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Department of Planning
Housing and Infrastructure

Issued under the Environmental Planning and Assessment Act 1979

Approved Application No 25/498

Granted on the 23 May 2025

Signed S Butler

Sheet No 8 of 9

Date: 11 March 2025

Our ref: 9734

Kosciuszko Thredbo Pty Ltd
GPO Box 1609
Sydney NSW 2001

Attention: Chloe Chalk

Dear Chloe,

Ecological Assessment – Sewer Trunk Main Rehabilitation- Thredbo Alpine Resort

As requested, I have reviewed the potential impacts on vegetation and fauna habitats associated with the rehabilitation of the sewer trunk main, as shown in Figure 1 below. This included an inspection of the vegetation and habitats to be affected on 23 October 2024. The potential vegetation removal is described in more detail below, and in Photos 1-4.

Vegetation removal and trimming

The development will include removal of selected trees where root systems are undermining the infrastructure and selective vegetation trimming to maintain an easement generally 3 m wide (1.5 m either side of the pipeline). This includes the removal of nine mature Eucalypts which are currently either growing directly on top of the pipeline or immediately adjacent to a sewer manhole, posing a significant risk of root ingress and subsequent sewer overflow caused by a root ball blockage. Some minor trimming of shrub species will also be required to maintain a 3 m easement. Trimming is only proposed outside of areas identified on the biodiversity values map.

Pipe Replacement

Approximately 50 m of the 1.3 km pipeline requires replacement (refer Site Plan). The works will include:

- Excavation
- Plugging of upstream manhole, setup of temporary sewer bypass network to downstream manhole
- Removal of existing damaged pipeline section
- Installation of new pipe section
- Unplugging of upstream manhole therefore diverting sewer through the new pipeline section
- Backfilling and compaction of excavation
- Site rehabilitation.

Pipe Relining

The Development will involve re-lining the existing pipeline (approx. 1.3 km long). Given the site constraints, this method will minimise the amount of ground disturbance required adjacent to the Thredbo River.

The works will include:

- Cleaning the pipeline with high-pressure water jet and root cutter
- Internal CCTV inspection of pipe to ensure no roots/obstructions remain
- Structural relining of 31 manhole lengths x DN 300 sewer main using Interflow's spiral wound PVC Explanda lining system
- Repair and reinstating of 15 existing manholes including benching and joint repairs as required
- Decommission of the remaining 16 existing manholes by lining through the manhole and filling the existing manhole void with stabilised sand
- Final internal CCTV inspection video of finalised works.

To avoid, minimise and mitigate impacts, the proposed works will be located almost entirely within existing highly disturbed areas. As such, impacts on native vegetation will be limited to the removal and/or pruning of only nine, mostly *Eucalyptus stellulata* (Black Sallee) trees, and a few shrubs and groundcovers, as shown in Photos 1-4.

Direct impacts arising from the proposal are expected to affect less than 200 m^2 of already disturbed native vegetation.

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.

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. The potential impacts on native vegetation or habitats will not exceed the 1 ha native vegetation clearance threshold which applies to the Thredbo Resort Area as per the BC Reg.

