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APPENDIX B

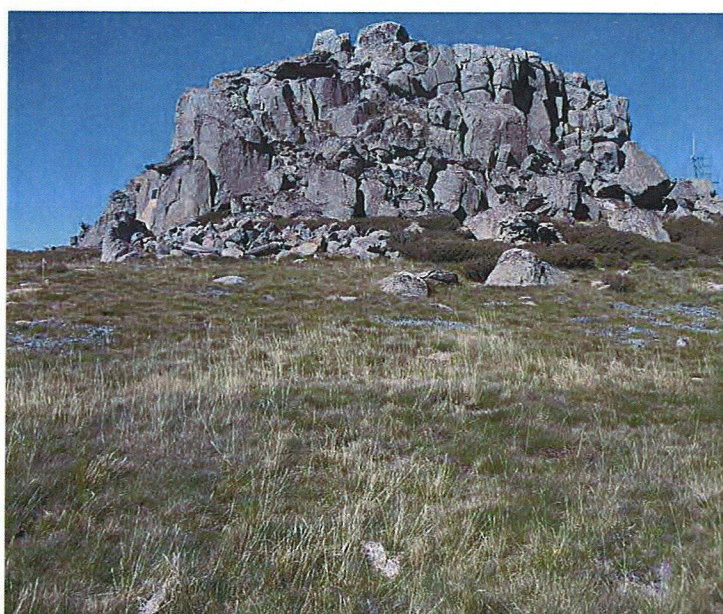
FAUNA AND FLORA ASSESSMENT

FLORA AND FAUNA ASSESSMENT

Proposed Communications Facility, Eagles Nest

Prepared for
Thredbo Ski Resort

12 November 2010



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EXECUTIVE SUMMARY

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 development application for a new external communications hut at Eagles Nest, Thredbo Ski Resort.

The existing environment was examined in detail from data gathered during fieldwork in April 2010.

The study area was found to predominately support Disturbed Vegetation, although there are areas of Tall Alpine Herbfield and Tall Alpine Heath without Eucalypts on the study area margins. The proposal will result in the removal of approximately 40 m² of Tall Alpine Herbfield.

Forty-three flora species were recorded during the survey period comprising 33 native species and 10 introduced species. No threatened flora species were recorded within the study area and none are expected to occur there.

Six faunal species were detected within or immediately surrounding the study area during the survey period. They comprised two exotic mammals, three birds, and one amphibian. No threatened fauna species were recorded within the study area or immediate surrounds during the survey period and none are expected to occur there regularly or be dependent upon the habitats within the study area. The potential threatened fauna habitats within the study area are considered to be insignificant in the context of the extent of similar and superior resources in the locality. No important habitat resources such as hollow-bearing trees or substantial rock or water habitats will be removed or otherwise adversely affected.

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.

A number of impact mitigation and amelioration strategies have been recommended for the proposal and these are set out in section 6.2.

1. INTRODUCTION

1.1 Background

This report has been prepared by Eco Logical Australia (ELA) at the request of Dabyne Planning Pty Ltd on behalf of Thredbo Ski Resort, to accompany a development application for a new external communications hut at Eagles Nest, Thredbo Ski Resort. This report is the outcome of the investigations undertaken by ELA in April 2010.

1.2 The Proposal

1.2.1 Description

The proposal involves the construction of an approximately 14.5 m by 8 m communications hut approximately 40 m to the northwest of the existing Eagles Nest building. The hut will enable the relocation of the communications equipment from the Eagles Nest building and will include an area for Ski Patrol storage and toilet. A trench will be excavated between the proposed hut and the Eagles Nest building for the communications conduit, power and a sewer line. The proposal includes the removal of the existing ski slope storage hut which is located within the footprint of the proposed communications hut.

The location of the proposal and proposal details are shown in Figures 1 and 2 (Appendix A).

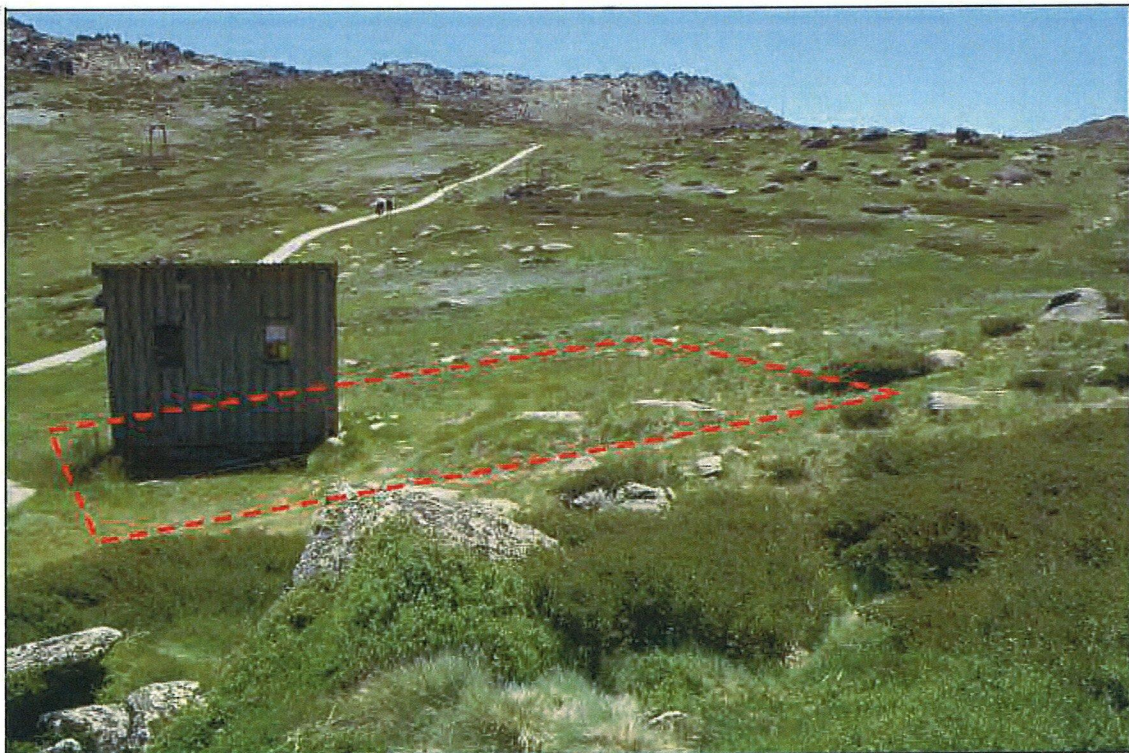


Photo 1: The footprint of the proposed communications hut.

All construction activities involved with the proposal will be undertaken in an ecologically sensitive manner. The new hut will largely be pre-fabricated offsite. All activities associated with the proposal such as trenching and the hut construction will be undertaken from within the footprint or adjacent disturbed areas so as to restrict disturbances to vegetation to the hut footprint or existing disturbed areas.

Other measures which mitigate the potential impacts of the proposal are identified in subsequent sections of the report and summarised in Section 6.2.

1.2.2 Direct and Indirect Impacts

Direct impacts on flora and fauna arising from the proposal will comprise:

- Removal of approximately 40 m² of Tall Alpine Herbfield vegetation in association with the construction of the proposed hut; and
- The removal and further disturbance of approximately 90 m² of heavily disturbed and weedy vegetation in association with the construction of the proposed hut and excavation of the services trench between the hut and the Eagles Nest building.

Indirect impacts on flora and fauna arising from the proposal are not expected to extend significantly beyond the extent of the direct impacts given the small scale of the direct impacts proposed.

1.3 The Subject Site, Study Area and Locality

The subject site for the purposes of this report is those areas directly affected by the proposed hut construction and associated activities as described above.

