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Mount Buller Summit trails: Flora and fauna assessment

Prepared for Mount Buller and Mount Stirling Alpine Resort Management Board
22 February 2022

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Summary

Biosis Pty Ltd was commissioned by Mount Buller and Mount Stirling Alpine Resort Management Board (MBMSARMB) to undertake a flora and fauna assessment of an area proposed for the Mount Buller Summit walking trails (the 'study area'). The study area is located approximately 1.5 kilometres west of Mount Buller village and approximately 35 kilometres south-east of Mansfield.

Ecological values

Key ecological values identified within the study area are as follows:

- High quality alpine native vegetation within the following Ecological Vegetation Classes (EVCs):
 - Alpine Coniferous Shrubland EVC 156 (Biodiversity Conservation Status [BCS]: Vulnerable).
 - Alpine Grassy Heathland EVC 1004 (BCS: Rare).
 - Alpine Rocky Outcrop Heathland EVC 1013 (Applied BCS: Rare).
- Proximity to known habitat for Mountain Pygmy Possum *Burramys parvus*, listed as endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and endangered under the *Flora and Fauna Guarantee Act 1988* (FFG Act).
- Potential habitat for the following other threatened fauna species:
 - White-throated Needletail *Hirundo alba*, listed as vulnerable under the EPBC Act and vulnerable under the FFG Act.
 - Broad-toothed Rat *Mastacomys fuscus mordicus*, listed as vulnerable under the EPBC Act and vulnerable under the FFG Act.
 - Black Falcon *Falco subniger*, listed as critically endangered under the FFG Act.
 - Alpine Bog Skink *Pseudemoia cryodroma*, listed as endangered under the FFG Act.
 - Tussock Stink *Pseudemoia pagenstecheri*, listed as endangered under the FFG Act.
- Recorded occurrence of the following threatened flora within the study area:
 - Snow Aciphyll *Aciphylla glacialis*, listed as endangered under the FFG Act.
 - Snow Beard-heath *Acrothamnus montanus*, listed as endangered under the FFG Act.
 - Carpet Snow-daisy *Celmisia costiniana*, listed as endangered under the FFG Act.
 - Silver Snow-daisy *Celmisia tomentella*, listed as vulnerable under the FFG Act.
 - Alpine Buttons *Leptorhynchus squamatus* subsp. *alpinus*, listed as endangered under the FFG Act.
 - Rusty Daisy-bush *Olearia brevipedunculata*, listed as endangered under the FFG Act.
 - Dusty Daisy-bush *Olearia phlogopappa* subsp. *flavescens*, listed as endangered under the FFG Act.
 - Alpine Phebalium *Phebalium squamulosum* subsp. *alpinum*, listed as endangered under the FFG Act.
 - Alpine Bootlace Bush *Pimelea axiflora* subsp. *alpina*, listed as endangered under the FFG Act.
 - Gunn's Alpine Buttercup *Ranunculus gunnianus*, listed as endangered under the FFG Act.

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- Alpine Triggerplant *Stylidium montanum*, listed as endangered under the FFG Act.
- Potential habitat for 14 other threatened flora species listed under the FFG Act.

Government legislation and policy

An assessment of the project in relation to key biodiversity legislation and policy is provided and summarised below.

Legislation / policy	Relevant ecological feature on site	Permit / approval required	Notes
EPBC Act	Known habitat for Mountain Pygmy Possum. Potential habitat for White-throated Needletail and Broad-toothed Rat.	Referral not recommended.	Significant impacts on matters of national environmental significance are not expected to occur as a result of the proposed works due to the minor nature of the works. An assessment under the Significant Impact Guidelines has been completed for Mountain Pygmy-possum.
FFG Act	Protected flora present. Habitat and potential habitat for Tussock Skink, Alpine Bog Skink and multiple threatened flora species.	Protected Flora Permit required. Actions required to avoid and minimise impacts on listed species and consideration of FFG Action Statements, especially for Mountain Pygmy-possum.	Site is public land (Alpine Resort Crown Land) and a permit is required to take or destroy protected flora.
Planning & Environment Act	Indigenous vegetation.	Planning permit required to remove, destroy or lop native vegetation. No Hawkweed recorded in the study area but species has been historically recorded at Mount Buller.	Best practice environmental management on public land requires avoidance, minimisation and offsetting of native vegetation in accordance with the <i>Guidelines for the removal, destruction or lopping of native vegetation</i> .
CaLP Act	No regionally controlled or restricted weeds were recorded in the study area during the site assessment, however they may be present as some are known from the broader resort area.	N/A	Comply with requirements to control/eradicate pest species.

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Guidelines for the removal, destruction or lopping of native vegetation (the Guidelines)

Based on the current design, it is proposed to remove 0.098 hectares of native vegetation from within location category 3. This in addition to the previous 6.271 hectares of past permitted removal creates a total vegetation removal extent of 6.369 hectares. Therefore the planning permit application will be assessed on the detailed assessment pathway. The strategic biodiversity value score of the native vegetation to be removed is between 0.902 and 0.970.

The steps that have been taken during the design of this development to ensure that impacts on biodiversity from the removal of native vegetation have been minimised include:

- Realignment of the trail to avoid areas of modelled Crag Wallaby-grass *Rytidosperma alpicola* habitat (a significant species).
- Realignment of the trail to move it further away from mapped Type 1 Mountain Pygmy-possum habitat.
- Utilisation of sections of existing informal walking trail towards McLaughlin's Shoulder.

If a permit is granted, the offset requirements would be species habitat units for the following nine species:

- 0.128 species units of habitat for Mountain Pygmy Possum, *Burramys parvus*
- 0.137 species units of habitat for Alpine Bog Skink, *Pseudemoia cryodroma*
- 0.009 species units of habitat for Mount Stirling Stonefly, *Thaumatoperla flaveola*
- 0.127 species units of habitat for Snow Aciphyll *Aciphylla glacialis*
- 0.127 species units of habitat for Gunn's Alpine Buttercup, *Ranunculus gunnianus*
- 0.127 species units of habitat for Alpine Erigeron, *Erigeron latifolia*
- 0.127 species units of habitat for Dusty Daisy-bush, *Olearia phlogopappa* subsp. *flavescens*
- 0.127 species units of habitat for Alpine Phebalium, *Phebalium squamulosum* subsp. *alpinum*
- 0.127 species units of habitat for Alpine Bootlace Bush, *Pimelea axiflora* subsp. *alpina*.

Mount Buller Mount Stirling Alpine Resort Management Board has an established offset site located on public land at Mount Stirling. The offset site provides habitat units for five out of the above nine species. The offset site does not provide species habitat units for the following four species:

- Snow Aciphyll *Aciphylla glacialis*
- Gunn's Alpine Buttercup *Ranunculus gunnianus*
- Dusty Daisy-bush *Olearia phlogopappa* subsp. *flavescens*
- Alpine Bootlace Bush *Pimelea axiflora* subsp. *alpina*.

Another alpine resort has recently established an offset site that provides species units for the four species listed above, and offset trades between Resorts have already occurred (approved and endorsed by DELWP) as two party trades. Mount Buller Mount Stirling Alpine Resort may be able to arrange a third party offset credit purchase of the required species units from that Resort.

If past permitted clearing requirements do not apply, then a registered credit broker could be used to facilitate purchase of the required general offset units.

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Recommendations

The results of this assessment should be incorporated into the project design, by adding the flora and fauna mapping information into the planning maps and investigating options to retain as much of the mapped vegetation as possible. All areas of vegetation/habitat nominated in the design plan as 'retained' are to be treated as no-go zones and are not to be encroached upon as development progresses.

Specific detail relating to preventing impacts to retained native vegetation and terrestrial habitat should be addressed in a site-specific Site Environmental Management Plan (SEMP). This plan will provide information for contractors such as environmental inductions, guidelines for installation of temporary fencing/signage and sensitive construction techniques, drainage and detailed sediment control measures and monitoring. In addition to this, the SEMP should also incorporate a detailed trail rehabilitation methodology. This should detail actions such as replacement of cut soil sods and other material along trail edges to encourage natural regeneration and reduce erosion.

Existing weeds (identified during this assessment) will be treated/controlled prior to construction commencing. The proposed walking trails should be incorporated into existing weed and pest management plans for trail networks at Mount Buller the trail network to address longer term management of threats such as pest plant and animal control, managing regrowth vegetation, sediment control and soil pathogens.

It is also recommended that targeted survey be undertaken for Alpine Bog Skink and Tussock Skink within the study area to quantify the magnitude and extent of impacts on these species listed under the FFG Act.

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1. Introduction

1.1 Project background

Biosis Pty Ltd was commissioned by Mount Buller and Mount Stirling Alpine Resort Management Board (MBMSARMB) to undertake a flora and fauna assessment of an area proposed the Mount Buller Summit walking trails (the 'study area').

Biosis understands construction of two walking trails and associated viewing platforms is proposed within the study area. The project works will include:

- Construction of a new Summit walking trail, from the existing Summit carpark leading up to the existing section of Summit walking trail (approximately 550 metres).
- Construction of McLaughlin's Shoulder walking trail, from the top of Grimus chairlift leading north to McLaughlin's shoulder (approximately 200 metres).
- Summit viewing platform, to be constructed on the northern side of the existing fire tower at the summit of Mount Buller.
- McLaughlin's Shoulder viewing platform.

1.2 Scope of assessment

The objectives of this investigation are to:

- Describe the vascular flora (ferns, conifers, flowering plants), vertebrate fauna (mammals, birds, reptiles, frogs, fishes) and decapod crustacea (e.g. crayfish).
- Map native vegetation and other habitat features.
- Conduct a vegetation quality assessment.
- Review the implications of relevant biodiversity legislation and policy, including Victoria's Guidelines for the removal, destruction or lopping of native vegetation ('the Guidelines').
- Identify potential implications of the proposed development and provide recommendations to assist with development design.
- Recommend any further assessments of the site that may be required (such as targeted searches for threatened species).

1.3 Location of the study area

The study area is located approximately 1.5 kilometres west of Mount Buller village and approximately 35 kilometres south-east of Mansfield (Figure 1). It encompasses approximately 2 hectares of public land along the highest points of Mount Buller. It is currently zoned Comprehensive Development Zone (CDZ2) and is covered by a Bushfire Management Overlay (BMO1), Design and Development Overlay - Schedule 3 (DDO3), Environmental Significance Overlay – Schedule 1 (ESO1) and an Erosion Management Overlay – Schedule 1 (EMO1).

The study area is within the:

- Victorian Alps Bioregion

- Management area of Goulburn Broken Catchment Management Authority (CMA)
- Mount Buller Alpine Resort.

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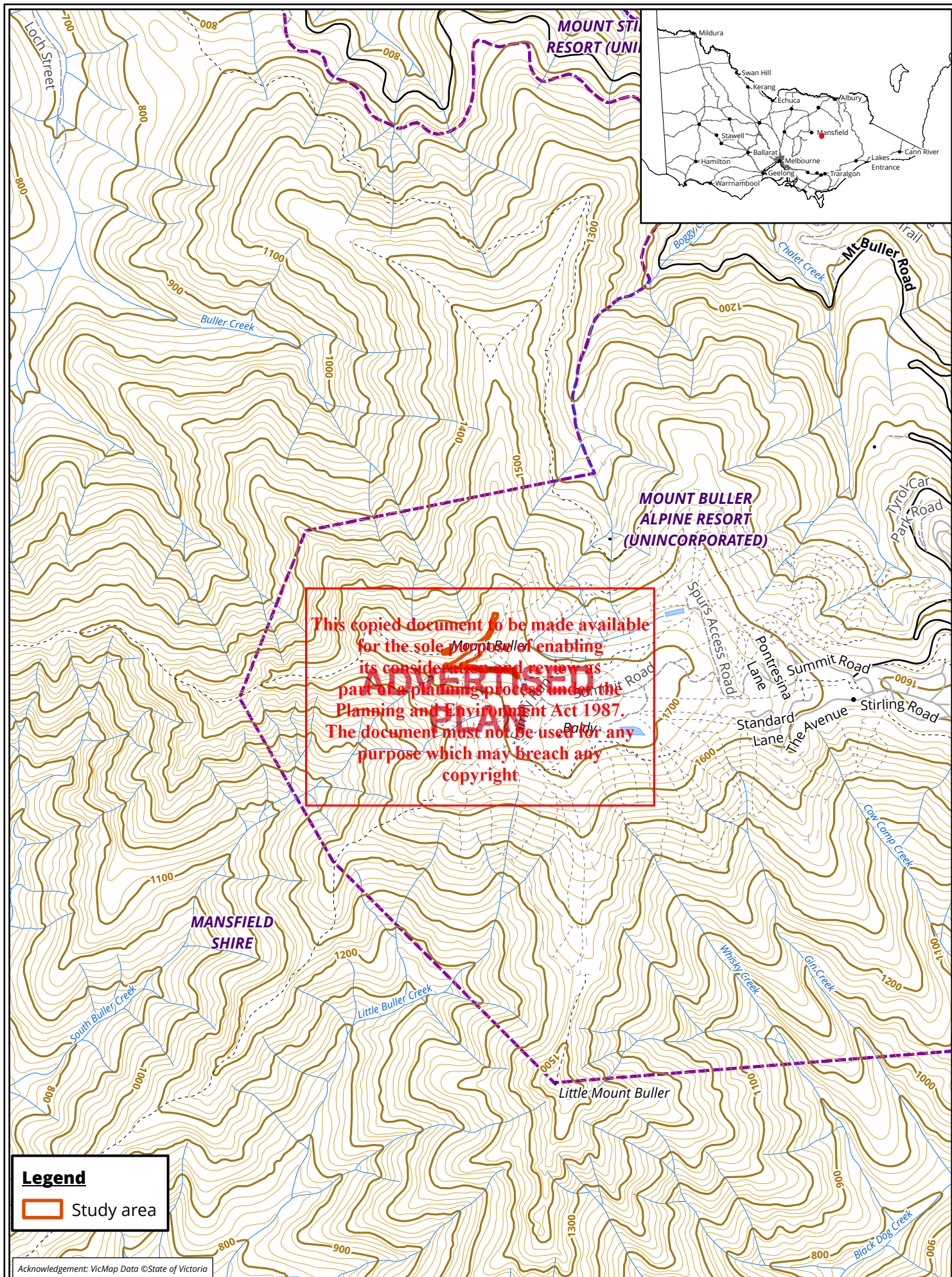


Figure 1 Location of the study area - Mount Buller, Victoria

2. Methods

2.1 Database review

In order to provide a context for the study area, information about flora and fauna from within 5 kilometres of the study area (the 'local area') was obtained from relevant biodiversity databases, many of which are maintained by the Victorian Government Department of Environment, Land, Water and Planning (DELWP) or the Australian Government Department of Agriculture, Water and the Environment (DAWE). Records from the following databases were collated and reviewed:

- DELWP's Victorian Biodiversity Atlas (VBA), including the 'VBA_FLORA25, FLORA100 & FLORA Restricted' and 'VBA_FAUNA25, FAUNA100 & FAUNA Restricted' datasets
- DAWE's Protected Matters Search Tool for matters protected by the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

Other sources of biodiversity information were examined including:

- DELWP's NatureKit mapping tool
- DELWP's Habitat Importance maps
- DELWP's Native Vegetation Information Management (NVIM) system
- DELWP's Ensym NVR Tool Support for the analysis was provided with site-based spatial information in order to generate a Native Vegetation Removal Report for the study area.
- Planning Scheme overlays relevant to biodiversity based on <http://planningschemes.dpcd.vic.gov.au>.

2.2 Definitions of threatened species or communities

Threatened species or communities include those species or communities that are listed under the EPBC Act and/or FFG Act. The conservation status of a species or ecological community is determined by its listing status under Commonwealth or State legislation / policy (Table 1).

Table 1 Conservation status of threatened species and ecological communities

Conservation status	
National	Listed as nationally critically endangered, endangered or vulnerable under the EPBC Act
State	Listed as extinct, extinct in the wild, critically endangered, endangered, vulnerable or conservation dependent in Victoria under the FFG Act

Lists of threatened species generated from the databases are provided in Appendix 1 (flora) and Appendix 2 (fauna) and the species have been assessed to determine their likelihood of occurrence based on the process outlined below.

2.3 Determining likelihood of occurrence of listed threatened species

Likelihood of occurrence indicates the potential for a species or ecological community to occur regularly within the study area. It is based on expert opinion, information in relevant biodiversity databases and reports, and an assessment of the habitats on site. Likelihood of occurrence is ranked as negligible, low,

medium, high or recorded. The rationale for the rank assigned is provided for each species in Appendix 1 (flora) and Appendix 2 (fauna). Those species for which there is little or no suitable habitat within the study area are assigned a likelihood of low or negligible and are not considered further.

Only those species listed under the EPBC Act or the FFG Act (hereafter referred to as 'threatened species') are assessed to determine their likelihood of occurrence. The habitat value for threatened species is calculated by the Habitat Importance Modelling produced by DELWP (DELWP 2017a). Where threatened species are recorded in the study area this is noted in Appendix 1 (flora) and Appendix 2 (fauna).

Threatened species which have at least medium likelihood of occurrence are given further consideration in this report. The need for targeted survey for these species is also considered.

