

APPENDIX C

FLORA AND FAUNA ASSESSMENT

FLORA AND FAUNA ASESMENT

Proposed Widening of the Slope Style Course, Perisher Ski Resort

Prepared for
Dabyne Planning

21 December 2012



DOCUMENT TRACKING

ITEM	DETAIL
Project Name	Flora and Fauna Assessment – Proposed Widening of the Slopestyle Course, Perisher Ski Resort
Project Number	12NARECO-0034
Prepared by	Ryan Smithers
Reviewed by	Lucas Mckinnon
Status	FINAL
Version Number	1
Last saved on	21 December 2012

This report should be cited as 'ELA 2012. *Flora and Fauna Assessment – Proposed Widening of the Slopestyle Course, Perisher Ski Resort*. Prepared for Dabyne Planning P/L and Perisher Blue P/L, by Eco Logical Australia, Narooma'

ACKNOWLEDGEMENTS

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1 Introduction

Eco Logical Australia (ELA) was engaged by Perisher Blue Pty Ltd at the request of Dabyne Planning Pty Ltd to prepare a flora and fauna assessment to accompany a proposal to widen the existing Slopestyle course, within the front valley area of Perisher Ski Resort. This flora and fauna assessment provides the findings of a review of relevant literature, database searches, as well as field survey. It also addresses relevant statutory considerations.

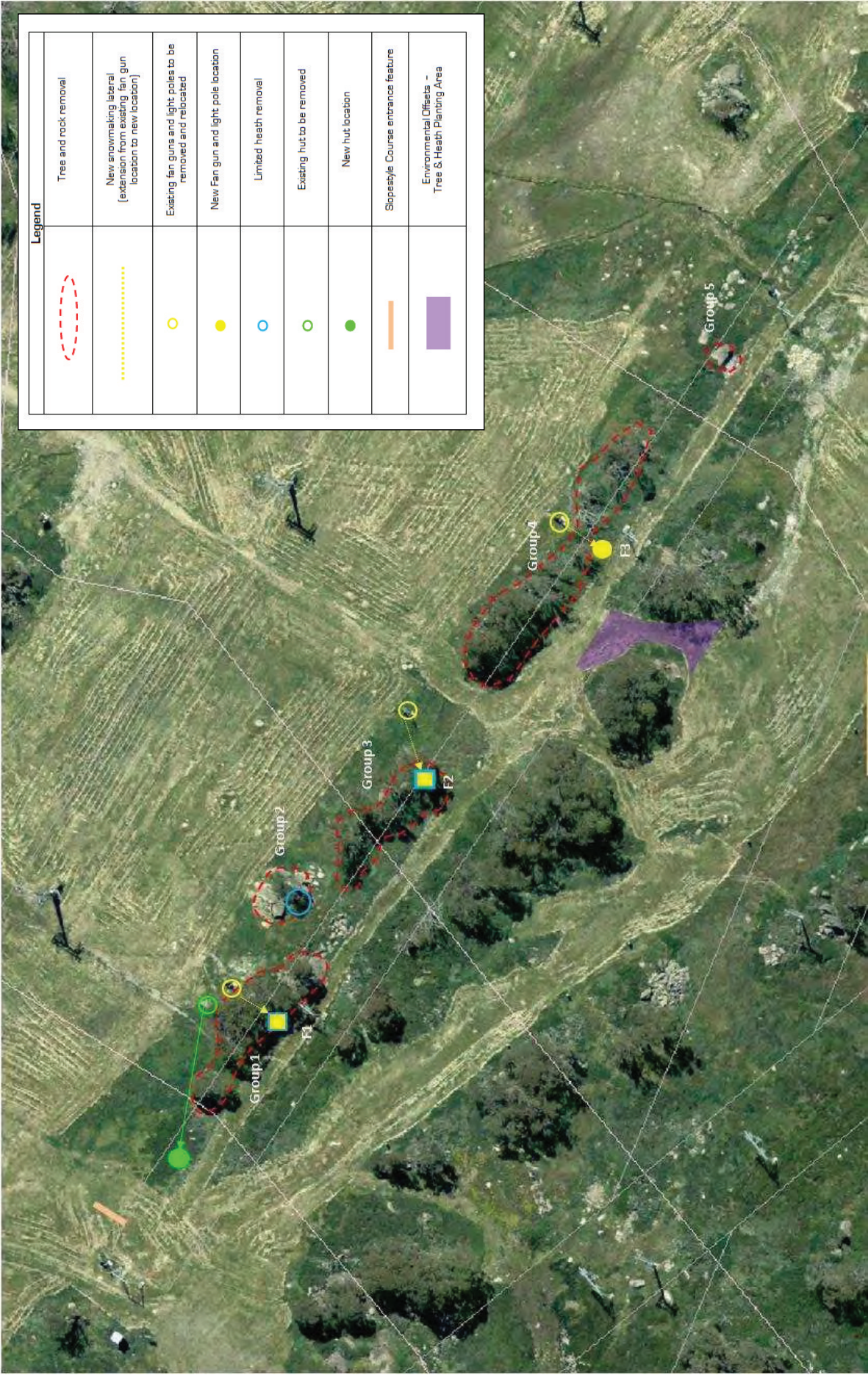
The aim of this investigation was to assess the ecological impacts of the proposal on flora, fauna and habitats within the study area. The objectives of this investigation were:

