within the large Blue Gum trees in the south-west of the study area

Appendices

Appendix 1. Flora and Fauna Tables.

Table A1. Flora recorded within the study area

Origin	Scientific Name	Common Name	Weeds of National Significance	Noxious Weeds Classification
	Acacia melanoxylon	Blackwood	-	-
	Acaena novae-zelandiae	Bidgee-widgee	-	-
	Amphibromus nervosus	Common Swamp Wallaby-grass	-	-
*	*Arctotheca calendula*	Capeweed	-	-
*	*Avena fatua*	Wild Oat	-	-
*	*Brassica rapa*	Wild Mustard	-	-
*	*Bromus catharticus*	Prairie Grass	-	-
*	*Bromus sterilis*	Sterile Brome	-	-
*	*Cardamine hirsuta*	Hairy Bittercress	-	-
*	*Chenopodium alba*	Fat Hen	-	-
*	*Cirsium vulgare*	Spear Thistle	-	Regionally Controlled
*	*Conium maculatum*	Hemlock	-	Regionally Controlled
*	*Convolvulus arvensis*	Common Bindweed	-	Regionally Controlled
*	*Crataegus monogyna*	Hawthorn	-	Regionally Controlled
*	*Cynodon dactylon*	Couch	-	-
*	*Cyperus eragrostis*	Drain Flat-sedge	-	-
*	*Dactylis glomerata*	Cock's-foot	-	-
	Dicksonia antarctica	Soft Tree-Fern	-	-
	Epilobium pallidiflorum	Showy Willow-herb	-	-
*	*Ehrharta longifolia*	Annual Veldt-grass	-	-
	Eucalyptus globulus	Blue Gum	-	-
	Eucalyptus ovata	Swamp Gum	-	-
*	*Fraxinus spp.*	Ash	-	-
*	*Galium aparine*	Cleavers	-	-
*	*Geranium dissectum*	Cut-leaf Crane's-bill	-	-
	Geranium retrorsum	Crane's-bill	-	-
*	*Holcus lanatus*	Yorkshire Fog	-	-
	Hypolepis glandulifera	Downy Ground-fern	-	-
	Juncus bufonius	Toad Rush	-	-
	Juncus usitatus	Common Rush	-	-
	Lachnagrostis filiformis	Blown Grass	-	-

Origin	Scientific Name	Common Name	Weeds of National Significance	Noxious Weeds Classification
*	*Lactuca serriola*	Prickly Lettuce	-	-
*	*Lolium perenne*	Rye Grass	-	-
*	*Lysimachia arvensis*	Scarlet Pimpernel	-	-
	Lythrum hyssopifolia	Lesser Loosestrife	-	-
*	*Malva nicaeensis*	Mallow of Nice	-	-
*	*Medicago polymorpha*	Burr Medic	-	-
*	*Onopordum acanthium*	Scotch Thistle	-	-
*	*Plantago lanceolata*	Ribwort Plantain	-	-
*	*Poa annua*	Annual Meadow Grass	-	-
*	*Prunus nigra*	Cheery Plum	-	-
*	*Pteridium australes*	Common Bracken	-	-
*	*Ranunculus repens*	Creeping Buttercup	-	-
*	*Rosa setigerum*	Climbing Rose	-	-
*	*Rubus fruticosus*	Blackberry	Yes	Regionally Controlled
*	*Rumex conglomeratus*	Clustered Dock	-	-
*	*Rumex crispus*	Curled Dock	-	-
	Senecio linearifolius	Fireweed Groundsel	-	-
	Senecio quadridentatus	Cotton Fireweed	-	-
*	*Sonchus oleraceus*	Sow Thistle	-	-
*	*Stellaria media*	Chickweed	-	-
*	*Taraxacum officinale*	Dandelion	-	-
*	*Trifolium fragiferum*	Strawberry Clover	-	-
*	*Trifolium subterraneum*	Sub Clover	-	-

Table Notes:
* Exotic # Naturalised

Table A2. Fauna recorded within the study area

Origin	Common Name	Species Name
Birds		
	Straw-necked Ibis	*Threskiornis spinicollis*
*	Spotted Dove	*Streptopelia chinensis*
	Galah	*Eolophus roseicapillus*
	Sulphur-crested Cockatoo	*Cacatua galerita*
	Eastern Rosella	*Platycercus eximius*
	Nankeen Kestrel	*Falco cenchroides*
	Superb Fairy-wren	*Malurus cyaneus*
	Red Wattlebird	*Anthochaera carunculata*
	Grey Fantail	*Rhipidura albiscapa*
	Australian Magpie	*Cracticus tibicen*
	Little Raven	*Corvus mellori*
	Welcome Swallow	*Hirundo neoxena*
	Fairy Martin	*Petrochelidon ariel*
	Australasian Pipit	*Anthus novaeseelandiae*
*	Common Blackbird	*Turdus merula*
*	Common Myna	*Sturnus tristis*
*	Common Starling	*Sturnus vulgaris*
*	House Sparrow	*Passer domesticus*
Frogs		
	Common Froglet	*Crinia signifera*
	Spotted Marsh Frog	*Limnodynastes tasmaniensis*
	Eastern Pobblebonk	*Limnodynastes dumerilii*

Definitions
* - Introduced species

Table A3. Threatened flora that has previously been recorded within, or in the vicinity of the study area (Department of Environment Land Water and Planning 2019e), or that has habitat that may occur within the vicinity of the study area (Department of the Environment and Energy 2019a).