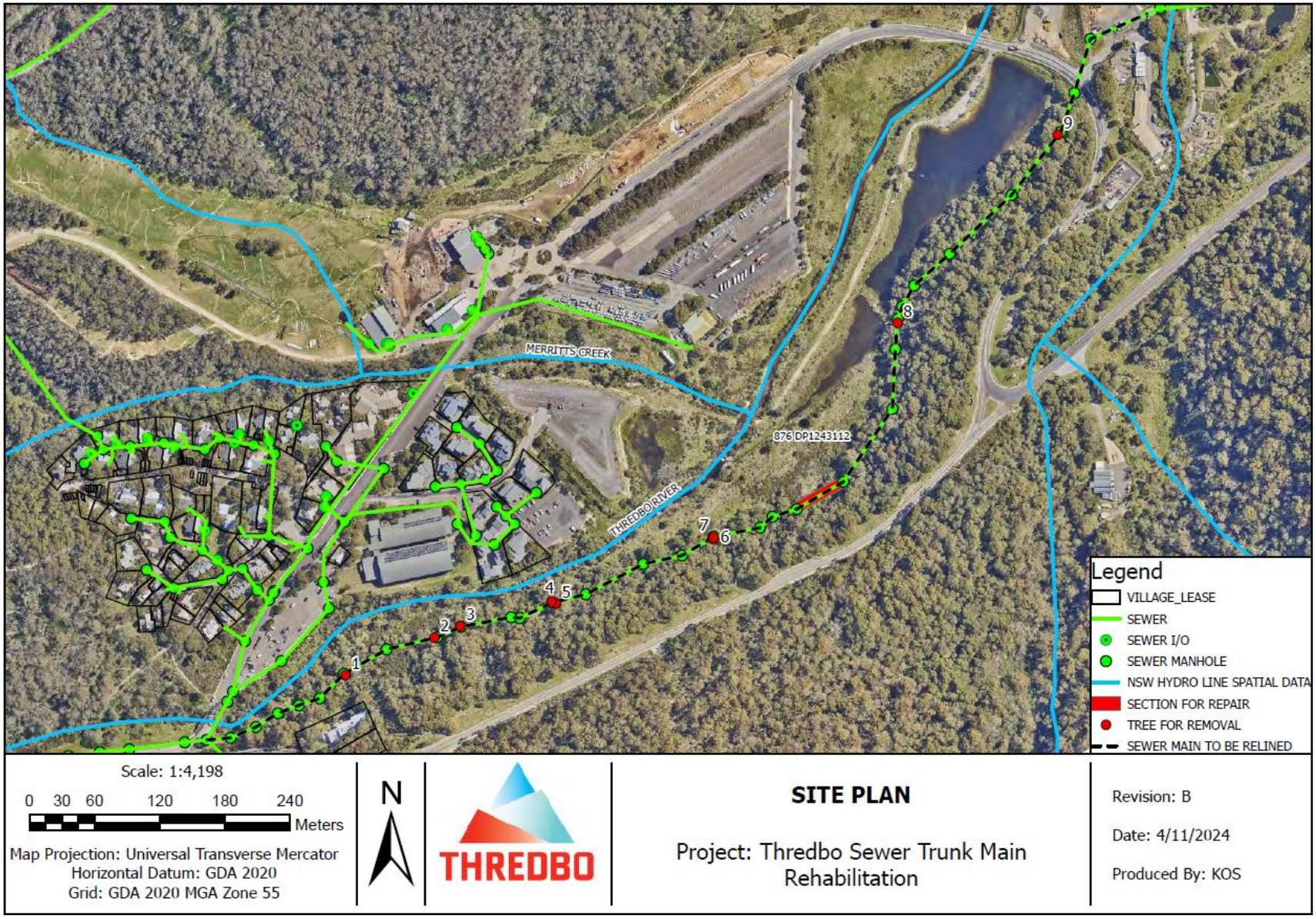

Figure 1: The proposed development.

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

Photo 1: The nine trees to be removed. All mature Black Sallee or *Eucalyptus dalrympleana* subsp. *dalrympleana* (Mountain Gum) trees that are located in very close proximity to the existing manholes. Whilst they are mature, none are old-growth or hollow-bearing having presumably grown since the initial installation of the sewer main.

Photo 2: Typical of the nine mostly Black Sallee trees to be removed as part of the proposed works.

Photo 3: Looking north from the southern limit of the 50 m section where the pipe will need to replaced.

Photo 4: Looking south from the northern limit of the 50 m section where the pipe will need to replaced.