2.4 Site investigation

2.4.1 Flora assessment

The flora assessment was undertaken on 9 November 2021 and a list of flora species was collected. This list will be submitted to DELWP for incorporation into the VBA. Planted species have not been recorded unless they are naturalised.

Native vegetation is defined in the Victoria Planning Provisions as 'plants that are indigenous to Victoria, including trees, shrubs, herbs, and grasses' (Clause 73.01).

The Guidelines classify native vegetation into two categories (DELWP 2017a):

- A **patch** of native vegetation (measured in hectares) is either:
 - An area of native vegetation, with or without trees, where at least 25 percent of the total perennial understorey is native plants.
 - An area with three or more native canopy trees where the drip line (i.e. the outermost boundary of a tree canopy) of each tree touches the drip line of at least one other tree, forming a continuous canopy.
 - Any mapped wetland included in the *Current wetlands map*, available in DELWP systems and tools.

Patch vegetation is classified into ecological vegetation classes (EVCs). An EVC contains one or more floristic (plant) communities, and represents a grouping of broadly similar environments. Definitions of EVCs and benchmarks (condition against which vegetation quality at the site can be compared) are determined by DELWP.

- A **scattered tree** is defined as a native canopy tree that does not form part of a patch of native vegetation.

A canopy tree is a mature tree that is greater than three metres in height and is normally found in the upper layer of a vegetation type. Ecological vegetation class descriptions provide a list of the typical canopy species. A scattered tree is defined as either small or large, and is determined using the large tree benchmark for the relevant EVC. The extent of a small scattered tree is the area of a circle with a 10 metre radius (i.e. 0.031 hectares), while the extent of a large scattered tree is a circle with a 15 metre radius (i.e. 0.070 hectares). A condition score is applied to each scattered tree based on information provided by DELWP's NVIM.

A Vegetation Quality Assessment (VQA) was undertaken for all patches of native vegetation identified in the study area. This assessment is consistent with DELWP's habitat hectare method (DSE 2004) and the Guidelines (DELWP 2017a). For the purposes of this assessment the limit of the resolution for identification of a patch of native vegetation was taken to be 0.001 habitat hectares (Hha). That is, if a discrete patch native

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vegetation was present with sufficient cover but its condition and extent would not have resulted in the identification of at least 0.001 habitat hectares, the vegetation patch of vegetation was not mapped or included in the assessment.

Species nomenclature for flora follows the VBA.

2.4.2 Fauna assessment

A desktop fauna assessment was undertaken by a zoologist to assess the fauna habitat values of the study area, and to determine the likelihood of threatened fauna species occurring. The desktop fauna assessment incorporated a review of database records of significant fauna species, along with photographs and vegetation descriptions obtained during the flora assessment.

2.4.3 Permits

Biosis undertakes flora and fauna assessments under the following permits and approvals:

- Permit to Take/Keep Protected Flora issued by DELWP under the *Flora and Fauna Guarantee Act 1988* (FFG Act) (Permit Number 10010194).

2.5 Qualifications

Ecological surveys provide a sampling of flora and fauna at a given time and season. There are a number of reasons why not all species will be detected at a site during survey, such as low abundance, patchy distribution, species dormancy, seasonal conditions, and migration and breeding behaviours. In many cases these factors do not present a significant limitation to assessing the overall biodiversity values of a site.

The current flora and fauna assessment was conducted in spring, which is not an optimal time for survey in alpine environments due to the recent snow-melt and being too early for the appearance of flora material required for the identification of many grasses and forbs. Despite this, the survey effort is considered sufficient to assess the general values of the study area.

Native Vegetation Removal Reports are prepared through DELWP's NVIM system or requested through DELWP's Ensym NVR Tool Support team. Biosis supplies relevant site-based spatial information as inputs to DELWP and we are reliant on DELWP's output reports for all assessment pathway applications. Biosis makes every effort to ensure site and spatial information entered into the NVIM, or supplied to DELWP, is an accurate reflection of proposed native vegetation removal. The Native Vegetation Removal Report can be viewed in Appendix 3.

2.6 Legislation and policy

The implications for the project were assessed in relation to key biodiversity legislation and policy including:

- Matters listed under the EPBC Act, associated policy statements, significant impacts guidelines, listing advice and key threatening processes
- Threatened taxa, communities and threatening processes listed under Section 10 of the FFG Act and associated action statements and listing advice
- Guidelines for the removal, destruction or lopping of native vegetation (DELWP 2017a)
- *Planning and Environment Act 1987* – specifically Clauses 12.01-2, 52.17 and 66.02 and Overlays in the Alpine Resorts Planning Scheme
- Noxious weeds and pest animals lists under the *Catchment and Land Protection Act 1994* (CaLP Act).

2.7 Mapping

Mount Buller Mount Stirling Alpine Resort Management Board supplied spatial data of trail alignment and lookout platforms.

Mapping was conducted using hand-held GPS-enabled tablets and aerial photo interpretation. The accuracy of this mapping is therefore subject to the accuracy of the tablets (generally ± 7 metres) and dependent on the limitations of aerial photo rectification and registration.

Mapping has been produced using a Geographic Information System (GIS). Electronic GIS files which contain our flora and fauna spatial data are available to incorporate into design concept plans. However this mapping may not be sufficiently precise for detailed design purposes.

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3. Results

The ecological features of the study area are described below and mapped in Figure 2. Species recorded during the flora and fauna assessment are listed in Appendix 1 (flora). A desktop fauna assessment was undertaken by a zoologist (Imogen Merlo) to assess the fauna habitat values of the study area. Unless of particular note, these species are not discussed further. Threatened species recorded or predicted to occur in the local area is also provided in those appendices, along with an assessment of the likelihood of the species occurring within the study area.

3.1 Vegetation and fauna habitat

The study area is located on the rocky peaks of Mount Buller, Victoria. A short section of existing walking trail follows the ridgeline to the summit of Mount Buller, and an informal walking trail leads to McLaughlin's shoulder.

The study area is above the tree line where vegetation is consistent with treeless alpine Ecological Vegetation Classes (EVCs). Ecological Vegetation Class present include Alpine Coniferous Shrubland EVC 156, Alpine Grassy Heathland EVC 1004 and Alpine Rocky Outcrop Heathland EVC 1013. These EVCs are associated with rocky, exposed ridgelines located on highest peaks that are subject to strong winds and erosion. The treeless vegetation is relatively low to the ground with most shrubs below 1 metre in height. Most of the study area has high diversity of shrubs, grasses and herbs and consists of high quality vegetation. Areas of previous disturbance including the ski slopes support predominantly introduced vegetation.

The topography of the study area consists of steep escarpments and rocks, including the summit of Mount Buller which is 1804 metres in elevation. Its steep cliffs and gullies high up on the mountains flanks are typical of higher peaks surrounding the Mount Buller area.

These features are described further in Table 2 and mapped in Figure 2. Photos are provided below Table 2.

3.2 Landscape context

The study area is located within the Mount Buller Alpine Resort, although it is approximately 2 kilometres west of the village. Much of the vegetation to the east of the study area has been cleared for construction of or access to amenities for the Alpine Resort village. This includes carparks, resort accommodation and facilities, ski fields and associated infrastructure, as well as other recreational activity developments such as walking and mountain biking tracks. These areas support predominantly introduced grass species. Remnant vegetation exists surrounding the developed resort village, as well as sporadically throughout the resort as scattered remnant tree and patch vegetation. Within the resort, vegetation quality ranges from highly modified to moderately intact.

To the north, south and west the study area is surrounded by the Alpine National Park which consists of relatively contiguous remnant alpine, sub-alpine, montane and foothill vegetation. Fire and other disturbances (e.g. logging) have created a mosaic of disturbed, regenerating and undisturbed native vegetation which is generally of high quality and provides habitat for a range of threatened flora and fauna.

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Table 2 Summary of vegetation and habitat types within the study area

Vegetation or habitat type	Description	Location	Significant values
Alpine Coniferous Shrubland EVC 156 Biodiversity Conservation Status (BCS): Vulnerable Photo 1	<p>Structure: Treeless shrubland, dominated by Mountain Plum-pine <i>Podocarpus lawrencei</i> and restricted to rocky, fire protected sites amongst granite tors or associated with basalt block streams.</p> <p>Character species: Dominated by Mountain Plum-pine. Other shrubs include scattered Dusty Daisy-bush <i>Olearia phlogopappa</i> subsp. <i>flavescens</i> and Snow Beard-heath <i>Acrothamnus montanus</i>. Low diversity of herbs and ferns, species including Mother Shield-fern <i>Polystichum proliferum</i>.</p> <p>Weeds: Low cover of Sheep Sorrel <i>Acetosella vulgaris</i> present.</p>	Isolated patch located adjacent to the bottom of the existing Summit walking trail.	Boulders beneath the Mountain Plum-pine likely to provide refugia for Bogong Moth. However the patch is small (160 sq m), isolated and is not mapped as Type 1 or Type 2 habitat for Mountain Pygmy-possum, so is unlikely to be regularly utilised by the species.
Alpine Grassy Heathland EVC 1004 BCS: Rare Photo 2	<p>Structure: Treeless, low heathland characterised by a low, discontinuous shrub cover with herbs and grasses.</p> <p>Character species: Variably dense shrub layer to 1 metre tall, comprising species including Alpine Podolobium <i>Podolobium alpestre</i>, Alpine Rusty-pods <i>Hovea montana</i> and Tree Violet <i>Melicytus dentatus</i>. Grasses dominate between shrubs, species including Bog Snow-grass <i>Poa costiniana</i> and Horny Snow-grass <i>Poa fawcettiae</i>. A high diversity of herbs are present, including Australian Caraway <i>Oreomyrrhis eriopoda</i>, Alpine Yam-daisy <i>Microseris lanceolata</i>, Mountain Woodruff <i>Asperula gunnii</i>, Alpine Triggerplant <i>Stylidium montanum</i> and Snow Aciphyll <i>Aciphylla glacialis</i>. Rocks, lichens and moss constitute to 10 percent cover in these areas.</p> <p>Weeds: Low cover of Sheep Sorrel and Flatweed <i>Hypochaeris radicata</i> present.</p>	Majority of the study area.	<p>Broad-toothed Rat scats were observed within Alpine Grassy Heathland during the site assessment and the EVC is likely used as dispersal habitat by the species.</p> <p>This EVC provides some areas of potential basking habitat for Tussock Skink and Alpine Bog Skink where exposed rocks are in close proximity to vegetation cover.</p>
Alpine Rocky Outcrop Heathland EVC 1013 Applied BCS*:: Rare Photo 3	<p>Structure: Low heathland occurring on shallow soils on exposed rocks and ridges above 1400 metres.</p> <p>Character species: Dominated by shrub and grasses including species Alpine Phebalium <i>Phebalium squamulosum</i> subsp. <i>alpinum</i>, Alpine Bootlace Bush <i>Pimelea axiflora</i> subsp. <i>alpina</i>, Yellow Kunzea <i>Kunzea muelleri</i> and Alpine Star-bush <i>Asterolasia trymalioides</i>. Understorey is dominated by grass and sedge</p>	On rocky ridgeline leading towards McLaughlin's Shoulder.	This EVC provides many areas of potential basking habitat for Tussock Skink and Alpine Bog Skink where exposed rocks are in close proximity to vegetation cover.

Vegetation or habitat type	Description	Location	Significant values
	<p>species including Bog Snow-grass, Common Grass-sedge <i>Carex breviculmis</i> with a high diversity of herbs including Bulbine Lily <i>Bulbine bulbosa</i>, Carpet Snow-daisy <i>Celmisia costiniana</i>, Woodrush <i>Luzula</i> spp. and Alpine Yam-daisy. Rocks, lichens and moss constitute 30 percent cover in these areas.</p> <p>Weeds: Disturbance increased in some areas subject to foot traffic, creating areas of bare ground where weeds can establish. Species such as Flatweed, Sheep Sorrel, Brown-top Bent <i>Agrostis capillaris</i> and Red Fescue <i>Festuca rubra</i> persist in these disturbed areas.</p>		
Predominantly introduced vegetation Photo 4	<p>Vegetation in disturbed areas around ski infrastructure and trails is made up of predominantly introduced species. Species include Sheep Sorrel, Milfoil <i>Achillea millefolium</i>, Brown-top Bent, Red Fescue, Garden Dandelion <i>Taraxacum officinale</i> and White Clover <i>Trifolium repens</i> var. <i>repens</i>.</p>	On ski slopes, informal walking trails, previously disturbed areas	These areas are of limited habitat value for fauna except for locally common and highly mobile species.

*In the absence of an official DELWP BCS for Alpine Rocky Outcrop Heathland EVC1013, a BCS of 'Rare' has been applied. 'Rare' is the BCS used for the ubiquitous Sub-alpine Treeless Vegetation EVC 44, appropriate for alpine environs due to the restricted distribution of the EVCs.

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Photo 1 Alpine Coniferous Shrubland EVC 156 within the study area, adjacent to existing Summit walking trail. Photo taken 9 November 2021. View to south-east

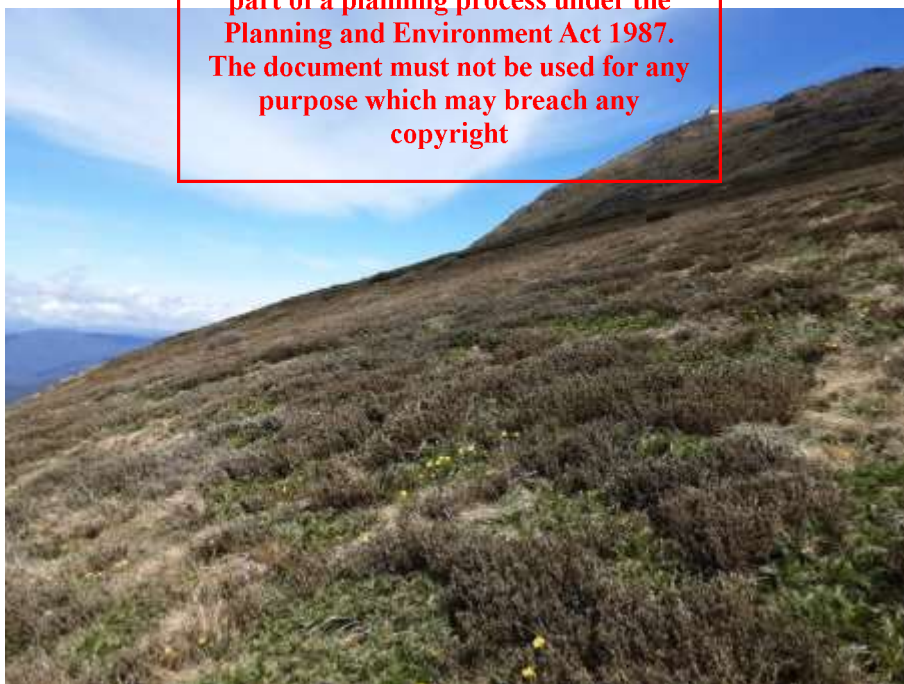


Photo 2 Alpine Grassy Heathland EVC 1004 within the study area. Photo taken 9 November 2021. View to south-west.

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Photo 3 Alpine Rocky Outcrop Heathland EVC 1013 within the study area. Photo taken 9 November 2021. View to south.



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Photo 4 Predominantly introduced vegetation within the study area on the ski slope at the top of Grimus and Summit chairlifts. Photo taken 9 November 2021. View to south-west.

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3.3 Threatened species and ecological communities

Threatened species recorded or predicted to occur within 5 kilometres of the study area or from the relevant catchment (aquatic species) are listed in Appendix 1 (flora) and Appendix 2 (fauna). An assessment of the likelihood of these species occurring in the study area and an indication of where within the site (i.e. which habitats or features of relevance to the species) is included. A summary of those species recorded or with a medium or higher likelihood of occurring in the study area is provided in Table 3.

