

Date: 2 August 2023

Our ref: 6163

Kosciuszko Thredbo Pty Ltd
PO Box 92
Thredbo Village NSW 2625

Attention: Chloe Chalk

Dear Chloe,

Snowmaking Upgrades, Bunny Walk to Milk Run, Thredbo

As requested, I have reviewed the potential impacts on vegetation and fauna habitats associated with the proposed snowmaking upgrades between Bunny Walk station and the base of Milk Run ski run, as shown in Figure 1-4 below. The development involves replacement of existing snowmaking infrastructure and the installation of new fan pits and TT10 fan guns in various locations.

The proposed works involve:

- Trenching for the replacement of the snowmaking main (1.4 m wide trench with up to a 10 m wide construction corridor).
- Trenching for laterals (0.8 m wide trench with up to a 3 m wide construction corridor).
- Installation of fan pits (1.6 x 1.6 m wide with a 3 x 3m wide x 1.6m deep construction footprint).

To avoid, minimise and mitigate impacts, the proposed works will be located almost entirely within existing ski slopes and other highly disturbed areas, as shown in Figures 1-4 and Photos 1-4. Impacts on native vegetation will be limited to the clearing of one eucalypt planting, and a few shrubs and groundcovers in two locations in the “middle slopes” area where proposed laterals and fan guns traverse, or are on the edge of, a planted tree island, as shown in Figure 2 and Photos 2-4.

Direct impacts arising from the proposal are expected to affect less than 30 m² 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 on the edge of ski runs.
- 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 Figures 1-4.