Impacts on vegetation communities

The proposal will result in the removal of only nine trees, eight Black Sallee and one Mountain Gum. A small amount of shrubs and groundcovers, estimated to be up to approximately 200 m^2, typical of the Montane Woodland of Ecology Australia (2002) will also be affected by the proposal. These include species such as *Hakea macrocarpa* (Small-fruit Hakea), *Callistemon pityoides* (Alpine Bottlebrush), *Leptospermum grandifolium* (Mountain Tea-tree), *Pimelea pauciflora, Bossiaea foliosa* (Leafy Bossiaea), *Olearia phlogopappa* (Dusty Daisy-bush), *Tasmannia xerophila* subsp. *xerophila* (Alpine Pepperbush), *Poa ensiformis* (Purple-sheathed Tussock-grass), *Stellaria pungens*, *Rubus parvifolius* (Native Raspberry), *Carex* spp., and *Geranium potentilloides* var. *potentilloides*. However, the groundcover where the works will occur is largely dominated by weedy grasses and forbs such as *Festuca* spp. (Fescues), *Agrostis capillaris* (Browntop Bent), *Hypochaeris radicata* (Flatweed), *Acetosella vulgaris* (Sheep Sorrel), and *Achillea millefolium* (Yarrow).

The trees to be removed are mostly Black Sallee individuals which characterise the Montane Woodland which occurs in the Thredbo Resort area. Montane Woodland is common within the lower slopes adjoining the Thredbo River covering an estimated 39.5 ha within the Thredbo Resort area (Ecology Australia 2002). The Montane Woodland best correlates with PCT 3383 Kosciuszko Subalpine Hollows Black Sally Woodland of the State Vegetation Type Map (SVTM), although the proposed works are at the ecotone with PCT 3382 Kosciuszko Eastern Slopes Mountain Gum Forest which dominates the slopes above the proposed works.

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

None of the trees to be removed are large or hollow-bearing or of any conservation significance. They do not provide any important fauna habitats, and provide only a very small amount of foraging habitat, for mainly highly mobile fauna species, in the context of the extent of similar habitat in the locality. No wombat burrows were observed within the area to be affected by the proposal.

Whilst threatened species such as the *Mastacomys fuscus* (Broad-toothed Rat), *Callocephalon fimbriatum* (Gang-gang Cockatoo), and *Petroica phoenicea* (Flame Robin) may occasionally forage within or in close proximity to the area to be affected by the proposed works, no threatened fauna species would be dependent upon the areas affected by the proposal. The proposal will not affect any important habitat resources for threatened species, and will affect only a very small area of habitat in the context of the extent of similar habitat available to threatened and more common fauna species in contiguous montane woodlands and forests.

The proposal will not result in substantial modifications to the hydrological environment nor will it create barriers which prevent the movement and dispersal of fauna species. 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 relatively minor 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.

EMM. 2019. *Biodiversity Development Assessment Report - Snowy 2.0 Main Works*. Prepared for Snowy Hydro Limited.

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.

NSW National Parks and Wildlife Service (NPWS). 2024. *Kosciuszko offset action plan – alpine tree frog - Kosciuszko Offset Project*. Department of Climate Change, Energy, the Environment and Water (DCCEEW), Parramatta.

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)
- *Litoria verreauxii alpina* (Alpine Tree Frog)
- *Callocephalon fimbriatum* (Gang-gang Cockatoo)
- *Petroica phoenicea* (Flame Robin)
- *Cyclodomorphus praealtus* (Alpine She-oak Skink)

(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 (Green 2002), where suitable habitats are present.

The development site provides a very small amount of potential foraging and sheltering habitat for the Broad-toothed Rat. However, the less disturbed areas adjacent to the Thredbo River provide much superior habitats for the species where it remains common.

The proposed development will affect some potential habitat for the species, however, it will affect only a very small amount of the potential habitat for the species in the Thredbo Resort area. The proposed development will not affect any key resources for the species, and the habitats immediately adjoining the development 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 will not result in habitat fragmentation which could isolate individuals or a population of the Broad-toothed Rat.

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.