Table 3 Summary of EPBC and FFG Act listed species most likely to occur in the study area

Species name	Listing status	Area of value within the study area
Mountain Pygmy Possum	Endangered under EPBC Act Endangered under FFG Act	Alpine Coniferous Shrubland, especially in association with boulderfields and rocky outcrops.
White-throated Needletail	Vulnerable under EPBC Act Vulnerable under FFG Act	Airspace above the study area
Broad-toothed Rat	Vulnerable under EPBC Act Vulnerable under FFG Act	Alpine treeless vegetation, especially sedges and heath along drainage lines
Black Falcon	Critically endangered under FFG Act	May hunt above the study area
Tussock Skink (high country)	Endangered under FFG Act	Alpine treeless vegetation, especially grassy areas, in association with rocks or logs
Alpine Bog Skink	Endangered under FFG Act	Alpine treeless vegetation in association with rocks or logs
Snow Aciphyll	Endangered under FFG Act	Alpine treeless vegetation
Snow Beard-heath	Endangered under FFG Act	Alpine treeless vegetation
Lilac Bitter-cress	Endangered under FFG Act	Alpine treeless vegetation
Carpet Sedge	Endangered under FFG Act	Alpine treeless vegetation
Carpet Snow-daisy	Endangered under FFG Act	Alpine treeless vegetation
Silver Snow-daisy	Vulnerable under FFG Act	Alpine treeless vegetation
Sticky Billy-buttons	Endangered under FFG Act	Alpine treeless vegetation
Green Billy-buttons	Endangered under FFG Act	Alpine treeless vegetation
Crimson Billy-buttons	Endangered under FFG Act	Alpine treeless vegetation
Thick Bent-grass	Endangered under FFG Act	Alpine treeless vegetation
Hairy Eyebright	Endangered under FFG Act	Alpine treeless vegetation
Mt Buller Snow-gentian	Vulnerable under FFG Act	Alpine treeless vegetation
Royal Grevillea	Endangered under FFG Act	Alpine treeless vegetation
Fir Clubmoss	Endangered under FFG Act	Alpine treeless vegetation
Fog Club-sedge	Endangered under FFG Act	Alpine treeless vegetation
Alpine Buttons	Endangered under FFG Act	Alpine treeless vegetation

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Species name	Listing status	Area of value within the study area
Rusty Daisy-bush	Endangered under FFG Act	Alpine treeless vegetation
Dusty Daisy-bush	Endangered under FFG Act	Alpine treeless vegetation
Alpine Phebalium	Endangered under FFG Act	Alpine treeless vegetation
Alpine Bootlace Bush	Vulnerable under FFG Act	Alpine treeless vegetation
Gunn's Alpine Buttercup	Endangered under FFG Act	Alpine treeless vegetation
Crag Wallaby-grass	Vulnerable under FFG Act	Alpine treeless vegetation
Mossy Knawel	Endangered under FFG Act	Alpine treeless vegetation
Alpine Triggerplant	Endangered under FFG Act	Alpine treeless vegetation
Alpine Westringia	Endangered under FFG Act	Alpine treeless vegetation

3.3.1 DELWP habitat importance modelling for threatened species

To support decision making under the Guidelines, DELWP has produced maps for Victoria showing the modelled extent of habitat for most threatened species. These maps are called 'habitat importance maps' and they assign a 'habitat importance score' to a location based on the importance of that location in the landscape as habitat for a particular threatened species, in relation to other suitable habitat for that species (DELWP 2017a).

Under the Guidelines, these maps form the basis for determining the impact of potential native vegetation removal on threatened species. The maps only apply where a proposal to remove native vegetation is considered on detailed assessment pathway. The habitat importance scores are used to calculate the type and extent of biodiversity offsets required for native vegetation removal that impacts on individual threatened species habitat. During the field assessment the walking trail was realigned to avoid mapped habitat for Crag Wallaby-grass *Rytidosperma alpicola*.

These data were provided by DELWP's Ensym NVR Tool Support team and a full output report from DELWP is provided in Appendix 3. Determination of the requirement for a species offset based on the extent of impact to one or more rare or threatened species is addressed in Section 5.

3.3.2 Threatened ecological communities

Two EPBC-listed threatened ecological communities (TECs) were predicted to occur within the local area including:

- Alpine Sphagnum Bogs and Associated Fens.
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland.

Alpine Sphagnum Bogs and Associated Fens is a community found in alpine and sub-alpine areas, usually above the climatic tree line (DoE 2015). This community is known from Mount Buller and Mount Stirling, although no areas surveyed within the study area align with the characteristics of this TEC or provide moist areas where this community could persist.

Box Gum Woodland community occurs in grassy woodlands on lower slopes and foothills of north-east Victoria and is not associated within the alpine or sub-alpine areas.

The study area does not support vegetation consistent with any EPBC-listed TECs.

Four FFG-listed TECs have distribution in the local area including:

- Alpine Bog Community
- Alpine Snowpatch Community
- *Caltha introloba* Herbland Community
- Fen (Bog Pool) Community.

The study area does not provide moist areas where Alpine Bog Community, *Caltha introloba* Herbland Community or Fen (Bog Pool) Community could persist, and vegetation in the study area is not consistent with the description of any of these communities.

Alpine Snowpatch Community is comprised of two main vegetation associations: Short-turf Snowparch and Diuturnal (long-continuing) Snowpatches. While concave sheltered aspects on the highest peaks of Mount Buller do provide suitable habitat for this community, no areas of this community were identified within the study area during the site assessment.

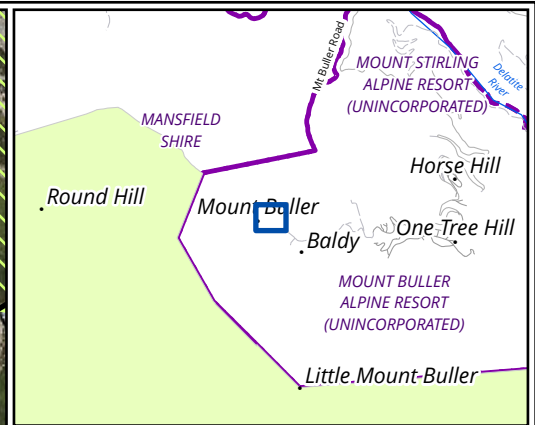
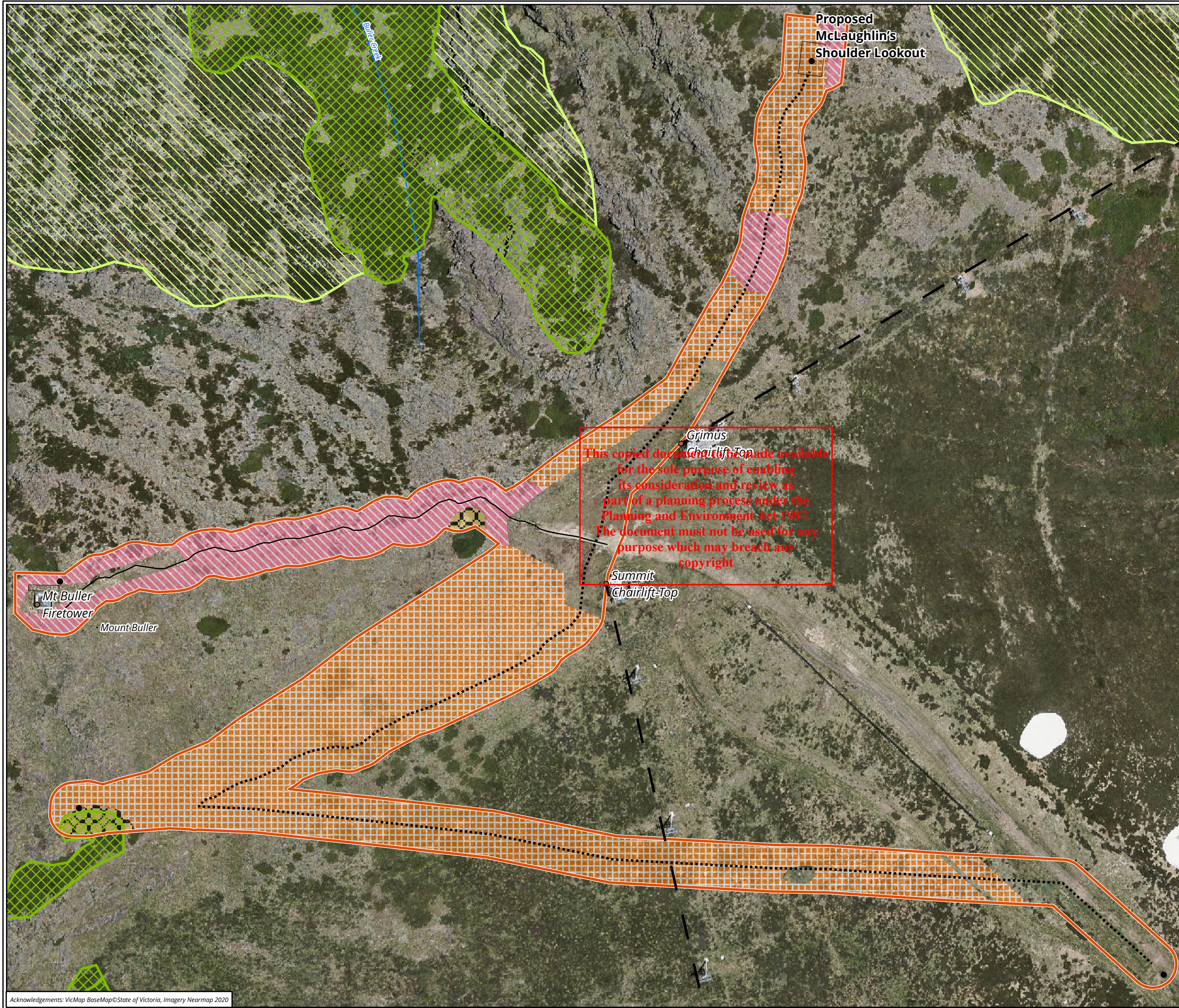
3.4 Further survey recommendations

It is recommended that targeted survey be undertaken for Alpine Bog Skink and Tussock Skink within the study area. Survey should be carried out in sunny conditions when ambient daytime temperature is greater than 20°C. A zoologist familiar with reptiles of the Victorian Alps should undertake the survey. Under appropriate conditions, both species, if present, should be readily detectable while basking. The best method to observe them is to use binoculars to scan appropriate basking sites from a vantage point.

If either species is detected, information about their specific microhabitats at the site may be used to assist design of the trail project to avoid or minimise effects on them.

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- Legend**
- Study area
 - Existing trail
 - Proposed trail
- Ecological Vegetation Class (EVC)**
- Alpine Coniferous Shrubland (VAIp0156)
 - Alpine Grassy Heathland (VAIp1004)
 - Alpine Rocky Outcrop Heathland (VAIp1013)
- Mountain Pygmy-possum habitat**
- Habitat Class**
- Type 1
 - Type 2

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Figure 2 Ecological features of the study area

0 10 20 30 40 50
Metres
Scale: 1:1,200 @ A3
Coordinate System: GDA 1994 MGA Zone 55



Matter: 36074,
Date: 30 November 2021 ,
Prepared for: GZ, Prepared by: SKM, Last edited by: smitchell
Layout: 36074_F2_EcoFeatures
Project: P:\36000s\36074\Mapping\36074_MtBuller_SummitWalk_FFA.aprx

4. Biodiversity legislation and government policy

This section provides an assessment of the project in relation to key biodiversity legislation and government policy. This section does not describe the legislation and policy in detail. Where available, links to further information are provided.

4.1 Commonwealth

4.1.1 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act applies to developments and associated activities that have the potential to significantly impact on Matters of National Environmental Significance (MNES) protected under the Act.

Link for further information including a guide to the referral process is available at:
<http://www.environment.gov.au/epbc/index.html>.

MNES relevant to the project are summarised in Table 4. It includes an assessment against the EPBC Act policy statements published by the Australian Government which provide guidance on the practical application of EPBC Act.

Table 4 Assessment of project in relation to the EPBC Act

MNES	Project specifics	Assessment against significant impact guidelines
EPBC Act listed species	Six flora and 21 fauna species have been recorded or predicted to occur in the project search area. The likelihood of these species occurring in the study area is assessed in Appendix 1 (flora) and Appendix 2 (fauna).	<p>Most of these species are not likely to occur and the development is unlikely to constitute a significant impact.</p> <p>White-throated Needletail is a predominantly aerial species and, while it may occupy airspace above the study area, is unlikely to be impacted by minor effects on terrestrial habitat within the study area. The proposal has no realistic capacity to cause a significant impact on the species.</p> <p>Broad-toothed Rat utilises the study area on the basis of scats recorded there. The proposal is not likely to cause a significant impact on the species due the narrow nature of the trail and the demonstrated dispersal ability of this species at Mount Buller in disturbed areas (Whisson et al 2015).</p> <p>Habitat for Mountain Pygmy-possum is mapped nearby the study area. A significant impact criteria assessment for the species is provided below in Table 5.</p>

MNES	Project specifics	Assessment against significant impact guidelines
EPBC Act listed ecological communities	Two EPBC Act listed ecological communities have been recorded or predicted to occur in the project search area.	Neither of these communities was recorded within the study area and therefore are highly unlikely to be impacted by the proposed works
Migratory species	Eleven migratory species have been recorded or predicted to occur in the project search area (Appendix 2).	While some of these species would be expected to use the study area on occasions, and some of them may do so regularly or may be resident, it does not provide important habitat for an ecologically significant proportion of any of these species.
Wetlands of international importance (Ramsar sites).	<p>The study area is identified as being within the catchment of six Ramsar sites:</p> <ul style="list-style-type: none"> • Banrock Station Wetland Complex. • Barmah Forest. • Gunbower Forest. • NSW Central Murray State Forests. • Riverland. • The Coorong, and Lake Alexandrina and Albert Wetland. 	The study area drains directly into two of these Ramsar sites, however the closest (Gunbower Forest) is located well over 300 km downstream of the study area and the potential for the proposed trails to have a significant impact on it is considered to be negligible.

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 ficant impact criteria (CoA 2013)
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4.1.2 Mountain Pygmy-possum self assessment against the significant impact criteria (CoA 2013)

Mountain Pygmy-possum *Burramys parvus* is listed as endangered under the EPBC Act and endangered under the FFG Act. A specific recovery plan for the species at Mount Buller is also in operation (ARMB 2020).

Mountain Pygmy-possum preferred habitat is classified into Type I and Type II habitat (Heinze 2002; Heinze and Harvey 2006). Mapped habitat in the vicinity of the study area is shown in Figure 2.

Habitat Type I is the habitat type where Mountain Pygmy-possums occur at the highest densities and generally breed (Heinze and Harvey 2006). It is composed of boulderfields and rocky outcrops that are dominated by Mountain Plum-pine and other alpine Heathland Communities. This habitat type occurs at higher elevations with high densities of the Mountain Plum-pine and deeper boulderfields.

Habitat Type II is habitat where Mountain Pygmy-possums occur at relatively lower densities and is less preferred boulderfields and rocky outcrops that are dominated by Mountain Plum-pine and other alpine Heathland Communities as breeding sites (Heinze and Harvey 2006). It is more varied than Habitat Type I and is composed of boulderfields, rocky outcrops, isolated patches of Mountain Plum-pine Heathland, buried boulderfields, dense Snow Gum canopy cover and a range of heathland communities. Type II habitat occurs on more exposed aspects, lower elevations and generally has poor snow holding capacity. Although less optimal than Type I habitat, this habitat type is extremely important for breeding, migrating and providing cover for dispersing individuals.

An assessment of the potential impacts to the species from construction of the proposed walking trails is provided in Table 5 below.

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Table 5 Mountain Pygmy-possum: self-assessment against Significant Impact Criteria (CoA 2013)

Significant impact criteria	Likelihood of significant impact	Justification
Lead to a long-term decrease in the size of a population	Unlikely	The removal of small areas of vegetation that may be used as an occasional foraging or dispersal habitat will decrease the area of available habitat within the locality. The resultant disturbance will be a narrow, permeable disturbance. Habitat removal of this type and extent is unlikely to lead to a decrease in the size of a population as the habitat to be removed is unlikely to be used by a significant number of individuals, nor is it likely to be used for critical activities (breeding, shelter, hibernation etc) or be a barrier to dispersal that will inhibit critical activities. This level of disturbance is unlikely to affect foraging, dispersal or gene flow of Mountain Pygmy-possum as extensive habitat will still be available during and post construction for these activities to occur in. Consequently, the proposed action is considered unlikely to lead to a long-term decrease in the size of the Mountain Pygmy-possum population at Mount Buller.
Reduce the area of occupancy of the species	Unlikely	The proposed walking trail has been re-aligned specifically to avoid proximity to mapped Type 1 habitat (the proposed walking trail is now >30 metres away from mapped Type 1 habitat). The removal of small areas of heathland that provides marginal foraging or dispersal habitat will reduce the area of available habitat at the locality but will not reduce the overall area of occupancy of the species as Mountain Pygmy-possum will still utilise the high quality habitat adjacent to the study area during and post construction.
Fragment an existing population into two or more populations	Highly unlikely	Core habitat for Mountain Pygmy-possum includes boulderfields and Alpine Coniferous Shrublands. Vegetation proposed for removal does not coincide with any areas of mapped Mountain Pygmy-possum habitat, and no removal of Alpine Coniferous Shrubland supporting Mountain Plum-pine is proposed. Habitat will not be fragmented by the walking trail and any resultant disturbance will be a permeable barrier that will not affect physical or functional connectivity between populations or breeding individuals.