- To identify and describe the flora species and vegetation communities present in the study area, their condition and conservation significance
- To identify and describe the fauna habitats present in the study area and their condition
- To identify the fauna species which are present or likely to occur in the study area, and their conservation significance
- To assess the impacts of the proposal on vegetation, fauna, habitats, and other environmental features as necessary
- To make recommendations regarding any environmental management and impact mitigation/amelioration measures, which can be implemented to limit the effects of the proposal on vegetation, fauna, habitats, and other environmental features as necessary

1.1 THE PROPOSAL

The objective of the proposal is to create a slightly wider Slopestyle course providing two lines of freestyle terrain, i.e., jumps and rails, and to provide additional room on the skiers right (south) of the Village Eight Chairlift towers and north of Sturt T-bar. The proposal is shown in **Figure 1** and **Photos 1-8**, and can be summarised as follows:

- The removal of approximately 41 Snow Gum *Eucalyptus niphophila* trees from five separate locations on the southern edge of the existing Slopestyle course, with the heath underneath these trees to generally be retained
- The relocation of snowmaking fan guns and light poles along their laterals to the south on the skiers right of the widened Slopestyle course, which will require the disturbance of 36 m² of Tall Alpine Heath and the removal of 6 m² for the footing for the two top fan guns (F1 and F2)
- The removal of a large granite boulder at the commencement of the Slopestyle course, to existing landform level, which will require the removal of 8 m² of Tall Alpine Heath with rock fragments to be placed in the depression below the rock or stockpiled off site
- Removal of a section of rock along the alignment of the Sturt T-bar
- Removal of a granite boulder at the bottom of the Slopestyle course
- The removal of the existing hut and its replacement in a new location with a larger storage hut, and electricity and communications cables, requiring the removal of 9 m² of Tall Alpine Heath
- The erection of an “entrance feature” in exotic grassland at the start of the course
- Mitigation and offset measures, including existing Tall Alpine Heath and additional tree plantings



SITE PLAN

Slopestyle Course Widening & Re-alignment, Front Valley, Perisher Ski Resort

Dec 2012

Dwg 1/1
Scale: 1:1400

Figure 1: The Proposal



Photo 1: Trees will be removed and the fan gun and light pole relocated along lateral to the southern side of the trees. The fan gun will be located in a dry area and will require the removal of some heath.



Photo 2: The side of the rock outcrop will be removed to improve access along the Sturt T-bar. Rock fragments will be placed in the depression below.



Photo 3: This outcrop and associated heath will be removed. Some fragments will be placed below the rock with the remainder stockpiled offsite.



Photo 4: The trees to the north of the Sturt T-bar will be removed.



Photo 5: The trees shown will all be removed. The red circle identifies the location of the relocated fan gun.



Photo 6: This rock at the bottom of the Slopestyle course will be blasted with rock fragments placed in the depression surrounding the rock.



Photo 7: Location of the proposed storage hut.



Photo 8: Location of the proposed heath and tree offset plantings.

1.2 OFFSETS

The proposal includes rehabilitation actions to offset the impacts on vegetation and fauna habitats.

Field investigations and consultation with Perisher identified potential rehabilitation areas and other works that could be used for offsetting the impacts of the proposal as identified below and in **Figure 1**:

- The provision of Alpine Heath and tree plantings in disturbed areas between the Sturt T-bar and the Escapade ski run to provide improved connectivity between remnant vegetation, which includes 300m² of heath planting and rehabilitation and the planting of 82 Snow Gums (*Eucalyptus. niphophila*)

The offset plantings achieve an offset ratio for Snow Gums of 2:1, and approximately 5:1 for Alpine Heath, and provide improvements in connectivity for small mammals in the Front Valley area.

1.3 DIRECT AND INDIRECT IMPACTS

Direct impacts on flora and fauna arising from the proposal will predominately comprise the removal of 41 Snow Gum trees, disturbances to 36 m² of Tall Alpine Heath, the permanent removal of 24 m² of Tall Alpine Heath and the removal of two rock outcrops and associated habitats.

The direct impacts can be summarised as follows:

- **Vegetation Removal:** the permanent removal of 41 Snow Gum trees and 24 m² of Tall Alpine Heath in association with the snow gum fan footings and the hut relocation
- **Rock Removal:** the removal of two large rocks and the removal of part of another
- **Trenching:** digging a 1 m wide and 0.9 m deep trench for the extension of the snow making infrastructure, with the approximately 36 m² of Tall Alpine Heath affected to be allowed to revegetate
- **Access for Construction:** machinery access to implement the proposal will be entirely within existing ski runs, and will not require any additional clearing or disturbance to native vegetation.

The total impact on native vegetation is estimated to be:

- **41** Snow Gum trees
- **60m²** of Tall Alpine Heath

Indirect impacts associated with the proposal are expected to be relatively minor as:

- The footprint of the proposed direct impacts is relatively small
- The areas affected are already disturbed or are on the margins of disturbed areas
- The proposal will be implemented using low impact methods and with adequate safeguards

The proposal is not anticipated to result in any substantial changes in surface or subsurface hydrology, which may lead to the loss or adverse modification of vegetation communities or associated habitats. The excavations and footings associated with the proposal will be small scale and generally relatively shallow. Similar developments throughout the resort have had negligible impact on surface and subsurface hydrology, aquatic ecosystems or vegetation communities beyond the immediate footprint.

The proposal is not expected to have any substantial adverse impacts on habitat connectivity. On the contrary the proposed offset plantings will improve connectivity between remnant patches of vegetation, particularly for small mammals and reptiles.

Whilst there are small areas of Upland Bog in areas immediately adjacent to the proposed works, the proposal will not have any direct impacts on Upland Bog vegetation, as the proposal has been designed to avoid wet areas and Upland Bog vegetation.

