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Date: 2 October 2024

Our ref: 8087

Kosciuszko Thredbo Pty Ltd
PO Box 92
Thredbo Village NSW 2625

Attention: Chloe Chalk

Dear Chloe,

Ecological Assessment – Cruiser Terrain Park Upgrades - Thredbo Alpine Resort

As requested, I have reviewed the potential impacts on vegetation and fauna habitats associated with the proposed Cruiser Terrain Park upgrades, as shown in Figure 1 below. This included an inspection of the vegetation and habitats to be affected on 26 March 2024. The proposed works are described in more detail below.

The proposed works include:

- Adding approximately 1 m, and up to a maximum of 1.6 m, of soil on top of the two permanent earth mounds in the Cruiser terrain park (brown earth mounds in Figure 1) – approximately 1.5 m high and maximum 2.1 m high.
- The moving of earth mound 2 approximately 7.5 m uphill.
- Minor grading/slope works in the hatched areas in Figure 1 to level the slope of the land and fill in depressions. The cut and fill would be no greater than 1 m.
- Installation of two fan guns and pits, including trenching for laterals, power and dialog. Each pit will be 3 x 3 m wide x 1.6 m deep.
- Installation of two lance guns and pits along the edge of the snow fence on the skiers right of the terrain park. These will replace existing manual guns. The pits for the lance guns will connect into existing laterals, therefore additional lateral trenching is not required.
- Trenching, 600 mm wide x 800 mm deep, for the installation of power and dialogue cables from existing main, downhill of snow fence.
- The mountain bike trails will remain in the current locations, however table-top features or the likes will be formed to tie in with the edge of the earth pads.
- All soil fill material for the mounds will be sourced from KT's material stockpile at Friday Flat.
- All works are within the disturbed ski slope. No tree clearing is required.

To avoid, minimise and mitigate impacts, the proposed works will be located entirely within existing highly disturbed areas. As such, there will be only very minor direct impacts on native vegetation. Direct impacts on vegetation will be restricted to approximately 20 m^2 of regrowth native shrubs on an existing batter on the edge of the existing ski run, and underneath an existing snow fence, as shown in Photo 5,6 and 8.

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

- The footprint of the proposed direct impacts is small.
- The areas affected are already disturbed and located immediately adjacent to existing clearings and other infrastructure.
- The proposed works will be implemented with appropriate safeguards.