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Significant impact criteria	Likelihood of significant impact	Justification
Adversely affect habitat critical to the survival of the species	Unlikely	No areas of Critical Habitat have been declared for the Mountain Pygmy-possum in Victoria under the FFG Act. However, habitat for Mountain Pygmy-possum is described as habitat that is used for feeding, nesting, hibernation, and movement corridors between male and female habitat (DoE 2016). No areas suitable for nesting or hibernation (i.e. Type 1 or 2 habitat) is mapped within the study area. Feeding occurs predominantly in Alpine Coniferous Shrublands and boulderfields (although <i>Acrothamnus</i> and <i>Pimelea</i> seeds and berries are also food sources) (DoE 2016). While scattered food shrub species (<i>Acrothamnus</i> and <i>Pimelea</i>) may be present within the construction footprint, it is unlikely the development will affect habitat critical to the survival of the species given the extent of vegetation removal in the context of similar available habitat immediately surrounding the construction footprint.
Disrupt the breeding cycle of a population	Highly unlikely	The proposed trail development will remove areas of marginal habitat including the removal of vegetation and rocky areas from an area that may be used as a dispersal corridor between male and female habitat. The study area does not provide nesting or hibernation habitat for Mountain Pygmy-possum. While the resultant disturbance from construction of the walking trail will reduce protective cover for potentially dispersing or migrating Mountain Pygmy-possum individuals, it will be a permeable barrier and will not isolate males from females. This level of disturbance is unlikely to affect foraging, dispersal or gene flow of Mountain Pygmy-possum as extensive habitat will still be available during and post construction for these activities to occur in.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Highly unlikely	While there is a small area of Alpine Coniferous Shrubland supporting Mountain Plum-pine within the study area this is not proposed for removal and is not mapped as Type 1 or Type 2 habitat for the species. While the trail development will result in the removal of alpine heathland vegetation that provides dispersal habitat for Mountain Pygmy-possum, this level of disturbance in the context of available habitat will not lead to a broader species decline in the Mount Buller area.

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Significant impact criteria	Likelihood of significant impact	Justification
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat	Highly unlikely	Invasive fauna species are already present within the study area (e.g. cats and foxes) and surrounding landscape. Invasive weed species identified as threats to Mountain Pygmy-possum habitat include Blackberry <i>Rubus anglocandicans</i> , Apple <i>Malus pumila</i> and Willows <i>Salix</i> spp. Soil disturbance and subsequent weed invasion will be minimised through construction management and follow up weed control. The project Site Environmental Management Plan (SEMP) will specifically deal with controlling the introduction and spread of weed species, especially those species associated with walking track edges. Provided the recommended SEMP protocol are adhered to, it is highly unlikely that the proposed walking trail will increase these species presence or encourage other invasive species harmful to Mountain Pygmy-possum to become established within the study area as a result of the proposed works. The trail project could also be incorporated into the existing feral predator control program that MBMS/ARMB operates.
Introduce disease that may cause the species to decline	Unlikely	The project will not result in the introduction of a disease that is harmful to Mountain Pygmy-possum.
Interfere with the recovery of a species	Unlikely	The national recovery plan for Mountain Pygmy-possum (DoE 2016) describes a number of threats and management actions, and while the removal of vegetation that may provide an occasional foraging or dispersal resource is counter to those management actions, the extent and type of vegetation removal required for the trail development is unlikely to interfere with the national recovery of the species.

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On the basis of criteria outlined in the relevant *Significant Impact Guidelines* it is considered unlikely that a significant impact on a Matter of National Environmental Significance would result from the proposed action. Referral of the proposed action to the Australian Government Minister for the Environment to determine whether the action requires approval under the EPBC Act is therefore unlikely to be required. Mount Buller and Mount Stirling Alpine Resort Management Board may choose to refer the project for legal certainty.

4.2 State

4.2.1 Flora and Fauna Guarantee Act 1988 (FFG Act)

The FFG Act is the key piece of Victorian legislation for the conservation of threatened species and communities and for the management of potentially threatening processes. Under the FFG Act a permit is required from DELWP to 'take' protected flora species. Permit exemptions under the FFG Act generally apply to the non-commercial removal of protected flora from private land, unless there is 'critical habitat' that has been declared on the land. Authorisation under the FFG Act is required to collect, kill, injure or disturb listed fish on private or public land.

Link for further information: <https://www.environment.vic.gov.au/conserving-threatened-species/victorias-framework-for-conserving-threatened-species>

The FFG Act defines public land as *Crown land or land owned by, or vested in, a public authority*, while private land is defined as *any land other than public land*. A public authority is defined in the FFG Act as a body established for a public purpose by or under any Act and includes:

- an Administrative Office
- a Government Department
- a municipal council
- a public entity
- a State-owned enterprise.

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Native vegetation on site is not a FFG act listed threatened community, and contains 18 protected flora species, 13 FFG Act listed threatened species or habitat for them (Appendix 1).

The study area is on Crown land or land owned by or vested in a public authority (MBMSARMB), and is therefore public land for the purposes of the FFG Act. Eighteen protected flora species are present (Appendix 1), and a protected flora permit from DELWP would be required if any of these species will be affected by the proposal.

In addition to the requirement for a protected flora permit, it is a requirement of the FFG Act that a public authority, in performing its functions, must consider the objectives of the FFG Act and the impact on biodiversity. Public authorities are also required to consider the Biodiversity 2037 targets (DELWP 2017b), action statements, critical habitat determinations and management plans made under the FFG Act.

4.2.2 Catchment and Land Protection Act 1994 (CaLP Act)

The CaLP Act identifies and classifies certain species as noxious weeds or pest animals, and provides a system of controls on noxious species.

No declared noxious weeds were identified in the study area. Mount Buller and Mount Stirling Alpine Resort Management Board must take all reasonable steps to eradicate regionally prohibited weeds, prevent the growth and spread of regionally controlled weeds, and prevent the spread of and as far as possible eradicate established pest animals. The State is responsible for eradicating State prohibited weeds from all land in Victoria.

Link for further information: <http://agriculture.vic.gov.au/agriculture/pests-diseases-and-weeds>.

4.2.3 Planning and Environment Act 1987 (incl. Planning Schemes)

The *Planning and Environment Act 1987* controls the planning and development of land in Victoria, and provides for the development of planning schemes for all municipalities.

Of particular relevance to the development proposal are controls relating to the removal, destruction or lopping of native vegetation contained within the Alpine Resorts Planning Scheme (the Scheme), including permit requirements. The Scheme (Clause 73.01) defines 'native vegetation' as 'Plants that are indigenous to Victoria, including trees, shrubs, herbs, and grasses'. It is an objective of Clause 12.01-2 of the State Planning Policy Framework (Native Vegetation Management) that removal of native vegetation results in no net loss in the contribution made by native vegetation to Victoria's biodiversity.

Clause 52.17 (Native Vegetation) requires a planning permit to remove, destroy or lop native vegetation including some dead native vegetation. Decision guidelines that must be considered by the referral or

responsible authority are contained in Section 7 of the Guidelines, and referred to in Clause 52.17-4. Clause 52.17 does not apply if a Native Vegetation Precinct Plan corresponding to the land is incorporated in the Scheme. It should be noted that where native vegetation does not meet the definition of a patch or scattered tree, as described in Section 3.1, the Guidelines do not apply. However, a permit may still be required to remove, destroy or lop native vegetation under the provisions of the Scheme.

Under Clause 66.02 a permit application to remove, destroy or lop native vegetation is required to be referred to DELWP as a recommending referral authority if any of the following apply:

- the class of application is on the detailed assessment pathway
- a property vegetation precinct plan applies to the site or
- the native vegetation is on Crown land occupied or managed by the Responsible Authority.

The need for a permit to remove native vegetation may also be triggered by overlays within the Scheme. The location of the overlays in relation to the study area can be determined via the following link:

<http://planningschemes.dpcd.vic.gov.au>. The provisions of the following overlays apply to the study area:

Environmental Significance Overlay – Schedule 1 (ESO1) covers the entire study area and is related to the protection of Mountain Pygmy-possum habitat. An application is required to:

- construct a building or construct or carry out works.
- construct a fence.

The following decision guidelines must be considered by the responsible authority:

- The objective of the schedule.
- The general management prescriptions and guidelines in the *Management Strategy and Guidelines for the conservation of the Mountain Pygmy-possum (Burramys parvus) in Victoria* (Mansergh 1989).
- Action Statement No. 2 Mountain Pygmy-possum (*Burramys parvus*), Department of Sustainability and Environment.
- The extent to which the proposed development or works will impact upon existing habitat areas.
- The views of the DELWP pursuant to Section 55 of the Act.

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Bushfire Management Overlay – Schedule 1 (BMO1) covers the entire study area.

Erosion Management Overlay – Schedule 1 (EMO1) covers the entire study area.

Victoria's Guidelines for the removal, destruction or lopping of native vegetation

The Guidelines are incorporated into the Victoria Planning Provisions and all planning schemes in Victoria (DELWP 2017a). The Guidelines replaced the previous incorporated document titled *Permitted clearing of native vegetation – Biodiversity assessment guidelines* (DEPI 2013) on 12 December 2017.

The purpose of the Guidelines is to guide how impacts to biodiversity should be considered when assessing a permit application to remove, destroy or lop native vegetation. The objective for the guidelines in Victoria is 'No net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation'.

A detailed assessment of the implications for the project under the Guidelines is provided in Section 5 of this report. Under the Guidelines, there are three assessment pathways for assessing an application for a permit to remove native vegetation: basic, intermediate and detailed.

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A detailed determination of the assessment pathway for the planning application relevant to the proposed development is provided in Section 5.2. In summary, the planning application for removal of native vegetation must meet the requirements of, and be assessed in, the detailed assessment pathway.

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5. Victoria's Guidelines for the removal, destruction or lopping of native vegetation

The Guidelines were introduced in December 2017. They set out and describe the application of Victoria's statewide policy in relation to assessing and compensating for the removal of native vegetation in order to achieve the objective of 'no net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation'.

This objective is to be achieved through Victoria's planning system using an assessment approach that relies on strategic planning and the permit and offset system. The key policy for achieving no net loss to biodiversity is the three-step approach of avoid, minimise and offset:

- **Avoid** the removal, destruction or lopping of native vegetation to ensure that the important biodiversity values of native vegetation continue to be delivered into the future.
- **Minimise** impacts resulting from the removal of native vegetation that cannot be avoided.
- Provide an **offset** to compensate for the biodiversity impact resulting from the removal of native vegetation.

The steps that have been taken during the design of the development to ensure that impacts on biodiversity from the removal of native vegetation have been minimised include:

- Realignment of the trail to avoid areas of modelled Crag Wallaby-grass habitat.
- Realignment of the trail to move it further away from mapped Type 1 Mountain Pygmy-possum habitat.
- Utilisation of areas of existing disturbance (informal walking trail) for the alignment towards McLaughlin's Shoulder.

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DELWP has provided biodiversity information tools to assist with determining the assessment pathway associated with the removal of native vegetation and the contribution that native vegetation within the study area makes to Victoria's biodiversity.

All planning permit applications to remove native vegetation are assigned to an assessment pathway determined by the extent and location of proposed native vegetation removal. The assessment pathway will dictate the information to be provided in a planning permit application and the decision guidelines DELWP as a referral authority will use to assess the permit application.

The biodiversity information tools have two components:

Site-based information

The site-based information is observable at a particular site. Biosis has collected the requisite site-based information for the assessment against the Guidelines.

Landscape scale information

Landscape scale information requires consideration of information beyond the site. This information is managed by DELWP and can be accessed via the NVIM.

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The following section summarises the results of the site-based assessment and the outputs generated by the Native Vegetation Removal Report, which identifies the assessment pathway on which the planning application will be assessed. The full Native Vegetation Removal Report can be viewed in Appendix 3.

5.1 Proposed removal of native vegetation

The extent of native vegetation patches were mapped within the study area (Figure 2) and the condition was assessed in relation to standard methods provided by DSE (2004) and pre-determined EVC benchmarks: <https://www.environment.vic.gov.au/biodiversity/bioregions-and-evc-benchmarks>.

In the absence of an official benchmark for Alpine Rocky Outcrop Heathland EVC 1013, the condition for this EVC was determined through assessment against the draft benchmark for *Kunzea muelleri* Heathland.

The proposed removal of native vegetation was assessed in accordance with the concept design provided (RMB_FT_ConceptDesign_131021.pdf, RMB_MSL_ConceptDesign_131021.pdf and MtBuller_SummitTrail.gdb). The impact footprint for the proposed works has been created from the following:

- A 2 metre construction corridor along the length of alignment of new trail to be constructed, which includes a 400 millimetre construction buffer on either side of the trail (constructed trail width to be 1200 millimetres).
- A 2.5 metre by 13 metre area for the Summit fire tower platform plus a 1 metre construction buffer.
- A 14 metre by 10 metre area for the McLaughlin's shoulder viewing platform plus a 1m construction buffer.

The platforms will be constructed from Fibre-reinforced Plastic (FRP) which will still allow light and rainfall to penetrate, however works within these areas have been treated as equating to full removal of vegetation and are included in loss calculations as such.

The development proposes to remove 0.098 hectares of native vegetation (Figure 3). Past permitted clearing of 6.271 hectares associated with the Mount Buller Sustainable Water Storage project has been included, resulting in a total native vegetation removal extent of 6.369 hectares. Spatial data (shapefiles) of proposed vegetation removal were submitted to DELWP's native vegetation support team, who provided a Native Vegetation Removal Report for the project. This is provided in Appendix 3 and summarised in the following sections.

5.1.1 Vegetation quality assessment

A continuous area of the same EVC is termed a 'habitat zone'. Different habitat zones exist where there are different EVCs present, discrete (non-continuous) patches of the same EVC, or where the same EVC is present in different condition states. A separate vegetation quality assessment was conducted for each habitat zone or EVC condition state. The results of the vegetation quality assessment are provided in Table 6.

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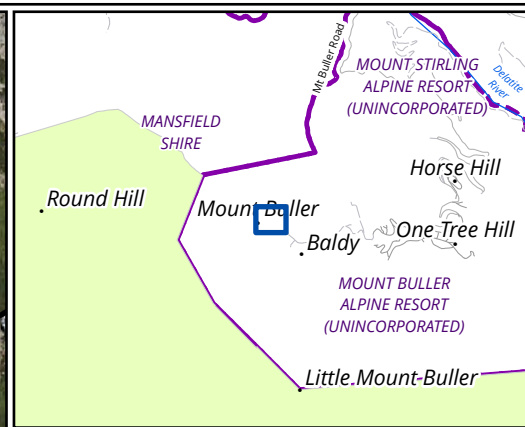
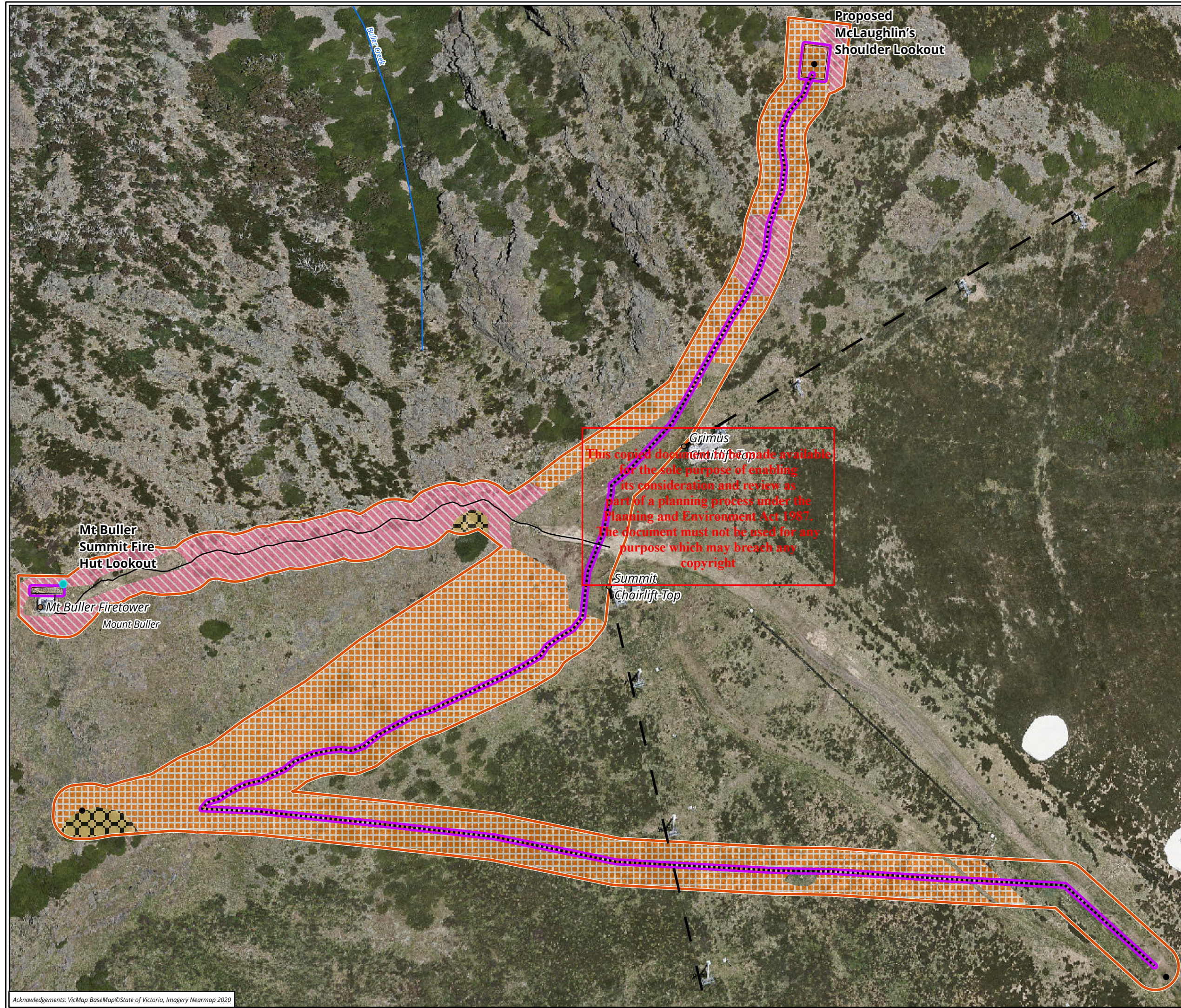
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Table 6 Vegetation quality assessment of native vegetation within the study area