Given the negligible indirect impacts expected the study area for the purposes of this report is the same as the subject site, with the exception of the area surrounding the proposed hut where indirect impacts associated with its use and maintenance are expected to extend for up to two metres. The approximate extent of the study area is shown in Figure 3 (Appendix A).

The locality for the purposes of this report is defined as the land within an area of 10 km x 10 km centred on the study area.



Photo 2: Disturbed area where the services trench will be located between the communications hut and the Eagles Nest building.



Photo 3: Disturbed area where the services trench will be located between the communications hut and the Eagles Nest building.

1.4 Aim and Objectives

The aim of this report was to assess the impact of the proposal on the flora, fauna and habitats of the study area, particularly species and communities of conservation significance.

The objectives of this investigation were:

- a) to identify and describe the flora species and vegetation communities present in the study area and their conservation significance;
- b) to identify and describe the fauna habitats present in the study area and their condition;
- c) to identify the fauna species which are present or likely to occur in the study area, and their conservation significance;
- d) to assess the impacts of the proposal on vegetation, fauna, habitats, and other environmental features as necessary;
- e) to determine whether there is likely to be a significant effect on threatened species, endangered populations or endangered ecological communities, or their habitats, pursuant to Section 5A of the *NSW Environmental Planning and Assessment Act 1979* as required by the *NSW Threatened Species Conservation Act 1995*;
- f) to determine whether there is likely to be a significant effect on threatened species, endangered populations or endangered ecological communities, or their habitats, pursuant to Section 5A of the *NSW Environmental Planning and Assessment Act 1979* as required by the *NSW Fisheries Management Act 1994*;
- g) to determine whether the proposal involves an action that has, will have, or is likely to have, a significant impact on a matter of national environmental significance under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*; and
- h) 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.

2. METHODOLOGY

2.1 General

Flora and fauna surveys of the study area were undertaken on 1 April 2010 by ELA.

A review of relevant information was undertaken prior to the commencement of field studies, which involved:

- a) reviewing available literature including relevant flora and fauna studies, legislation, environmental planning instruments, topographic maps, aerial photographs and draft plans pertaining to the proposal;
- b) searching the Atlas of NSW Wildlife for threatened flora and threatened fauna species recorded in the locality; and
- c) searching the Commonwealth Environment Protection & Biodiversity Conservation Act Protected Matters Search Tool for matters of national environmental significance recorded in the locality.

The data gathered during the field studies and from the review of literature were analysed and interpreted in accordance with the provisions of legislation and planning controls pertaining to flora and fauna.

2.2 Flora Survey Methods

A detailed botanical survey was conducted in the study area by ELA on 1 April 2010.

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 and the location and extent of vegetation communities.

The vegetation was surveyed at all levels present: the canopy (trees), understorey (shrubs), and groundcover plants (plants less than one metre in height). A general description of the vegetation was then prepared. This technique was used to classify the vegetation communities. The native vegetation was assessed according to the floristic and structural classifications of Ecology Australia (2002) and McDougall and Walsh (2007). The boundaries of vegetation communities in the study area were marked onto a plan.

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. Targeted searches concentrated on Shining Cudweed *Argyrotegium nitidulum*, Archer's Carex *Carex archeri*, *Rytidosperma vickeryae*, Feldmark Grass *Rytidosperma pumilum*, Mountain Speedwell *Derwentia nivea*, Austral Pilwort *Pilularia novae-hollandiae*, Alpine Holy Grass *Hierochloe submutica*, Hill Buttercup *Ranunculus clivicola*, Rare Buttercup *Ranunculus productus*, and Anemone Buttercup *Ranunculus anemoneus*.

Limitations

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

Nomenclature

Most of the plant species names in this report are the current names published in the Flora of NSW (Harden 1990-1993). The taxonomic names have been supplemented with common names obtained from various sources. The scientific and conservation significance of individual plant species was established with reference to Briggs and Leigh (1996) and the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* in the national context, and to the *NSW Threatened Species Conservation Act 1995* in the state context.

Flora Survey Effort

The flora survey effort employed a total of 2.5 person-hours as documented in Table 1.

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

DATE	METHOD	EFFORT	TARGET SPECIES
1 April 2010	Random Meander	2.5 person-hours	All flora species
TOTAL FLORA SURVEY EFFORT		2.5 person-hours	

2.3 Fauna Survey Methods

Field investigations for fauna were conducted in the study area and in the locality by ELA on 1 April 2010.

Opportunistic Diurnal Surveys

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.

Specific searches were conducted for habitats or resources of relevance for those threatened fauna species known from the general region, or species which might be anticipated to occur given the vegetation communities and habitats present. Opportunistic records of all fauna species observed were maintained throughout the survey period, and an inventory was 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 outcrops, tree hollows, dams, 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.

Nomenclature

The nomenclature in this report is based on the Mammals of Australia (Strahan 1995), and Australian Bats (Churchill 1998), The Taxonomy and Species of Birds of Australia and its Territories (Christidis & Boles 1994) and Reptiles and Amphibians of Australia (Cogger 1996).

Survey Effort

The fauna survey effort employed a total of 2.5 person-hours as documented in Table 2.

Table 2: Fauna survey effort employed over the study area.

DATE	METHOD	EFFORT	TARGET SPECIES
1 April 2010	Diurnal habitat search and general fauna survey	2.5 person-hours	All species
TOTAL FAUNA SURVEY EFFORT		2.5 PERSON HOURS	

3. THE EXISTING ENVIRONMENT

3.1 Disturbances

The bulk of the study area comprises heavily disturbed and predominately exotic vegetation. The existing buildings and management trails and areas immediately adjacent have been heavily disturbed. These disturbed areas are generally dominated by exotic grasses and herbs such as Red Fescue *Festuca rubra*, Browntop Bent *Agrostis capillaries*, Timothy Grass *Phleum pratense*, Cocksfoot *Dactylis glomerata*, Sheep Sorrel *Acetosella vulgaris*, White Clover *Trifolium repens*, Red Clover *Trifolium pratense*, Dandelion *Taraxacum officinale*, and Yarrow *Achillea millefolium*. The northern and north-western margins of the study area are less disturbed and continue to support predominately native vegetation.

3.2 Flora

The vegetation within the study area has been typed with reference to the classifications of Ecology Australia (2002) and McDougall and Walsh (2007). The bulk of the study area supports Disturbed Vegetation, however the study area does include approximately 40 m² of Tall Alpine Herbfield (Figure 3 Appendix A). Areas adjacent to the study area support Upland Bog and Tall Alpine Heath without Eucalypts, as shown in Figure 3.

3.2.1 Tall Alpine Herbfield

This community occurs in the north-western parts of the study area and beyond. It is mapped by Ecology Australia (2002) as Snowpatch but more closely correlates with the *Poa fawcettiae* – *Euphrasia collina* Grassland (community 22) of McDougall and Walsh (2007) which fits with the Tall Alpine Herbfield vegetation class. It is the most common community in the saddle to the west of the Eagles Nest with the patch contiguous within the study area being estimated as 4 ha in size Ecology Australia (2002).

It comprises a grassland – herbfield dominated by Soft Snow Grass *Poa hiemata* and Smooth-blue Snow-grass *Poa fawcettiae*, and to a lesser extent Herbfield *Celmisia costiniana* Australian Carraway *Oreomyrrhis eriopoda*, Bidgee Widgee *Acaena* sp. 2, Carpet Heath *Pentachondra pumila*, Sticky Fleabane *Erigeron nitidus*, Feldark Woodrush *Luzula australiasca* subsp. *dura*, Purple Violet *Viola betonicifolia*, Scaly Buttons *Leptorhynchos squamatus* and a Billy-buttons *Craspedia* sp.

3.2.2 Tall Alpine Heath without Eucalypts

This community occurs on the margins of the study area but is more extensive around the base and to the east of the Eagles Nest rock outcrop. It is also present as scattered patches of vegetation on top of the Eagles Nest rock outcrop.