Alpine Tree Frog *Litoria verreauxii alpina* (potential occurrence)

This species occurs in the alpine and subalpine 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 species has disappeared from much of its former range in the last 20 years and until recently was thought to be restricted to a few breeding sites in murky ponds. However recent surveys for the Snowy 2.0 project have demonstrated that the northern parts of Kosciuszko NP support a large population of the species concentrated on the Long Plain, Kiandra, Tantangara and Coolamine Plain areas (NPWS 2024 and EMM 2019). There is no suitable breeding habitat for the species within the area affected by the proposed works and no records from the Thredbo Resort Area. The nearest record is a 2012 record from Bullocks Flat.

The development site provides a very small amount of potential foraging and sheltering habitat for the Alpine Tree Frog.

The proposed development will affect some potential habitat for the species, however, it will affect only a very small amount of the potential habitat for the species in the context of the potential habitat in the locality and will not affect directly any potential breeding habitat. Appropriate safeguards have been incorporated into the proposed to mitigate the potential for any adverse impacts on potential breeding habitat in association with the nearby snowmaking pond.

The proposed development will not result in habitat fragmentation which could isolate individuals or a population of the Alpine Tree Frog.

Under these circumstances, the proposed development is considered unlikely to disrupt the life cycle of the Alpine Tree Frog t such that a viable local population is likely to be placed at risk of extinction.

Gang-gang Cockatoo *Callocephalon fimbriatum* (likely occurrence).

In New South Wales, the Gang-gang Cockatoo is distributed from the south-east coast to the Hunter region, and inland to the central and southern tablelands and south-west slopes. In summer, this species is generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In winter, the Gang-gang Cockatoo may occur at lower altitudes in drier more open eucalypt forests and woodlands, and is often found in urban areas. It may also occur in sub-alpine Snow Gum woodland and occasionally in temperate rainforests.

The species is regularly observed at Thredbo in montane and subalpine areas. Whilst the species may forage within the study area, it would not breed there given the absence of suitable nesting habitat. Given the extensive forests within the locality, breeding and roosting habitat is likely to be relatively abundant.

The study area provides a very small area of suitable foraging resources for the species. The foraging resources (generally eucalypt trees) to be removed in association with the proposed development would not be important for the species, given the extent of foraging resources in the Thredbo Resort area.

Under these circumstances, the proposed development will not disrupt the life cycle of the Gang-gang Cockatoo such that a viable local population of the species is likely to be placed at risk of extinction.

Flame Robin *Petroica phoenicea* (potential occurrence)

The Flame Robin is found in south-eastern Australia (Queensland border to Tasmania, western Victoria and south-east South Australia). In NSW it breeds in upland moist eucalypt forests and woodlands, often on ridges and slopes, in areas of open understorey. It migrates in winter to more open lowland habitats such as grassland with scattered trees and open woodland on the inland slopes and plains. There are numerous records of the species throughout the NSW Alps, and the species is well known from the Thredbo Resort area and is one of the most common birds of open habitats outside of the winter period.

The proposal will affect a very small amount of potential foraging habitat for the species. This is negligible in the context of the extensive areas of similar habitat within the Thredbo Resort area that will not be affected by the proposed development and which will continue to be available to the species. The species is not sedentary and undertakes substantial seasonal migrations, reducing the species dependence on any specific area of known or potential habitat.

Under these circumstances, the proposed development is unlikely to disrupt the life cycle of the Flame Robin such that a viable local population of the species is likely to be placed at risk of extinction.

Alpine She-oak Skink *Cyclodomorphus praealtus* (Potential occurrence)

The Alpine She-oak Skink is a slender lizard reaching a maximum length of 350 mm. It is largely carnivorous mostly eating invertebrates but also small lizards and snakes. In NSW, the species is known from alpine and subalpine open heath and tussock grassland within the Kosciuszko region, preferring treeless or lightly treed areas. It is negatively associated with increasing structural diversity (Sato. et al. 2014) and is thus negatively associated with the dense heath habitats that characterise much of the study area. Within NSW the species is known to occur from the South Ramshead area to Kiandra. It is rarely encountered, appearing to mostly lie partially hidden amongst groundcovers. The species is thought to be restricted to habitats above 1500 m in elevation.