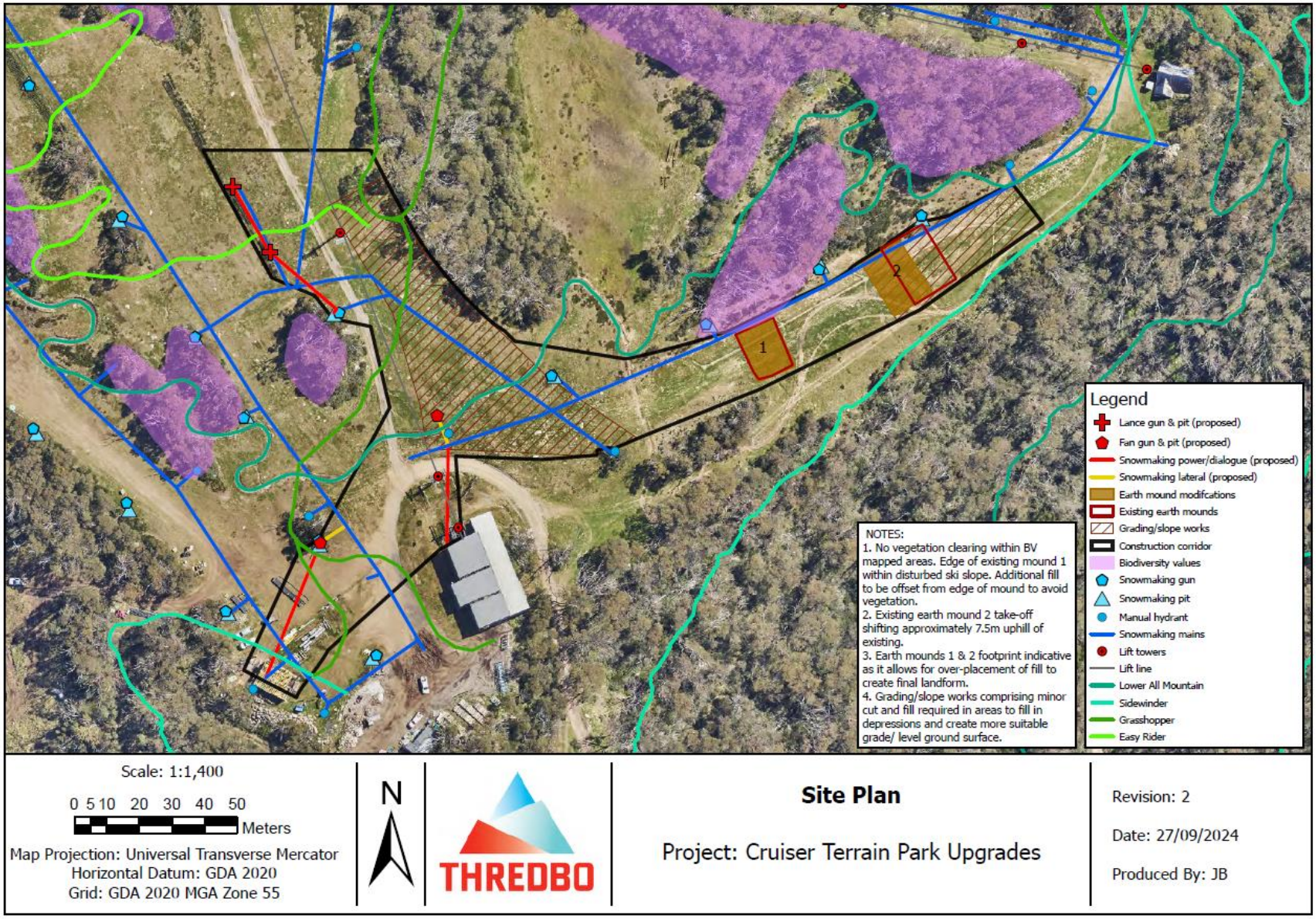

Figure 1: The proposed development.

Figure 2: The proposed works will not affect any vegetation on the Biodiversity Values Map.

Photo 1: The proposed upgrades will be entirely contained within the existing heavily disturbed ski slopes.

Photo 2: The proposed earthworks will be within the existing heavily disturbed ski slopes and will not affect any remnant native vegetation.

Photo 3: The proposed fan gun at the bottom of the cruiser area will be located such that there will be no need to clear any of the small tree island immediately above.

Photo 4: The existing earth mounds within the terrain park will be added to and mound 2 will be moved slightly uphill. Impacts on native vegetation will be limited to some shrubs on the adjacent batter.

Photo 5: The slope cut and movement of mound 2 may require the removal of these regrowth shrubs on the adjacent batter.

Photo 6: The slope cut below earth mound 2 will impact these shrubs on the adjacent batter.

Photo 7: The proposal includes two new lance guns, pits and trenching for power and dialogue cables.