Similarly, the proposal includes safeguards to avoid and protect the two sites within the study area where individuals of the Anemone Buttercup *Ranunculus anemoneus* occur.

1.4 SUBJECT SITE, STUDY AREA AND LOCALITY

The 'subject site' for the purposes of this report comprises those areas, as described in **Section 1.1** and in **Figure 1**, which will be directly impacted by the proposal.

The 'study area' for the purposes of this report is considered to extend approximately 5 m beyond the limits of the subject site given the negligible indirect impacts anticipated beyond the development footprint.

The 'locality' for the purposes of this report is the area of land within a 10 km radius of the study area.

1.5 TOPOGRAPHY, GEOLOGY AND SOILS

The study area occupies the southeast facing slopes of Perisher Front Valley at an altitude from approximately 1735m to 1810m Australian Height Datum (AHD). The majority of the study area is gently sloping with and short steep slopes, with the steepest slopes occurring at the upper and lower ends of the study area.

The study area is underlain by Silurian granodiorite (Ecology Australia 2002) as evidenced by the granite outcrops throughout. Soils are alpine humus soils, comprising sandy clay loams.

There are no defined watercourses within the study area however minor drainage lines occur to the immediate south of the study area on the northern side of the Escapade ski run, and to the immediate east of the study area. These drainage lines discharge into Perisher Creek approximately 150 m to the east of the study area.

1.6 DISTURBANCES

Most of the study area has already been disturbed in association with the existing resort infrastructure including the existing access tracks, ski runs, snowmaking, lifts and associated infrastructure. These disturbed areas are generally dominated by introduced grasses such as Red Fescue *Festuca rubra*, Chewings Fescue *Festuca nigrescens* and Browntop Bent *Agrostis capillaris*, and a range of exotic herbs including Sheep Sorrel *Acetosella vulgaris*, White Clover *Trifolium repens*, Dandelion *Taraxacum officinale*, Yarrow *Achillea millefolium* and Flatweed *Hypochaeris radicata*. The areas of native vegetation to be affected by the proposal are generally less disturbed with scattered occurrences of cosmopolitan exotic grasses and herbs.

1.7 PLANNING AND LEGISLATION

It is not the intention of this assessment to document all the legislation and planning instruments that are relevant to the proposal. A detailed analysis of the statutory environment is provided in the Statement of Environmental Effects for the proposal (Dabyne Planning 2012). However, the legislation and planning instruments which are relevant to the assessment of potential impacts on terrestrial flora and fauna are discussed in brief below. The Determining Authority for the proposal is the NSW Department of Planning and Infrastructure (DOPI).

Environment Protection Biodiversity Conservation Act 1999

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides a national scheme for protecting the environment and conserving biodiversity values. Approval from the Commonwealth Minister is required under the EPBC Act if the action will, or is likely to, have a significant impact on matters considered to be of national environmental significance (NES matters). NES matters relevant to the proposal include species and ecological communities that are listed under the Act. The EPBC Act does not define significant impact but identifies matters that are necessary to take into consideration.

Environmental Planning and Assessment Act 1979

The NSW *Environmental Planning and Assessment Act 1979* (EPA Act) is the principle planning legislation for NSW, providing a framework for the overall environmental planning and assessment of development proposals. This proposal is to be assessed under Part 4 of the EPA Act. The EPA Act places a duty on the determining authority to adequately address a range of environmental matters including the maintenance of biodiversity and the likely impact to threatened species, populations and communities. Assessment of threatened species, populations and community considerations usually occurs under Section 5A of the EPA Act relating to 7-Part Tests of Significance.

Threatened Species Conservation Act 1995

The NSW *Threatened Species Conservation Act 1995* (TSC Act) aims to protect and encourage the recovery of threatened species, populations and communities listed under the Act. Obligations on determining authorities include the consideration of threatened species, populations, endangered communities and recovery plans in fulfilling their statutory responsibilities in the development approvals process under the EPA Act. The Act requires the completion of a Species Impact Statement where a significant impact is considered likely on a threatened species, population or community listed under the Act.

Fisheries Management Act 1994

The NSW *Fisheries Management Act 1994* (FM Act) sets out to conserve fish stocks and key fish habitats, threatened species, populations and ecological communities of fish and marine vegetation and biological diversity. Obligations on determining authorities include the consideration of threatened species, populations, endangered communities and recovery plans listed under the FM Act in fulfilling their statutory responsibilities in the development approvals process under the EPA Act.

State Environmental Planning Policy (Kosciuszko National Park—Alpine Resorts) 2007

State Environmental Planning Policy (Kosciuszko National Park—Alpine Resorts) 2007 identified the Minister for Planning as the determining authority for development within the NSW Alpine Resorts. SEPP (Kosciuszko National Park—Alpine Resorts) 2007 requires the Minister for Planning to refer for comment any development application in the Alpine Resorts to the Director General of the NSW Office of Environment and Heritage (OEH).

2 Methods

2.1 DATABASE AND LITERATURE REVIEW

A review of relevant information was undertaken prior to the commencement of field studies. Databases and other sources were searched to generate a list of species that have been recorded within the locality and included:

- The available literature including relevant flora and fauna studies, topographic maps, aerial photographs and draft plans pertaining to the proposal
- The Atlas of NSW Wildlife for threatened flora and threatened fauna species – last searched on 23 November 2012; and
- The EPBC Act Protected Matters Search Tool for matters of national environmental significance – last searched on the 23 November 2012

Data gathered during all field studies and the literature review was analysed and interpreted in accordance with the provisions of legislation and planning controls pertaining to flora and fauna. Threatened and migratory species, threatened populations and Endangered Ecological Communities (EECs) that have been recorded, or have the potential to occur within the locality have been assessed for their likelihood to inhabit the study area (**Appendix A**). All listed species and EECs considered likely to occur within the subject site, or to be affected by the proposal, require consideration pursuant to Section 5A of the (EPA Act) and under the EPBC Act.