Common Name	Species Name	National Status	Victorian Status	Habitat Preferences	Most Recent Record	Habitat Present on Site	Likelihood of Presence*
Dense Leek-orchid	*Prasophyllum spicatum*	Vulnerable	Endangered	Coastal and hinterland heath and heathy woodland	NPR	No	Unlikely
Filmy Maidenhair	*Adiantum diaphanum*	-	Endangered FFG Listed	Restricted to the Strzelecki Ranges of south Gippsland. It forms small colonies near waterfalls, on wet rock faces and banks.	1993 (3)	Yes	Low
Green-striped Greenhood	*Pterostylis chlorogramma*	Vulnerable	Vulnerable	Open forest and woodland	NPR	No	Unlikely
Leafy Greenhood	*Pterostylis cucullata*	Vulnerable	Endangered FFG Listed	Tea-tree heath	NPR	No	Unlikely
Maroon Leek-orchid	*Prasophyllum frenchii*	Endangered	Endangered FFG Listed	Tea-tree heath; wattle tea-tree scrub; valley sclerophyll forest. Predominantly in or near coastal swamps. Rarely occupies sites more than 10 km inland	NPR	No	Unlikely
River Swamp Wallaby-grass	*Amphibromus fluitans*	Vulnerable	-	Beside swamps in grassy low open forest, riparian scrub. Required moist soils, tolerates inundation.	NPR	No	Low
Rosemary Grevillea	*Grevillea rosmarinifolia* subsp. *rosmarinifolia*	-	Rare	Prefers well drained soils in plains grasslands and dry sclerophyll forests	1970 (1)	No	Unlikely

Common Name	Species Name	National Status	Victorian Status	Habitat Preferences	Most Recent Record	Habitat Present on Site	Likelihood of Presence*
Strzelecki Gum	*Eucalyptus strzeleckii*	Vulnerable		Fragmented populations in the Strzelecki Ranges, on a range of sites including ridges, slopes and along the banks of streams, but particularly foothills and flats	1990 (3)	No	Unlikely
Swamp Everlasting	*Xerochrysum palustre*	Vulnerable	Vulnerable FFG Listed	Seasonal or permanent wetlands	NPR	No	Unlikely
Thick-lipped Spider Orchid	*Caladenia tessellata*	Vulnerable	Vulnerable	Grassy sclerophyll woodland on clay loam or sandy soils	NPR	No	Unlikely

*** Likelihood of Presence Definitions**:

Unlikely – Site does not contain habitat and/or it is outside the species' known, current distribution.

Low –Site contains some marginal habitat, but the species was not observed and has not been recently recorded in previous surveys in the area.

Moderate – Site contains preferred habitat that may support a population of the species. However, other factors, such as fragmentation, disturbance or predators may be impacting any local population.

High - Site contains the preferred habitat which is likely to support the species.

Present – Preferred habitat is present on the site, and the species was observed on the site, or recently recorded at the site.

NPR – No previous record, modelled presence only under the EPBC Protected Matters Search results.

Threatened status based on the Advisory List of Rare or Threatened Plants in Victoria (Department of Environment and Primary Industries 2014).

Table A4. Threatened fauna that has previously been recorded within, or in the vicinity of the study site (Department of Environment Land Water and Planning 2019e), or that has habitat that may occur within the vicinity of the site (Department of the Environment and Energy 2019a).