Photo 4: Disturbed area of Tall Alpine Herbfield that will be removed in association with the proposal.



Photo 5: The much less disturbed Tall Alpine Herbfield adjacent to the study area.

It is dominated by Common Shaggy Pea *Oxylobium ellipticum*, Alpine Grevillea *Grevillea australis*, Dusty Daisy-bush *Olearia phlogopappa* var. *supendra*, *Nematolepis ovatifolius*, and Alpine Baeckea *Baeckea gunniana*.

The diverse and dense groundcover includes a diverse range of native shrubs, herbs, grasses, and sedges the most common of which include Bog Snow Grass *Poa costiniana*, Soft Snow Grass, Bog Billy-buttons *Craspedia lamicola*, Bidgee Widgee *Acaena* sp., Dryland Sedge *Carex hebes* and Mountain Woodruff *Asperula gunnii*.

3.2.3 Upland Bog

This community does not occur in the immediate vicinity of the study area, but occurs approximately 50 m to the west. It comprises a patchy low layer of Candle Heath *Richea contentis* above a dense groundcover dominated by grasses, sedges and forbs such as Spreading Rope Rush *Empodisma minus*, *Celmisia* spp., and Kosciuszko Aniseed *Ginidia*.

3.2.4 Disturbed Vegetation

This community dominates the study area. The community is characterised by an abundance of exotic grasses and herbs with a few hardy native species. The most common species comprise the exotic grasses Red Fescue, Browntop Bent, Timothy Grass, and Cocksfoot with a range of exotic herbs the most common of which is Sheep Sorrel, but also including species such as White Clover, Red Clover, Dandelion and Yarrow.

3.2.5 Flora Species

A total of 43 flora species were recorded during the survey period within the study area or immediate surrounds comprising 33 native species and ten introduced species, and these are listed in Table 3.

Table 3: Plant species recorded in the study area (*introduced species).

SCIENTIFIC NAME	COMMON NAME
<i>Acaena</i> sp. 2	Bidgee Widgee
<i>Acetosella vulgaris</i> *	Sheep Sorrel
<i>Achillea millefolium</i> *	Yarrow
<i>Agrostis capillaries</i> *	Browntop Bent
<i>Asperula gunnii</i>	Mountain Woodruff
<i>Australopyrum velutinum</i>	Mountain Wheat-grass
<i>Baeckea gunniana</i>	Alpine Baeckea
<i>Brachyscome obovata</i>	
<i>Carex hebes</i>	Dryland Sedge
<i>Celmisia costiniana</i>	Herbfield Celmisia

<i>Craspedia lamicola</i>	Bog Billy-buttons
<i>Dactylis glomerata*</i>	Cocksfoot
<i>Deyeuxia</i> sp.	A Bent Grass
<i>Epilobium gunnianum</i>	Gunn's Willow-herb
<i>Erigeron nitidus</i>	Sticky Fleabane
<i>Euchiton</i> sp. <i>argentifolius?</i>	Silver Cudweed
<i>Ewartia nubigena</i>	Silver Ewartia
<i>Festuca rubra*</i>	Red Fescue
<i>Grevillea australis</i>	Alpine Grevillea
<i>Hypochaeris radicata*</i>	Flatweed
<i>Leptorhynchus squamatus</i>	Scaly Buttons
<i>Luzula australiasca</i> subsp. <i>dura</i>	Feldark Woodrush
<i>Microseris</i> sp.	Murnon
<i>Nematolepis ovatifolius</i>	
<i>Olearia phlogopappa</i> var. <i>subrepandra</i>	Dusty Daisy-bush
<i>Oreomyrrhis eriopoda</i>	Australian Carraway
<i>Oxylobium ellipticum</i>	Shaggy Pea
<i>Ozothamnus secundiflorus</i>	Cascade Everlasting
<i>Pentachondra pumila</i>	Carpet Heath
<i>Phleum pratense*</i>	Timothy Grass
<i>Pimelea alpina</i>	Alpine Rice-flower
<i>Poa costiniana</i>	Bog Snow Grass
<i>Poa fawcettiae</i>	Smooth Blue Snowgrass
<i>Poa hiemata</i>	Soft Snowgrass
<i>Podolepis robusta</i>	Alpine Podolepis
<i>Rytidosperma nudiflorum</i>	Alpine Wallaby-grass
<i>Scleranthus singluiflorum</i>	One-flowered Knawel
<i>Senecio gunnii</i>	Gunn's Groundsel
<i>Senecio pinnatifolius</i> var. <i>pleiocephalus</i>	Highland Groundsel
<i>Taraxacum officinale*</i>	Dandelion
<i>Trifolium pratense*</i>	Red Clover
<i>Trifolium repens*</i>	Clover
<i>Viola betonicifolia</i>	Purple Violet

3.3. Fauna

3.3.1 Fauna Habitats

The fauna habitats present in the study area are generally limited given the small size of the study area, the absence of “wet” areas, the limited shelter and the heavily disturbed nature of the bulk of the study area. The most substantial fauna habitat within the vicinity of the study area is the rock outcrop that occurs immediately adjacent to the eagles Nest building and the surrounding heath. This area provides some marginal potential habitat for the Mountain Pygmy Possum *Burramys parvus* however it does not provide any key habitats for the species (i.e. breeding or hibernating habitat) and would only be potentially used as temporary shelter during movements between boulderfields. It also provides some marginal habitat for the Broad-toothed Rat *Mastacomys fuscus*, however no evidence of the species utilising the study area was observed during the survey period and the generally open nature of the habitats within the study area limit the suitability of the study area for both species. In any case, the proposal will not result in any direct impacts on this rock outcrop or the surrounding heath.

Notwithstanding the small size and disturbed nature of the fauna habitats within the study area, the study area is surrounded by extensive areas of contiguous habitats and as such, a relatively diverse range of native fauna are likely to occur there from time to time.

The study area provides a small area of marginal potential habitat for a range of reptiles including the Mountain Log Skink *Pseudemoia entrecasteauxii*, Mountain Swamp Skink *Pseudemoia rawlinsoni* and Highlands Copperhead *Austrelaps ramsayi*.

The study area provides some potential foraging and marginal nesting habitat for a range of birds associated with alpine and subalpine areas. However the study area does not support any hollow-bearing trees, so there is not potential roosting or breeding habitat for threatened hollow-dependent birds such as the Gang-gang Cockatoo *Callocephalon fimbriatum* or threatened microchiropteran bats.

There are no water habitats within the study area and as such very limited habitats for amphibians.

Habitat connectivity to adjacent areas of native vegetation is good in all directions with only minor disruptions associated with the existing access track network and to the east, in association with the Thredbo Ski Resort facilities.

3.3.2 Fauna Species

Opportunistic observations during the survey period resulted in the detection of six faunal species with or immediately surrounding the study area. These species comprised a total of two exotic mammals, three birds, and one amphibian, and these are listed in Table 4.

Table 4: Fauna species recorded during this study (*denotes introduced species).

CATEGORY	COMMON NAME	SCIENTIFIC NAME	DETECTION METHOD
Mammals	Deer	<i>Cervidae</i>	Scat
	Rabbit	<i>Oryctolagus cuniculus*</i>	Scat
Birds	Australian Raven	<i>Corvus coronoides</i>	Observed
	Brown Goshawk	<i>Accipiter fasciatus</i>	Observed
	Richard's Pipit	<i>Anthus novaeseelandiae</i>	Observed
Amphibians	Common Eastern Froglet	<i>Crinia signifera</i>	Call recognition

4. CONSERVATION SIGNIFICANCE

The *NSW Threatened Species Conservation Act 1995 (TSC Act)* and the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* provide for the listing of threatened flora and fauna species. The *EPBC Act* also provides for the listing of migratory species. The *NSW Fisheries Management Act 1994 (FM Act)* provides for the listing of threatened fish species and marine vegetation. The *TSC Act* classifies threatened flora and fauna species as Endangered (Schedule 1, Part 1), Vulnerable (Schedule 2), or Presumed Extinct (Schedule 1, Part 4).