2.2 FIELD SURVEYS

ELA conducted flora and fauna surveys within the study area and surrounds on 14 November 2012.

2.2.1 Flora Surveys

A detailed botanical survey was conducted in the study area by ELA Senior Ecologist Ryan Smithers on 14 November 2012.

Community Identification and Floristic Audit

The Random Meander technique documented by Cropper (1993) was used across the study area in general, to document the flora species present, including those of conservation significance, and the location and extent of vegetation communities including any EEC encountered. All flora species encountered along the length of the random meander traverse were identified to the genus and species level where practicable.

The vegetation was surveyed at all levels present: the canopy (trees), understorey (shrubs), and groundcover plants (plants less than one metre in height). A description of the vegetation was then prepared with general observations made of the wider area. The vegetation was assessed according to the floristic and structural classifications of Ecology Australia (2002). General observations were made of the wider area.

Targeted Searches

Specific searches for plant species of conservation significance known from the locality were conducted using the Random Meander method targeting areas of potential or suitable habitat.

Limitations

The floristic audit undertaken recorded as many species as possible and provides a comprehensive but not definitive species list. More species would probably be recorded during a longer survey over more seasons and years. Nevertheless, the techniques used in this investigation are considered adequate to gather the data necessary to identify potential ecological constraints to the proposed development.

Flora Survey Effort

The flora survey effort employed a total of four person-hours as documented in Table 1.

Table 1: Flora survey effort employed over the study area.

DATE	METHOD	EFFORT	TARGET SPECIES
14 November 2012	Random meander and targeted search	4 person-hours	All flora species
TOTAL FLORA SURVEY EFFORT		4 PERSON HOURS	

2.2.2 Fauna Surveys

Field investigations for fauna were conducted by ELA in the study area and immediate surrounds concurrently with the flora surveys on 14 November 2012.

Diurnal Surveys

Specific searches were conducted for habitats or resources of relevance for those threatened fauna species known from subalpine areas, and which might be anticipated to occur given the vegetation communities and habitats present. In particular targeted searches were undertaken for evidence of the Broad-toothed Rat *Mastacomys fuscus*, Alpine She-oak Skink *Cyclodomorphus praealtus*, Guthega Skink *Loipholis guthega*, and Flame Robin *Petroica phoenicea*.

Opportunistic fauna surveys involved observations of animal activity, habitat surveys and searches for indirect evidence of fauna. Diurnal mammal searches were conducted in areas of potential habitat across the study area, with emphasis on searches for scats, tracks, burrows, diggings and scratchings.

Opportunistic records of all fauna species observed were maintained and an inventory compiled of all species recorded during the current investigations.

Habitat Analysis

A description of the fauna habitats in the study area was prepared because the type of habitat in an area influences which animals occur there, as well as diversity and abundance. This habitat assessment also has an important role in predicting threatened fauna likely to occur in an area. The information collected usually includes the type of vegetation present, the presence/absence of rock habitats, tree hollows, ponds, streams, wetlands, foraging substrates and other features likely to attract threatened fauna. The study area was traversed to identify habitat components, which were recorded and described.

Limitations

The results of fauna surveys can be optimised by conducting investigations over a long period to compensate for the effect of unfavourable weather, seasonal changes and climatic variation. In general, the longer the survey the more species will be detected. Results can also be improved by

using a wide range of techniques, since some species are more likely to be detected by a particular method.

However, surveys are subject to constraints that determine the amount of time allocated, the methods used and the timing of the work. Thus, the results should be viewed in the light of these limitations. The fauna detected during the survey period are a guide to the native fauna present, but are by no means a definitive list of the species occurring in the study area. Nevertheless, the techniques used in this investigation are considered adequate to gather the data necessary to identify potential ecological constraints to the proposal.

Survey Conditions

Survey conditions during the diurnal fauna survey and habitat analysis are detailed in **Table 2**.

Table 2: Fauna survey conditions

DATE	SURVEY TYPE	TEMPERATURE	WIND	CLOUD	RAIN
14 November 2012	Diurnal	10 – 14 °C	Light WSW	2/8	Nil

3 Results

3.1 DATABASE AND LITERATURE REVIEW

Appendix A provides a list of threatened species that have been recorded from database searches within a 10 km radius of the study area with the status of each species listed as endangered (E) or Vulnerable (V). The potential for each of these species to occur in the study area and the importance of the habitats are also discussed in **Appendix A**, and a decision made regarding the need for further assessment in this report.

3.2 FLORA

The vegetation within the study area has been typed with reference to the classifications of Ecology Australia (2002). Three vegetation communities have been identified within the study area and immediate surrounds; Tall Alpine Heath with Eucalypts, Upland Bog and Exotic Grassland, as shown in **Figure 2**. These vegetation communities extend well beyond the study area, and with the exception of Exotic Grassland, are extensive in the locality.

Tall Alpine Heath with Eucalypts is the predominant vegetation community within and immediately adjoining the study area. Areas of Tall Alpine Heath without Eucalypts occur predominately to the south of the study area, although the absence of eucalypts in some areas is probably an artefact of historic tree removal. Small patches of Upland Bog occur on the margins of the study area along watercourses. More extensive areas of Upland Bog are present to the south of Lower Goats Gully ski run.