EVC #: Name			EVC 1004 – Alpine Grassy Heathland	EVC 1013 – Alpine Rocky Outcrop Heathland
		Max Score	Score	Score
Site Condition	Large Old Trees	10	-	-
	Canopy Cover	5	-	-
	Lack of Weeds	15	7	7
	Understorey	25	25	15
	Recruitment	10	6	6
	Organic Matter	5	5	3
	Logs	5	-	-
	Total Site Score		43	31
	EVC standardiser (x 75/55)		1.36	1.36
	Adjusted Site Score		58.48	42.16
Landscape Value	Patch Size	10	8	8
	Neighbourhood	10	6	6
	Distance to Core	5	4	4
	Total Landscape Score		18	18
HABITAT SCORE		100	76.48	60.16
Habitat points = #/100		1	0.7648	0.6016

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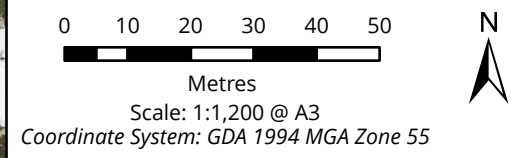
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- Legend**
- Study area
 - Existing trail
 - Proposed trail
 - Impact area
- Ecological Vegetation Class (EVC)**
- Alpine Coniferous Shrubland (VALp0156)
 - Alpine Grassy Heathland (VALp1004)
 - Alpine Rocky Outcrop Heathland (VALp1013)

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Figure 3 Proposed impacts



Matter: 36074,
Date: 30 November 2021 ,
Prepared for: GZ, Prepared by: SKM, Last edited by: smitchell
Layout: 36074_F3_Impacts
Project: P:\36000s\36074\Mapping\
36074_MtBuller_SummitWalk_FFA.aprx

5.2 Determining the assessment pathway

Applications to remove native vegetation are categorised into one of three assessment pathways: basic, intermediate or detailed. Two factors are used to determine the assessment pathway for a permit application, the **location** and **extent** of the native vegetation proposed to be removed. Location has been divided into three possible categories by DELWP, and has been pre-determined by DELWP for all locations in Victoria. The location of a particular site is determined using the *location map* available in the Native Vegetation Information Management (NVIM) system (<http://nvim.depi.vic.gov.au>).

The extent of native vegetation proposed to be removed determines the assessment pathway by considering the following:

- The total area (hectares) of native vegetation (including any patches and scattered trees) proposed to be removed.
- Whether any large trees are proposed to be removed, either as scattered trees or occurring in patches.

Based on the current design, it is proposed to remove 0.098 hectares of native vegetation from within location category 3. This in addition to the previous 6.271 hectares of past permitted removal creates a total vegetation removal extent of 6.369 hectares. Therefore the planning permit application will be assessed on the detailed assessment pathway. The strategic biodiversity value score of the native vegetation to be removed is between 0.902 and 0.970. These requirements are provided in Appendix 3.

5.3 Offset requirements

In order to ensure a gain to Victoria's biodiversity that is equivalent to the loss resulting from the proposed removal of native vegetation, compensatory offsets are required. Losses and gains are measured in general or species habitat scores or units. The offset must also include at least one large tree for every large tree removed.

For a detailed assessment pathway application, the species-general offset test will determine if a general offset, species offset or combination of both is required.

The results of the species-general offset test are provided in Appendix 3 and summarised in Table 7.

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Table 7 Summary of DELWP Native Vegetation Removal Report

Attribute	Outcome	Notes
Location category	3	Highest location risk category
Native vegetation removal extent	0.098 hectares	6.369 hectares of removal in total made up of: <ul style="list-style-type: none"> 0.098 hectares of proposed removal 6.271 hectares of past permitted removal.
Assessment pathway	Detailed	Detailed assessment pathway
Strategic Biodiversity Value Score	Between 0.970 and 0.902	Range over multiple patches
Modelled habitat for threatened species	Yes	Modelled habitat above the species offset threshold for nine species (Appendix 3)
Offset type	Species	Species units required
Offset amount: Species habitat units		<ul style="list-style-type: none"> 0.128 species units of habitat for Mountain Pygmy Possum, <i>Burramys parvus</i> 0.137 species units of habitat for Alpine Bog Skink, <i>Pseudemoia cryodroma</i> 0.009 species units of habitat for Mount Stirling Stonefly, <i>Thaumatoperla flaveola</i> 0.127 species units of habitat for Snow Aciphyll, <i>Aciphylla glacialis</i> 0.127 species units of habitat for Gunn's Alpine Buttercup, <i>Ranunculus gunnianus</i> 0.127 species units of habitat for Subalpine Baeckea, <i>Baeckea latifolia</i> 0.127 species units of habitat for Dusty Daisy-bush, <i>Olearia phlogopappa</i> subsp. <i>flavescens</i> 0.127 species units of habitat for Alpine Phebalium, <i>Phebalium squamulosum</i> subsp. <i>alpinum</i> 0.127 species units of habitat for Alpine Bootlace Bush, <i>Pimelea axiflora</i> subsp. <i>alpina</i>

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5.4 Proposed offset strategy

Mount Buller Mount Stirling Alpine Resort Management Board has an established offset site located on public land at Mount Stirling. The offset site is located within the Goulburn Broken CMA, North East CMA and Mount Stirling Alpine Resort, and has a strategic biodiversity value score of 0.897. An offset statement spreadsheet from the Native Vegetation Credit Register (NVCR) will be provided as a separate attachment to support the planning permit application.

The offset site provides habitat units for the five out of the nine species for which species units are required by the proposed works. The offset site does not provide species habitat units for the following four species:

- Snow Aciphyll *Aciphylla glacialis*
- Gunn's Alpine Buttercup *Ranunculus gunnianus*
- Dusty Daisy-bush *Olearia phlogopappa* subsp. *flavescens*

- Alpine Bootlace Bush *Pimelea axiflora* subsp. *alpina*.

Another alpine resort in Victoria has recently established an offset site that provides species units for the four species listed above, and offset trades between Resorts have already occurred (approved and endorsed by DELWP) as two party trades. Mount Buller Mount Stirling Alpine Resort may be able to arrange a third party offset credit purchase of the required species units from that Resort.

If past permitted clearing requirements do not apply, then a registered credit broker could be used to facilitate purchase of the required general offset units.

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6. Key ecological values and recommendations

This section identifies the key ecological features of the study area, provides an outline of potential implications of proposed development on those values and includes recommendations to assist MBMSARMB to design walking trails and viewing platforms that minimise impacts on biodiversity. In total, up to 0.098 hectares of native vegetation is proposed for removal.

The primary measure to reduce impacts to biodiversity values within the study area is to avoid and minimise removal of native vegetation and terrestrial habitat. Minimisation and avoidance of impacts has been demonstrated in a trail realignment and shortening of proposed trail length and through designing the trail alignment to utilise existing disturbed areas.

A summary of potential implications of development of the study area and recommendations to minimise impacts during the **design phase** of the project is provided in Table 8.

Table 8 Summary of key ecological values, potential implications of developing the study area and recommendations to minimise ecological impacts during the design phase.

Ecological feature (Figure 2)	Implications of development	Recommendations
Native vegetation	<p>The permanent removal of 0.098 hectares of vegetation.</p> <p>The application will be assessed under the detailed assessment pathway.</p> <p>Proportional impacts to native vegetation above the species offset threshold for nine species.</p>	<p>Where native vegetation removal is unavoidable then minimise impacts in accordance with the Guidelines. Refer to Section 5. Retained vegetation should be fenced off and treated as no-go zones.</p> <p>Identify and implement appropriate offsets for vegetation losses as outline in Section 5.3. Further conversation with a registered credit broker is required to secure species offsets for four species.</p> <p>In addition to sediment control measures and sensitive construction techniques, the SEMP should also incorporate a detailed trail rehabilitation methodology. This should detail actions such as replacement of cut soil sods and other material along trail edges to encourage natural regeneration and reduce erosion.</p>
Threatened species and ecological communities	<p>Removal of known/potential habitat for threatened species (as identified in Table 3).</p>	<p>Utilise minimal impact trail construction techniques.</p> <p>Undertake targeted survey for Alpine Bog Skink and Tussock Skink within the study area to quantify the magnitude and extent of impacts on these species. The results of targeted surveys should also inform mitigation measures such as the installation of small drains or rock armouring to allow reptiles to move across the trail.</p>

Ecological feature (Figure 2)	Implications of development	Recommendations
Weed invasion and spread	Soil disturbance can lead to weed invasion into undisturbed areas or weed spread in existing disturbed areas. Key high and medium threat species known from the resort (but not necessarily in the study area) include Blackberry, Grey Sallow, English Broom, St John's Wort, Soft Rush, Sweet Vernal-grass, Timothy Grass, Twiggy Mullein, Spear Thistle and Brown-top Bent and Hawkweeds.	Incorporate the proposed walking trails into existing Mount Buller weed management plans. Ensure weed management and monitoring targets the control of high threat species. Undertake surveillance for new and emerging weeds along newly constructed trails.
Habitat connectivity	Small scale fragmentation of habitat connectivity for vertebrate and invertebrate fauna species.	Utilise minimal impact trail construction techniques as detailed in the project SEMP and as much as possible, avoid removal of vegetation providing cover for dispersing Mountain Pygmy-possum. Consider installation of small drains and rock armouring to facilitate movement and dispersal of reptiles.

Conclusion

Specific detail relating to preventing impacts to retained native vegetation and aquatic and terrestrial habitat should be addressed in a site-specific SEMP. This plan will provide information for contractors such as environmental inductions, guidelines for installation of temporary fencing/signage, drainage and particularly detailed sediment control measures and monitoring.

Existing weeds (identified during this assessment) will be treated/controlled prior to construction commencing. The proposed walking trails should be incorporated into existing weed and pest management plans for trail networks at Mount Buller the trail network to address longer term management of threats such as pest plant and animal control, managing regrowth vegetation, sediment control and soil pathogens.

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Appendices

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Appendix 1 Flora

The following abbreviations and symbols are relevant to this Appendix:

Code	Meaning	Reference
National listings (EPBC Act)		
EX	Extinct	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act)
CR	Critically endangered	
EN	Endangered	
VU	Vulnerable	
PMST	Protected Matters Search Tool	
State listings (FFG Act and DELWP Advisory List)		
x	Extinct	Victorian <i>Flora and Fauna Guarantee Act 1988</i> (FFG Act)
cr	Critically endangered	
e	Endangered	
v	Vulnerable	
t	Threatened	
P	Protected (public land only)	
Weed status (CaLP Act ¹)		
SP	State prohibited species	Victorian <i>Catchment and Land Protection Act 1994</i> (CaLP Act)
RP	Regionally prohibited species	
RC	Regionally controlled species	
R	Restricted species	
Other		
#	Native species outside its natural range	Victorian Biodiversity Atlas (VBA)

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¹ The DELWP Advisory List for Rare or Threatened Plants was revoked in 2021 and are superseded by the current list of threatened species under the FFG Act 1988.

A1.1 Flora species recorded from the study area

Table A1.1 Flora species recorded from the study area

Status	Scientific Name	Common Name
Indigenous species		
	<i>Acaena novae-zelandiae</i>	Bidgee-widgee
e, P, r	<i>Aciphylla glacialis</i>	Snow Aciphyll
e, P, r	<i>Acrothamnus montanus</i>	Snow Beard-heath
P	<i>Asperula gunnii</i>	Mountain Woodruff
	<i>Asterolasia trymalioides</i>	Alpine Star-bush
P	<i>Brachyscome</i> spp.	Daisy
	<i>Bulbine bulbosa</i>	Bulbine Lily
	<i>Carex breviculmis</i>	Common Grass-sedge
e, P, r	<i>Celmisia costiniana</i>	Carpet Snow-daisy
P	<i>Celmisia</i> spp.	Snow Daisy
v, P, r	<i>Celmisia tomentella</i>	Silver Snow-daisy
P	<i>Craspedia gracilis</i>	Ashen Billy-buttons
P	<i>Craspedia</i> spp.	Billy Buttons
	<i>Euphrasia</i> spp.	Eyebright
	<i>Gentianella muelleriana</i>	Mueller's Snow-gentian
P	<i>Grevillea australis</i>	Alpine Grevillea
	<i>Hovea montana</i>	Alpine Rusty-pods
	<i>Kunzea muelleri</i>	Yellow Kunzea
e, P, r	<i>Leptorhynchus squamatus</i> subsp. <i>alpinus</i>	Alpine Buttons
P	<i>Leucopogon gelidus</i>	Drooping Beard-heath
P	<i>Leucopogon</i> spp.	Beard Heath
	<i>Luzula</i> spp.	Woodrush
	<i>Melicytus dentatus</i> s.l.	Tree Violet
P	<i>Microseris lanceolata</i>	Alpine Yam-daisy
e, P, r	<i>Olearia brevipedunculata</i>	Rusty Daisy-bush
e, P, r	<i>Olearia phlogopappa</i> subsp. <i>flavescens</i>	Dusty Daisy-bush
	<i>Oreomyrrhis eriopoda</i>	Australian Caraway
e, r	<i>Phebalium squamulosum</i> subsp. <i>alpinum</i>	Alpine Phebalium
v, r	<i>Pimelea axiflora</i> subsp. <i>alpina</i>	Alpine Bootlace Bush
	<i>Plantago</i> spp.	Plantain
	<i>Poa costiniana</i>	Bog Snow-grass
	<i>Poa fawcettiae</i>	Horny Snow-grass
	<i>Podocarpus lawrencei</i>	Mountain Plum-pine
	<i>Podolobium alpestre</i>	Alpine Podolobium
P	<i>Polystichum proliferum</i>	Mother Shield-fern
e, r	<i>Ranunculus gunnianus</i>	Gunn's Alpine Buttercup
	<i>Rytidosperma nudiflorum</i>	Alpine Wallaby-grass

Status	Scientific Name	Common Name
e, P, r	<i>Stellaria pungens</i>	Prickly Starwort
	<i>Stylidium montanum</i>	Alpine Triggerplant
	<i>Tasmannia xerophila</i>	Alpine Pepper
	<i>Tasmannia xerophila</i> subsp. <i>xerophila</i>	Alpine Pepper
	<i>Trisetum spicatum</i> subsp. <i>australiense</i>	Bristle Grass
Introduced species		
	<i>Acetosella vulgaris</i>	Sheep Sorrel
	<i>Achillea millefolium</i>	Milfoil
	<i>Agrostis capillaris</i>	Brown-top Bent
	<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass
	<i>Cerastium glomeratum</i> s.l.	Common Mouse-ear Chickweed
	<i>Dactylis glomerata</i>	Cocksfoot
	<i>Hypochaeris radicata</i>	Flatweed
	<i>Taraxacum officinale</i> spp. agg.	Garden Dandelion
	<i>Trifolium repens</i> var. <i>repens</i>	White Clover

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A1.2 Listed flora species

The following table includes threatened flora species that have potential to occur within the study area. The list of threatened species is sourced from the VBA and PMST (accessed on 21 October 2021). Where years are specified for the most recent database records, these refer to records from the VBA unless otherwise specified. Where no year is specified, the PMST has predicted that the species has potential to occur. A proportion of the flora habitat descriptions have been reproduced with permission from the Royal Botanic Gardens Victoria (RBGV 2020).

Table A1.2 Threatened flora species recorded or predicted to occur within 5 km of the study area

Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
National significance								
<i>Colobanthus curtisiae</i>	Snowy Colobanth	VU			PMST	Grassland and grassy woodland; known in Victoria from a small number of records in the Alpine National Park.	Low	No records known from the area, restricted to the Snowy Ranges and the Bluff.
<i>Diuris ochroma</i>	Pale Golden Moths	VU	e		PMST	Flats and lower slopes just above floodplains in native grassland dominated by Kangaroo Grass <i>Themeda triandra</i> .	Negligible	No records and no suitable floodplain habitat within the study area.
<i>Glycine latrobeana</i>	Clover Glycine	VU	v		PMST	Grasslands and grassy woodlands, particularly those dominated by Kangaroo Grass.	Negligible	No records and study area above this species' altitudinal range.