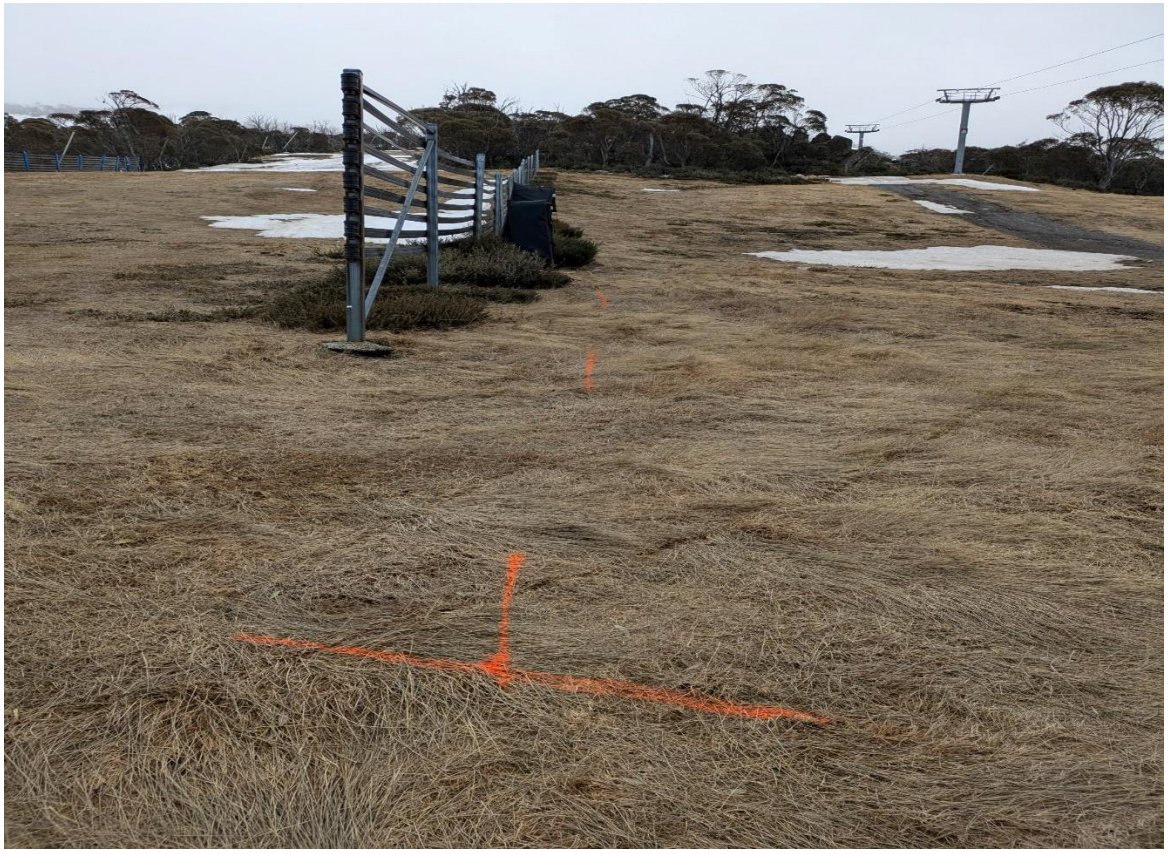

Photo 8: The new lance guns and trenching will result in impacts to the shrubs under the snow fence.

NSW Biodiversity Offset Scheme

The proposed works will not affect any areas mapped within the Biodiversity Values Map as defined in the NSW *Biodiversity Conservation Regulation 2017* (BC Reg), as shown in Figure 2, nor will the potential impacts on native vegetation or habitats exceed the 1 ha native vegetation clearance threshold which applies to the Thredbo Resort Area as per the BC Reg. As such, the proposal will not trigger the NSW Biodiversity Offset Scheme (BOS).

Impacts on vegetation communities

The proposal will result in only very minor impacts on native vegetation, being limited to the removal of approximately 20 m^2 of regrowth shrubs, mainly *Bossiaea foliosa* (Leafy Bossiaea) on the edge of the existing ski run. The rest of vegetation within the development footprint comprises the exotic grassland of the ski runs, which is dominated by a range of exotic grasses such as *Festuca rubra* (Red Fescue) and *Agrostis capillaris* (Browntop Bent), and weeds such as *Acetosella vulgaris* (Sheep Sorrel), *Achillea millefolium* (Yarrow), and *Hypochaeris radicata* (Flatweed).

The proposed works will be undertaken on ski slopes between patches of remnant native vegetation, which may have some indirect impacts, such as potential impacts on connectivity. These impacts are discussed further below.

Impacts on threatened ecological communities

The proposed development will not affect any threatened ecological communities.

Impacts on flora species of conservation significance

The proposed development will not affect any threatened flora species.