Records of these species may be obtained by searching the Atlas of NSW Wildlife. The *EPBC Act* classifies threatened flora and fauna species as Extinct, Critically Endangered, Endangered or Vulnerable. An indication of the threatened and migratory species likely to be encountered in a locality may be obtained by using the *EPBC Act* Protected Matters Search Tool. Both of these databases were searched on 30 March 2010 for records of threatened flora, threatened fauna and migratory species within an area of 10 km x 10 km centred on the study area.

The *FM Act* classifies threatened fish and marine vegetation as Endangered, Vulnerable, or Presumed Extinct. An indication of the species likely to be encountered in a locality may be obtained by reviewing the recommendations listed on the schedules of the *FM Act*.

4.1 Threatened Flora

The outcomes of database searches for threatened flora are shown in Table 5 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 discussed in Table 5 and a decision made regarding the need for further assessment in this report. Additional species have been added where the study area is considered to provide potential habitat.

Table 5: Threatened flora species recorded or likely to occur in the locality.

THREATENED FLORA SPECIES	STATUS		POTENTIAL TO OCCUR IN THE STUDY AREA AND IMPORTANCE OF HABITATS TO BE AFFECTED BY THE PROPOSAL	FURTHER ASSESSMENT REQUIRED IN THIS REPORT
	TSC Act	EPBC Act		
<i>Argyrotegium nitidulum</i> syn. <i>Euchiton nitidulus</i> Shining Cudweed	V	V	A mat-forming silver-leaved perennial daisy growing in tall alpine herbfield or open heathland above or close to the treeline. The species is known in NSW only from the high alpine area in the vicinity of Mt Kosciuszko and is associated with wet areas near streams and near the margins of bogs and sod tussock grassland. The species is conspicuous and was not detected within the study area despite active searches. It is considered highly unlikely that it occurs within the study area	No

THREATENED FLORA SPECIES	STATUS		POTENTIAL TO OCCUR IN THE STUDY AREA AND IMPORTANCE OF HABITATS TO BE AFFECTED BY THE PROPOSAL	FURTHER ASSESSMENT REQUIRED IN THIS REPORT
	TSC Act	EPBC Act		
<i>Carex archeri</i> Archer's Carex	E	-	This species is associated with alpine herbfield, sod tussock grassland or alpine heathland and is known in NSW only from the Club Lake and upper Thredbo River areas. The species was not detected within the study area during the survey period despite searches and is considered highly unlikely to occur there given the relatively small area of native vegetation and the "dry" nature of the habitats.	No
<i>Carex raleighii</i> Raleigh Sedge	E	-	This rhizomatous perennial herb grows to about 25 cm and has narrow, flat and wiry leaves. The species is very similar to <i>Carex hebes</i> . It is known from a confirmed record from Spencers Creek near Charlottes Pass where it occurs in a broad valley bog on a gentle slope with a patchy cover of moss. The species was not detected within the study area during the survey period despite searches and is considered highly unlikely to occur there given the relatively small area of native vegetation and the "dry" nature of the habitats.	No
<i>Pilularia novae-hollandiae</i> Austral Pillwort	E	-	This ephemeral species grows in shall swamps and waterways and is most often recorded in drying mud as this is when it is most conspicuous. It has been recorded across a wide area of South-eastern Australia including in the ACT and Khancoban. The study area does not provide suitable habitat for the species and it would not occur there.	No
<i>Rytidosperma pumilum</i> Feldmark Grass	V	-	This perennial grass is associated with feldmark and is limited to an approximately 3ha area between Mt Northcote and Mt Lee. The species was not detected within the study area during the survey period despite searches and is considered highly unlikely to occur there given the relatively small area of native vegetation and the absence of feldmark.	No
<i>Ranunculus anemoneus</i> Anemone Buttercup	V	V	This perennial forb of the alpine and upper alpine zones tends to occur in areas where snow persists late into the warm season. The species has recovered well after the relaxation of grazing pressure in the alpine areas and is now locally common in a range of communities on the main range between Mt Kosciuszko and Mt Jangungal. The species was not detected within the study area during the survey period despite searches and it is considered highly unlikely that it occurs there.	No

The study area does not provide suitable habitat for any of the threatened flora known from the locality. As such, no further consideration is given to threatened flora in this report.

4.2 Threatened Fauna

The outcomes of database searches for threatened fauna and the review of recommendations for threatened species listed on the schedules of the *FM Act* are shown in Table 6 below 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 discussed in Table 6 and a decision made regarding the need for further assessment in this report. Additional species that may inhabit the study area have also been included by correlating species habitat requirements with the existing environment.

Table 6: Threatened fauna species recorded or likely to occur in the locality.

THREATENED FAUNA SPECIES	STATUS		POTENTIAL TO OCCUR IN THE STUDY AREA AND IMPORTANCE OF HABITATS TO BE AFFECTED BY THE PROPOSAL	FURTHER ASSESSMENT REQUIRED IN THIS REPORT
	TSC Act	EPBC Act		
Mammals				
Broad-toothed Rat <i>Mastacomys fuscus</i>	V	-	This species occurs in two widely separated areas in NSW, the Barrington Tops area and the wet alpine and subalpine heaths and woodlands of the Kosciuszko NP and adjacent areas. The species lives in a complex of runways through dense vegetation of wet grass, sedge or heath and under the snow in winter. The species is known from the Thredbo Ski Resort area and surround and may occur in the study area from time to time.	Yes
Eastern False Pipistrelle <i>Falsistrellus tasmaniensis</i>	V	-	This species appears to prefer moist habitats, with trees taller than 20 m. It generally roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings. There are no hollow-bearing trees within the study area so there is no potentially suitable roosting or breeding habitat. It is unlikely but possible that the species may forage above the study area from time to time however it would not be dependent upon the habitats there.	No
Mountain Pygmy Possum <i>Burramys parvus</i>	E	E	This species lives only in the alpine and subalpine areas of the highest mountains of Victoria and NSW. In NSW the entire range of the species is a 30km by 8 km areas of Kosciuszko NP between Thredbo and Kerries Ridge, with local population centres at Mount Blue Cow and Charlottes Pass. It lives in rocky areas where boulders have accumulated below mountain peaks and is frequently associated with alpine heathlands dominated by Mountain Plum-pine <i>Podocarpus lawrencei</i> . The study area provides only marginal habitat for the species as there are no boulder fields in the immediate vicinity or heathlands dominated by Mountain Plum-pine. It is considered unlikely that the species would occur regularly within the study area nor be dependent upon the habitats there.	Yes