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Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
<i>Lobelia gelida</i>	Snow Pratia	VU	e		PMST	Alpine grasslands, on heavy dark mud around seasonal pools and creek edges.	Low	Species is known from alpine heathlands on Mt Buffalo and Mt Reynard, north of Licola. No distribution for this species within the study area.
<i>Prasophyllum morganii</i>	Mignonette Leek-orchid	VU	x		PMST	Known from only one location near Cobungra in Snow Gum open forest at about 1000 m ASL. Presumed to be extinct.	Negligible	Presumed extinct within Victoria.
<i>Pterostylis oreophila</i>	Blue-tongue Greenhood	CR			PMST	Damp, shady habitat along watercourses.	Negligible	Localised in montane to sub-alpine sphagnum bogs and stream sides under thickets of <i>Leptospermum grandiflorum</i> . No suitable habitat within the study area.
<div style="border: 2px solid red; padding: 10px; text-align: center;"> <p>This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright</p> </div>								
State significance								
<i>Aciphylla glacialis</i>	Snow Aciphyll		e	2013		Tussock grassland and tall herbfield in alps and higher sub-alps, rarely in subalpine woodland.	Recorded	Recorded within the study area during site assessment

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Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
<i>Agrostis muelleriana</i>	Mueller's Bent		e	2009		Moist, rocky sites on mountains above c. 1700 m but apparently absent from the Baw Baws.	Low	Species usually occupies habitat that is more moist than that found within the study area.
<i>Baeckea latifolia</i>	Subalpine Baeckea		e	2018		Alpine and subalpine areas along streams and in bogs; altitudes between c. 680 and 1080 m ASL.	Low	No suitable sheltered bog or streamside habitat within the study area
<i>Barbarea grayi</i>	Native Wintercress		v	1980		Damp areas near high altitude streams.	Low	No suitable streamside habitat within the study area
<i>Botrychium australe</i>	Austral Moonwort		cr	1770		Lowland forest and scrubland to subalpine grasslands, lightly wooded plains, at the base of granitic hills, alongside subalpine streams, and in some disturbed environments.	Low	Rare species usually recorded in lowland forest to sub-alpine grassland.
<i>Calochilus imberbis</i>	Naked Beard-orchid		cr	1980		Mainly found in heath, heathy woodlands and lowland forests.	Negligible	No suitable habitat for this species within the study area.
<i>Cardamine lilacina</i> s.s.	Lilac Bitter-cress		e	2016		Subalpine woodland and various alpine habitats.	Medium	Some suitable habitat within the study area.

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Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
<i>Carex jackiana</i>	Carpet Sedge		e	2019		Locally common in alpine areas, usually within or bordering bog or damp grassland communities.	Medium	Some suitable habitat within the study area
<i>Carpha nivicola</i>	Broad-leaf Flower-rush		e	1980		Treeless alpine and subalpine areas above c. 1400 m in, and at the margins of, Sphagnum bogs and wet heaths.	Negligible	No suitable alpine bog or wet heath habitat for this species within the study area
<i>Celmisia costiniana</i>	Carpet Snow-daisy		e	2016		Alpine and higher subalpine, including open heaths, herbfields, grasslands, cold-air drainage valleys and along gravelly stream banks.	Recorded	Recorded within the study area during the site assessment
<i>Celmisia latifolia</i>	Victorian Snow-daisy		e	2019		Alpine herbfields and grasslands along margins of wetlands.	Low	No alpine wetland habitat within the study area
<i>Celmisia tomentella</i>	Silver Snow-daisy		v	2018		Alpine and subalpine woodland, heath and Sphagnum moss beds, also in lower alpine and upper montane bogs.	Medium	Known from the area and suitable habitat within the study area
<i>Craspedia adenophora</i>	Sticky Billy-buttons		e	2016		Dry to damp grassland and open heaths, often around exposed rock, above 1500m.	High	Locally common species known from the area and with suitable habitat within the study area

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Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
<i>Craspedia aurantia</i> var. <i>jamesii</i>	Green Billy-buttons		e	2019		Widespread in subalpine areas in grassland.	High	Locally common species known from the area and with suitable habitat within the study area
<i>Craspedia crocata</i>	Crimson Billy-buttons		e	2013		Moist grassland near or below treeline.	Medium	Suitable habitat within the study area
<i>Craspedia maxgrayi</i> s.s.	Woolly Billy-buttons		cr	1853		Alpine grassland and herbfield, usually in drier sites.	Negligible	Species restricted to Mount Hotham and Falls Creek area
<i>Craspedia sylvestris</i>	Mountain Forest Billy-buttons		e	2020		Alpine eucalypt woodlands between approximately 880 and 1300 m ASL	Low	No suitable woodland habitat within the study area
<i>Cystopteris tasmanica</i>	Brittle Bladder-fern		e	1980		Confined to wet, rocky sites in alpine and subalpine areas.	Low	Limited wet rocky habitat for this species within the study area
<i>Deyeuxia carinata</i>	Keeled Bent-grass		e	2007		Moist grasslands, heathlands or rocky drainage areas of the alps.	Low	Limited moist habitat for this species within the study area

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Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
<i>Deyeuxia crassiuscula</i>	Thick Bent-grass		e	2016		Confined to rocky areas above treeline on the higher mountains, and rather rare.	Medium	Known from Mount Buller and suitable habitat for this species within the study area
<i>Diplaspis nivis</i>	Snow Pennywort		e	1953		Alpine grasslands, herbfields and wet heathlands.	Negligible	No suitable mossbed habitat for this species within the study area
<i>Eucalyptus perriniana</i>	Spinning Gum		e	1999		Alpine areas on the margins of bogs and bogs, and occasionally over ridges.	Negligible	Study area is above the climatic treeline
<i>Euchiton umbricola</i>	Cliff Cudweed		e	2009		Confined almost exclusively to shaded cliff faces (often near waterfalls) and boulders above c. 1000 m.	Low	Limited suitable sheltered rockface habitat for this species within the study area
<i>Euphrasia lasianthera</i>	Hairy Eyebright		e	2020		Alpine grasslands and herbfields, and subalpine woodlands.	High	Common alpine species with suitable habitat within the study area
<i>Gentianella muelleriana</i> subsp. <i>willisiana</i>	Mt Buller Snow-gentian		v	2016		Alpine and subalpine grasslands and heathlands.	High	Common alpine species known from the area and with suitable habitat within the study area

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Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
<i>Gentianella polysperes</i>	Early Forest-gentian		e	1906		Foothill to subalpine woodlands and forests.	Negligible	Study area is above the climatic treeline, no suitable habitat for this species within the study area
<i>Geranium potentilloides</i> var. <i>abditum</i>	Soft Crane's-bill		e	2019		In, or fringing, subalpine woodlands, often in areas with exposed rock.	Low	Suitable habitat nearby but species unlikely to occur within the study area
<i>Grevillea victoriae</i> subsp. <i>victoriae</i>	Royal Grevillea		e	2019		Subalpine shrublands and woodlands.	Medium	Known from the area and suitable habitat within the study area
<i>Huperzia australiana</i>	Fir Clubmoss		e	1981		Restricted to alpine or subalpine scrubs or wet heathlands, and uncommon to rare.	Medium	Known from the area and suitable habitat within the study area
<i>Isolepis montivaga</i>	Fog Club-sedge		e	2016		Wet depressions in alpine and subalpine herbfields.	Medium	May occur within micro-depressions within the study area
<i>Leptorhynchos squamatus</i> subsp. <i>alpinus</i>	Alpine Buttons		e	2011		Grassland, herbfields and open heath communities of the snowfields.	Recorded	Recorded within the study area during the site assessment

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Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
<i>Notogrammitis crassior</i>	Alpine Finger-fern		e	1970		Rocks and rock crevices in wet alpine and subalpine areas.	Low	Limited wet rocky crevice habitat for this species within the study area
<i>Olearia phlogopappa</i> subsp. <i>flavescens</i>	Dusty Daisy-bush		e	2020		Common throughout the alpine and subalpine areas, often in rocky areas, and usually growing in heath or shrubland above the treeline, or in shrubby subalpine woodlands of Eucalyptus pauciflora woodlands.	Recorded	Recorded within the study area during the site assessment
<i>Ozothamnus stirlingii</i>	Ovens Everlasting		e	2014		Locally common in montane forests at c. 1000 m altitude from Mt Buller area eastward.	Negligible	Study area is above this species altitudinal range
<i>Phebalium squamulosum</i> subsp. <i>alpinum</i>	Alpine Phebalium		e	2011		Confined to subalpine and alpine woodlands and shrublands, usually in rocky areas below the treeline, but extending onto the Bogong High Plains.	Recorded	Recorded within the study area during the site assessment
<i>Pimelea axiflora</i> subsp. <i>alpina</i>	Alpine Bootlace Bush		v	2016		Alpine to subalpine habitats, above 1500 m, usually in rocky areas.	Recorded	Recorded within the study area during the site assessment
<i>Pimelea ligustrina</i> subsp. <i>ciliata</i>	Fringed Rice-flower		e	2019		Alpine to subalpine woodlands, at altitudes over 1400 m, usually in Snow Gum woodland.	Low	No woodland habitat for this species within the study area

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Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
<i>Polystichum formosum</i>	Broad Shield-fern		cr	1980		Creek beds or on wet rock faces.	Low	Limited wet rockface habitat within the study area
<i>Psychrophila introloba</i>	Alpine Marsh-marigold		e	2016		Locally common in beds of late-lying snow and in moss-beds on the higher ranges. Usually flowering at edges of receding snow drifts.	Low	No mossbeds and limited water-retentive habitat for this species within the study area
<i>Ranunculus gunnianus</i>	Gunn's Alpine Buttercup		e	2018		Locally common in damp grassland, herbfield and bogs throughout the higher alps.	Recorded	Recorded within the study area during the site assessment
<i>Rytidosperma alpicola</i>	Crag Wallaby-grass		v	2016		Exposed rocky crags and ledges in alpine areas.	Medium	Species known from the area and some suitable habitat within the study area
<i>Rytidosperma nivicola</i>	Snow Wallaby-grass		e	2007		Wet alpine heathland and mossbed communities.	Low	No wet heathland or mossbed habitat within the study area
<i>Schizeilema fragoseum</i>	Alpine Pennywort		e	2007		Moist alpine herbfields, rock crevices and near streams.	Low	No wet or streamside alpine habitat within the study area

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Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
<i>Scleranthus singuliflorus</i>	Mossy Knawel		e	2013		Alpine and subalpine herbfields and tussock grasslands, usually above 1600 m.	High	Species known from the area and suitable habitat within the study area
<i>Senecio pectinatus</i> var. <i>major</i>	Alpine Groundsel		e	2013		Damp ground in alpine herbfield or open heathland communities.	Low	Limited moist grassland/herbfield habitat for this species within the study area
<i>Senecio pinnatifolius</i> var. <i>alpinus</i>	Snowfield Groundsel		e	2019		Damp herbfield and grassland throughout the alps.	Low	Limited moist grassland/herbfield habitat for this species within the study area
<i>Trachymene humilis</i> subsp. <i>breviscapa</i>	Alpine Trachymene		e	2007		Moist alpine and higher subalpine grassland and herbfields, often bordering streams and seepage zones.	Low	Limited moist grassland/herbfield habitat for this species within the study area
<i>Trochocarpa clarkei</i>	Lilac Berry		e	1980		Alpine and subalpine areas usually in sheltered areas or near rocks.	Low	Limited sheltered rocky habitat for this species within the study area

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Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
<i>Westringia senifolia</i>	Alpine Westringia		e	1987		Subalpine woodlands.	High	Species known from the area and suitable habitat within the study area

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Appendix 2 Fauna

The following abbreviations and symbols are relevant to this Appendix:

Code	Meaning	Reference
National listings (EPBC Act)		
EX	Extinct	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act)
CR	Critically endangered	
EN	Endangered	
VU	Vulnerable	
NT	Near threatened	
CD	Conservation dependent	
PMST	Protected Matters Search Tool	
State listings (FFG Act and DELWP Advisory List) ²		
x	Extinct	Victorian <i>Flora and Fauna Guarantee Act 1988</i> (FFG Act)
cr	Critically endangered	
e	Endangered	
v	Vulnerable	
t	Threatened	
P	Protected (fish only)	
Pest animal status (CaLP Act)		
PS	Declared pest animal	Victorian <i>Catchment and Land Protection Act 1994</i> (CaLP Act)
Other		
*	Introduced species	Victorian Biodiversity Atlas (VBA)

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² The DELWP Advisory Lists for Threatened Terrestrial and Invertebrate Fauna were revoked in 2021 and are superseded by the current list of threatened species under the FFG Act 1988.

A2.1 Listed fauna species

The following table includes a list of threatened fauna species that have potential to occur within the study area. The list of threatened species is sourced from the VBA and PMST (accessed on 21 October 2021). Where years are specified for the most recent database records, these refer to records from the VBA unless otherwise specified. Where no year is specified, the PMST has predicted that the species has potential to occur.

Table A2.3 Threatened fauna species recorded or predicted to occur within 5 km of the study area

Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
National significance								
<i>Rostratula australis</i>	Australian Painted-snipe	EN	cr		PMST	Shallows of well-vegetated freshwater wetlands.	Negligible	No aquatic habitat within the study area.
<i>Hirundapus caudacutus</i>	White-throated Needletail	VU	v	2008	PMST	An almost exclusively aerial species within Australia, occurring over most types of habitat, particularly wooded areas.	High	This highly mobile aerial species will likely fly over the study area, however is unlikely to utilise terrestrial habitat within the study area.
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<i>Numenius madagascariensis</i>	Eastern Curlew	CR	cr		PMST	Large intertidal sandflats, banks, mudflats, estuaries, inlets, sewage farms, saltworks, harbours, coastal lagoons and bays.	Negligible	No suitable habitat within the study area.
<i>Calidris ferruginea</i>	Curlew Sandpiper	CR	cr		PMST	Large intertidal sandflats, banks, mudflats, estuaries, inlets, sewage	Negligible	No suitable habitat within

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Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
						farms, saltworks, harbours, coastal lagoons and bays.		the study area.
<i>Grantiella picta</i>	Painted Honeyeater	VU	v		PMST	Dry open woodlands and forests. Typically forages for fruit and nectar in mistletoes and in tree canopies.	Negligible	No suitable habitat within the study area.
<i>Potorous tridactylus trisulcatus</i>	Long-nosed Potoroo (SE mainland)	VU	v		PMST	Forest, heathy woodlands and heathlands.	Negligible	No trees present within the study area. Species requires mistletoes to be present.
<i>Dasyurus maculatus maculatus</i> (SE mainland population)	Spot-tailed Quoll	EN	e		PMST	Rainforest and wet and dry sclerophyll forests and woodlands.	Negligible	No suitable habitat within the study area.
<i>Petauroides volans</i>	Southern Greater Glider	VU	v	2017	PMST	Wet and damp sclerophyll forest with large hollow-bearing trees.	Low	The study area is treeless.
<i>Burramys parvus</i>	Mountain Pygmy-possum	EN	e	2018	PMST	Alpine rock screes and boulder fields supporting heathy vegetation.	Medium	Suitable dispersal habitat within the study area, known populations in vicinity.

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Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
<i>Mastacomys fuscus mordicus</i>	Broad-toothed Rat	VU	v	2018	PMST	Sub-alpine Woodland, Heathland, Sedgeland, and sedge-dominated areas within forest.	Recorded	No sedge-dominated habitat present that would be suitable for breeding, however scats were found within study area, which is likely used as dispersal habitat
<i>Pseudomys fumeus</i>	Smoky Mouse	EN	e		PMST	Coastal heath and heathy woodland, wet forest, sub-alpine heath and dry sclerophyll forest.	Low	No suitable habitat within the study area.
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	VU	v		PMST	Rainforest, wet and dry sclerophyll forest, woodland and urban areas.	Negligible	The study area is treeless.
<i>Liopholis guthega</i>	Guthega Skink	EN	cr		PMST	Alpine woodlands, grasslands and heathlands with sub-surface boulders.	Low	No records of this species and only found on the Bogong High Plains in Victoria.

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Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
<i>Litoria spenceri</i>	Spotted Tree Frog	EN	cr		PMST	Rocky areas along streams within forest and woodland.	Negligible	No aquatic habitat within the study area. Species is restricted to altitudes of 200 to 1100 metres.
<i>Litoria raniformis</i>	Growling Grass Frog	VU	v		PMST	Still or slow-flowing waterbodies and surrounding terrestrial vegetation.	Negligible	No aquatic habitat within the study area.
<i>Litoria verreauxii alpina</i>	Alpine Tree Frog	VU	cr	1985	PMST	Alpine and subalpine woodland, heath and grassland; breeds in a variety of natural and artificial waterbodies including dams and reservoirs.	Low	No aquatic habitat present within the study area.
<i>Galaxias rostratus</i>	Flat-headed Galaxias	CR	v		PMST	Still or slow-moving waters of rivers, billabongs, lakes and swamps.	Negligible	No aquatic habitat within the study area.
<i>Galaxias fuscus</i>	Barred Galaxias	EN	cr	2021	PMST	Cool and clear montane streams above 400 m ASL with coarse substrates.	Negligible	No aquatic habitat within the study area.
<i>Maccullochella macquariensis</i>	Trout Cod	EN	e		PMST	Streams characterised by a high abundance of large woody debris.	Negligible	No aquatic habitat within the study area.

