Proposed Widening, Upper Snowmaking Pond, Thredbo Alpine Resort

Biodiversity Development Assessment Report

Kosciuszko Thredbo Pty Ltd

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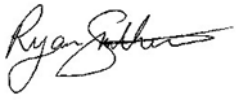
Document Tracking

Project Name:	Proposed Widening, Upper Snowmaking Pond, Thredbo Alpine Resort
Project Number:	9807
Project Manager:	Ryan Smithers
Accredited Assessor Certification	BAAS S. 6.15(1) of the *Biodiversity Conservation Act 2016* states that: *(1) A biodiversity assessment report cannot be submitted in connection with a relevant application, unless—* *(a) the accredited person certifies in the report that the report has been prepared on the basis of the requirements of, and information given under, the biodiversity assessment method as at a specified date (the certification date), and* *(b) the report is submitted within 14 days after the certification date.* This Biodiversity Development Assessment Report was prepared on the basis of the requirements of (and information provided under) the biodiversity assessment method (BAM 2020). The BAM calculations or outputs from the calculator (BAM-C) pertaining to the development application were finalised on 04/08/2025 and this BDAR was completed on 04/08/2025. No actual, perceived, or potential conflict of interest exists between it or between any one or more of the author's employees, consultants or agents and the project client, or is likely to arise in relation to the report that is submitted for this project.
Signature of Assessor	 Dated: 8 August 2025
Prepared By	Ryan Smithers
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Abbreviations

Abbreviation	Description
BAM	Biodiversity Assessment Method
BAMC	Biodiversity Assessment Method Credit Calculator
BC Act	*NSW Biodiversity Conservation Act 2016*
BAM	Biodiversity Assessment Method
BDAR	Biodiversity Development Assessment Report
BSSAR	Biodiversity Stewardship Site Assessment Report
CEEC	Critically Endangered Ecological Community
DCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water
DCCEEW (NSW)	NSW Department of Climate Change, Energy, the Environment and Water
DNG	Derived Native Grassland
DPIE	NSW Department of Planning, Industry and Environment
EEC	Endangered Ecological Community
ELA	Eco Logical Australia Pty Ltd
EP&A Act	*NSW Environmental Planning and Assessment Act 1979*
EPBC Act	*Commonwealth Environment Protection and Biodiversity Conservation Act 1999*
FM Act	*NSW Fisheries Management Act 1994*
GIS	Geographic Information System
GPS	Global Positioning System
IBRA	Interim Biogeographic Regionalisation for Australia
LGA	Local Government Area
LLS	Local Land Service
NRAR	Natural Resources Access Regulator
NSW	New South Wales
PCT	Plant Community Type
SEPP	State Environmental Planning Policy
SSD	State Significant Development
SSI	State Significant Infrastructure
TEC	Threatened Ecological Community
VIS	Vegetation Information System
WM Act	*NSW Water Management Act 2000*

Executive Summary

Eco Logical Australia Pty Ltd was engaged by Kosciuszko Thredbo Pty Ltd to prepare a Biodiversity Development Assessment Report (BDAR) for the proposed widening of the channel supplying the upper snowmaking pond, within Thredbo Alpine Resort.

This report has been prepared to meet the requirements of the Biodiversity Assessment Method 2020 established under Section 6.7 of the NSW *Biodiversity Conservation Act 2016* (BC Act). Some of the native vegetation within the development site is mapped on the Biodiversity Values map.

The proposed development has been designed to take advantage of existing disturbed areas and minimise the required clearing. As a result, it is anticipated that the proposal will involve the clearing or further modification of only 0.04 ha of native vegetation, all of which is located on the margins on the existing snowmaking pond which is already heavily disturbed.

The development footprint supports one Plant Community Type (PCT) PCT 3892 Kosciuszko Subalpine Valley Damp Heath in one condition state; moderate. PCT 3892 comprises the Endangered Ecological Communities (EEC) Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions, which is listed under the NSW BC Act.

One threatened fauna species, *Mastacomys fuscus* (Broad-toothed Rat), was considered likely to occur within the development site. A number of other threatened fauna species are known to occur in adjoining habitats and/or have the potential to occur within the development site, such as *Petroica phoenicea* (Flame Robin).

This BDAR outlines the measures taken to avoid, minimise and mitigate impacts to the vegetation and habitats present within the development footprint during the design and undertaking of the proposed development. The residual unavoidable impacts of the proposed development were calculated in accordance with the BAM by utilising the Biodiversity Assessment Method Credit Calculator. A total of one ecosystem credit and one species credit is required to offset the unavoidable impacts to the vegetation and habitats present within the development footprint.

Serious and Irreversible Impact (SAII) values have been considered as part of this assessment. The proposal will not result in any SAII.

Following consideration of the administrative guidelines for determining significance under the EPBC Act, it is concluded that the proposal is unlikely to have a significant impact on matters of National Environmental Significance (MNES) or Commonwealth land, and a referral to the Commonwealth Environment Minister is therefore not recommended.