Common Name	Species Name	National Status	Victorian Status	Habitat Preferences	Most Recent Record	Habitat Present on Site	Likelihood of Presence*
Birds							
Blue-billed Duck	*Oxyura australis*	-	Endangered, FFG Listed	Well-vegetated freshwater swamps, large dams, lakes. More open waters in winter.	1999 (1)	No	Unlikely
Australasian Bittern	*Botaurus poiciloptilus*	Endangered	Endangered	Reed beds, dense vegetation of freshwater swamps and creeks.	NPR	No	Unlikely
Australian Painted-Snipe	*Rostratula australis*	Vulnerable	Critically Endangered, FFG Listed	Uncommon summer migrant to Victoria. Lowlands on shallow freshwater swamps with emergent vegetation, and flooded salt marshes.	NPR	No	Unlikely
Eastern Curlew	*Numenius madagascariensis*	Critically Endangered	Vulnerable, FFG Listed	Estuaries, tidal mudflats, mangroves, shallow river margins, coastal or inland	NPR	No	Unlikely
Curlew Sandpiper	*Calidris ferruginea*	Critically Endangered	Endangered, FFG Listed	Estuaries, tidal mudflats, mangroves, shallow river margins, coastal or inland	NPR	No	Unlikely
Hooded Plover	*Thinornis rubricollis rubricollis*	Vulnerable	Vulnerable, FFG Listed	Intertidal mudflats, estuaries and beaches.	NPR	No	Unlikely
Swift Parrot	*Lathamus discolor*	Endangered	Endangered, FFG Listed	Winter migrant from Tasmania. Generally prefers Box-Ironbark forests and woodlands inland of the Great Dividing Range during winter.	NPR	No	Unlikely
White-throated Needletail	*Hirundapus caudacutus*	Vulnerable	Vulnerable, FFG Listed	Aerial insectivore that rarely lands to perch, often sleeping on the wing	NPR	No	Low
Regent Honeyeater	*Anthochaera phrygia*	Endangered	Critically Endangered, FFG Listed	Depends on nectar and insects from Box-Ironbark Eucalypt forests. Only breeding habitat lies in Northeast Victoria and central	NPR	No	Unlikely

Common Name	Species Name	National Status	Victorian Status	Habitat Preferences	Most Recent Record	Habitat Present on Site	Likelihood of Presence*
				coast of NSW			
Mammals							
Spotted-tail Quoll	*Dasyurus maculatus maculatus*	Vulnerable	Endangered, FFG Listed	Forests including large intact areas of vegetation for foraging.	NPR	No	Unlikely
Swamp Antechinus	*Antechinus minimus maritimus*	Vulnerable	Near Threatened, FFG Listed	Heathy forest, wetlands, heathland and coastal scrub.	1978 (1)	No	Unlikely
Southern Brown Bandicoot	*Isoodon obesulus obesulus*	Endangered	Near Threatened	Heathy forest, heathland and coastal scrub.	NPR	No	Unlikely
Long-nosed Potoroo	*Potorous tridactylus tridactylus*	Vulnerable	Near Threatened, FFG Listed	Heathy woodland	NPR	No	Unlikely
Greater Glider	*Petauroides volans*	Vulnerable	Vulnerable	Wet sclerophyll forests, requires large tree hollows for nesting	NPR	No	Unlikely
Grey-headed Flying-fox	*Pteropus poliocephalus*	Vulnerable	Vulnerable, FFG Listed	Roost sites commonly occur in gullies, in vegetation with dense canopy cover and close to water.	NPR	No	Low
Broad-toothed Rat	*Mastacomys fuscus mordicus*	Vulnerable	Endangered, FFG Listed	A range of habitats from sub-alpine to coastal heathland, with high vegetative coverage in high rainfall areas	NPR	No	Unlikely
Frogs							
Growling Grass Frog	*Litoria raniformis*	Vulnerable	Endangered, FFG Listed	Permanent lakes, swamps, dams and lagoons.	NPR	No	Unlikely
Southern Toadlet	*Pseudophryne semimarmorata*	-	Vulnerable	Dry forest, woodland, grassland and heath in moist soaks and depressions; uses leaf litter for shelter.	1968 (4)	No	Unlikely
Fish							

Common Name	Species Name	National Status	Victorian Status	Habitat Preferences	Most Recent Record	Habitat Present on Site	Likelihood of Presence*
Australian Grayling	*Prototroctes maraena*	Vulnerable	Vulnerable, FFG Listed	Clear gravelly streams; deep slow flowing pools.	NPR	No	Unlikely
Dwarf Galaxias	*Galaxiella pusilla*	Vulnerable	Vulnerable, FFG Listed	Slow moving waters, including ephemeral drains.	NPR	Yes	Low
Macquarie Perch	*Macquaria australasica*	Endangered	Endangered, FFG Listed	Deep, rocky holes with considerable cover and flowing water over unsilted cobble and gravel substrate.	1970 (3)	No	Unlikely
Invertebrates							
Narracan Burrowing Crayfish	*Engaeus phyllocercus*	-	Endangered, FFG Listed	Creates burrows with a rim shaped chimney of 1 - 2 cm height, which are typically found in the flood bed region of fern tree gullies in wet sclerophyll forest	1760 (1)	No	Unlikely
Gippsland Burrowing Crayfish	*Engaeus hemicirratulus*	-	Endangered	Burrows in habitats which are usually situated in the yellow-orange clay-dominated soils of South Gippsland, often in what was formerly dense, temperate wet sclerophyll forest dominated by the Mountain Ash *Eucalyptus regnans*	1905 (1)	No	Unlikely
Giant Gippsland Earthworm	*Megascolides australis*	Endangered	Vulnerable, FFG Listed	Usually associated with deep blue-grey clay-like soils near creek banks (especially smaller tributaries of the Bass River), soaks, river flats or on slopes with a southerly or westerly aspect and is rarely found on north facing slopes, in the western Strzelecki Ranges.	2015 (84)	Yes	Moderate

Table Notes:

This table excludes species listed exclusively as 'migratory' or 'marine' under the EPBC Protected Matters Search results (Department of the Environment and Energy 2019a).