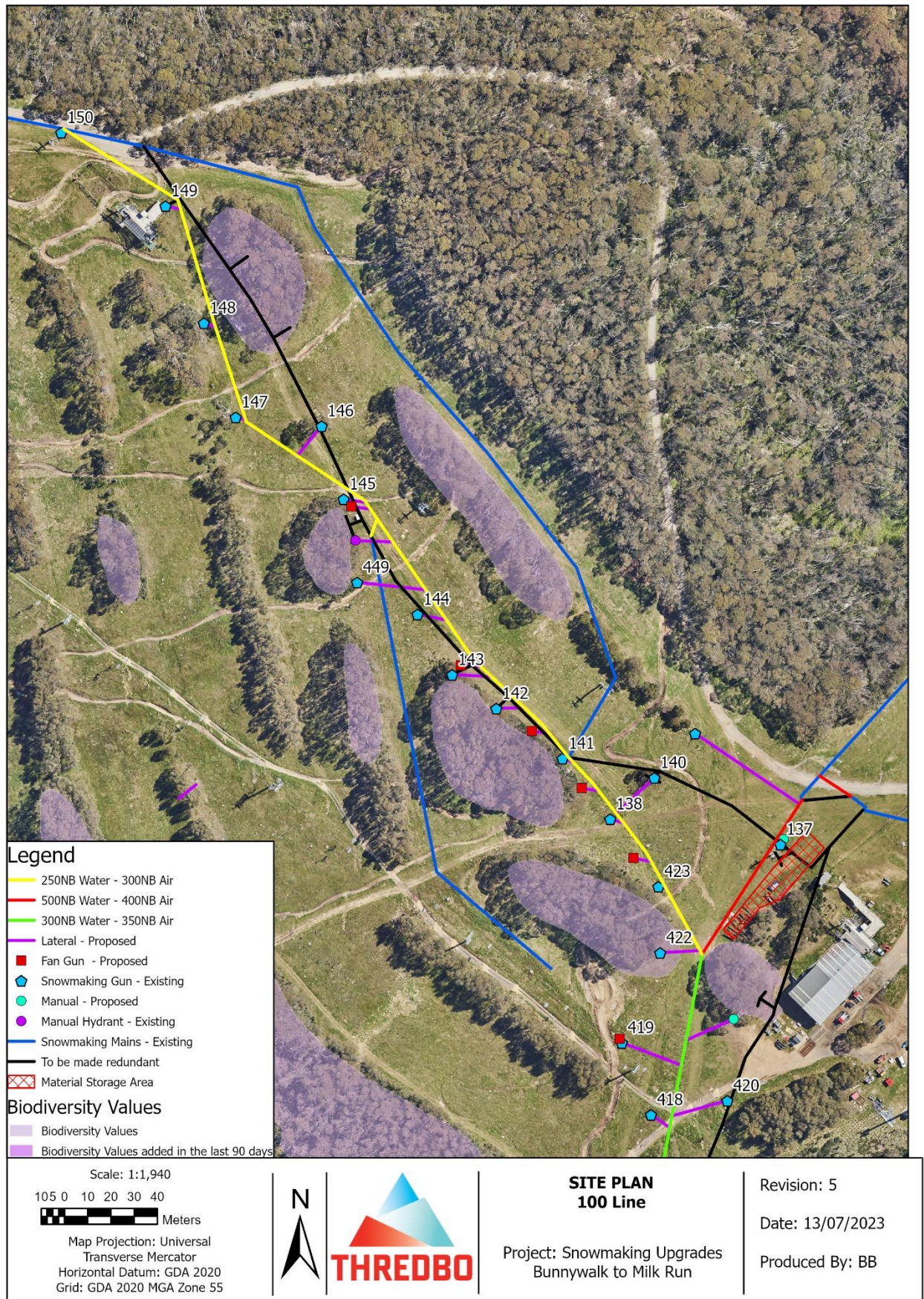


Figure 1: The proposed works relative to the Biodiversity Values Map in the “100 line” area.