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Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
<i>Maccullochella peelii</i>	Murray Cod	VU	e		PMST	A diverse range of stream habitats in the Murray-Darling basin; principally the main channels of rivers and their major tributaries.	Negligible	No aquatic habitat within the study area.
<i>Macquaria australasica</i>	Macquarie Perch	EN	e		PMST	Streams with clear water and deep, rocky holes with abundant cover.	Negligible	No aquatic habitat within the study area.
State significance								
<i>Falco subniger</i>	Black Falcon		cr	1996		Woodlands, open country and around terrestrial wetlands areas, including rivers and creeks. Mostly hunts over open plains and undulating land with large tracts of low vegetation. Primarily occurs in arid and semi-arid zones in the north, north-west and west of Victoria, though can be forced into more coastal areas by droughts and subsequent food shortages.	Medium	Some potential hunting habitat present within the study area. No trees to provide perching opportunities.
<i>Ninox strenua</i>	Powerful Owl		v	2003		Eucalypt forests and woodlands, well-treed urban areas.	Low	The study area is treeless.
<i>Actitis hypoleucos</i>	Common Sandpiper		v		PMST	Migrates to Australia from Eurasia in August where it inhabits a wide variety of coastal and inland wetlands with muddy margins before departing north in March.	Low	The study area is treeless.

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Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
<i>Pseudemoia cryodroma</i>	Alpine Bog Skink		e	2013		Alpine and Sub-alpine Grassland, Heathland and Woodland.	High	Suitable habitat within the study area, multiple recent records nearby.
<i>Pseudemoia pagenstecheri</i>	Tussock Skink		e	2008		On the ground in a range of grasslands or sparse grassy woodlands from alps to coast.	High	Suitable habitat within the study area, recent records nearby.
<i>Pseudophryne bibronii</i>	Brown Toadlet		e	1990		A wide variety of woodland, forest and grassland habitats.	Negligible	Potential suitable habitat is quite disturbed. No recent records nearby.
<i>Spathula tryssa</i>	Planarian		e	1994		Occurs in spring-fed waters and damp seeps above 1470m in alpine areas. It has commonly been detected amongst alpine herb field vegetation adjacent to watercourses and within damp interstitial spaces of coarse substrates.	Negligible	No suitable habitat within the study area.
<i>Thaumatoperla flaveola</i>	Mount Stirling stonefly		cr	2016		Slow flowing streams in the Mount Buller and Mount Stirling area, Victoria.	Low	No aquatic habitat within the study area.

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Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
<i>Riekoperla isosceles</i>	Stonefly		v	1984		Upper reaches of montane streams within the vicinity of Mount Buller, Victoria.	Low	No aquatic habitat within the study area.
<i>Tamasia furcilla</i>	Caddisfly		cr	1972		Little known about the habitat requirements of this species. This species appears to have been recorded from only three localities, all of which are in the Mount Buller Area. Two of these records are from the Delatite catchment and one in the Howqua River catchment.	Low	No aquatic habitat within the study area.

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A2.2 Migratory species (EPBC Act listed)

Table A2.4 Migratory fauna species recorded or predicted to occur within 5 km of the study area

Scientific name	Common name	Most recent record
Migratory species		
<i>Gallinago hardwickii</i>	Latham's Snipe	PMST
<i>Hirundapus caudacutus</i>	White-throated Needletail	2008
<i>Apus pacificus</i>	Fork-tailed Swift	PMST
<i>Numenius madagascariensis</i>	Eastern Curlew	PMST
<i>Actitis hypoleucos</i>	Common Sandpiper	PMST
<i>Calidris ferruginea</i>	Curlew Sandpiper	PMST
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	PMST
<i>Calidris melanotos</i>	Pectoral Sandpiper	PMST
<i>Motacilla flava</i>	Yellow Wagtail	PMST
<i>Rhipidura rufifrons</i>	Rufous Fantail	PMST
<i>Myiagra cyanoleuca</i>	Satin Flycatcher	PMST

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Appendix 3 Native Vegetation Removal Report

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Native vegetation removal report

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

Date of issue: 07/12/2021

Time of issue: 9:32 pm

Report ID: BIO_2021_115

Project ID

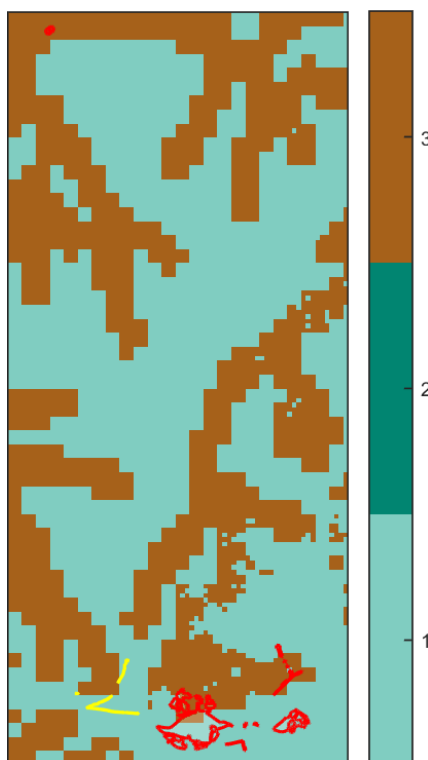
SummitTrail_Assessed_VegLoss_wPPC

Assessment pathway

Assessment pathway	Detailed Assessment Pathway
Extent including past and proposed	6.396 ha
Extent of past removal	6.298 ha
Extent of proposed removal	0.098 ha
No. Large trees proposed to be removed	0
Location category of proposed removal	Location 3 The native vegetation is in an area where the removal of less than 0.5 hectares could have a significant impact on habitat for one or more rare or threatened species.

1. Location map

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Native vegetation removal report

Offset requirements if a permit is granted

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

Species offset amount ¹	0.128 species units of habitat for Mountain Pygmy Possum, <i>Burramys parvus</i> 0.137 species units of habitat for Alpine Bog Skink, <i>Pseudemoia cryodroma</i> 0.009 species units of habitat for Mount Stirling Stonefly, <i>Thaumatoperla flaveola</i> 0.127 species units of habitat for Snow Aciphyll, <i>Aciphylla glacialis</i> 0.127 species units of habitat for Gunn's Alpine Buttercup, <i>Ranunculus gunnianus</i> 0.127 species units of habitat for Subalpine Baeckea, <i>Baeckea latifolia</i> 0.127 species units of habitat for Dusty Daisy-bush, <i>Olearia phlogopappa subsp. flavescens</i> 0.127 species units of habitat for Alpine Phebalium, <i>Phebalium squamulosum subsp. alpinum</i> 0.127 species units of habitat for Alpine Bootlace Bush, <i>Pimelea axiflora subsp. alpina</i>
Large trees	0 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

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¹ The species offset amount(s) required is the sum of all species habitat units in Appendix 1.

Native vegetation removal report

Next steps

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

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

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

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

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

Additional application requirements must be met including:

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

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

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

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Appendix 1: Description of native vegetation to be removed

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

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

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

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

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

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

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

Native vegetation to be removed

Information provided by or on behalf of the applicant in a GIS file										Information calculated by EnSym		
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
1-AA	Patch	valp1004	Rare	0	no	0.760	0.019	0.019	0.913	0.750	0.025	11156 Mountain Pygmy Possum <i>Burramys parvus</i>
										0.879	0.027	12992 Alpine Bog Skink <i>Pseudemoia cryodroma</i>
										0.708	0.025	500113 Snow Aciphyll <i>Aciphylla glacialis</i>
										0.708	0.025	502892 Gunn's Alpine Buttercup <i>Ranunculus gunnianus</i>
										0.708	0.025	504267 Subalpine Baeckea <i>Baeckea latifolia</i>
										0.708	0.025	504780 Dusty Daisy-bush <i>Olearia phlogopappa subsp. flavescens</i>
										0.708	0.025	504815 Alpine Phebalium <i>Phebalium squamulosum subsp. alpinum</i>
										0.708	0.025	504828 Alpine Bootlace Bush <i>Pimelea axiflora subsp. alpina</i>

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Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
1-AB	Patch	valp1013	Rare	0	no	0.600	0.001	0.001	0.910	0.760	0.001	11156 Mountain Pygmy Possum <i>Burramys parvus</i>
										0.890	0.001	12992 Alpine Bog Skink <i>Pseudemoia cryodroma</i>
										0.750	0.001	500113 Snow Aciphyll <i>Aciphylla glacialis</i>
										0.750	0.001	502892 Gunn's Alpine Buttercup <i>Ranunculus gunnianus</i>
										0.750	0.001	504267 Subalpine Baeckea <i>Baeckea latifolia</i>
										0.750	0.001	504780 Dusty Daisy-bush <i>Olearia phlogopappa subsp. flavescens</i>
										0.750	0.001	504815 Alpine Phebalium <i>Phebalium squamulosum subsp. alpinum</i>
										0.750	0.001	504828 Alpine Bootlace Bush <i>Pimelea axiflora subsp. alpina</i>
1-AC	Patch	valp1013	Rare	0	no	0.600	0.005	0.005	0.930	0.700	0.005	11156 Mountain Pygmy Possum <i>Burramys parvus</i>
										0.820	0.005	12992 Alpine Bog Skink <i>Pseudemoia cryodroma</i>
										0.490	0.004	500113 Snow Aciphyll <i>Aciphylla glacialis</i>
										0.490	0.004	502892 Gunn's Alpine Buttercup <i>Ranunculus gunnianus</i>
										0.490	0.004	504267 Subalpine Baeckea <i>Baeckea latifolia</i>
										0.490	0.004	504780 Dusty Daisy-bush <i>Olearia phlogopappa subsp. flavescens</i>
										0.490	0.004	504815 Alpine Phebalium <i>Phebalium squamulosum subsp. alpinum</i>
										0.490	0.004	504828 Alpine Bootlace Bush <i>Pimelea axiflora subsp. alpina</i>
1-AF	Patch	valp1004	Rare	0	no	0.760	0.005	0.005	0.930	0.730	0.007	11156 Mountain Pygmy Possum <i>Burramys parvus</i>

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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
										0.850	0.007	12992 Alpine Bog Skink <i>Pseudemoia cryodroma</i>
										0.760	0.007	500113 Snow Aciphyll <i>Aciphylla glacialis</i>
										0.760	0.007	502892 Gunn's Alpine Buttercup <i>Ranunculus gunnianus</i>
										0.760	0.007	504267 Subalpine Baeckea <i>Baeckea latifolia</i>
										0.760	0.007	504780 Dusty Daisy-bush <i>Olearia phlogopappa subsp. flavescens</i>
										0.760	0.007	504815 Alpine Phebalium <i>Phebalium squamulosum subsp. alpinum</i>
										0.760	0.007	504828 Alpine Bootlace Bush <i>Pimelea axiflora subsp. alpina</i>
1-AE	Patch	valp1013	Rare	0	no	0.600	0.001	0.001	0.970	0.749	0.001	11156 Mountain Pygmy Possum <i>Burramys parvus</i>
										0.856	0.001	12992 Alpine Bog Skink <i>Pseudemoia cryodroma</i>
										0.742	0.001	500113 Snow Aciphyll <i>Aciphylla glacialis</i>
										0.742	0.001	502892 Gunn's Alpine Buttercup <i>Ranunculus gunnianus</i>
										0.742	0.001	504267 Subalpine Baeckea <i>Baeckea latifolia</i>
										0.742	0.001	504780 Dusty Daisy-bush <i>Olearia phlogopappa subsp. flavescens</i>
										0.742	0.001	504815 Alpine Phebalium <i>Phebalium squamulosum subsp. alpinum</i>
										0.742	0.001	504828 Alpine Bootlace Bush <i>Pimelea axiflora subsp. alpina</i>
1-AH	Patch	valp1004	Rare	0	no	0.760	0.051	0.051	0.924	0.753	0.068	11156 Mountain Pygmy Possum <i>Burramys parvus</i>
										0.880	0.073	12992 Alpine Bog Skink <i>Pseudemoia cryodroma</i>
										0.775	0.069	500113 Snow Aciphyll <i>Aciphylla glacialis</i>

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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
										0.775	0.069	502892 Gunn's Alpine Buttercup <i>Ranunculus gunnianus</i>
										0.775	0.069	504267 Subalpine Baeckea <i>Baeckea latifolia</i>
										0.775	0.069	504780 Dusty Daisy-bush <i>Olearia phlogopappa subsp. flavescens</i>
										0.775	0.069	504815 Alpine Phebalium <i>Phebalium squamulosum subsp. alpinum</i>
										0.775	0.069	504828 Alpine Bootlace Bush <i>Pimelea axiflora subsp. alpina</i>
1-AI	Patch	valp1004	Rare	0	no	0.760	0.008	0.008	0.902	0.770	0.011	11156 Mountain Pygmy Possum <i>Burramys parvus</i>
										0.893	0.012	12992 Alpine Bog Skink <i>Pseudemoia cryodroma</i>
										0.787	0.011	500113 Snow Aciphyll <i>Aciphylla glacialis</i>
										0.787	0.011	502892 Gunn's Alpine Buttercup <i>Ranunculus gunnianus</i>
										0.787	0.011	504267 Subalpine Baeckea <i>Baeckea latifolia</i>
										0.787	0.011	504780 Dusty Daisy-bush <i>Olearia phlogopappa subsp. flavescens</i>
										0.787	0.011	504815 Alpine Phebalium <i>Phebalium squamulosum subsp. alpinum</i>
										0.787	0.011	504828 Alpine Bootlace Bush <i>Pimelea axiflora subsp. alpina</i>
1-AJ	Patch	valp1004	Rare	0	no	0.760	0.002	0.002	0.910	0.770	0.002	11156 Mountain Pygmy Possum <i>Burramys parvus</i>
										0.910	0.003	12992 Alpine Bog Skink <i>Pseudemoia cryodroma</i>
										0.770	0.002	500113 Snow Aciphyll <i>Aciphylla glacialis</i>
										0.770	0.002	502892 Gunn's Alpine Buttercup <i>Ranunculus gunnianus</i>

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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
										0.770	0.002	504267 Subalpine Baeckea <i>Baeckea latifolia</i>
										0.770	0.002	504780 Dusty Daisy-bush <i>Olearia phlogopappa subsp. flavescens</i>
										0.770	0.002	504815 Alpine Phebalium <i>Phebalium squamulosum subsp. alpinum</i>
										0.770	0.002	504828 Alpine Bootlace Bush <i>Pimelea axiflora subsp. alpina</i>
1-AD	Patch	valp1004	Rare	0	no	0.760	0.004	0.004	0.930	0.700	0.006	11156 Mountain Pygmy Possum <i>Burramys parvus</i>
										0.820	0.006	12992 Alpine Bog Skink <i>Pseudemoia cryodroma</i>
										0.040	0.007	2366 Mount Stirling Stonefly <i>Thaumatoperla flaveola</i>
										0.490	0.005	500113 Snow Aciphyll <i>Aciphylla glacialis</i>
										0.490	0.005	502892 Gunn's Alpine Buttercup <i>Ranunculus gunnianus</i>
										0.490	0.005	504267 Subalpine Baeckea <i>Baeckea latifolia</i>
										0.490	0.005	504780 Dusty Daisy-bush <i>Olearia phlogopappa subsp. flavescens</i>
										0.490	0.005	504815 Alpine Phebalium <i>Phebalium squamulosum subsp. alpinum</i>
										0.490	0.005	504828 Alpine Bootlace Bush <i>Pimelea axiflora subsp. alpina</i>
1-AG	Patch	valp1004	Rare	0	no	0.760	0.002	0.002	0.930	0.683	0.002	11156 Mountain Pygmy Possum <i>Burramys parvus</i>
										0.803	0.002	12992 Alpine Bog Skink <i>Pseudemoia cryodroma</i>
										1.000	0.003	2366 Mount Stirling Stonefly <i>Thaumatoperla flaveola</i>
										0.490	0.002	500113 Snow Aciphyll <i>Aciphylla glacialis</i>

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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
										0.490	0.002	502892 Gunn's Alpine Buttercup <i>Ranunculus gunnianus</i>
										0.490	0.002	504267 Subalpine Baeckea <i>Baeckea latifolia</i>
										0.490	0.002	504780 Dusty Daisy-bush <i>Olearia phlogopappa subsp. flavescens</i>
										0.490	0.002	504815 Alpine Phebalium <i>Phebalium squamulosum subsp. alpinum</i>
										0.490	0.002	504828 Alpine Bootlace Bush <i>Pimelea axiflora subsp. alpina</i>