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1. Introduction

This Biodiversity Development Assessment Report (BDAR) has been prepared by Ryan Smithers, an Accredited Person (BAAS17061) to apply the Biodiversity Assessment Method (BAM) under the NSW *Biodiversity Conservation Act 2016* (BC Act). All credit calculations have been undertaken using the BAM Calculator (BAMC) version 2020 in case number 53852.

Definitions of terminology used throughout this report are presented in Appendix A:.

1.1. General description of the development site

The proposal comprises the widening of the channel in the upper snowmaking pond to restore normal flow into the pond. The existing channel has become narrower through the deposition of alluvium and vegetation over the years such that flow into the snowmaking pond has been reduced. This reduced flow has been inhibiting snowmaking operations to the point where there have been occasions where there was insufficient water in the snowmaking pond to meet snowmaking demands. The proposed works will be undertaken in two locations between the inlet sluice gate at the offtake from the Thredbo River and the upper parts of the upper snowmaking pond.

This report includes two base maps, the Location Map (Figure 1) and the Site Map (Figure 2).

1.2. Brief description of the proposal

The proposal comprises the widening of the upper parts of the snowmaking pond channel through the excavation and removal of alluvium and associated vegetation that has accumulated on the either side of the channel. The channel will be widened by 2.5 m through the use of a small excavator at two locations (Location 1 and Location 2). The excavated material will be deposited onto geofabric, to minimise impacts on vegetation, from where it will be picked up by another larger long-reaching excavator, located on the existing vehicle track, and loaded onto a truck for transport to the Thredbo stockpile site for storage and dewatering. After dewatering the excavated material will be removed from the Thredbo Resort Area for disposal at an appropriate offsite location.

The small excavator will stay out of the pond channel and will be supported on the soft alluvium by swamp mats. At Location 1, the small excavator will be beyond the reach of the long-reaching excavator for part of the proposed works. In these areas, the excavated material will be piled behind the smaller machine as it digs with each pile moved along until the excavated material is back in range of the long-reaching excavator.

The proposed works include multiple measures to minimise impacts on vegetation and water quality:

- The use of designated access tracks for the excavators
- The use of geofabric and swamp mats
- Multi-stage sediment control
- The use of hydrocarbon filters
- The use of trucks with water-tight tailgate to transport excavated material
- The closing of the inlet sluice gate and down-stream weir and the dewatering of the upper snowmaking pond prior to the commencement of the proposed works.

The expected volume of excavated material is conservatively estimated at 130 m^3. The proposed works are expected to be completed in 5-6 working days. The proposed works are shown in Figures 3-6.

1.3. Development site footprint

The development site is heavily modified in association with historic disturbances associated with the construction and maintenance of the snow making pond, channel, sluice gate and access road. As a result, the development site footprint comprises a mix and native and exotic grasses, sedges and herbs with scattered native shrubs and trees that are characteristic of the riparian and floodplain vegetation adjacent to the Thredbo River.

The development site footprint is shown in Figure 2. The total size of the development footprint is 0.04 ha.

The proposed development and development site is further described in Photos 1-6.

1.4. Sources of information used

The following data sources were reviewed as part of this report:

- BioNet Vegetation Classification
- Bionet Atlas Database
- Threatened Biodiversity Data Collection
- Additional GIS datasets including cadastre, contours, imagery and drainage.
- The Aquatic Ecology Assessment undertaken for the proposal (ELA 2025).