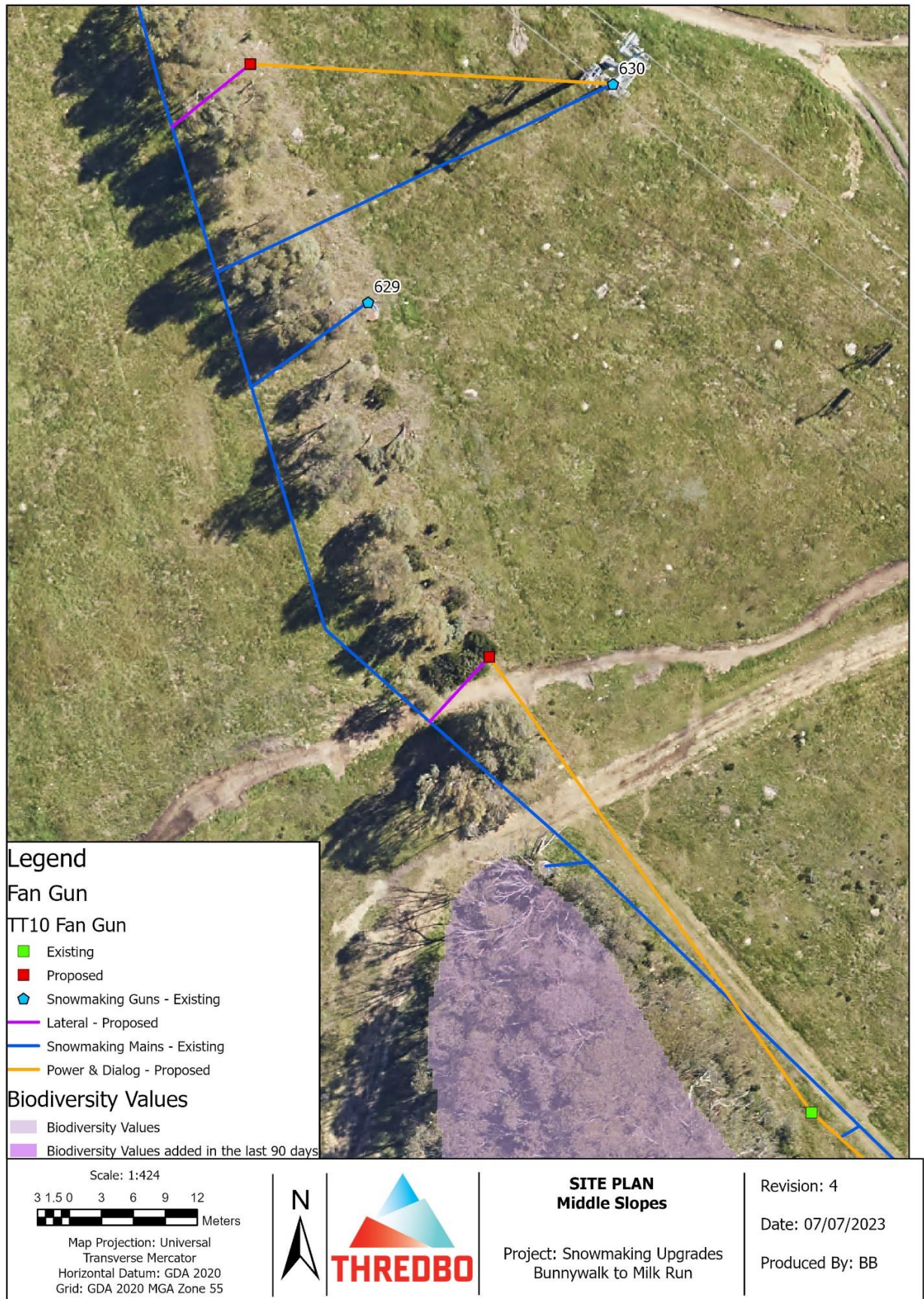


Figure 2: The proposed works relative to the Biodiversity Values Map in the Middle Slopes area. Minor shrub and tree planting removal will be necessary in two locations but will not affect any Biodiversity Values mapped vegetation.

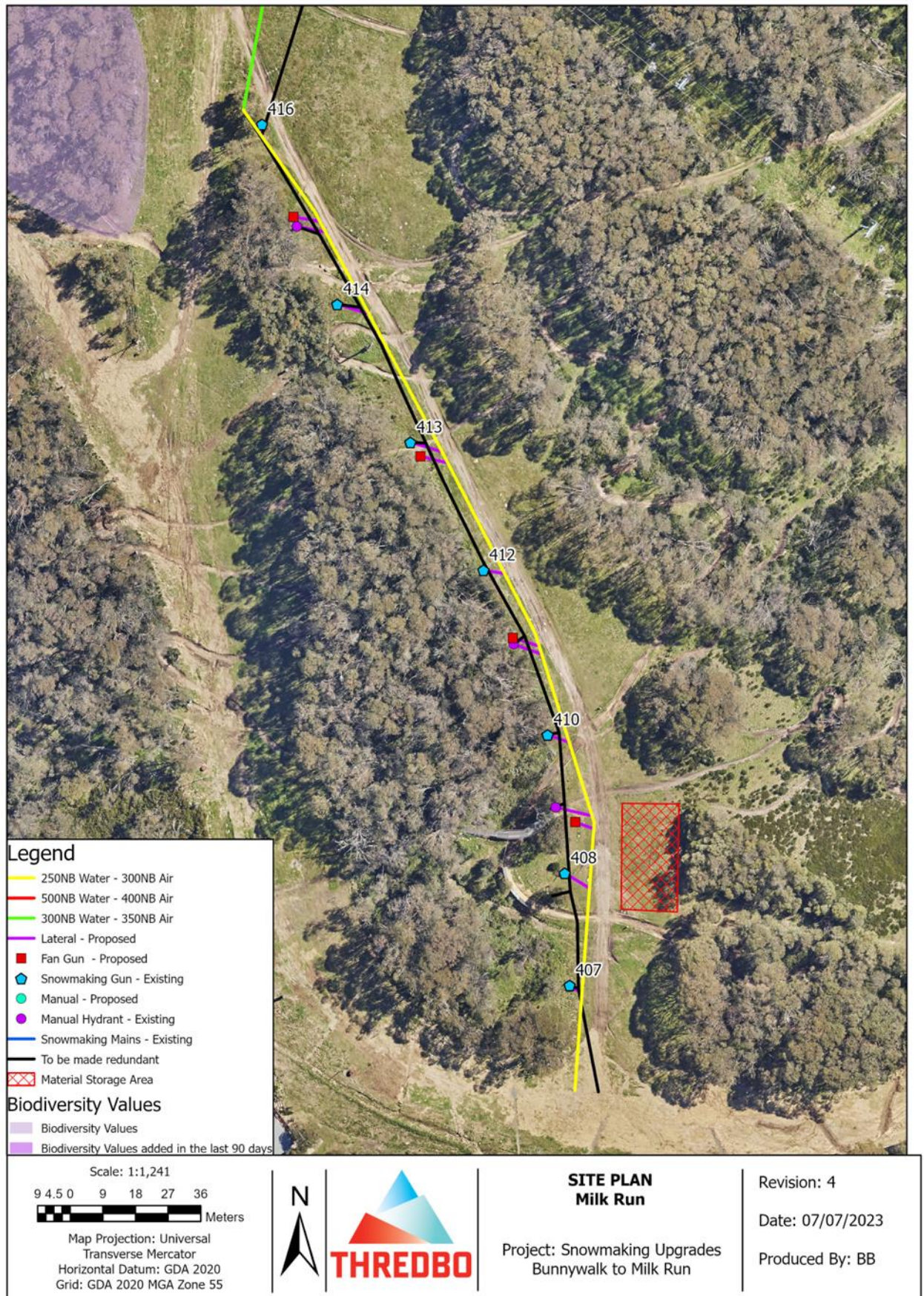


Figure 3: The proposed works relative to the Biodiversity Values Map in the Milk Run area.