3.2.1 Tall Alpine Heath with Eucalypts

This community is the predominant vegetation community within the study area. The canopy is dominated by Snow Gum to a height of approximately 8 m and projective foliage cover (PFC) of approximately 30%.

The understorey is dominated by Common Shaggy Pea *Oxylobium ellipticum*, *Nematolepis ovatifolius*, Alpine Mint Bush *Prostanthera cuneata*, Dusty Daisy-bush *Olearia phlogopappa*, *Olearia brevipedunculata*, and Alpine Hovea *Hovea montana* to a height of 0.5-1 m with PFC of up to approximately 50%. Other understorey species which are less common include Alpine Orites *Orites lancifolius*, Kerosene Bush *Ozothamnus hookeri*, Alpine Pepperbush *Tasmannia xerophila*, Cascade Everlasting *Ozothamnus secundiflorus*, *Pimelea axiflora* subsp. *alpina* and Alpine Grevillea *Grevillea australis*.

The groundcover includes Bog Snow Grass *Poa costiniana*, Smooth Blue Snowgrass *Poa fawcettiae*, *Geranium potentilloides* var. *potentilloides*, Bidgee Widgee *Acaena* sp., *Luzula novae-cambriae*, Ribbony Grass *Chionochloa frigida*, Gunn's Willow-herb *Epilobium gunnianum*, Australian Caraway *Oreomyrrhis eriopoda*, and in a few areas *Leptorhynchus squamatus*. In cracks and at the base of rocks Mother Shield Fern *Polystichum proliferum* and Alpine Water Fern *Blechnum penna-marina* subsp. *alpina* occur. The weeds Sheep Sorrel and Flatweed are common throughout as is Yarrow, and the exotic grasses Red Fescue, Chewings Fescue and Browntop Bent.

3.2.2 Upland Bog

Within and immediately surrounding the study area, Upland Bog is restricted to very small patches associated with watercourses and areas where drainage is impeded. The small patches of Upland Bog on the margins of the study area are characterised by the presence of Candle Heath *Richea continentis*, and other species associated with bogs such as Spreading Rope Rush *Empodisma minus*, Swamp Heath *Epacris paludosa* and Alpine Baeckea *Baeckea gunniana*. In a few areas, particularly on the margins of ski slopes species such as Kosciuszko Pineapple-grass *Astelia psychrocharis*, *Celmsia pugioniformis*, *Carex gaudichaudiana* and *Ranunculus dissectifolius* are present.

3.2.3 Exotic Grassland

This community occurs within and adjacent to the study area in association with existing access tracks, ski runs and ski lift infrastructure and is common throughout the Front Valley area. The community is characterised by an abundance of exotic grasses and herbs with patches of hardy native species, particularly on the margins. The most common species comprise the exotic grasses Red Fescue, Chewings Fescue and Browntop Bent, and a range of exotic herbs including Sheep Sorrel, White Clover, Dandelion, and Flatweed.

3.2.4 Flora Species

A total of 44 flora species were recorded within the study area including 35 native species and nine introduced species. This species list appears in **Appendix B**. One threatened flora species, the Anemone Buttercup *Ranunculus anemoneus* was detected at several locations within the study area and immediate surrounds.



Photo 9: A small patch of Candle Heath in a wet area on the margins of the remnant vegetation within the study area. The relocated snow gun fan will be located in the Tall Alpine Heath in the adjacent dry area.