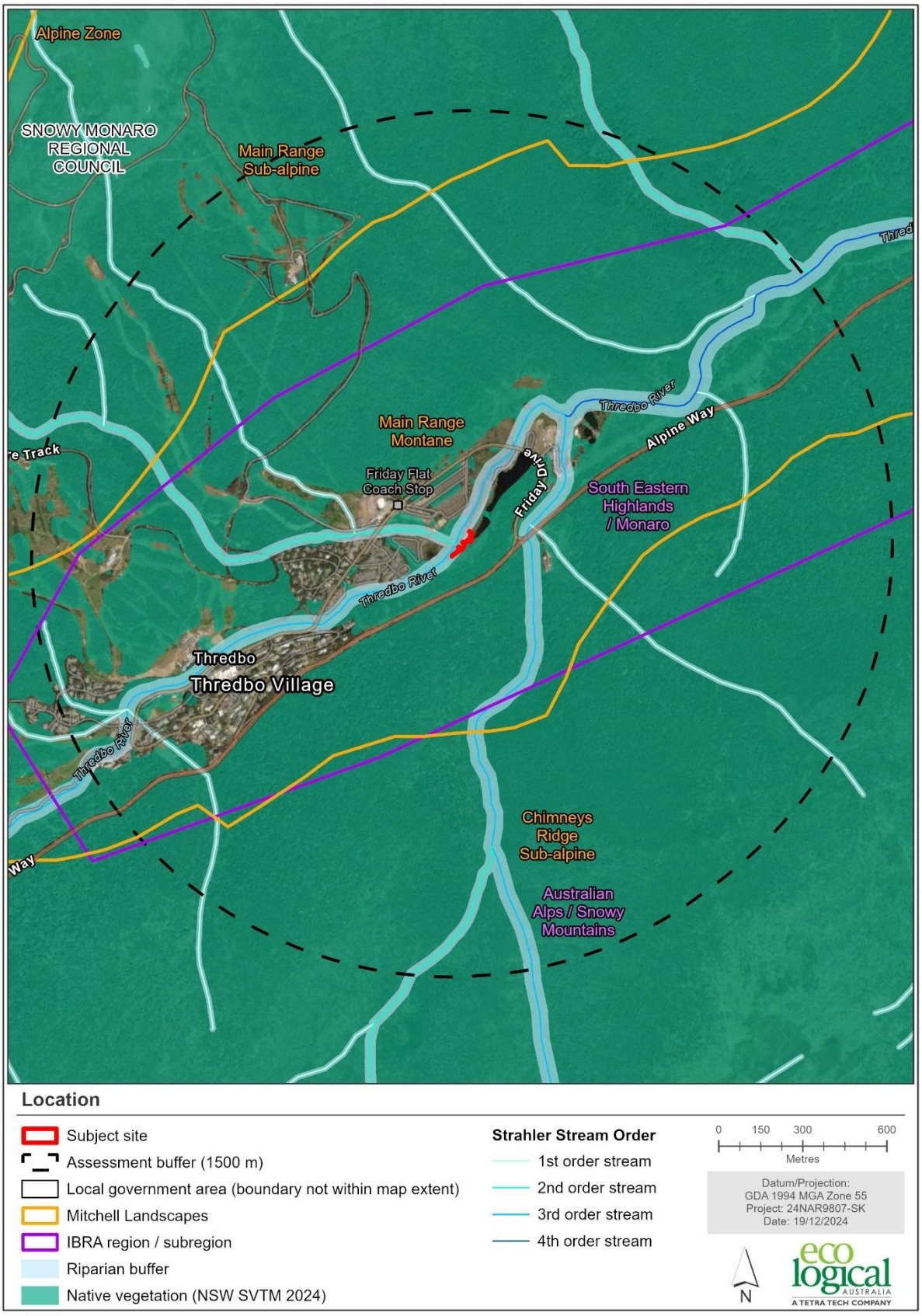

Figure 1: Location Map

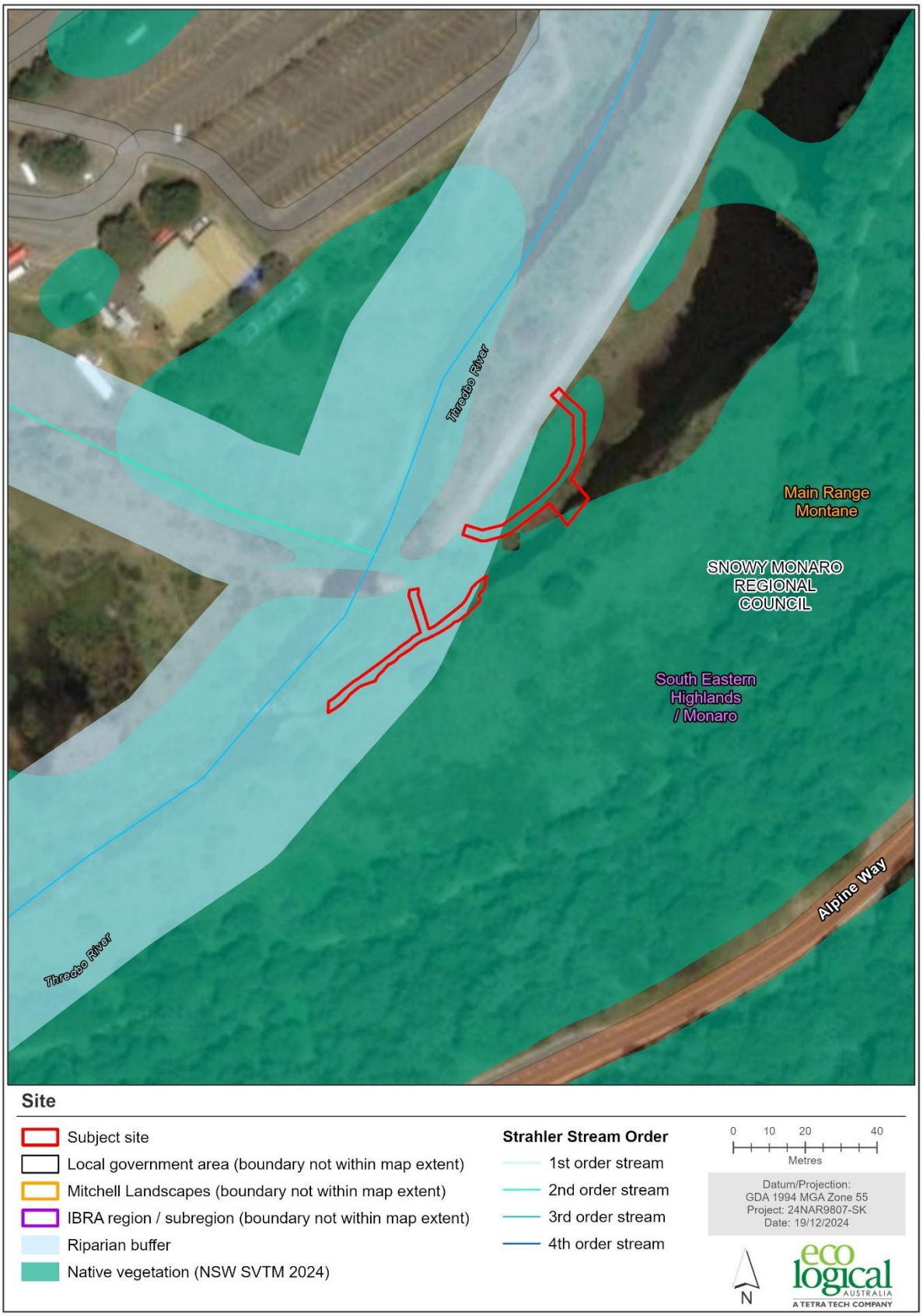

Figure 2: Site Map