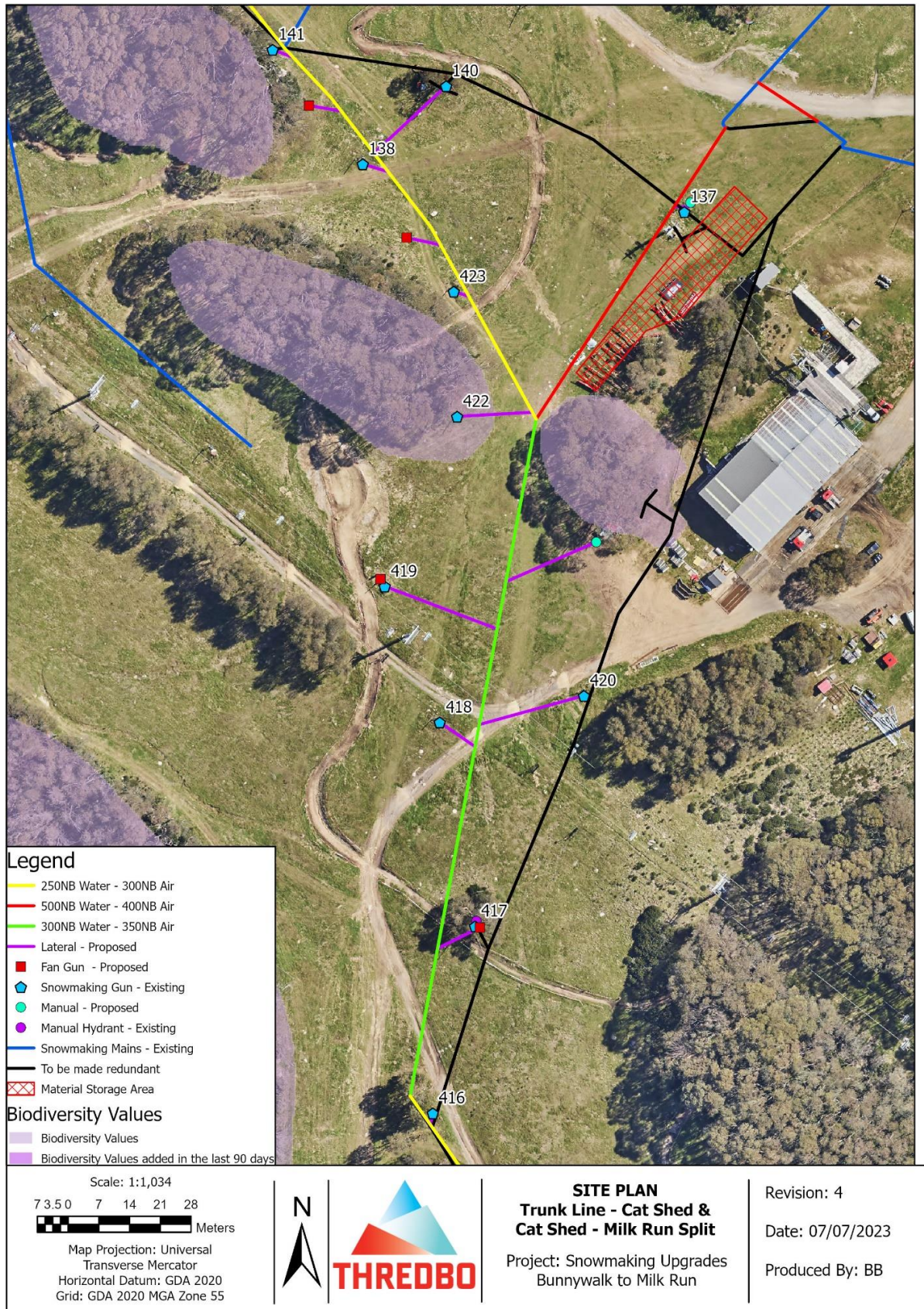


Figure 4: The proposed works relative to the Biodiversity Values Map in the Cat Shed - Milk Run Split area.



Photo 1: The proposed works are almost entirely located within ski slopes and other highly disturbed areas avoiding the need for vegetation clearing.