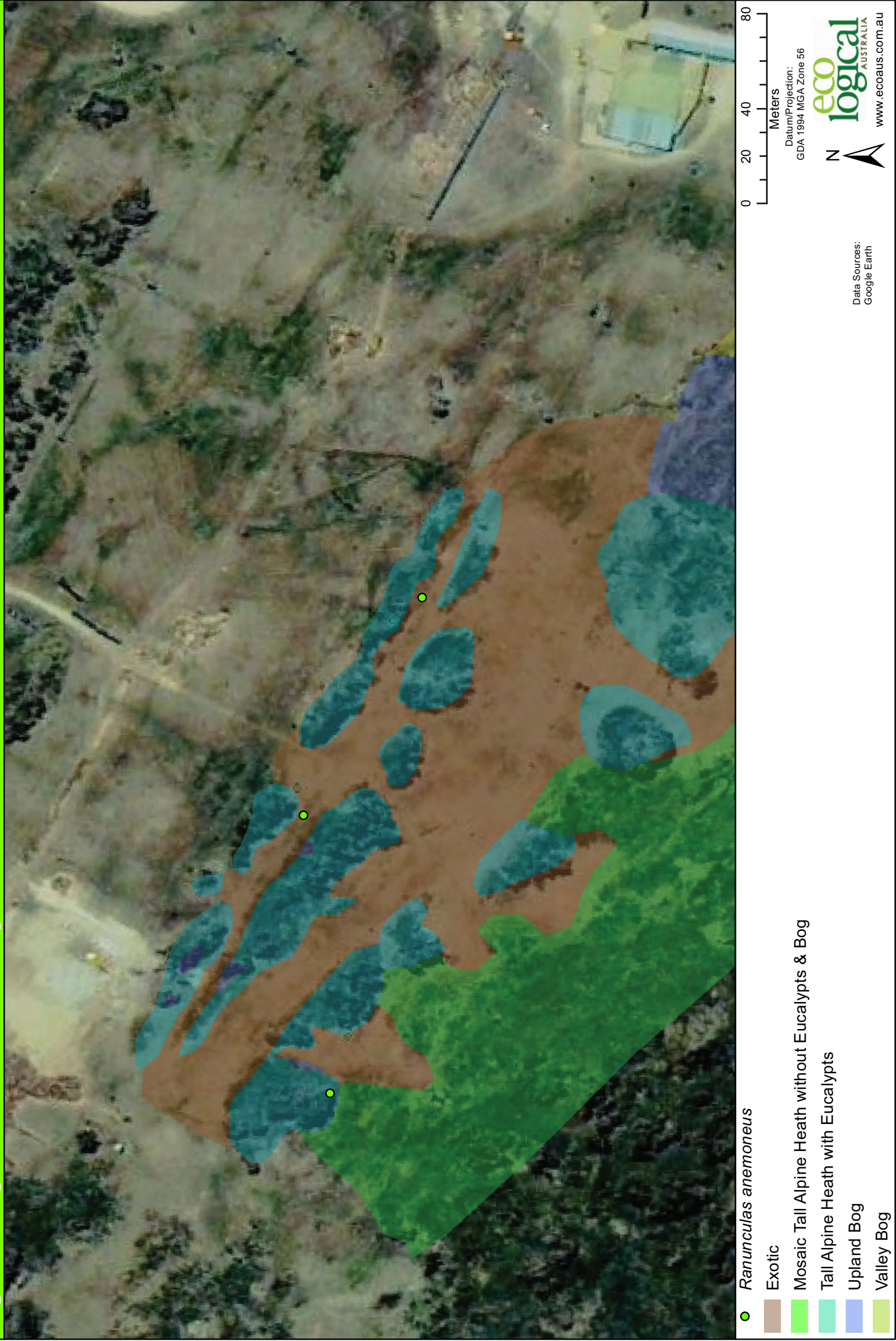


Photo 10: Typical narrow band of Upland Bog in the drainage line to the immediate south of the study area. The proposal has been designed to avoid these small areas of Upland Bog



Photo 11: 34 Anemone Buttercup plants occur in a disturbed wet area on the margins of the Sturt T-bar. These and other occurrences of Anemone Buttercup within and nearby the study area will be protected during the implementation of the proposal.

Figure 2: Vegetation within the study area and immediate surrounds



3.3 FAUNA

3.3.1 Fauna Habitats

The study area contains a limited range of fauna habitats given its small size. However, despite its small size and the often disturbed nature of the fauna habitats within and adjoining the study area, the study area is surrounded by extensive areas of remnant native vegetation and as such, a relatively diverse range of native fauna are likely to occur there from time to time.

The Tall Alpine Heath which dominates the study area, and to a lesser extent the small patches of Upland Bog provide habitat value for native birds, terrestrial mammals, microchiropteran bats, reptiles, amphibians and invertebrates.

In particular the study area and immediate surrounds provide known habitat for the Broad-toothed Rat *Mastacomys fuscus*. The species' characteristic scats were observed throughout the study area and surrounds. The mosaic of wet areas and surrounding heaths in the Front Valley and Centre Valley areas provide excellent habitat for the species, which is likely to be relatively widespread in the Perisher Resort area. Other common small mammal species such as the Dusky Antechinus *Antechinus swainsonii*, Agile Antechinus *Antechinus agilis* and Southern Bush Rat *Rattus fuscipes* are also likely to occur within the study area.

A range of microchiropteran bat species may forage within the study area on occasion however given the absence of hollow-bearing trees, they would not roost there.

The study area provides a small amount of habitat for a range of reptiles associated with rock outcrops and alpine heaths including the Southern Water Skink *Eulamprus tympanum* and White-lipped Snake *Drysdalia coronoides*, both of which were observed during the survey period.

There are limited habitats for amphibians given the small size and general absence of any larger pools or slow flowing water, however the Common Eastern Froglet *Crinia signifera* was heard calling during the survey period. This is likely to be the only amphibian that would occur within the study area.

The study area provides some potential foraging and nesting habitat for a range of birds associated with alpine and subalpine areas including the threatened species the Gang-gang Cockatoo *Callocephalon fimbriatum* and Flame Robin *Petroica phoenicea*. However the study area does not support any hollow-bearing trees, so there is no potential roosting or breeding habitat for the Gang-gang Cockatoo. A corvid nest was observed in one of the trees to be removed, and likely belongs to an Australian Magpie *Cracticus tibicen* or Little Raven *Corvus mellori*.

Habitat connectivity to adjacent areas of native vegetation is currently disrupted to the north by the extensive area of exotic grassland on Front Valley, and to a lesser extent to the south by the minor disruptions associated with the existing access track and ski slope network. However, the abundance of small mammal tracks and scats in the remnant patches of vegetation within the study area suggests that these disruptions do not prevent movements of small mammals between the habitats within the study area and those to the south. The proposed offset heath plantings will enhance this connectivity, particularly for species to which even small areas of grassland may pose a barrier, such as some species of reptile.



Photo 12: Evidence of small mammals occurs throughout the study area.



Photo 13: A nest in one of the trees within the study area likely belongs to either the Australian Magpie or Little Raven.

3.3.2 Fauna Species

Targeted surveys during the survey period resulted in eleven native and one exotic fauna species being detected within or immediately surrounding the study area, including two mammals, seven birds, two reptiles and one amphibian, as listed in Table 3. As previously mentioned, evidence of the threatened Broad-toothed Rat was recorded in and adjacent to the study area. Faecal pellets were observed in places although no nests were located in the study area or immediate surrounds.