THREATENED FAUNA SPECIES	STATUS		POTENTIAL TO OCCUR IN THE STUDY AREA AND IMPORTANCE OF HABITATS TO BE AFFECTED BY THE PROPOSAL	FURTHER ASSESSMENT REQUIRED IN THIS REPORT
	TSC Act	EPBC Act		
Spotted-tailed Quoll <i>Dasyurus maculatus</i>	V	E	The species prefers moist forest types and is often associated with escarpments. There are no trees near the subject site that provide hollows potentially suitable for denning and the foraging habitat within the study area would form only a small proportion of the home range of the species. The species may potentially forage in the study area on occasion however it is unlikely to be dependent upon the habitats there and will not be adversely affected by the proposal.	No
Birds				
Gang-gang Cockatoo <i>Callocephalon fimbriatum</i>	V	-	Gang-gang cockatoos live as pairs inhabiting woodlands of south-eastern Australia. The species feeds primarily on the seeds of eucalypts and acacias and breeds in tree hollows. There are no hollow-bearing trees within the study area so there is no potentially suitable roosting or breeding habitat. The species is typically associated with taller montane forests in the region and is unlikely to utilise the habitats within the study area.	No
Flame Robin <i>Petroica phoenicea</i>	v	-	This species is endemic to south-eastern Australia. It breeds in upland tall moist forest and woodlands in spring and summer and many birds move to the inland slopes and plains during winter. Nests are often near the ground and are built in sheltered sites, such as shallow cavities in trees, stumps or banks. It is possible that the species may forage in the study area from time to time however it is unlikely that it would breed there and would not be dependent upon the habitats within the study area.	No
Olive Whistler <i>Pachycephala olivacea</i>	V	-	This species is usually associated with moist tall forests at high elevations but has been occasionally recorded at lower altitudes. Breeding occurs at altitudes above 300m within habitats providing both a thick understorey and moderate canopy. It is possible that the species may forage in the study area from time to time however it is unlikely that it would breed there and would not be dependent upon the habitats within the study area.	No
Pink Robin <i>Petroica rodinogaster</i>	v	-	This species is endemic to south-eastern Australia. It breeds in upland tall moist forest and rainforest in spring and summer moving to the inland slopes and plains during winter. The nest is a deep, spherical cup made of green moss bound with cobweb and adorned with camouflaging lichen, and is lined with fur and plant down. It is situated in an upright or oblique fork, from 30cm to 6m above the ground, in deep undergrowth. It may forage in the study area from time to time however it would not be dependent upon the habitats there.	No

THREATENED FAUNA SPECIES	STATUS		POTENTIAL TO OCCUR IN THE STUDY AREA AND IMPORTANCE OF HABITATS TO BE AFFECTED BY THE PROPOSAL	FURTHER ASSESSMENT REQUIRED IN THIS REPORT
	TSC Act	EPBC Act		
Scarlet Robin <i>Petroica boodang</i>	V	-	The Scarlet Robin occurs through south-eastern Australia and south-west Western Australia from coastal areas to inland slopes. Prefers dry forest and woodland with an open grassy understorey and abundant logs and fallen timber. Forages from low perches and feeds on invertebrates taken from the ground or from logs or the base of tree trunks. Constructs an open cup nest from plant material and cobweb, and generally breeds between July and January. It is possible that the species may forage in the study area from time to time however it is unlikely that it would breed there and would not be dependent upon the habitats within the study area.	No
Varied Sittella	V	-	The Varied Sittella occurs in forests and woodland throughout most of mainland Australia. It forages on invertebrates gleaned from the branches and bark of trees. It constructs an open cup nest of plant fibres and cobweb in an upright tree fork in the canopy. It is possible that the species may forage in the study area from time to time however it is unlikely that it would breed there and would not be dependent upon the habitats within the study area.	No
Amphibians				
Alpine Tree Frog <i>Litoria verreauxii alpina</i>	E	V	This species occurs in the alpine and sub-alpine zones of south-eastern NSW and Victoria. It is found in a wide variety of habitats including woodland, heath, grassland and herbfields. It breeds in natural and artificial wetlands including ponds, bogs, fens, streamside pools, dams and drainage channels that are still or slow flowing. The study area does not provide any important habitats for the species given the absence of water habitats, bogs, fens or other wetlands.	No
Southern Corroboree Frog <i>Pseudophryne corroboree</i>	E	E	The Southern Corroboree Frog is limited to sphagnum bogs of the northern Snowy Mountains, in a strip from the Maragle Range in the northwest, through Mt Jagungal to Smiggins Holes in the south. Its range is entirely within Kosciuszko National Park. The study area does not provide any important habitats for the species given the absence of water habitats, bogs, fens or other wetlands.	No

There is some potential habitat for the Mountain Pygmy Possum and Broad-toothed Rat in areas immediately adjacent to the study area. Further consideration is given to the affects of the proposal on these species in subsequent sections of the report.

4.3 Migratory Species

The migratory species known from the locality include Latham's Snipe, the White-bellied Sea-Eagle, Rainbow Bee-eater, Rufous Fantail, Satin Flycatcher, and White-throated Needletail. None of these species would occur regularly within the study area nor be dependent upon the habitats there. The proposal will not have any adverse impacts on any listed migratory species.

4.4 Endangered Populations

The *TSC Act* provides for the listing of endangered populations on Schedule 1, Part 2. There are no endangered populations listed on the schedules of the *TSC Act* in the Snowy River LGA.

4.5 Threatened Ecological Communities

The *TSC Act* and *EPBC Act* provide for the listing of threatened ecological communities. The vegetation within the study area does not comprise any endangered ecological communities listed on either the *TSC Act* or *EPBC Act*.

5. IMPACT ASSESSMENT

5.1 Impacts on Native Vegetation Communities

The proposal will result in the removal of approximately 40 m² of Tall Alpine Herbfield and minor indirect impacts on an additional approximately 20 m² of Tall Alpine Herbfield in association with the construction phase and potential modification resulting from shading from the new hut.

Tall Alpine Herbfield is one of the most widespread of alpine vegetation communities (Costin *et al.* 2000) and Ecology Australia (2002) estimate that there is more than 4 ha contiguous with the study area. In this context the removal of approximately 40 m² or 0.1% (one thousandth) of the patch of the community contiguous with the study area is a minor and acceptable impact. This is particularly the case given that the areas to be affected are at the interface with heavily disturbed and predominately non-native vegetation.

5.2 Impacts on Fauna Habitats

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

The impacts associated with the proposal are limited to the removal of a very small amount of native vegetation. The proposal will not remove or otherwise disturb any major rock outcrops nor will it result in modifications to the hydrological environment, or create permanent barriers which prevent the movement and dispersal of fauna species.

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

5.3 Effects on Threatened Biota (Assessment of significance)

An assessment of the effects of the proposal on threatened species, populations and ecological communities likely to occur in habitats similar to those available in the study area, may be carried out by applying the seven factors from Section 5A of the amended *NSW Environmental Planning and Assessment Act 1979* in accordance with gazetted assessment guidelines to each identified threatened species, population and ecological community.

This assessment of significance is presented below for the threatened fauna species Broad-toothed Rat and the Mountain Pygmy Possum.

Part a)

In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction

Schedule 1 Endangered Species

Mountain Pygmy Possum *Burramys parvus* (possible occurrence).

The Mountain Pygmy Possum is the only mammal endemic to the Australian Alps. The species primary habitat comprises boulderfields and associated Podocarpus Heaths where it hibernates under the snow in winter. The species feeds primarily on Bogong Moths but will also feed on Podocarpus and other heath species. Individual animals are capable of travelling up to 3 km in a night to meet their daily or seasonal needs. The species hibernates for periods of up to seven months from autumn to spring, with breeding occurring in November and December. Movements between boulderfields occur through areas of shrub cover, with roads and slashed ski runs being shown to inhibit movement in places. Movements of more than several metres tend to be restricted to the snow-free season.

Thredbo Ski Resort is not known to support any important habitats for the species although there is some boulderfield habitat for the species approximately 1 km to the northwest of the study area (NSW NPWS 2002). The rock outcrop at Eagles Nest does not comprise a boulderfield nor support Podocarpus Heath and would comprise only very marginal potential habitat for the species. It is possible although unlikely that some Mountain Pygmy Possum individuals may shelter within the heath and rock outcrop immediately adjacent to the study area on occasion during the snow-free months.

The life cycle of Mountain Pygmy Possum could be significantly disrupted if:

- habitats, which may be used as breeding or hibernating sites, are modified or removed;
- vegetation removal, snow compaction or other activities restrict the movement of populations or individuals;
- actions result in increase predation on the species,
- actions result in reductions in snow cover or compaction of the snow cover and the loss of subnivean space; or
- the availability of food resources is greatly reduced by vegetation removal or disturbance to habitats for prey species such as the Bogong Moth.