Although there are no records of the species from the Thredbo Resort area, it is still possible, that the species occurs within the less disturbed and grassy habitats in the northern parts of the study area. The species is considered to be particularly cryptic, and difficult to detect even using methods such as artificial shelter and trapping surveys.

Whilst the study area includes a very small amount of potential habitat for the Alpine She-oak Skink, the proposal involves only a narrow band of disturbance in disturbed habitats that are highly unlikely to comprise a significant proportion of the home range of any Alpine She-oak Skink individual.

Under these circumstances, it considered highly unlikely that the proposal will have an adverse effect on the life cycle of the Alpine She-oak Skink 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 development site.

(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 impact on only a very small area of potential habitat for the Broad-toothed Rat and will not affect any known Broad-toothed Rat communal nesting or likely breeding sites. The proposed development will result in the modification of a very small amount of potential foraging and sheltering habitat for the Alpine Tree Frog. The proposed development will result in the modification of a very small amount of potential foraging for the Gang-gang Cockatoo and Flame Robin. The habitats to be affected by the action proposed are unlikely to be suitable for the Alpine She-oak Skink given the general paucity of grass tussocks and other sufficiently dense groundcovers.

(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 proposed development will involve only a very small area of clearing. The proposed works will not sever connectivity between the fauna habitats within the development site and contiguous habitats, or isolate any fauna populations which may occur there. The disruptions to connectivity between fauna habitats will be minor and temporary only.

The effects of the action proposed on habitat connectivity will be minor and the native fauna which may occur within the development site from time to time, will continue to be able to traverse the development site.

(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 potential Broad-toothed Rat habitats to be affected comprise a small area of marginal habitat relative to the extensive areas of similar and superior habitats provided by contiguous vegetation. The alpine, subalpine and montane heaths in the locality provide superior habitat for the species than the habitats within the study area. Under these circumstances, the habitats to be affected are not considered to be particularly important for Broad-toothed Rat.

In the context of the extent of similar habitat available for the Alpine Tree Frog, Gang-gang Cockatoo, Alpine She-oak Skink and Flame Robin in the Thredbo Resort area and elsewhere in the locality, the habitats within the study area are not considered to be important.

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 will remove only a very small area of native vegetation in an already highly disturbed area. Whilst this constitutes the Key Threatening Process 'Clearing of native vegetation', the contribution to this key threatening process is negligible considering the extent of remnant native vegetation in the locality.

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.

Threatened and migratory species listed under the EPBC Act that are considered likely or potentially to occur within the study area are given in Appendix A of the Report. The only Commonwealth listed species which are considered to have the potential to occur within the study area are the Broad-toothed Rat and Gang-gang Cockatoo.

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 three Commonwealth listed endangered species: the Broad-toothed Rat, Alpine She-oak Skink and the Gang-gang Cockatoo. 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 and Alpine She-oak Skink, it will affect only a very small amount of the potential habitat for these species. As such, the proposal is considered highly unlikely to adversely affect a significant proportion of the home range of one or more Broad-toothed Rat or Alpine She-oak Skink individuals and will not result in habitat fragmentation which could isolate individuals or a population of the Broad-toothed Rat or Alpine She-oak Skink. The proposed action will only affect a very small amount of foraging habitat for the Gang-gang Cockatoo in the context of the extent of potential habitat in the locality. The proposal will not affect any breeding or roosting habitat or otherwise adversely impact the species.