Table 3: Fauna species recorded during fauna surveys (bold denotes threatened species)

CATEGORY	COMMON NAME	SCIENTIFIC NAME	DETECTION METHOD
Mammals	Broad-toothed Rat	<i>Mastacomys fuscus</i>	Scats
	Rabbit	<i>Oryctolagus cuniculus</i> *	Observed
Birds	Australian Magpie	<i>Cracticus tibicen</i>	Observed
	Brown Thornbill	<i>Acanthiza pusilla</i>	Observed
	Crimson Rosella	<i>Platycercus elegans</i>	Observed
	Fan-tailed Cuckoo	<i>Cacomantis flabelliformis</i>	Call recognition
	Little Raven	<i>Corvus mellori</i>	Observed
	Richard's Pipit	<i>Anthus novaeseelandiae</i>	Observed
	Yellow-faced Honeyeater	<i>Lichenostomus chrysops</i>	Observed
Reptiles	Southern Water-skink	<i>Eulamprus tympanum</i>	Observed
	White-lipped Snake	<i>Drysdalia coronoides</i>	Observed
Amphibians	Common Eastern Froglet	<i>Crinia signifera</i>	Call recognition

*Denotes Exotic Species

4 Impact Assessment

The proposal will result in the loss or disturbance of approximately:

- **60m²** of Tall Alpine Heath;
- The removal of **41** Snow Gum trees; and
- The total removal of two large granite outcrops and the partial removal of another.

Of the 60 m² of Tall Alpine Heath to be affected by the proposal only 24 m² will be permanently removed with the remaining 36 m² allowed to regenerate.

4.1 IMPACTS ON VEGETATION COMMUNITIES

The proposal will result in the removal or further modification of approximately 60m² of Tall Alpine Heath with Eucalypts and approximately 41 Snow Gums.

Ecology Australia (2002) estimate that there is more than 500 ha of the Tall Alpine Heath with Eucalypts vegetation community between Mount Perisher, Guthega Resort, Mount Blue Cow and Smiggins Holes. In this context the removal or disturbance of approximately 60 m² of the community (0.001 % of the extent between Mount Perisher, Guthega Resort, Mount Blue Cow and Smiggins Holes) and the removal of 41 Snow Gums is a minor and acceptable impact.

The proposal will not have any adverse impacts on areas of Upland Bog.

4.2 IMPACTS ON ENDANGERED ECOLOGICAL COMMUNITIES

The small patches of Upland Bog within the study area and immediate surrounds comprise two endangered ecological communities:

- The Montane Peatland and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions endangered ecological community (EEC) (hereafter referred to as the Montane Peatland and Swamps) which is listed on the TSC Act; and
- The Alpine Sphagnum Bogs and Associated Fens EEC (hereafter referred to as the Alpine Sphagnum Bogs and Associated Fens) which is listed on the EPBC Act.

The proposal has been designed to avoid any adverse impacts on the small patches of Upland Bog which occur on the margins of the study area and immediate surrounds. Specifically, the relocated snow making infrastructure and light poles have been positioned to avoid wet areas. There are no Snow Gums within any Upland Bog vegetation, however, the removal of trees and other activities associated with the proposal will be undertaken so as to avoid any adverse disturbances to nearby small patches of Upland Bog.

4.3 IMPACTS ON FAUNA HABITATS

Whilst the study area provides a small amount of habitat for a range of native fauna species, including threatened species such as the Broad-toothed Rat, similar habitats are widespread in adjacent areas and within the locality and will continue to be available to these species.

The impacts associated with the proposal are limited to the removal of a very small amount of native vegetation and will be concentrated in already heavily disturbed areas. Some sheltering habitat will be affected in association with the proposed removal of two rock outcrops. However, much of the fragments of these rocks will be placed in the depressions below these rocks and will provide compensatory sheltering habitat. Observations during the survey period confirmed that similar piles of fragmented rock in and surrounding the study area are being used by small mammals and reptiles species.

None of the trees to be removed for the proposal are hollow-bearing and consequently there will be no loss of this resource for hollow-dependant threatened fauna. The proposal includes a compensatory planting of 82 Snow Gums.

Under these circumstances, the impacts on sheltering habitats are considered to be minor and acceptable.

The proposal will not result in significant modifications to the hydrological environment nor will it create permanent barriers which prevent the movement and dispersal of fauna species. On the contrary, the proposal involves compensatory plantings of heath species that will enhance connectivity for fauna species between the patches of remnant native vegetation within the area, particularly for small mammals and reptiles species.

Impacts on foraging resources for fauna species will be negligible and extensive areas of similar resources occur elsewhere in adjacent vegetation.

Under these circumstances, the impacts of the proposal on fauna habitats are considered to be relatively minor and acceptable.

4.4 THREATENED SPECIES LIKELIHOOD OF OCCURRENCE

As a result of database searches and field surveys, the threatened species and communities identified in **Table 4** are known or considered likely to occur within the study area or immediate surrounds (**Appendix A**). The potential impact of the proposal on these species has been assessed (**Appendix C**) pursuant to relevant statutory assessments.

Table 4: Threatened and migratory species and ecological communities with the potential to be affected by the proposal

Scientific Name	Common Name	FM Act	TSC Act	EPBC Act	Occurrence
Flora					
<i>Ranunculus anemoneus</i>	Anemone Buttercup	—	V	—	Known
Fauna					
<i>Mastacomys fuscus</i>	Broad-toothed Rat	—	V	—	Known
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	—	V	—	Potential
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	—	V	—	Potential
<i>Petroica phoenicea</i>	Flame Robin	—	V	—	Potential
Threatened Ecological Communities					
Montane Peatlands and Swamps		—	E	—	Known
Alpine Sphagnum Bogs and Associated Fens		—	—	E	Known

V = Vulnerable, E=Endangered

4.5 CONCLUSION OF SEVEN-PART TEST

An assessment of significance under Section 5A of the EPA Act was undertaken on those species and threatened communities known within the study area and immediate surrounds or with potential to occur there (**Table 4**). The outcome of this assessment was that it is unlikely that the development would significantly impact on those threatened species and endangered ecological communities assessed (**Appendix C**).