The action proposed is located well away from the primary habitats for the species. Whilst it is possible that individuals may traverse the study area and immediate surrounds when foraging or when moving between primary habitats, they would not hibernate or nest within the study area.

The impacts on potential foraging habitat for the species will be negligible.

The action proposed will not create any additional barriers to movement for the species, nor will it lead to declines in snow cover or increase predation.

Under these circumstances, it is considered highly unlikely that the action proposed is likely to have an adverse effect on the life cycle of the Mountain Pygmy Possum such that a viable local population is likely to be placed at risk of extinction.

Schedule 2 Vulnerable Species

Fauna

Broad-toothed Rat *Mastacomys fuscus* (possible occurrence).

The Broad-toothed Rat occurs in two widely separated areas in NSW, the Barrington Tops area and the wet alpine and subalpine heaths and woodlands of the Kosciuszko NP and adjacent areas. The species lives in a complex of runways through dense vegetation of wet grass, sedge or heath and under the snow in winter. The species appears to be limited to patches of optimal habitat, which is usually close to streams with steep banks, although it will cross unsuitable habitat when dispersing, searching for mates or nest sites. Home ranges range between approximately 0.1 ha and 0.27 ha. Individuals nest alone over summer but congregate in communal nests during winter. The species is known from the Thredbo Ski Resort area.

The life cycle of Broad-toothed Rat could be significantly disrupted if:

- habitats, which may be used as breeding sites, are modified or removed;
- vegetation removal results in the isolation of populations or individuals;
- activities lead to an increase in predation on the species; or
- the availability of food resources is greatly reduced by vegetation removal or disturbance.

The action proposed will affect only a very small amount of marginal potential foraging habitat for the species relative to that available to the species in adjacent areas. It will not affect the availability of any sheltering habitat for the species.

The proposal will not affect connectivity between habitats for the species.

Under these circumstances, the action proposed is unlikely to disrupt the life cycle of the Broad-toothed Rat such that a viable local population is likely to be placed at risk of extinction.

Part b)

In the case of an endangered population, whether the life cycle of the species that constitutes the endangered population is likely to be disrupted such that the viability of the population is likely to be significantly compromised.

There are no endangered populations within the study area.

Part c)

In the case of an endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

There are no endangered ecological communities within or immediately adjacent to the study area.

Part d)

In relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

i. Effects on Extent of Habitat

Threatened Species

The action proposed will directly impact only a 40 m² of potential habitat for threatened fauna species. The action proposed does not include the removal of any hollow-bearing trees, sheltering habitats, important water or rock habitats, or any other important threatened fauna species habitats. The impacts on potential habitat for the Mountain Pygmy Possum and Broad-toothed Rat will be negligible in the context of the extent of similar habitat that will continue to be available for the species in areas immediately adjacent to the study area.

Endangered Populations

There are no endangered populations within the study area.

Endangered Ecological Communities

There are no endangered ecological communities within or immediately adjacent to the study area.

ii. Effects on Habitat Connectivity

Threatened Species

The action proposed will not fragment or isolate any areas of potential habitat for any threatened fauna species as it will affect only a 40 m² of Tall Alpine Herbfield at the interface with heavily disturbed areas. The proposal will not remove or otherwise modify vegetation such that barriers to connectivity between habitats are created or the movement of fauna disrupted.

Endangered Populations

There are no endangered populations within the study area.

Endangered Ecological Communities

There are no endangered ecological communities within or immediately adjacent to the study area.

iii. Importance of Habitat to be Affected

Threatened Species

The habitats to be modified by the proposed action are not unique or uncommon within the resort area or within the locality and are unlikely to provide key resources for any threatened fauna species. The small area of potential Mountain Pygmy Possum and Broad-toothed Rat habitat to be affected is negligible in the context of the extent of similar habitat that will continue to be available for the species in areas immediately adjacent to the study area. The study area does not provide primary habitats for the Mountain Pygmy Possum and does not support important breeding or sheltering habitats for the Broad-toothed Rat.

The habitats to be affected by the action proposed are considered unlikely to support any individuals of threatened flora species and none were detected within the study area despite active searching.

Whilst all alpine and sub-alpine habitats are important given their relatively limited extent within Australia and the potential implications of climate change, the habitats to be affected by the action proposed are not considered to be particularly important for any threatened species.

Endangered Populations

There are no endangered populations within the study area.

Endangered Ecological Communities

There are no endangered ecological communities within or immediately adjacent to the study area.

Part e)

Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly).

The action proposed will not affect any critical habitat.

Part f)

Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan.

Recovery Plans

A recovery plan has been prepared for the Mountain Pygmy Possum. The action proposed, in avoiding disturbances to the primary habitats for the species, and in avoiding other threatening processes considered to be affected the species, is consistent with the objectives and actions of this recovery plan.

No recovery plans have been prepared for the Broad-toothed Rat.

Threat Abatement Plans

A threat abatement plan has not been prepared for the key threatening process *Clearing of native vegetation*, which is involved with the action proposed.

Part g)

Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of native vegetation

The extent of clearing for the proposal is approximately 40 m² of a vegetation community which is relatively widespread within the alpine areas. The area to be affected is at the interface with existing heavily disturbed areas and comprises approximately one thousandth of the contiguous extent of the community.

Under these circumstances, any increase in the impact of the key threatening process *Clearing of native vegetation* associated with the action proposed is minor and will not result in a substantial increase in the key threatening process *Clearing of native vegetation*.

Seven-part Test Conclusion

The proposal is unlikely to have a significant effect on threatened species, populations or ecological communities or their habitats pursuant to Section 5A of the *NSW Environmental Planning and Assessment Act 1979*. A Species Impact Statement is not required for the proposal.

5.4 Commonwealth EPBC Act 1999

The *Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* contains provisions to protect commonwealth land and matters of national environmental significance (NES) listed by the Act, including World Heritage properties, Ramsar wetlands, threatened species, migratory species, nuclear actions and the commonwealth marine environment.

Under this Act a person may require assessment and/or approval from the Commonwealth Environment Minister if they are undertaking an action that has, will have, or is likely to have, a significant impact on a matter of national environmental significance. Administrative guidelines have been produced to assist proponents in determining whether an action should be referred to the Commonwealth Environment Minister for a decision on whether approval is required.

The proposal involves construction works and the removal of vegetation, which may constitute an action defined by the *EPBC Act*.

The study area provides potentially suitable habitat for the following matters of National Environmental Significance listed on the schedules of the *EPBC Act* that may be indirectly impacted by the proposal:

- the Endangered Species; Mountain Pygmy Possum *Burramys parvus*.

No other Commonwealth listed threatened or migratory species were recorded in the study area during the survey period and none are expected to occur or rely on the habitats found there.

Commonwealth Endangered Species

The proposal is located well away from any identified primary habitats for the Mountain Pygmy Possum. Whilst individuals may traverse the study area when foraging or when moving between primary habitats, they would not hibernate or nest within the study area or immediate surrounds. The impacts on potential foraging habitat will be negligible and the proposal will not create any additional barriers to movement for the species, nor will it lead to declines in snow cover or increase predation.

Thus, with respect to Commonwealth Endangered Species, the proposal is considered unlikely to:

- lead to a long-term decrease in the size of a population;
- reduce the area of occupancy of the species;
- fragment an existing population into two or more populations;
- adversely affect habitat critical to the survival of the species;
- disrupt the breeding cycle of a population;

- modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline;
- result in invasive species that are harmful to critically endangered or endangered species becoming established in the endangered or critically endangered species habitat;
- introduce disease that may cause species to decline; or
- interfere with the recovery of the species.

Under these circumstances, it is considered highly unlikely that the proposal may have a significant impact on a Commonwealth Endangered Species listed by the *EPBC Act* that occurs in the study area and a referral to the Commonwealth Environment Minister is not required.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

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 development application for a new external communications hut at Eagles Nest, Thredbo Ski Resort.