*** Likelihood of Presence Definitions:**

Unlikely – Site does not contain habitat and/or it is outside the species' known, current distribution. Birds and bats may fly over.

Low –Site contains some marginal habitat, but the species was not observed and has not been recorded in previous recent surveys in the area. Birds and bats may fly over.

Moderate – Site contains preferred habitat that may support a population of the species. Birds and bats may opportunistically or seasonally forage at the site.

High – Site contains preferred habitat which is likely to support the species. Birds and bats are likely to regularly (at least seasonally) forage or roost at the site.

Present – Preferred habitat is present on the site, and the species was observed on the site, or recently recorded on the site.

NPR – No previous record, modelled presence only under the EPBC Protected Matters Search results.

Threatened status based on the Advisory List of Threatened Vertebrate Fauna in Victoria (Department of Sustainability and Environment 2013) and the Advisory List of Threatened Invertebrate Fauna in Victoria (Department of Sustainability and Environment 2009).

Appendix 2. Legislation

Commonwealth Legislation

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

The *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) is to provide for the conservation of 'Matters of National Environmental Significance'. The Act defines eight Matters of National Environmental Significance:

- World Heritage properties;
- National Heritage Places;
- Ramsar wetlands of international significance;
- Nationally listed threatened species and ecological communities;
- Listed migratory species;
- Commonwealth marine areas;
- The Great Barrier Reef Marine Park; and,
- Nuclear actions.

Under the Act, actions that are likely to have a significant impact upon Matters of National Environmental Significance require approval from the Federal Environment Minister. This approval is sought through a referral process for a particular action. An action includes any project, development, undertaking, activity or series of activities. Consideration of the requirement for an 'EPBC Referral' to the Minister has been made within this report.

State Legislation

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

The *Flora and Fauna Guarantee Act 1998* (Vic) (FFG Act) provides a legal framework for enabling and promoting the conservation of all Victoria's native flora and fauna, and to enable management of potentially threatening processes on public land. The Act lists native species, communities, and processes that threaten native flora and fauna, under Schedules of the Act. This enables the assessor and regulators to establish management measures to mitigate impacts on listed values within Victoria.

A 'Protected Flora and Fauna Licence or Permit' from DSE is required to 'take' listed flora species that are members of listed communities or protected flora from public land. 'Taking' flora is defined as any action which results in the removal or death of a native plant. A permit is not required under the FFG Act for private land, unless listed species are present and the land is declared 'critical habitat' for the species.

An evaluation of the likelihood of the presence of significant flora and fauna species on the subject site, including those listed under the FFG Act that have previously been recorded in the vicinity of the site, has been undertaken.

***Planning and Environment Act 1987* (Vic)**

The *Planning and Environment Act 1987* (Vic) (P&E Act), later amended by the *Planning and Environment (Planning Schemes) Act 1996* (Vic) provides the foundation of planning schemes in

Victoria. Planning schemes set out policies and provisions for the development and protection of land within each municipality in Victoria.

The *Planning and Environment (Planning Schemes) Act 1996* provides for the Minister for Planning to prepare a set of standard provisions for planning schemes called the Victoria Planning Provisions (VPP). The VPP is a state-wide reference document or template from which planning schemes are sourced and constructed. Incorporation of references such as the *Guidelines For the Removal, Destruction or Lopping of native vegetation* into Section 12 of the VPP ensures that all municipalities must consider this policy. Local zones and overlays, such as Environmental Significance Overlays, may be incorporated into Section 30 and 40 of the planning provisions by each Council, but only remain relevant within that municipality.

The objectives of the P&E Act are to integrate local land use, development planning and development policy with environmental, social, economic, conservation and resource management policies at State, regional and municipal levels through a set of planning schemes. The Act also establishes a clear procedure for public participation in decision making in amending planning schemes.

Some important sections of the planning scheme, in relation to the ecological values of a site, include:

- Section 12 of the State Planning Policy Framework, which identifies, and aims to protect, key biodiversity assets from inappropriate development;
- Clause 52.17 which identifies where native vegetation removal is exempt from requiring a planning permit; and
- Clause 66 which identifies all of the mandatory referral authorities. In particular, the Victorian Department of Environment, Land Water and Planning is identified as the recommending referral authority if a proponent proposes:
    - *'To remove, destroy or lop native vegetation in the Detailed Assessment Pathway as defined in the Guidelines for the removal, destruction or lopping of native vegetation;*
    - *To remove, destroy or lop native vegetation if a property vegetation plan applies to the site; and*
    - *To remove, destroy or lop native vegetation on Crown land which is occupied or managed by the responsible authority'* (Department of Environment Land Water and Planning 2019d).