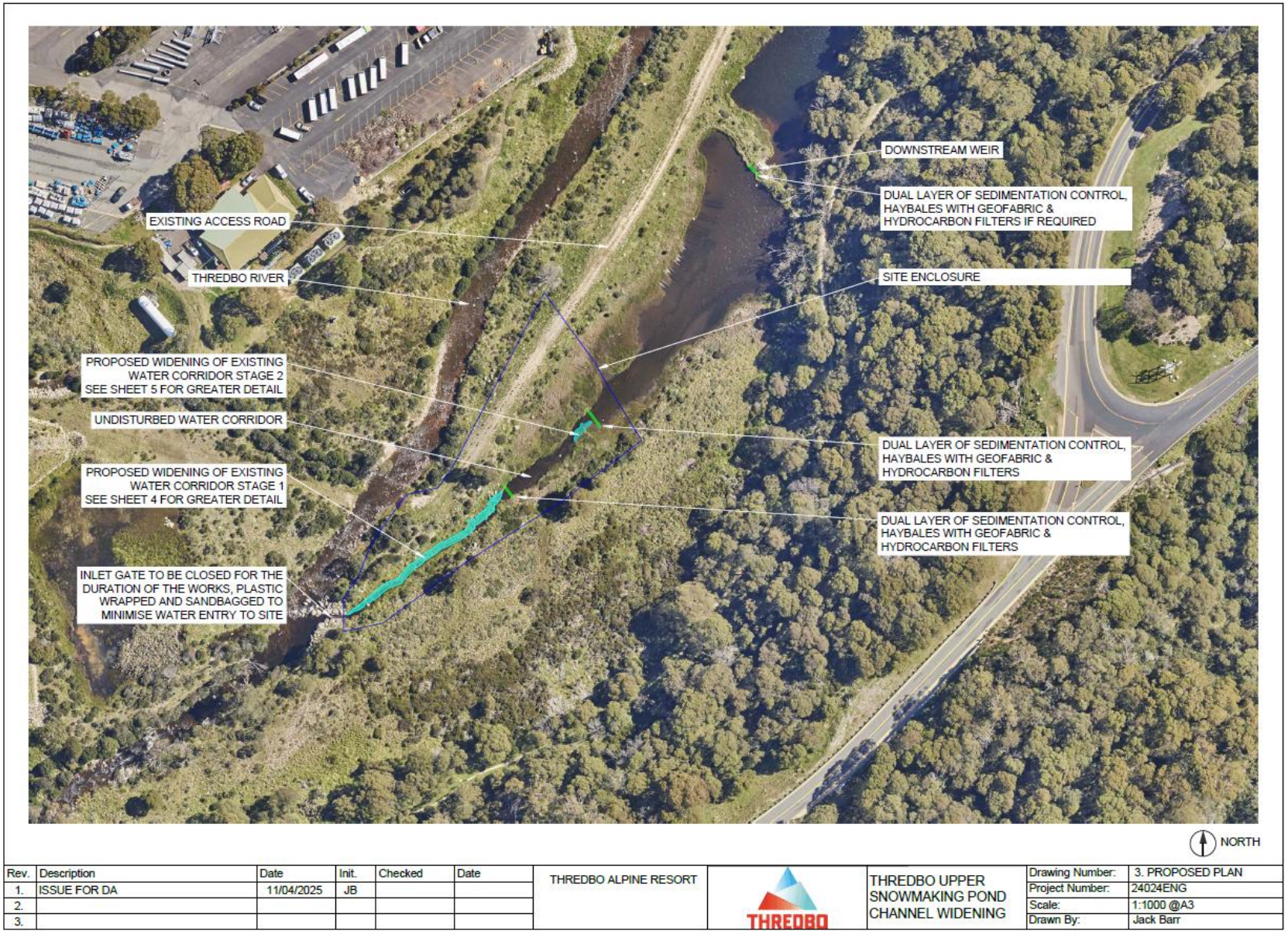

Figure 3: The upper snowmaking pond and the channel from the Thredbo River offtake.