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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
Subalpine Baeckea	<i>Baeckea latifolia</i>	504267	Rare	Dispersed	Habitat importance map	0.0412
Mount Stirling Stonefly	<i>Thaumatoperla flaveola</i>	2366	Vulnerable	Dispersed	Habitat importance map	0.0388
Mountain Pygmy Possum	<i>Burramys parvus</i>	11156	Critically endangered	Dispersed	Habitat importance map	0.0134
Snow Aciphyll	<i>Aciphylla glacialis</i>	500413	Rare	Dispersed	Habitat importance map	0.0095
Alpine Bootlace Bush	<i>Pimelea axiflora</i> subsp. <i>alpina</i>	504828	Rare	Dispersed	Habitat importance map	0.0092
Dusty Daisy-bush	<i>Olearia phlogopappa</i> subsp. <i>flavescens</i>	504780	Rare	Dispersed	Habitat importance map	0.0072
Alpine Phebalium	<i>Phebalium squamulosum</i> subsp. <i>alpinum</i>	504815	Rare	Dispersed	Habitat importance map ; special site	0.0058
Alpine Bog Skink	<i>Pseudemoia cryodroma</i>	12992	Endangered	Dispersed	Habitat importance map ; special site	0.0056
Gunn's Alpine Buttercup	<i>Ranunculus gunnianus</i>	502892	Rare	Dispersed	Habitat importance map	0.0050
Mossy Knawel	<i>Scleranthus singuliflorus</i>	503064	Rare	Dispersed	Habitat importance map	0.0044
Alpine Westringia	<i>Westringia senifolia</i>	503572	Rare	Dispersed	Habitat importance map ; special site	0.0044
Carpet Sedge	<i>Carex jackiana</i>	500644	Rare	Dispersed	Habitat importance map	0.0041
Mueller's Bent	<i>Agrostis muelleriana</i>	500157	Rare	Dispersed	Habitat importance map	0.0039
Snowfield Groundsel	<i>Senecio pinnatifolius</i> var. <i>alpinus</i>	505108	Rare	Dispersed	Habitat importance map	0.0037
Fir Clubmoss	<i>Huperzia australiana</i>	501709	Rare	Dispersed	Habitat importance map	0.0032
Fringed Rice-flower	<i>Pimelea ligustrina</i> subsp. <i>ciliata</i>	504841	Rare	Dispersed	Habitat importance map	0.0031
Broad-toothed Rat	<i>Mastacomys fuscus mordicus</i>	11438	Endangered	Dispersed	Habitat importance map	0.0031

Tussock Skink	<i>Pseudemoia pagenstecheri</i>	12993	Vulnerable	Dispersed	Habitat importance map ; special site	0.0031
Soft Crane's-bill	<i>Geranium potentilloides var. abditum</i>	505339	Rare	Dispersed	Habitat importance map	0.0029
Royal Grevillea	<i>Grevillea victoriae subsp. victoriae</i>	505486	Rare	Dispersed	Habitat importance map	0.0028
Crag Wallaby-grass	<i>Rytidosperma alpicola</i>	500959	Rare	Highly Localised Habitat	Habitat importance map ; special site	0.0018
White-throated Needle-tail	<i>Hirundapus caudacutus</i>	10334	Vulnerable	Dispersed	Habitat importance map	0.0002

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

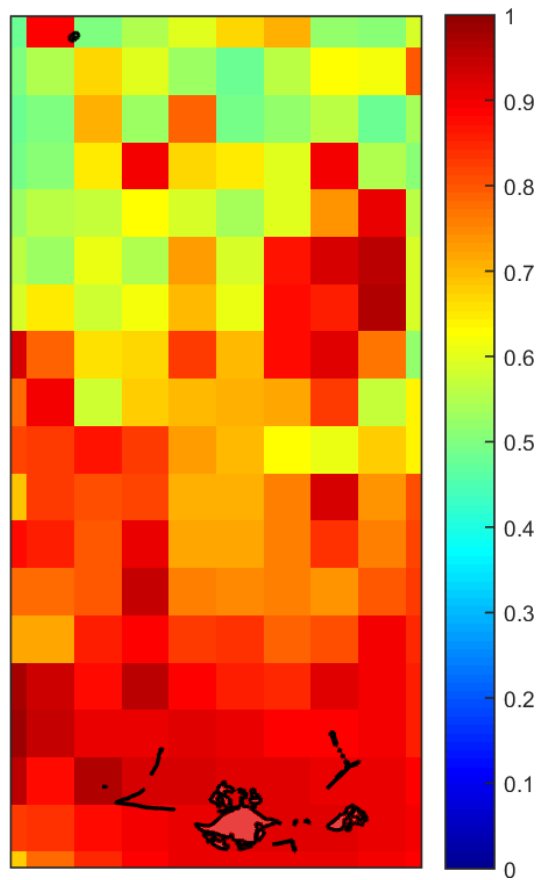
- Habitat importance maps are the maps defined in the Guidelines that include all the mapped habitat for a rare or threatened species
- Top ranking maps are the maps defined in the Guidelines that depict the important areas of a dispersed species habitat, developed from the highest habitat importance 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.

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Appendix 3 – Images of mapped native vegetation

2. Strategic biodiversity values map



3. Aerial photograph showing mapped native vegetation



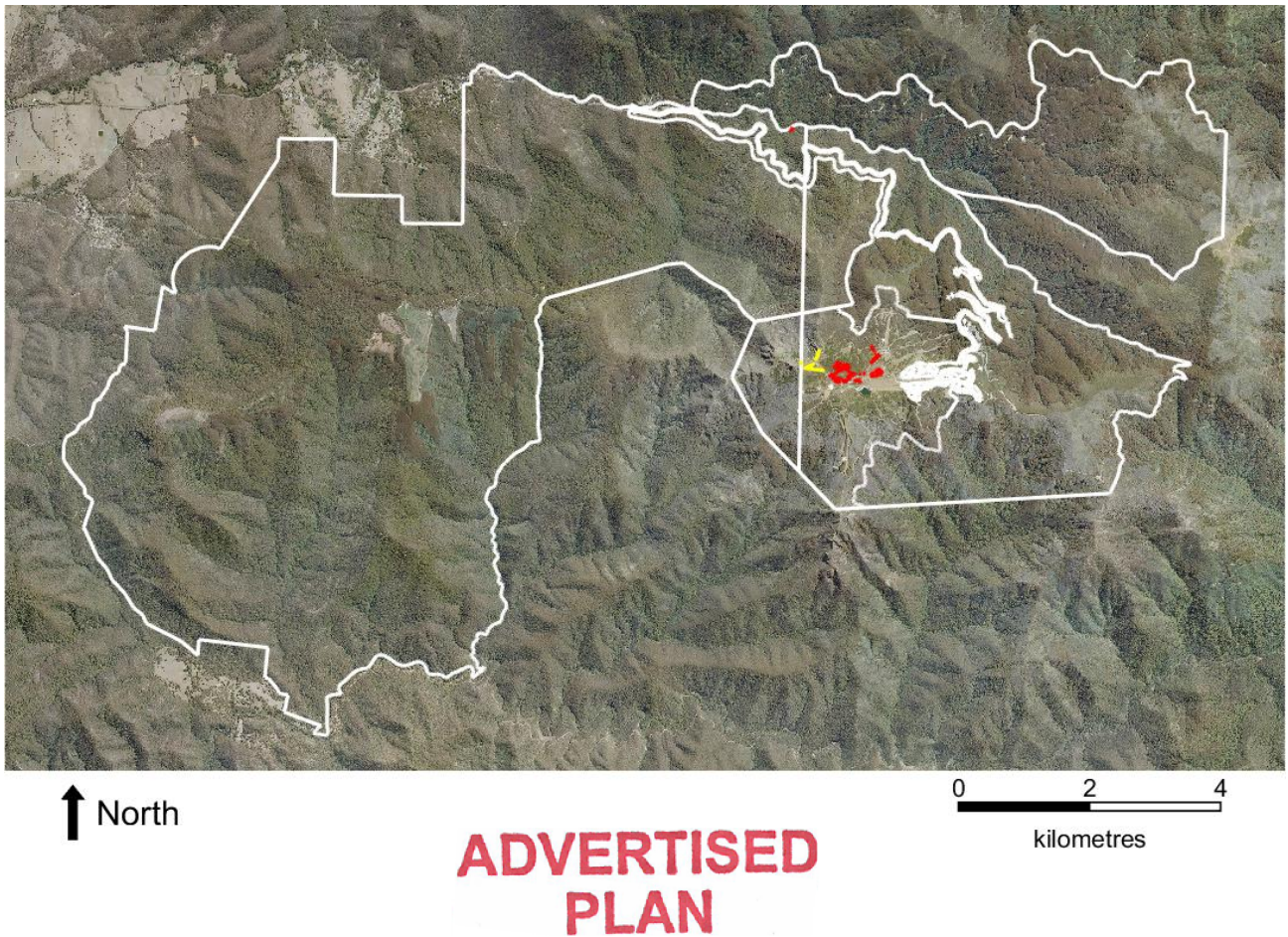
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↑ North

0 2 4
x100 metres

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4. Map of the property in context



Yellow boundaries denote areas of proposed native vegetation removal.

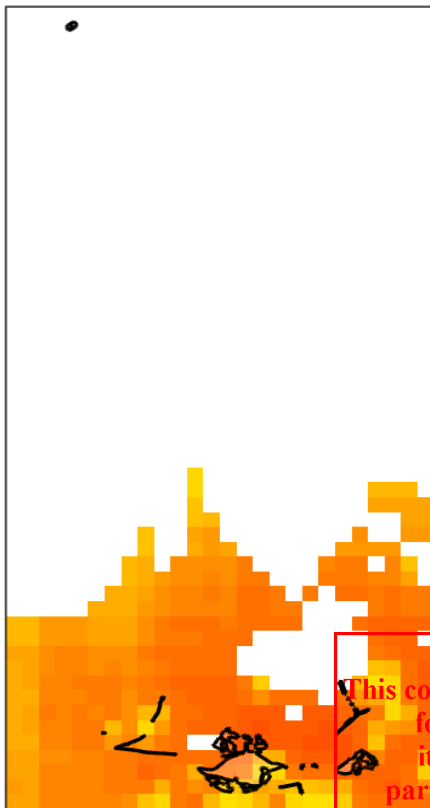
Red boundaries denote areas of past removal.

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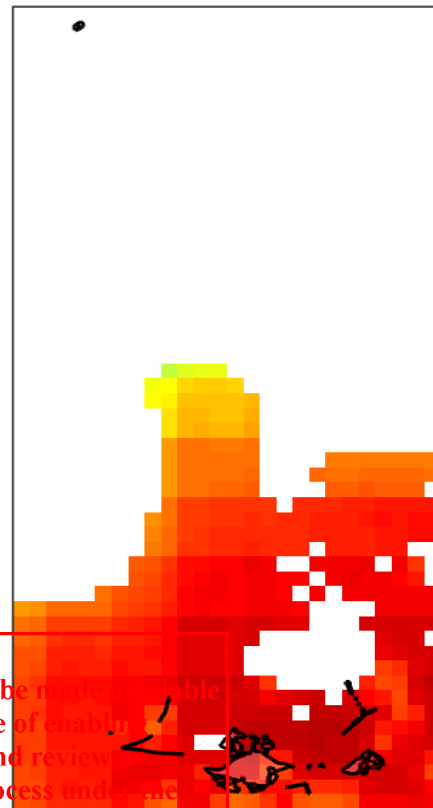
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4. Habitat importance maps

Mountain Pygmy Possum
Burramys parvus
11156



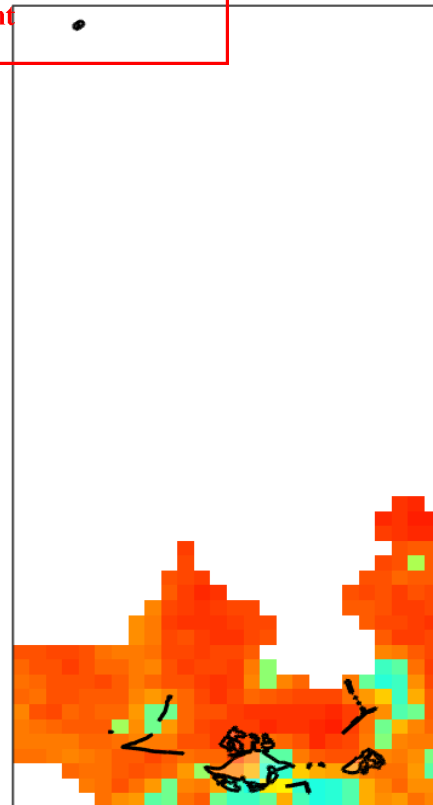
Alpine Bog Skink
Pseudemoia cryodroma
12992



Mount Stirling Stonefly
Thaumatoperla flaveola
2366



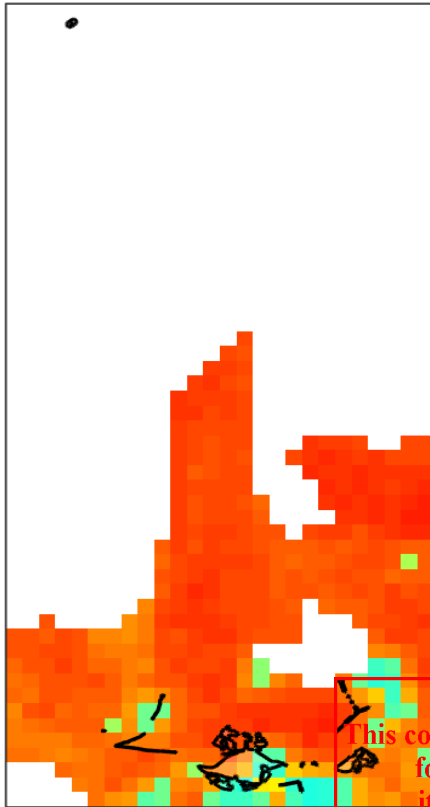
Snow Aciphyll
Aciphylla glacialis
500113



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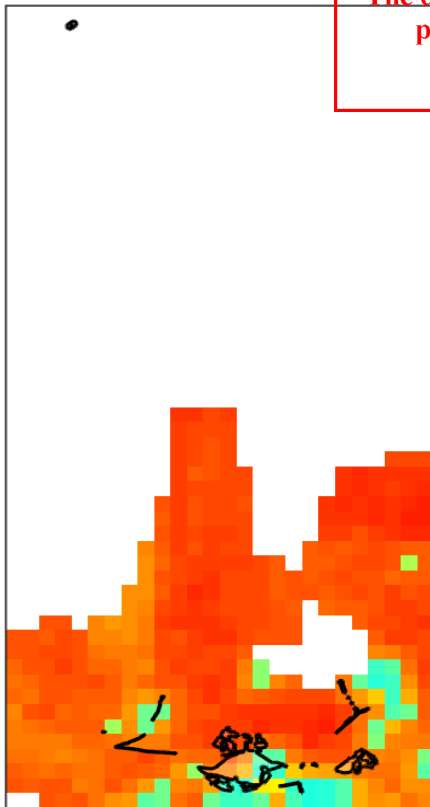
Gunn's Alpine Buttercup
Ranunculus gunnianus
502892



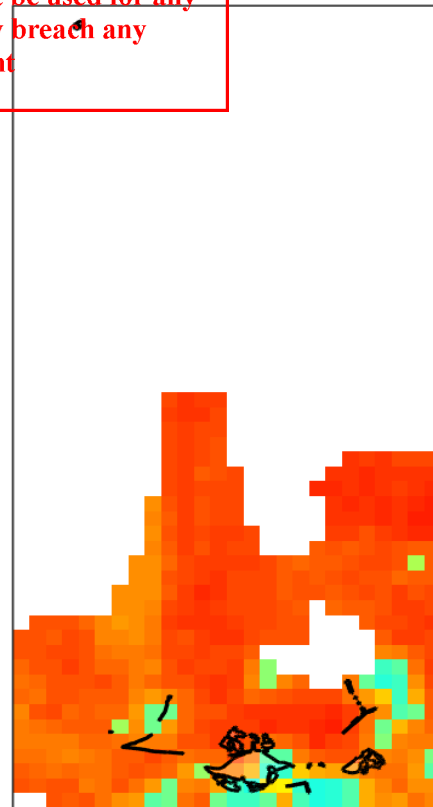
Subalpine Baeckea
Baeckea latifolia
504267



Dusty Daisy-bush
Olearia phlogopappa subsp. *flavescens*
504780

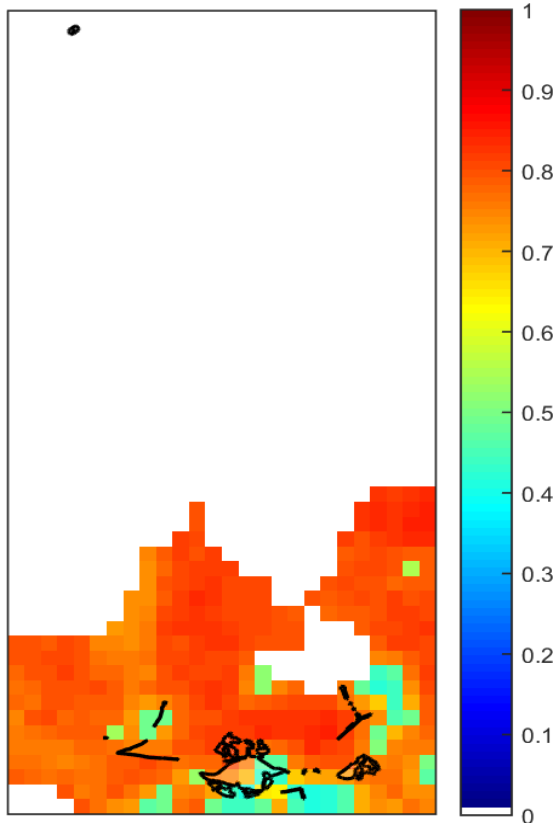


Alpine Phebalium
Phebalium squamulosum subsp. *alpinum*
504815



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Alpine Bootlace Bush
Pimelea axiflora subsp. *alpina*
504828



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