***Catchment and Land Protection Act 1994* (Vic)**

The *Catchment and Land Protection Act 1994* (Vic) (CALP Act) is the principle legislation relating to the management of pest plants and animals in Victoria. Under this Act, landowners have a responsibility to avoid causing or contributing to land degradation. Where possible, landowners are required to conserve soil, protect water resources, eradicate 'regionally prohibited' weeds, prevent the growth and spread of 'regionally controlled' weeds and control pest animals. The CALP Act lists the species that are considered weeds and pest animals.

***Wildlife Act 1975* (Vic)**

Victoria's *Wildlife Act 1975* (Vic) and the *Wildlife Regulations 2002* (Vic) protect all indigenous vertebrate fauna, some non-indigenous vertebrate fauna, and some invertebrate fauna listed as 'threatened' under the FFG Act. The *Wildlife Act 1975* (Vic)prevents intentional injury to wildlife, and stipulates that a licence should be granted where there is a possibility that wildlife are injured, or where wildlife is to be kept, relocated or traded.

In most cases, where the proponent is planning to develop a site, a planning permit approval provides this licencing approval, however, this report advises if an additional permit is required. Circumstances where this legislation may not be relevant is where fish are involved, on public land where additional regulatory approval is required, or where other permits are required (such as where fauna are required to undergo invasive procedures or installation of telemetry systems).

***Fisheries Act 1995 (*Vic)**

The *Fisheries Act 1995* (Vic) provides the legislative framework for the regulation, management conservation of Victorian fish species and their habitats. As with the Victorian *Wildlife Act 1975* described above, the key method to ensure compliance is through licencing. Where fish, or their habitats, are likely to be impacted, this report will identify additional requirements.

Other relevant policy

***Guidelines for the removal, destruction or lopping of native vegetation* (Department of Environment Land Water and Planning 2017c)**

The *Guidelines for the removal, destruction or lopping of native vegetation* (Department of Environment Land Water and Planning 2017) were released by DELWP in December 2017. These guidelines supersede the Biodiversity Assessment Guidelines (Department of Environment and Primary Industries 2013).

A permit to remove native vegetation under clause 52.16 and 52.17 of the Victoria Planning Provisions is required unless:

- The table of exemptions to this clause specifically states that a permit is not required;
- It is native vegetation or an area specified in the schedule to the clause;
- A Native Vegetation Precinct Plan corresponding to the land is incorporated into the relevant planning scheme; or
- Bushfire exemptions apply in bushfire prone areas (Department of Environment Land Water and Planning 2017).

The Guidelines describe the permitting process for applications to remove native vegetation on private and public property within Victoria. A key strategy of the State Planning Policy Framework, relating to biodiversity, is to ensure that there is no net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation. This is achieved through iteratively applying the three-step approach:

1. Avoiding the removal, destruction or lopping of native vegetation.

2. Minimising impacts from the removal, destruction or lopping of native vegetation that cannot be avoided.
3. Providing an offset to compensate for the biodiversity impact from the removal, destruction or lopping of native vegetation (Department of Environment Land Water and Planning 2017; p. 4).

Native vegetation is defined in the Victoria Planning Provisions as 'plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses' (Department of Environment Land Water and Planning 2017).

Native vegetation is further classified into two categories (Department of Environment Land Water and Planning 2017):

- A remnant patch of native vegetation (measured in hectares) is either:
    - An area of vegetation where at least 25 per cent of the total perennial understorey plant cover is native, or
    - Any area with three or more native canopy trees where the drip line of each tree touches the drip line of at least one other tree, forming a continuous canopy, or
    - Any mapped wetland included in the *Current Wetlands Map*, available in DELWP systems and tools.

OR

- A scattered tree (measured in number of trees), is a native canopy tree that does not form a patch (Department of Environment Land Water and Planning 2017).

In addition, a canopy tree with a Diameter at Breast Height (DBH) greater than or equal to the large tree benchmark for the relevant bioregional EVC is defined as a large tree. Large trees can be either a large scattered tree or a large tree within a patch.

The contribution that is made by native vegetation to the biodiversity values of Victoria is determined through an assessment of both site-based information and landscape scale information.

At a site-based level, the contribution is determined through an assessment of:

- The extent of native vegetation;
- The number of large trees (either within a patch or scattered trees), relative to the appropriate EVC benchmark;
- The native vegetation condition, which is determined through a Habitat Hectare assessment
- The conservation status of the Ecological Vegetation Class (EVC) to which the vegetation can be classified; and,
- The presence of sensitive wetlands and coastal areas.

At a landscape scale, the value of the vegetation is determined with reference to its strategic context in the Victorian landscape (Department of Environment and Primary Industries 2013). This is determined by the vegetation's 'Strategic Biodiversity Score' (SBS) and its 'Habitat Importance Score'

(HIS) for its value to rare and threatened species (Department of Environment Land Water and Planning 2017).