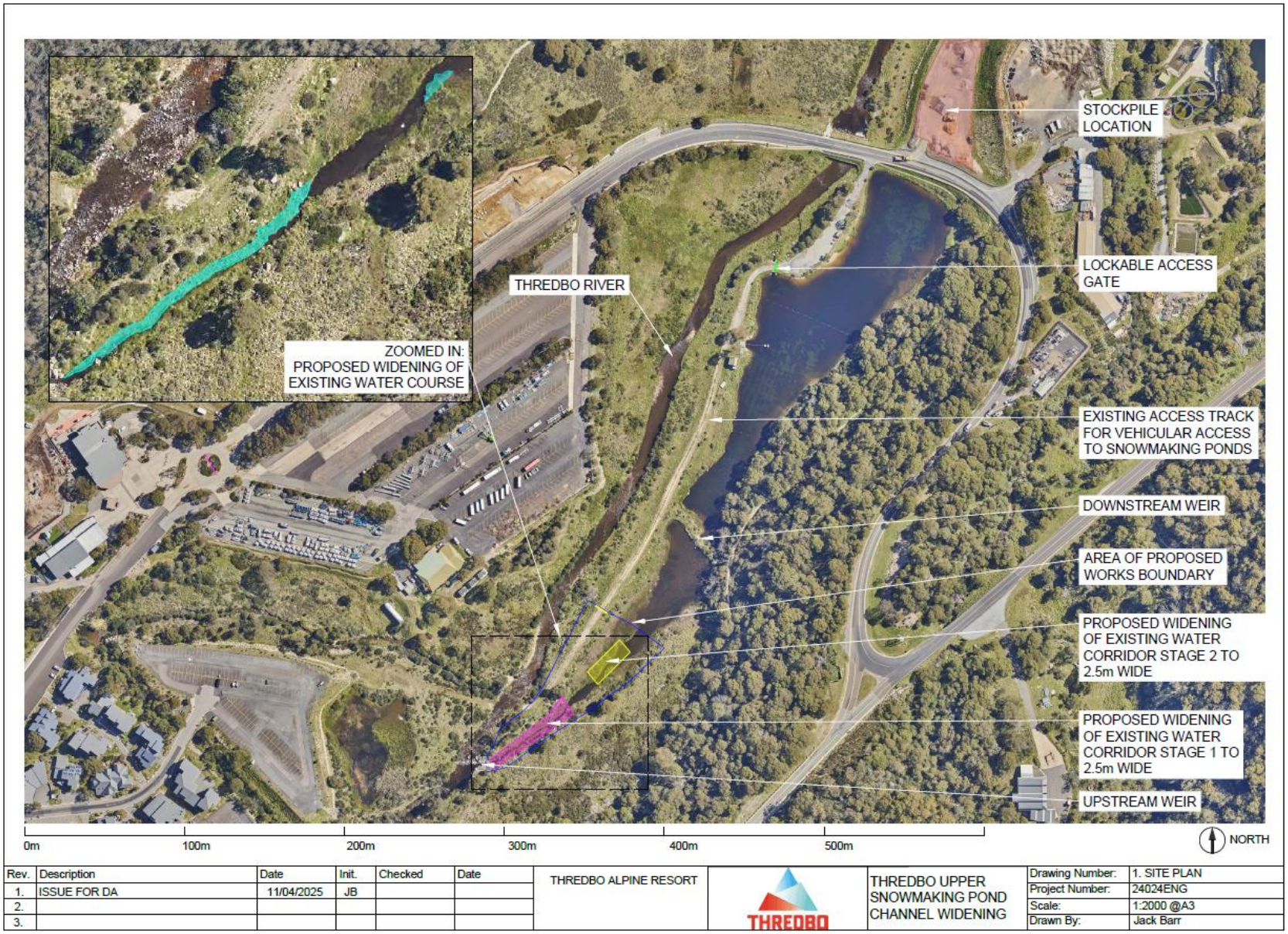

Figure 4: Overview of the proposed works