Impacts on fauna habitats

Potential impacts on fauna habitats associated with the proposed works will be limited to potential impacts on connectivity as no potentially important fauna habitats will be directly impacted by the proposed works. The proposed works will not affect connectivity for highly mobile fauna species, nor is it considered likely that the proposed works will adversely affect the capacity for less mobile species such as small mammals and reptiles, to access habitats surrounding the proposed works. In particular, it is considered highly unlikely that the proposed works would adversely affect connectivity between the small tree island and the extensive areas of native vegetation that occur on the other side of the ski run. During winter there is unlikely to be a subnivean space on the ski run where the works are proposed given the “super groomed” structure of the exotic grassland that characterises the ski slopes in the affected area. This would likely necessitate surface movements for small mammals traversing this area during winter. Outside of winter, the earth mounds are highly unlikely to inhibit fauna movements, given the spaces between the mounds, which will remain after the proposed works.

Searches of the tree island did not detect any evidence of use by *Mastacomys fuscus* (Broad-toothed Rat). A wombat burrow was observed beneath the lift operators hut however the proposed works would not adversely impact any wombats that may use the burrow, given their capacity to traverse much more substantial connectivity barriers. Whilst highly mobile threatened species such as the *Callocephalon fimbriatum* (Gang-gang Cockatoo), and *Petroica phoenicea* (Flame Robin) may occasionally forage in the tree island they would not be affected by the proposed works.

The proposal will not result in substantial modifications to the hydrological environment. Similar developments have been undertaken over many years within the Thredbo Resort area, and elsewhere within the NSW Alps, with negligible impacts on the hydrological environment and associated ecosystems.

Under these circumstances, the impacts of the proposal on fauna habitats are considered to be negligible and acceptable. The potential impact of the proposal on threatened fauna have been assessed further (Appendix A) pursuant to relevant statutory assessments.

Recommendations

To further mitigate the potential impacts of the proposal, the following recommendations for impact mitigation and amelioration are suggested.

Vegetation and habitat management

- All disturbance should be kept to the minimum required to achieve the proposal.
- The proposed works 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.
- Appropriate safeguards should be in place during the proposed works to limit the potential for invasive plants or pathogens, chemicals or any other pollutants to enter the environment in association with the proposed development.

Sediment control

- 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.
- Sediment control measures are to have particular regard to the prevention of any sedimentation of watercourses or vegetation communities adjoining the study area.

Rehabilitation

- Rehabilitation activities should be consistent with the resort areas rehabilitation guidelines (NGH Environmental 2007).
- Only weed-free straw or natural thatch/litter should be used in sediment control activities.

Conclusion

The proposed works will not result in any adverse impacts on threatened species, populations or ecological communities and will not have a significant impact on these entities pursuant to the NSW *Biodiversity Conservation Act 2016* or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

The proposal will not result in any substantial adverse impacts on native vegetation communities or associated fauna habitats, nor will there be any impacts on flora species of conservation significance, important fauna habitats, habitat connectivity or any other biodiversity values of conservation significance.

Should you require any further information please contact me on 0422 802 447.

Regards,

Ryan Smithers
Principal Ecologist

References

Department of Environment and Conservation. 2006. *Plan of Management Kosciuszko National Park*. Department of Environment and Conservation, South Sydney.

NGH Environmental 2007. *Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park.* A report for Parks and Wildlife Division. Department of Environment and Climate Change NSW.

Appendix A : Test of significance

Test of significance pursuant to section 7.3 of the BC Act: Five-part test

An assessment of the effects of the proposal on threatened species, populations and ecological communities which may be directly or indirectly affected by the proposal may be carried out by applying the five factors from Section 7.3 of the BC Act.

This test of significance is presented below for the threatened fauna species:

- *Mastacomys fuscus* (Broad-toothed Rat)
- *Cercartetus nanus* (Eastern Pygmy-possum)

(a) in the case of a threatened species, whether the proposed development or activity 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,

Broad-toothed Rat *Mastacomys fuscus* (potential occurrence)
The Broad-toothed Rat generally 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. Home range size is thought to 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 thought to be locally common in the alpine and high subalpine tracts of the Snowy Mountains area, where suitable habitats are present. The study area provides a very small amount of potential foraging and sheltering habitat for the Broad-toothed Rat.

The proposed development will not affect any key resources for the species, and the habitats immediately adjoining the study area will continue to be available to the species after the implementation of the proposed development. As such, the proposed development will not adversely affect a significant proportion of the home range of any Broad-toothed Rat individuals.