All native vegetation within Victoria has a SBS that has been determined through spatial modelling, based on its rarity, level of depletion, species habitats, and condition and connectivity (Department of Environment Land Water and Planning 2017). SBS scores are between 0 and 1 and are used to determine the offset required for the loss of that vegetation. Native vegetation only has a HIS score if it is habitat for a particular rare or threatened species[5] (Department of Environment Land Water and Planning 2017). There are two types of rare or threatened species habitats that may be provided by native vegetation:

- **Highly localised habitats for rare or threatened species** – where impact to this particular patch of native vegetation could result in a significant biodiversity impact, such as a breeding colony or species with a limited geographic extent.
- **Dispersed rare or threatened species habitats** – where habitat for the threatened species has become depleted or fragmented over time (Department of Environment Land Water and Planning 2017).

The HIS is used to apply the decision guidelines in relation to the removal of a patch of native vegetation and to determine offset requirements (Department of Environment Land Water and Planning 2017).

Applications to remove native vegetation are categorised against one of three assessment pathways. These pathways are categorised as:

- Basic – limited impacts on biodiversity.
- Intermediate – could impact on large trees, endangered EVCs, and sensitive wetlands and coastal areas.
- Detailed – could impact on large trees, endangered EVCs, sensitive wetlands and coastal areas, and could significantly impact on habitat for rare or threatened species (Department of Environment Land Water and Planning 2017).

This is initially determined in two ways, based on the 'location map' and the extent risk of the vegetation proposed to be removed. The location risk is determined with reference to the *Native Vegetation Location Risk* map available on DELWP's website (Department of Environment Land Water and Planning 2019b). This map shows whether native vegetation is classified as Location 1, 2 or 3.

[5] Rare or threatened species are species listed in:

- DELWP's Advisory List of Rare or Threatened Plants in Victoria (DEPI 2014a) as 'endangered', 'vulnerable', or 'rare', but does not include the 'poorly known' category.
- DELWP's Advisory List of Threatened Vertebrate Fauna in Victoria (DEPI 2013) as 'critically endangered', 'endangered' or 'vulnerable', but does not include 'near threatened' or 'data deficient' categories
- DELWP's Advisory List of Threatened Invertebrate Fauna in Victoria (DEPI 2009) as 'critically endangered', 'endangered' or 'vulnerable', but does not include 'near threatened' or 'data deficient' categories.

The extent risk is determined based on the amount of native vegetation that is proposed for removal and includes the area (in hectares) of impact to native vegetation, the number of scattered trees, and the number of large trees (Table A5).

Table A5. Assessment pathways for removal of remnant patches of native vegetation (Department of Environment Land Water and Planning 2017).

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

All applications to remove native vegetation must include the following information:

1. Information about the native vegetation to be removed, including:
    a. The assessment pathway and reason for the assessment pathway;
    b. A description of the native vegetation to be removed;
    c. Maps showing the native vegetation and property in context;
    d. The offset requirement, determined in accordance with section 5 of the Guidelines that will apply if the native vegetation is approved to be removed.
2. Topographic and land information relating to the native vegetation to be removed;
3. Recent, dated photographs of the native vegetation to be removed;
4. Details of any other native vegetation approved to be removed, or that was removed without the required approvals, on the same property or on contiguous land in the same ownership as the applicant, in the five year period before the application for a permit is lodged;
5. An 'Avoid and Minimise' statement;
6. A copy of any Property Vegetation Plan contained within an agreement made pursuant to section 69 of the *Conservation, Forests and Lands Act 1987* (Vic) that applies to the native vegetation to be removed;
7. Where the removal of native vegetation is to create defendable space, a written statement explaining why the removal of native vegetation is necessary;
8. If the application is under Clause 52.16, a statement that explains how the proposal responds to the Native Vegetation Precinct Plan considerations at decision guideline 8, and
9. An offset statement providing evidence that an offset that meets the offset requirements for the native vegetation to be removed has been identified, and can be secured in accordance with the Guidelines (Department of Environment Land Water and Planning 2017; p. 20-21).

If the application will be assessed under the Detailed Assessment Methodology, the following additional requirements apply:

10. A site assessment report of the native vegetation to be removed, including:
    a. A habitat hectare assessment of any patches of native vegetation, including the condition, extent (in hectares), Ecological Vegetation Class and bioregional conservation status.
    b. The location, number, circumference (in centimetres measured at 1.3 metres above ground level) and species of any large trees within patches.
    c. The location, number, circumference (in centimetres measured at 1.3 metres above ground level) and species of any scattered trees, and whether each tree is small or large.
11. Information about impacts on rare or threatened species habitat, including:
    a. The relevant section of the Habitat importance map for each rare or threatened species requiring a species offset.
    b. For each rare or threatened species that the native vegetation to be removed is habitat for, according to the Habitat importance maps: - the species' conservation status - the proportional impact of the removal of native vegetation on the total habitat for that species - whether their habitats are highly localised habitats, dispersed habitats, or important areas of habitat within a dispersed species habitat (Department of Environment Land Water and Planning 2017; p. 22).