A Species Impact Statement is not required for the proposal.

Recommendations have been provided in **Section 5** to ameliorate the potential impacts of the proposal.

4.6 CONCLUSION OF EPBC ASSESSMENT

An assessment of significance under the EPBC Act was undertaken on threatened species known within the study area and immediate surrounds or with potential to occur there (**Table 4**).

The outcome of this assessment was that it is highly unlikely that the development would significantly impact on those threatened species assessed (**Appendix C**). A referral to the Commonwealth under the EPBC Act is not considered necessary.

Recommendations have been provided in Section 5 to ameliorate the potential impacts of the proposal.

5 Recommendations

To further ameliorate the potential impacts of the proposal, the following recommendations for impact mitigation and amelioration are suggested as modifications to the proposal and/or as conditions of consent.

5.1 VEGETATION AND HABITAT MANAGEMENT

- All disturbance should be kept to the minimum required to achieve the proposal
- All machinery to be used during the construction phase should be limited to the existing disturbed areas and access tracks and the proposed footprint of the proposal (as identified in **Figure 1**) as far as is possible, and any wet areas should be avoided
- The locations of the Anemone Buttercup individuals within the study area, as shown in **Figure 2**, should be marked with temporary fencing and protected from any disturbance during the implementation of the proposal
- Native vegetation adjacent to the study area should be protected during the construction phase of the proposal. Construction materials, machinery or other substances should not be stored in any undisturbed areas of native vegetation to avoid physical damage to the vegetation there
- The proposed footings and trenching should be constructed and implemented in accordance with best practice design standards to ensure that there are no adverse modifications to the hydrological environment that may impact on surrounding vegetation and associated habitats
- The fragments of blasted rock are to be piled in the depressions below the affected rock to supplementary fauna habitats. The rocks are to be piled in areas of exotic vegetation so as to avoid adverse impacts on remnant heath

5.2 REHABILITATION

- Appropriate sediment control measures should be implemented prior to any construction work for the proposal and retained in place until exposed areas of soil or vegetation are stabilised and/or revegetated
- Topsoil removed during the construction phase should be stockpiled on site and used in any rehabilitation works
- Any areas of native groundcover to be removed will be subject to careful sod removal and replacement techniques where its use in post-construction rehabilitation is practical
- Only weed free straw or natural thatch/litter should be used in sediment control activities
- Shrubs removed in association with the proposal should be mulched and used in the stabilization of cleared areas
- Rehabilitation activities should be consistent with the resort areas rehabilitation guidelines (NGH Environmental 2007)

6 Conclusion

This report describes the biological environment and assesses the potential effects on threatened and migratory species, endangered populations and ecological communities of the proposal to widening the existing Slopestyle course, within the Front Valley of Perisher Ski Resort.

The study area was found to support three vegetation communities, Tall Alpine Heath with Eucalypts, Upland Bog and Exotic Grassland. These vegetation communities extend well beyond the study area, and with the exception of the Exotic Grassland, are extensive in the locality.

The small areas of Upland Bog occur within the study area and immediate surrounds comprise the *Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps* EEC, which is listed on the TSC Act and the *Alpine Sphagnum Bogs and Associated Fens* EEC which is listed on the EPBC Act. The proposal has been designed to avoid any adverse impacts on these communities.

Forty-four plant species were recorded within the study area including 35 native species and nine introduced species. One threatened flora species, the Anemone Buttercup *Ranunculus anemoneus* was detected at several locations within the study area and immediate surrounds. Safeguards have been incorporated into the proposal to ensure that the Anemone Buttercup individuals within the study area are protected during the implementation of the proposal.

Whilst the study area provides known and potential habitat for a number of threatened fauna species including the Broad-toothed Rat, Eastern False Pipistrelle, Gang-gang Cockatoo, and Flame Robin, it does not provide any critical habitats, nor any other important resources for any threatened fauna species, that are not available extensively immediately beyond the study area and in the locality generally. Whilst the loss or modification of a small amount of known or potential habitat for threatened fauna species is an adverse impact, it is considered acceptable in the context of extensive areas of suitable habitat that will continue to be available to these species in contiguous areas.

Following the application of the seven factors from Section 5A of the *NSW Environmental Planning and Assessment Act 1979*, as required by the *NSW Threatened Species Conservation Act 1995* and the *NSW Fisheries Management Act 1994*, in accordance with relevant assessment guidelines, it is concluded that the proposal is unlikely to have a significant effect on threatened species, endangered populations, ecological communities, or their habitats.

A Species Impact Statement is not required for the proposal.

Following consideration of the administrative guidelines for determining significance under the *Commonwealth Environment Protection & Biodiversity Conservation Act 1999*, it is concluded that the proposal is unlikely to have a significant impact on matters of National Environmental Significance or Commonwealth land, and a referral to the Commonwealth Environment Minister is not necessary.

Notwithstanding the relatively minor impacts on vegetation and fauna habitats associated with the proposal, the proposal includes the offsetting of these impacts through the rehabilitation of 300 m² of Tall Alpine Heath in degraded areas on the margins of the study area and the planting of 82 Snow Gums.

The impact mitigation and amelioration measures described in Section 5 above are also recommended to be incorporated into the proposal.

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Personal Communications

Dr Dave Hunter, 2012. NSW Office of Environment and Heritage.