The proposed development is highly unlikely to result in any habitat fragmentation or the creation of barriers which could isolate individuals or a population of the Broad-toothed Rat. Whilst the proposal includes earthworks between a small tree island and the extensive areas of native vegetation that occur on the other side of the ski run, the proposed earthworks will not sever connectivity between the tree island and surrounding habitats. During winter there is unlikely to be a subnivean space on the ski run where the earthworks are proposed given the “super groomed” structure of the exotic grassland that characterises the ski slopes in the affected area. This would likely necessitate surface movements for small mammals traversing this area during winter. Outside of winter the proposed works will not inhibit fauna movements.

Under these circumstances, the proposed development is considered 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.

Eastern Pygmy-possum *Cercartetus nanus* (potential occurrence).

The Eastern Pygmy-possum is found in wet and dry eucalypt forest, subalpine woodland, coastal banksia woodland and wet heath. Pygmy-Possums feed mostly on the pollen and nectar from Banksias, Eucalypts and understorey plants and will also eat insects, seeds and fruit. The presence of Banksia sp. and Leptospermum sp. are an important habitat feature. Small tree hollows are favoured as day nesting sites, but nests have also been found under bark, in old bird nests and in the branch forks of tea-trees. The Eastern Pygmy-possum appears to be mainly solitary, each individual using several nests, with males having non-exclusive home-ranges of about 0.68 hectares and females about 0.35 hectares. They are mainly nocturnal. The Eastern Pygmy-possum is found in south-eastern Australia, from southern Queensland to eastern South Australia and in Tasmania. In NSW it extends from the coast inland as far as the Pilliga, Dubbo, Parkes and Wagga Wagga on the western slopes.

There are a few records of the species from Kosciuszko National Park, mainly from lower altitudes, however the species has been recorded at 1800 m. It is possible that the Eastern Pygmy-possum occurs in the subalpine habitats of the Thredbo Resort area although it has not been recorded there.

The proposal is unlikely to adversely affect a significant proportion of the home range of any individual Eastern Pygmy-possum given that it will not directly affect any suitable habitats for the species. It is unlikely that any individual Eastern Pygmy-possum would rely on the small tree island adjacent to the proposed works. In any case, the proposed works will not isolate this tree island, and the small amount of habitat it provides, from adjacent habitats. This habitat will remain accessible to any Eastern Pygmy-possum that may utilise the habitat on occasion.

Under these circumstances, the proposal is highly unlikely to disrupt the life cycle of the Eastern Pygmy-possum such that a viable local population of the species is likely to be placed at risk of extinction.

(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:

(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 or critically endangered ecological communities within the study area.

(c) in relation to the habitat of a threatened species or ecological community:

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

The proposed development will not impact any known Broad-toothed Rat or Eastern Pygmy-possum habitat. The proposed development is not considered likely to modify connectivity between habitats adjoining the proposed works to the extent that either the Broad-toothed Rat or Eastern Pygmy-possum would be adversely impacted.

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

The effects of the action proposed on habitat connectivity will be minor and the native fauna which may occur within the study area, will continue to be able to traverse the study area and access habitats adjoining the proposed works.

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

The habitats that will be effected by the proposed works are not considered to be important for either the Broad-toothed Rat or Eastern Pygmy-possum.

d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),

The proposed development will not affect any area of outstanding biodiversity value.

(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

The proposed development is not part of any key threatening process.

EPBC Act Significant Impact Criteria

The EPBC Act Administrative Guidelines on Significance set out 'Significant Impact Criteria' that are to be used to assist in determining whether a proposed action is likely to have a significant impact on matters of national environmental significance. Matters listed under the EPBC Act as being of national environmental significance include:

- Listed threatened species and ecological communities;
- Listed migratory species;
- Wetlands of International Importance;
- The Commonwealth marine environment;
- World Heritage properties;
- National Heritage places;
- Nuclear actions; and
- Great Barrier Reef.

Specific 'Significant Impact Criteria' are provided for each matter of national environmental significance except for threatened species and ecological communities in which case separate criteria are provided for species listed as endangered and vulnerable under the EPBC Act.

The only Commonwealth listed species which is considered to have the potential to occur within the study area or be affected by the action proposed is the Broad-toothed Rat.