Matters to be considered	Impact
	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, Alpine She-oak Skink or Gang-gang Cockatoo population. b. reduce the area of occupancy of the species The proposed action will be limited to the loss or further modification of 0.02 ha of degraded native vegetation which is a small amount of habitat in the context of the extent of similar habitats in the locality generally. The proposed works will not affect any key habitat resources for the Broad-toothed Rat, Alpine She-oak Skink or Gang-gang Cockatoo; nor affect these 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, Alpine She-oak Skink or Gang-gang Cockatoo. c. fragment an existing population into two or more populations The proposed action will be limited to the loss or further modification of 0.02 ha of native vegetation which is a small amount of habitat in the context of the extent of similar habitats in the locality generally. The proposed works will not affect any key habitat resources for the Broad-toothed Rat, Alpine She-oak Skink or Gang-gang Cockatoo; nor affect these 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, Alpine She-oak Skink or Gang-gang Cockatoo 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, Alpine She-oak Skink or Gang-gang Cockatoo. 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 and Gang-gang Cockatoo continue 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, Alpine She-oak Skink or Gang-gang Cockatoo 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, Alpine She-oak Skink or Gang-gang Cockatoo. 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, Alpine She-oak Skink and Gang-gang Cockatoo, 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, Alpine She-oak Skink or Gang-gang Cockatoo are likely to decline. 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, Alpine She-oak Skink or Gang-gang Cockatoo. 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, Alpine She-oak Skink or Gang-gang Cockatoo to decline. i. interfere substantially with the recovery of the species.

Matters to be considered	Impact
	As the proposed action is not considered to decrease or fragment any existing populations the recovery of the Broad-toothed Rat, Alpine She-oak Skink and Gang-gang Cockatoo are unlikely to be adversely impacted.
Any impact on Commonwealth Listed vulnerable Species;	Yes. The study area does provide potential habitat for one Commonwealth listed vulnerable species: The Alpine Tree Frog. The significant impact criteria in terms of the vulnerable species are discussed below: a. lead to a long-term decrease in the size of an important population of a species. There is no evidence that an important population of the Alpine Tree Frog occurs within the Thredbo Resort Area. An important population of the species occurs within the northern parts of the Kosciuszko NP and it is possible that an important population of the species persists in association with known breeding habitat at Bullocks Flat. Given the absence of any records of the species in the Thredbo Resort Area, the minor nature of the works proposed and the proposed mitigation measures, it is considered highly unlikely that the proposed works would lead to a long-term decrease in the size of an important population of the Alpine Tree Frog. b. reduce the area of occupancy of an important population There are no recent records of the Alpine Tree Frog within the Thredbo Resort Area or any other evidence that it supports an important population of the species. As such, the proposed action is highly unlikely to reduce the area of occupancy of the Alpine Tree Frog. c. fragment an existing important population into two or more populations The proposed action will not fragment an existing important population of the Alpine Tree Frog into two or more populations. Even if the species was present in the Thredbo Resort Area, the proposed works are too small to fragment a population of the species. d. adversely affect habitat critical to the survival of a species No habitat within the development site is considered to be critical to the survival of the Alpine Tree Frog. e. disrupt the breeding cycle of an important population The proposed action and affected area are too small to disrupt the breeding cycle of a population of the Alpine Tree Frog. 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 not modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the Alpine Tree Frog is likely to decline as the habitat to be affected is very small in the context of the available habitat within the Thredbo Resort Area. The proposal includes appropriate safeguards to mitigate the potential for adverse impacts on the potential breeding habitat associated with the nearby snowmaking pond. g. result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat The proposed action will not result in invasive species that are harmful becoming established in habitat for the Alpine Tree Frog. Invasive species, including foxes and cats, are already present. h. introduce disease that may cause the species to decline The proposed action is unlikely to introduce disease that may cause the Alpine Tree Frog to decline. i. interferes substantially with the recovery of the species. The proposal is too small to interfere with the recovery of the Alpine Tree Frog. The Snowy 2.0 project proposed to impact on more than 1500 individual of the species, and some 54 ha of known habitat. The proposed works include appropriate safeguards to mitigate the potential for adverse impacts on the potential breeding habitat associated with the nearby snowmaking pond Under these circumstances, the risk associated with the proposal are relatively minor and highly unlikely to interfere substantially with the recovery of the Alpine Tree Frog.

Matters to be considered	Impact
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.