Ten decisions guidelines are identified within the Guidelines that the responsible or referral authority must consider when deciding on an application to remove native vegetation. These are summarised as follows:

1. The degree to which the application avoids and minimises impacts to native vegetation, and where vegetation is proposed to be removed, the highest quality vegetation is avoided;
2. The role that the vegetation to be removed has in relation to landscape services such as erosion control, ground-water quality, waterway quality;
3. The role of the vegetation in the preservation of landscape features;
4. Whether any part of the native vegetation to be removed, destroyed or lopped is protected under the *Aboriginal Heritage Act 2006* (Vic);
5. The need to remove, destroy or lop native vegetation to create defendable space to reduce the risk of bushfire to life and property, having regard to other available bushfire risk mitigation measures;
6. Whether the native vegetation to be removed is in accordance with any Property Vegetation Plan that applies to the site;
7. Whether an offset that meets the offset requirements for the native vegetation to be removed has been identified and can be secured in accordance with the Guidelines;
8. Whether the application is consistent with a Native Vegetation Precinct Plan (where relevant);
9. For applications in both the Intermediate and Detailed Assessment Pathway only, the impacts on biodiversity values that would occur as a result of vegetation removal; and,
10. For applications in the Detailed Assessment Pathway only, the impacts on habitat for rare or threatened species (Department of Environment Land Water and Planning 2017).

Offset requirements

In all cases where native vegetation is approved for removal, the proponent is liable for the security of an offset site that meets the requirements under the Guidelines. An offset can be either a:

- First party offset – on the same property as the proposed removal of native vegetation, or on another property owned or managed (in the case of Crown land) by the party requiring the offset, or
- Third party offset – on another party's property. Third party offsets are traded as native vegetation credits.

In most cases a third party offset is the simplest and most cost effective means of securing the required offset.

There are three components to offset requirements:

1. Offset type (general or species).
2. Offset amount (measured in general or species habitat units).
3. Offset attributes.

Two types of offset are identified: General Offsets and Specifies Offsets. Specific Offsets may only be required if the native vegetation to be removed is habitat for rare or threatened species that are identified in an Intermediate or Detailed Assessment Pathway application (Department of Environment Land Water and Planning 2017). To determine this, a 'Specific Biodiversity Equivalence Score' is calculated by multiplying the habitat hectares with the HIS for each species that may be impacted. For each of the species, this figure is divided by the sum of all the Specific Biodiversity Value Scores calculated for the remaining vegetation under investigation to give a specific offset threshold for each species. If the amount of vegetation removed exceeds this threshold, then a Specific Offset is required. If it does not exceed the threshold, then only a General Habitat Offset is required (Table A6)(Department of Environment Land Water and Planning 2017).

Table A6 summarises the offset requirements for each of the Assessment Pathways and offset types.

Table A6. Offset requirements for the removal of native vegetation

Assessment Pathway	Offset Type	Offset amount		Offset attributes	
		Risk Adjusted Biodiversity Equivalence	Species Habitat Requirement	Vicinity	Strategic Biodiversity Score
Basic Assessment Pathway	General offset	1.5 times the general biodiversity equivalence score[1] of the native vegetation to be removed.	No restrictions.	In the same Catchment Management Authority boundary as the native vegetation to be removed.	At least 80 per cent of the SBS of the native vegetation to be removed.
Intermediate or Detailed Assessment Pathway	General offset	1.5 times the general biodiversity equivalence score of the native vegetation to be removed.	No restrictions.	In the same Catchment Management Authority boundary as the native vegetation to be removed.	At least 80 per cent of the SBS of the native vegetation to be removed.
	Specific offset	For each species impacted, 2 times the specific biodiversity equivalence score of the native vegetation to be removed.	Likely habitat for each rare or threatened species that a specific offset is required for, according to the specific-general offset test.	No restrictions.	No restrictions.

[1] The general biodiversity equivalence score is determined by multiplying the vegetation's habitat hectare score by its SBS.

Appendix 3. Native Vegetation Removal Report

Scenario test – native vegetation removal

This report provides offset requirements for internal testing of different proposals to remove native vegetation. **This report DOES NOT support an application to remove, destroy or lop native vegetation under Clause 52.16 or 52.17 of planning schemes in Victoria.** A report must be obtained from the Department of Environment, Land, Water and Planning (DELWP).