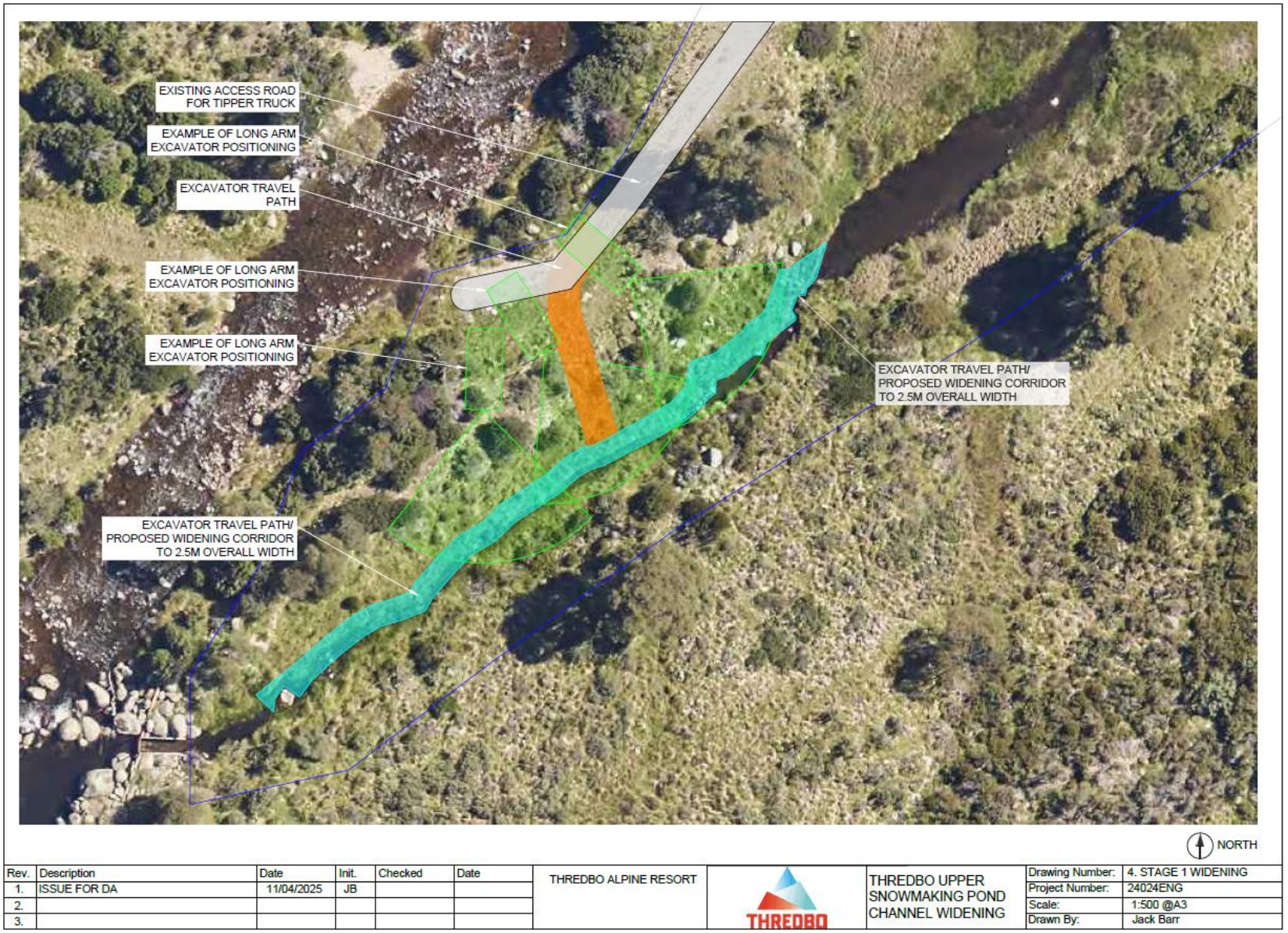

Figure 5: The proposed works at Location 1.