The relevant Significant Impact Criteria have been applied to determine the significance of impacts associated with the proposal.

Matters to be considered	Impact
any environmental impact on a World Heritage Property or National Heritage Places;	No. The proposal does not impact on a World Heritage Property or a National Heritage Place as addressed in the SEE. (listed natural: Australian Alpine National Parks and Reserves; nominated historic: Snowy Mountains Scheme NSW).
any environmental impact on Wetlands of International Importance	No. The proposal will not affect any part of Ramsar wetland.
any impact on Commonwealth Listed Critically Endangered or Endangered Species;	Yes. The study area provides potential habitat for one Commonwealth listed endangered species: the Broad-toothed Rat. The significant impact criteria for endangered species are discussed below: a. lead to a long-term decrease in the size a population of a species, Whilst the proposed action will affect some marginal potential habitat for the Broad-toothed Rat, the proposal is considered highly unlikely to adversely affect a significant proportion of the home range of one or more Broad-toothed Rat individuals and will not result in habitat fragmentation which could isolate individuals or a population of the Broad-toothed Rat. Under these circumstances, it is considered highly unlikely that the proposed action will lead to a long-term decrease in the size of the Broad-toothed Rat population. b. reduce the area of occupancy of the species The proposed works will not affect any key habitat resources for the Broad-toothed Rat; nor substantially adversely affect the species ability to access habitats within or beyond the study area. Under these circumstances, the proposed action is highly unlikely to reduce the area of occupancy of the local population of the Broad-toothed Rat. c. fragment an existing population into two or more populations The proposed works will not affect any key habitat resources for the Broad-toothed Rat; nor substantially adversely affect the species ability to access habitats within or beyond the study area. Under these circumstances, the proposed action will not fragment an existing population of the Broad-toothed Rat into two or more populations. d. adversely affect habitat critical to the survival of a species No habitat within the development site is considered likely to be critical to the survival of the Broad-toothed Rat. There are thousands of hectares of similar habitats in the alpine and subalpine zones of the Australian alps, including elsewhere within the Thredbo Resort area. The Broad-toothed Rat continues to occur within the Thredbo Resort Area despite a long history of similar and more extensive disturbances. e. disrupt the breeding cycle of a population It is considered highly unlikely that the Broad-toothed Rat would breed within the study area given the absence of suitable habitat. Under these circumstances, the proposed action will not disrupt the breeding cycle of a population of the Broad-toothed Rat. f. modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline The proposed action will modify a very small area of potential habitat for the Broad-toothed Rat, but this area is unlikely to be important to these species in the context of the extent of potential habitat in the locality. Under these circumstances it is highly unlikely that the proposed action would modify- destroy- remove or isolate or decrease the availability or quality of habitat to the extent that the Broad-toothed Rat is likely to decline.

Matters to be considered	Impact
	g. result in invasive species that are harmful to an endangered species becoming established in the endangered or critically endangered species' habitat The proposed action is unlikely to result in invasive species that are harmful becoming established in potential habitat of the Broad-toothed Rat. Species such as cats or foxes are already present in the landscape and are subject to control programs within the resort. h. introduce disease that may cause the species to decline The proposed action is unlikely to introduce disease that may cause the Broad-toothed Rat to decline. i. interfere substantially with the recovery of the species. As the proposed action is not considered to decrease or fragment any existing populations the recovery of the Broad-toothed Rat is unlikely to be adversely impacted.
Any impact on Commonwealth Listed vulnerable Species;	No. The study area does not provides potential habitat for any Commonwealth listed vulnerable species.
Any impact on a Commonwealth Endangered Ecological Community	No. The proposal will not impact any Commonwealth listed endangered ecological communities.
Any environmental impact on Commonwealth Listed Migratory Species;	No. The proposal will not have any adverse impacts on any listed migratory species.
Does any part of the Proposal involve a Nuclear Action;	No. The project does not include a Nuclear Action.
Any environmental impact on a Commonwealth Marine Area;	No. There are no Commonwealth Marine Areas within the study area.
In addition, any direct or indirect impact on Commonwealth lands	No. The project does not directly or indirectly affect Commonwealth land.