The study area was found to predominately support Disturbed Vegetation, although there are areas of Tall Alpine Herbfield and Tall Alpine Heath without Eucalypts on the study area margins. The proposal will result in the removal of approximately 40 m² of Tall Alpine Herbfield.

Whilst the study area provides a small amount of foraging habitat for a range of threatened fauna, it is considered unlikely to provide any important resources for any threatened fauna species. The proposal is well away (1 km) from any primary habitats for the Mountain Pygmy Possum, and will not affect important habitats for the species nor disrupt the movement of individuals between habitats. The study area is considered unlikely to support important breeding or sheltering habitats for the Broad-toothed Rat.

The proposal will not affect habitat connectivity for any threatened fauna species.

No threatened flora species were recorded within the study area despite active searches and none are considered likely to occur there.

No threatened species, endangered populations, ecological communities or migratory species listed on the schedules of the *NSW Threatened Species Conservation Act 1995*, the *NSW Fisheries Management Act 1994*, or the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* were recorded in the study area and it was concluded that none of these entities would be dependent upon the habitats within the study area.

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 limited impacts the impact mitigation and amelioration measures described in Section 6.2 below are recommended for the proposal.

6.2 Recommendations for Impact Mitigation and Amelioration

The following recommendations for impact mitigation and amelioration should be required as modifications to the proposal and/or imposed as conditions of consent.

Vegetation and Habitat Management

1. All vehicle and pedestrian activity associated with the proposal should avoid the native vegetation communities identified in Figure 3.
2. All vehicles to be used during the proposal should be limited to the existing tracks and heavily disturbed areas.
3. Any access to relatively undisturbed native vegetation should be on foot and works undertaken by hand.

Hygiene

4. All machinery to be used should be clean to minimise the potential for introducing chytrid fungus.

7. BIBLIOGRAPHY

- Blakers, M., Davies, S.J.J.F., & Reilly, P.N. 1984, *The Atlas of Australian Birds*, Melbourne University Press, Melbourne. Briggs, J.H. & Leigh, J.D. 1996, *Rare or Threatened Australian Plants*, Australian NPWS, Canberra.
- Briggs, J.H. & Leigh, J.D. 1996, *Rare or Threatened Australian Plants*, Australian NPWS, Canberra.
- Christides, L. & Boles, W. 1994, *The Taxonomy and Species of Birds of Australia and its Territories*, Royal Australasian Ornithologists Union, Victoria.
- Churchill, S. 1998, *Australian Bats*, Reed New Holland, Sydney.
- Cogger, H.G. 1996, *Reptiles and Amphibians of Australia*, Reed Books, Sydney
- Commonwealth of Australia, *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*.
- Commonwealth of Australia accessed 2010, *Commonwealth Environment Protection and Biodiversity Conservation Act Protected Matter Search Tool*.
<http://www.deh.gov.au/erin/ert/epbc/index.html>
- Costermans, L. 1994, *Native Trees and Shrubs of South-Eastern Australia*, Lansdowne Publishing, Sydney.
- Costins, C., Gray, M., Totterdell, C., and Wombush, D. 2000. *Kosciuszko Alpine Flora*. CSIRO Publishing, Victoria.
- Cropper, S.C. 1993, *Management of Endangered Plants*, CSIRO Publishing, Melbourne.
- Ecology Australia. 2002. *Kosciuszko Resorts Vegetation Assessment*. A report for Planning NSW.
- Harden, B. (ed) 1993, *Flora of NSW*, NSW Botanic Gardens, Sydney.
- McDougall, K.L. and Walsh, N.G. 2007. Treeless Vegetation of the Australian Alps. *Cunninghamia* Vol 10(1) 1-59.
- NGH Environmental. 2008. *Environmental Values Report – Charlotte Pass Village*. A report for Charlotte Pass Ski Resort.
- NGH Environmental. 2009. *Review of Environmental Factors. Perisher High Voltage Cable Installation*. A report for Country Energy.

NSW Department of Environment and Climate Change. 2007 *Rehabilitation Guidelines for the Resort Area of Kosciuszko National Park*.

NSW Government, *State Environmental Planning Policy No. 44 – Koala Habitat Protection*, Government Printer, Sydney, as amended.

NSW Government 1987, *Environmental Planning and Assessment Act 1979*, Government Printer, Sydney, as amended.

NSW Government 1994, *Fisheries Management Act 1994*, Government Printer, Sydney, as amended.

NSW Government 1995, *Threatened Species Conservation Act 1995*, Government Printer, Sydney.

NSW National Parks and Wildlife Service. 2001. *Approved Recovery Plan for the Southern Corroboree Frog Pseudophryne corroboree*. NSW National Parks and Wildlife Service Hurstville.

NSW National Parks and Wildlife Service. 2002. *Approved Recovery Plan for the Mountain Pygmy Possum Burramys parvus*. NSW National Parks and Wildlife Service Hurstville.

NSW National Parks and Wildlife Service accessed 2010 *Atlas of NSW Wildlife and Rare or Threatened Plants Database*, <http://wildlifeatlas.nationalparks.nsw.gov.au/wildlifeatlas/watlas.jsp>

PlantNET accessed 2010. *The Plant Information Network System of the Botanic Gardens Trust* <http://plantnet.rbgsyd.gov.au>.

Schodde, R. & Tiedemann, S.C. 1997, *Reader's Digest Complete Book of Australian Birds*, Reader's Digest, Sydney.

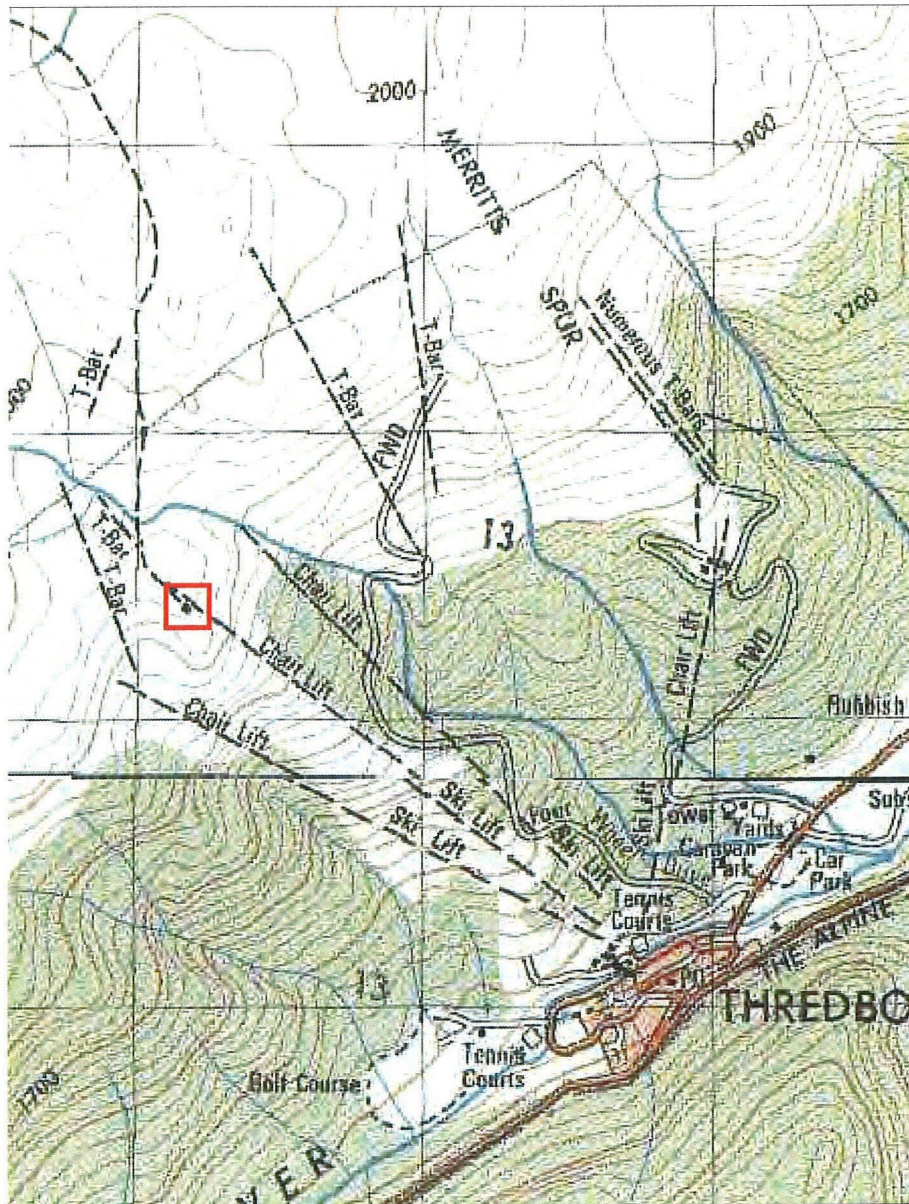
Specht R.L. 1970, Vegetation, in Leeper G.W. (ed), *The Australian Environment*, CSIRO Australia.