Photo 2: Two new TT10 fan gun locations in the Middle Slopes area that will require minor vegetation clearing. Lateral connection to existing mains on others side of tree island is proposed. Some minor tree planting, shrub and ground cover clearing will be required.



Photo 3: Minor clearing of native shrubs / ground cover will be necessary to install a new fan gun and pit at this location (the lower location shown in Photo 2).



Photo 4: TT10 fan gun and pit location facing towards the snowmaking main on the other side of the tree island. A single eucalypt planting may need to be removed or roots impacts to access existing lateral that runs below planted tree island. This is the higher location shown in Photo 2.

Impacts on vegetation communities

The vegetation within the development footprint almost entirely 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).

Where the minor vegetation clearing will occur on the middle slopes, a few shrubs of *Bossiaea foliosa* (Leafy Bossiaea), *Olearia phlogopappa* (Dusty Daisy-bush), a eucalypt (*Eucalyptus* sp.) planting, and a small area of common groundcovers such as *Poa ensiformis* (Purple-sheathed Tussock-grass), *Poa fawcettiae* (Smooth Blue Snowgrass), and *Asperula gunnii* (Mountain Woodruff) will be affected, as shown in Photos 3-4.

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

The small amount of vegetation to be affected by the proposal does not support any fauna habitats that aren't widely available in the extensive areas of contiguous vegetation.

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 the years within and in areas immediately adjacent to the development footprint, 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.

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)
- *Petroica phoenicea* (Flame Robin)

(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 study area provides a very small amount of potential foraging and sheltering habitat for the Broad-toothed Rat.

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 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 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.

Flame Robin *Petroica phoenicea* (known 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 was observed in the study area during the survey period. It 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.

(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 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 for the Flame Robin.

(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 study area and contiguous habitats, or isolate any fauna populations which may occur within the study area. 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 study area from time to time, will continue to be able to traverse the study area.

(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 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 few small patches of native groundcovers in already highly disturbed ski slopes. 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 is considered to have the potential to occur within the study area 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;	No. The proposal will not impact any Commonwealth listed endangered species.
Any impact on Commonwealth Listed vulnerable Species;	<p>Yes. The study area provides potential habitat for one Commonwealth listed vulnerable species: the Broad-toothed Rat.</p> <p>The significant impact criteria in terms of the vulnerable species are discussed below:</p> <p>a. lead to a long-term decrease in the size of an important population of a species.</p> <p>Whilst the proposed action will affect some marginal potential habitat for the Broad-toothed Rat, it will affect only a very small amount of the potential habitat for the 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 individuals and will not result in habitat fragmentation which could isolate individuals or a population of the Broad-toothed Rat.</p> <p>Under these circumstances the proposed action will not lead to a long-term decrease in the size of an important population of the Broad-toothed Rat.</p> <p>b. reduce the area of occupancy of an important population</p> <p>It is highly likely that the Broad-toothed Rat will continue to occur within the study area after the implementation of the proposed action. The species continues to be locally common in the Thredbo Resort Area where there have been many similar and larger developments over many decades. As such, the proposed action is highly unlikely to reduce the species area of occupancy.</p> <p>c. fragment an existing important population into two or more populations</p> <p>The proposed action will not fragment an existing important population of the Broad-toothed Rat into two or more populations.</p> <p>d. adversely affect habitat critical to the survival of a species</p> <p>No habitat within the study area is critical to the survival of the Broad-toothed Rat.</p> <p>e. disrupt the breeding cycle of an important population</p> <p>The proposed action and affected area are too small to disrupt the breeding cycle of a population of the Broad-toothed Rat.</p> <p>f. modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline</p> <p>The proposed action will not 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.</p> <p>g. result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat</p> <p>The proposed action will not result in invasive species that are harmful becoming established in habitat for the Broad-toothed Rat.</p> <p>h. interferes substantially with the recovery of the species.</p> <p>Whilst there have been documented declines in some Broad-toothed Rat populations within the Snowy Mountains, these declines have been attributed to environmental factors such as major bushfire events and early snow thaws, and not impacts of the nature of those proposed. In any case, the local population of the Broad-toothed Rat appears to continue to be relatively large on the basis of the abundance of the species' scats throughout the Thredbo Resort Area. The</p>

Matters to be considered	Impact
	species continues to occur in suitable habitats within the Thredbo Resort Area, including within the village. As such, it is considered highly unlikely that proposed action will substantially interfere with the recovery of the Broad-toothed Rat.
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.