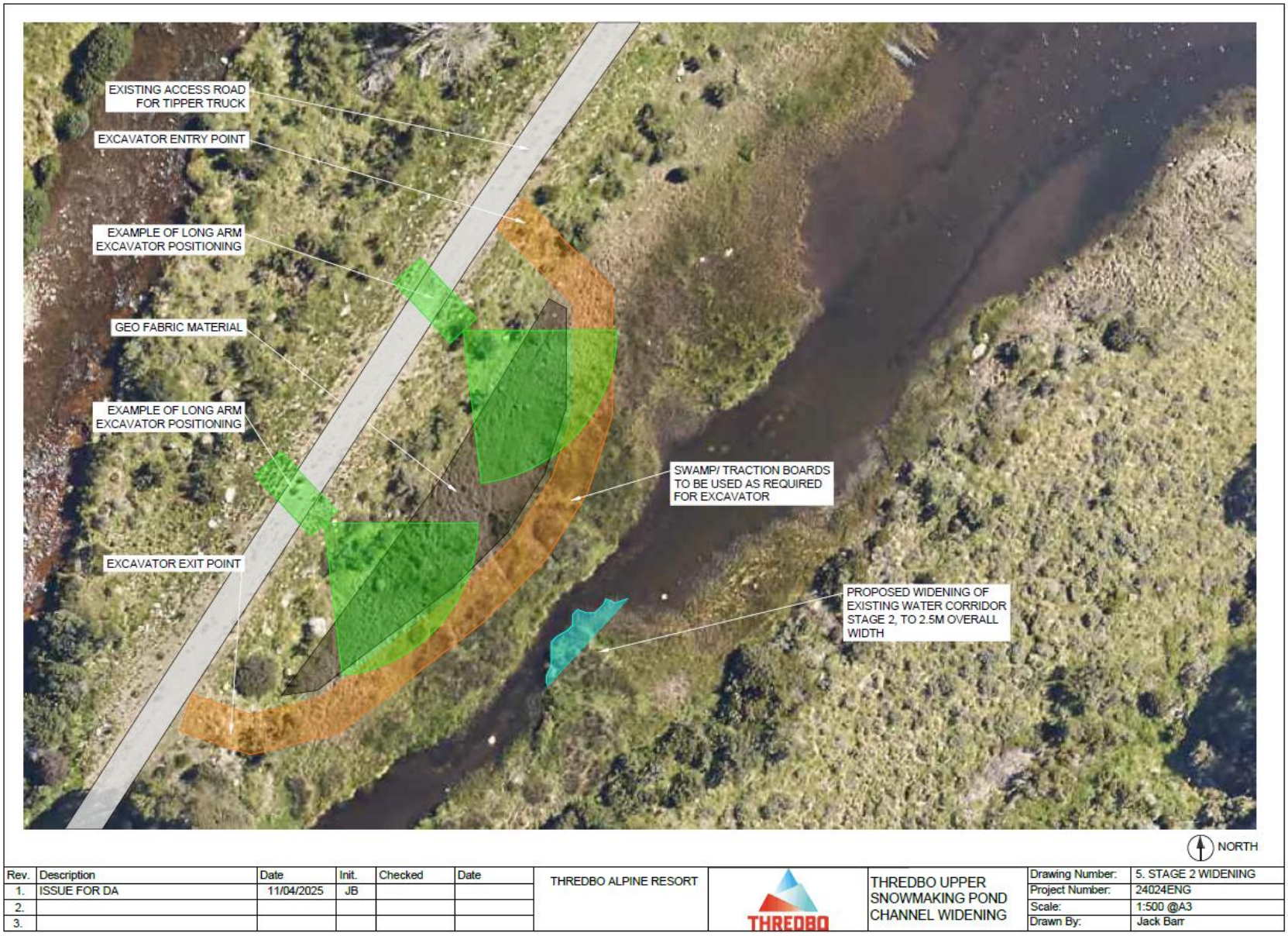

Figure 6: The proposed works at Location 2.

Photo 1: Looking from the sluice gate north along the snowmaking pond offtake channel at Location 1. The excavation will start approximately at the location the photo was taken and continue north. The excavator will be located on the left side of the river (western bank).

Photo 2: Looking south along the channel from the northern limit of Location 1. A long-arm excavator will be position on the access road on the western side of the channel to remove excavated material to a tipper truck.

Photo 3: Looking north along the channel to Location 2 where the existing corridor will be widened to improve flow.

Photo 4: Looking towards Location 2 from the access road. A 15 tonne excavator will descend from the access road and then head south to Location 2. It will then excavate the material from Location 2 placing it on geo-fabric. It will then be loaded by a long-arm excavator located on the access road onto a tipper truck.

Photo 5: The vegetation to excavated at Location 2.

Photo 6: The relatively undisturbed vegetation on the Thredbo River floodplain on the eastern side of the snowmaking pond channel. The heavily modified vegetation within the development site is derived from the clearing of this vegetation which would have once occurred where the snowmaking ponds are now located.

1.5. Legislative context

Legislation relevant to the development site is outlined in Table 1.

Table 1: Legislative context

Name	Relevance to the project	Report Section
Commonwealth		
Environmental Protection and Biodiversity Conservation Act 1999	Matters of national Environmental Significance (MNES) have been identified on or near the development site. This report assesses impacts to MNES and concludes that the development is unlikely to have a significant impact on MNES.	Appendix D
State		
Environmental Planning and Assessment Act 1979	The proposed development requires consent and is to be assessed under Part 4 of the EP&A Act. The EP&A Act places a duty on the determining authority to adequately address a range of environmental matters including the maintenance of biodiversity and the likely impact to threatened species, populations and communities.	-
Biodiversity Conservation Act 2016	The proposed development involves clearing of vegetation identified as high conservation value on the Biodiversity Values Land Map and thus requires submission of a Biodiversity Development Assessment Report.	-
Planning Instruments		
Precincts - Regional SEPP 2021	State Environmental Planning Policy (Precincts—Regional) 2021 (Precincts-Regional SEPP) facilitates a planning framework for Special Activation Precincts (Precinct/s) in regional NSW, streamlining planning processes and guiding the delivery of the precincts. The Precincts-Regional SEPP identifies the Minister for Planning as the determining authority for development within the NSW Alpine Resorts. Precincts-Regional SEPP requires the Minister for Planning to refer for comment any development application in the Alpine Resorts to the Director General of the NSW National Parks and Wildlife Service (NPWS).	-
Snowy River Shire Local Environment Plan 2013	The subject site is zoned C1 National Parks and Nature Reserves under the Snowy River Shire Local Environment Plan 2013.	-

2. Landscape features

The site-based method was applied for this assessment, therefore the assessment area is the 1,500 m buffer surrounding the outside edge of the boundary of the development footprint was applied for this assessment.

The landscape features considered for this assessment are presented in Table 2, Figure 1 and Figure 2.