Strahan, R. 1995 *The Australian Museum Complete Book Of Australian Mammals*, Cornstalk Publishing, Sydney.

Triggs, B. 1997, *Tracks, Scats and Other Traces - A Field Guide to Australian Mammals*, Oxford University Press, Melbourne.

URS Australia. 2007. *Flora and Fauna Assessment of the installation of Stage 1, Stage 2 and Stage 3 of Snowmaking Infrastructure at Perisher Valley NSW*. A report for Perisher Blue Pty Ltd.

APPENDIX A: FIGURES



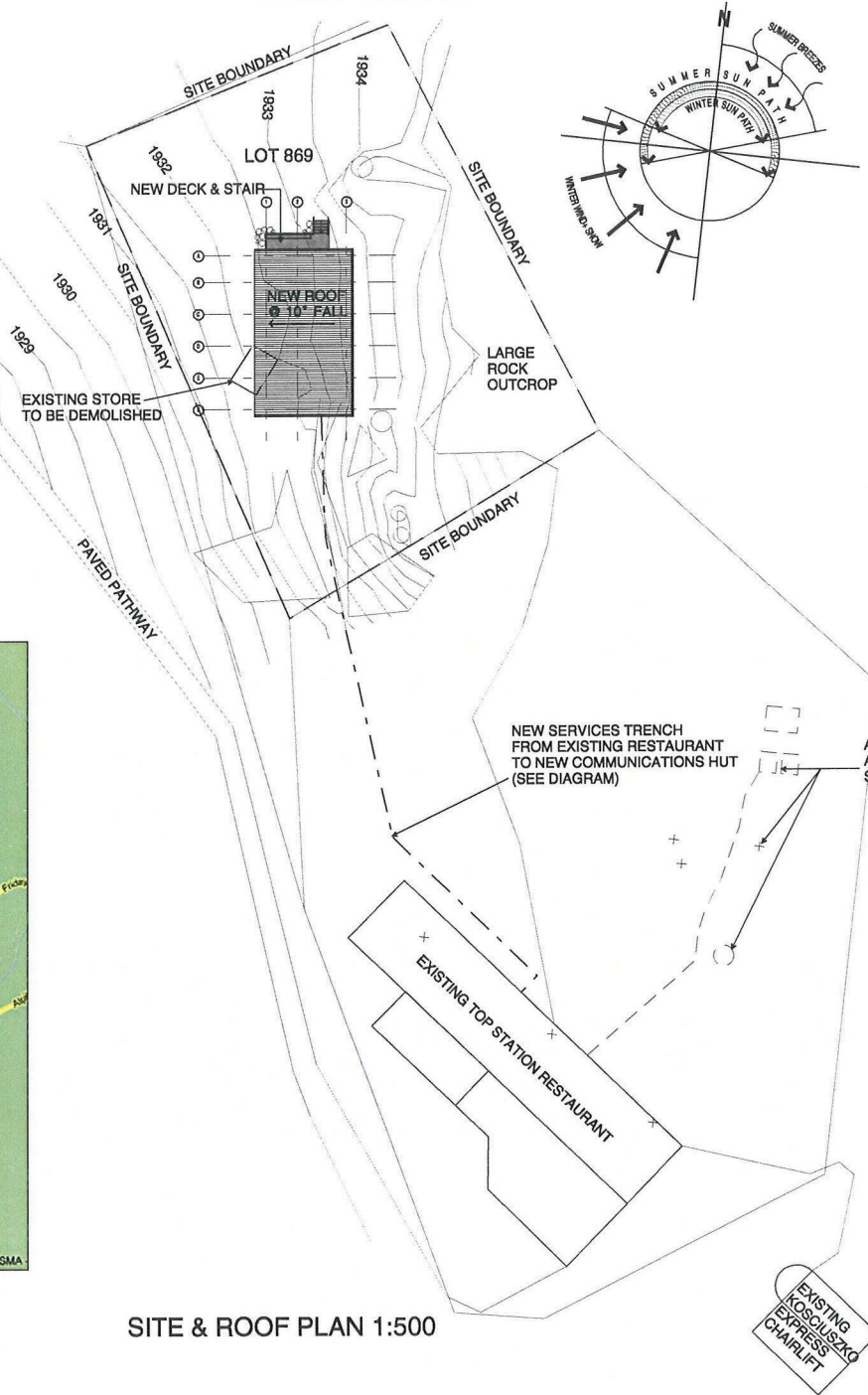
 Eagles Nest

Base topographic map:
Land & Property Information

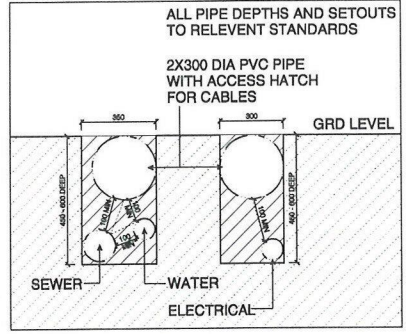


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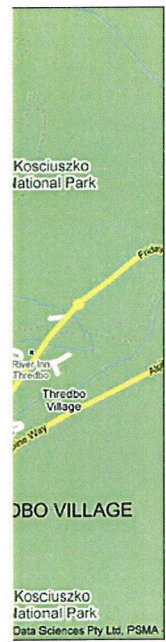
Flora and Fauna Assessment - Proposed Communications Facility, Eagles Nest
Thredbo Ski Resort



SITE & ROOF PLAN 1:500

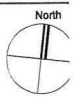


SERVICES TRENCHES



DEVELOPMENT APPLICATION

Issue	Status	Date
A	DEVELOPMENT APPLICATION	09.11.10
P	PRELIMINARY	28.09.10



Bar Scale

Client:
KOSCIUSZKO THREDBO PTY LTD

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ARCHITECTS
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Project
LOT 869
COMMUNICATIONS HUT
EAGLES NEST THREDBO
Scale @ A3 Date
1:500 26.08.10








Description
LOCATION PLAN, SITE PLAN
& ROOF PLAN

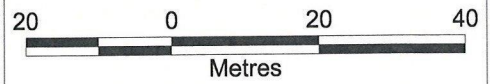
Job Number	Dwg. No.	Rev.
10 420	A0.100	A

EXISTING
KOSCIUSZKO
EXPRESS
CHAIRLIFT

Study area and immediate surrounds



-  Approximate extent of study area
-  Disturbed vegetation
-  Rock outcrop
-  Tall Alpine Herbfield
-  Tall Alpine Heath without Eucalypts
-  Upland Bog
-  Not assessed



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