Date of issue: **06/12/2019**
Time of issue: **8:33 am**

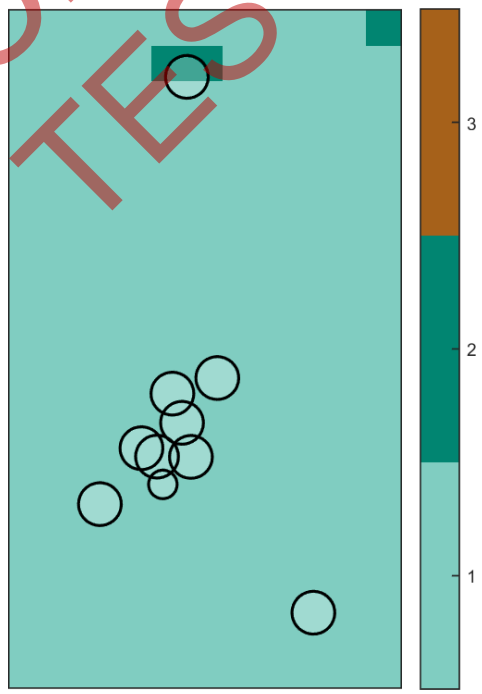
Report ID: Scenario Testing

Project ID	1774_Korumburra_EnSym_06122019

Assessment pathway

Assessment pathway	**Detailed Assessment Pathway**
Extent including past and proposed	0.599 ha
Extent of past removal	0.000 ha
Extent of proposed removal	0.599 ha
No. Large trees proposed to be removed	9
Location category of proposed removal	Location 2 The native vegetation is in an area mapped as an endangered Ecological Vegetation Class (as per the statewide EVC map). Removal of less than 0.5 hectares of native vegetation in this location will not have a significant impact on any habitat for a rare or threatened species.

1. Location map



Scenario test – native vegetation removal

Offset requirements if a permit is granted

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

General offset amount[1]	0.119 general habitat units
Vicinity	West Gippsland Catchment Management Authority (CMA) or South Gippsland Shire Council
Minimum strategic biodiversity value score[2]	0.258
Large trees	9 large trees

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

Appendix 1 includes information about the native vegetation to be removed

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

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

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

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

Scenario test – native vegetation removal

Next steps

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

This report DOES NOT support an application to remove, destroy or lop native vegetation under Clause 52.16 or 52.17 of planning schemes in Victoria.

If you wish to remove the mapped native vegetation you must submit the related shapefiles to the Department of Environment, Land, Water and Planning (DELWP) for processing, by email to ensymnvrtool.support@delwp.vic.gov.au. DELWP will provide a *Native vegetation removal report* that is required to meet the permit application requirements in accordance with *Guidelines for the removal, destruction or lopping of native vegetation* (Guidelines).

Appendix 1: Description of native vegetation to be removed

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

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

Species habitat units = extent x condition x species landscape factor x 2, where the species landscape factor = 0.5 + (habitat importance score/2)

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

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

General habitat units = extent x condition x general landscape factor x 1.5, where the general landscape factor = 0.5 + (strategic biodiversity value score/2)

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

Native vegetation to be removed

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	**Type**	**BioEVC**	**BioEVC conservation status**	**Large tree(s)**	**Partial removal**	**Condition score**	**Polygon Extent**	**Extent without overlap**	**SBV score**	**HI score**	**Habitat units**	**Offset type**
0-J	Scattered Tree	strz0030	Depleted	1	no	0.200	0.070	0.070	0.310		0.014	General
0-I	Scattered Tree	strz0030	Depleted	0	no	0.200	0.031	0.026	0.310		0.005	General
0-H	Scattered Tree	strz0030	Depleted	1	no	0.200	0.070	0.070	0.310		0.014	General
0-G	Scattered Tree	strz0030	Depleted	1	no	0.200	0.070	0.053	0.310		0.010	General
0-F	Scattered Tree	strz0030	Depleted	1	no	0.200	0.070	0.049	0.310		0.010	General
0-E	Scattered Tree	strz0030	Depleted	1	no	0.200	0.070	0.064	0.310		0.012	General
0-D	Scattered Tree	strz0030	Depleted	1	no	0.200	0.070	0.061	0.310		0.012	General
0-C	Scattered Tree	strz0030	Depleted	1	no	0.200	0.070	0.064	0.310		0.013	General

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
0-B	Scattered Tree	strz0030	Depleted	1	no	0.200	0.070	0.070	0.322		0.014	General
0-A	Scattered Tree	strz0030	Depleted	1	no	0.200	0.070	0.070	0.400		0.015	General

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

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

Species common name	Species scientific name	Species number	Conservation status	Group	Habitat impacted	% habitat value affected
Gippsland Giant Earthworm	*Megascolides australis*	15004	Endangered	Dispersed	Habitat importance map	0.0007
Strzelecki Gum	*Eucalyptus strzeleckii*	504558	Vulnerable	Dispersed	Habitat importance map	0.0000
Bog Gum	*Eucalyptus kitsoniana*	501290	Rare	Dispersed	Habitat importance map	0.0000
Oval Fork-fern	*Tmesipteris ovata*	503404	Rare	Dispersed	Habitat importance map	0.0000

Habitat group

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

Habitat impacted

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

Appendix 3 – Images of mapped native vegetation

2. Strategic biodiversity values map