Table 2: Landscape features

Landscape feature	Subject Land/Development Site	Assessment Area	Data source
IBRA Region(s)	South Eastern Highlands	South Eastern Highlands and Australian Alps	Interim Biogeographic Regionalisation for Australia, Version 7
IBRA subregion(s)	Monaro	Monaro and Snowy Mountains	Interim Biogeographic Regionalisation for Australia, Version 7
Rivers and streams	Thredbo River	The Thredbo River and tributaries.	NSW LPI Waterway mapping
Estuaries and wetlands	Artificial wetland	No	NSW directory of important wetlands
Connectivity of different areas of habitat	The development site is connected to vast areas of native vegetation.	No	Aerial imagery
Geological features of significance and soil hazard features	No	The rock outcropping in the Assessment Area is very typical of the locality and not of any particular geological significance	Site observation
Areas of Outstanding Biodiversity Value	No	No	Register of Declared Areas of Outstanding Biodiversity Value (DPIE 2020)
NSW (Mitchell) Landscapes	Main Range Montane	Main Range Montane, Main Range Subalpine and Chimneys Ridge Subalpine	NSW (Mitchell) Landscapes - version 3.1 (DPIE 2016)
Percent (%) native vegetation extent	90	There are no substantial differences between the mapped vegetation extent and the aerial imagery	Calculated using aerial imagery and ArcGIS software

3. Native Vegetation

3.1. Survey Effort

Vegetation survey was undertaken within the development site by Ryan Smithers on 12 November 2024 (Figure 7).

A total of one full-floristic vegetation plot was surveyed to identify Plant Community Types (PCTs) and Threatened Ecological Communities (TECs) on the development site (Table 3), as shown in Figure 8. A total of one vegetation integrity survey plot was undertaken on the development site to assess the composition, structure and function components of each vegetation zone in accordance with the BAM.

All field data collected at full-floristic and vegetation integrity plots is included in Appendix B and Appendix C.

Table 3: Full-floristic PCT identification plots

PCT ID	PCT Name	Number of plots surveyed
3892	Kosciuszko Subalpine Valley Damp Heath	1

3.2. Native vegetation extent on the subject land

There are no substantial differences between the extent of native vegetation within the development site as identified in recent aerial imagery and that identified during the vegetation survey.

3.3. Plant Community Types present

One PCT was identified within the development site as indicated in Table 4.

Table 4: Plant Community Types

PCT ID	PCT Name	Vegetation Class	Vegetation Formation	Area	Percent cleared
3892	Kosciuszko Subalpine Valley Damp Heath	Alpine Bogs and Fens	Alpine Complex	0.04	3

3.3.1. Plant Community Type selection justification

In determining the PCT for the development site, various attributes were considered in combination to assign vegetation to the best fit PCT. Attributes included dominant species in each stratum and relative abundance, community composition, soils and landscape position. Reference was made to the PCT descriptions in the BioNet Vegetation Classification and the final scientific determinations for TECs. Possible PCT options are provided in Table 5.

Table 5: Potential PCTs

Selected PCT ID	PCT Name	Other PCT options
3892	Kosciuszko Subalpine Valley Damp Heath	3383

3.4. Threatened Ecological Communities

The bulk of the vegetation within the development site comprises a highly disturbed occurrence of the Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions, endangered ecological community which is listed under the BC Act, as shown in Table 6 and Figure 9.

Table 6: Threatened Ecological Communities

PCT ID	BC Act			EPBC Act		
	Listing status	Name	Area (ha)	Listing status	Name	Area (ha)
3892	Endangered	Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions	0.038	NA	-	-

3.5. Vegetation integrity assessment

3.5.1. 3.5.1. Vegetation zones

A total of one vegetation zone was identified with the development site based on the broad condition state of each PCT. A total of one vegetation integrity survey plot was collected on the development site consistent with the BAM (Table 7). Descriptions of the vegetation zone within the development site is provided in Table 8.

Table 7: Vegetation zones and vegetation integrity survey plots collected on the development site

Vegetation Zone	PCT ID	PCT Name	Condition	Area (ha)	Patch Size	Vegetation Integrity Survey Plots required	Vegetation Integrity Survey Plots collected
1	3892	Kosciuszko Subalpine Valley Damp Heath	Moderate	0.04	101	1	1
			Total	0.04	101	1	1

3.5.2. Patch size

Patch size was calculated using available vegetation mapping for all patches of intact native vegetation on and adjoining the development site. Patch size was assigned to one of four classes (<5 ha, 5-24 ha, 25-100 ha or ≥100 ha). A patch size of >100 ha was determined for the development site.

Table 8: Zone 1 PCT 3892 in moderate condition

3892 - Kosciuszko Subalpine Valley Damp Heath			
Vegetation formation/class	Alpine Complex / Alpine Bogs and Fens		
Conservation status	NSW BC Act EEC: Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions		
	EPBC Act: Not an EEC		
Description	This community occurs in bands on the floodplain adjacent to the Thredbo River. It is also known to occur in other poorly drained habitats in subalpine and montane areas.		
Characteristic canopy trees	Occassional scattered *Eucalyptus stellulata*.		
Characteristic mid-storey	*Baeckea utilis*, *Bossiaea foliosa*, *Epacris breviflora*, *Hakea microcarpa*, *Leptspermum grandifolium, Pimelea pauciflora* and *Olearia phlogopappa.*		
Characteristic groundcovers	*Carex gaudichaudiana, Carex incomitata, Empodisma minus, Poa costiniana, Poa helmsii, Poa labillardierei* var. *labillardierei, Juncus australis*		
Mean native richness	21		
Exotic species / HTW cover	*Holcus lanatus*, *Anthoxanthum odoratum*, *Dactylis glomerata*, *Achillea millefolium*, *Agrostis capillaris*, *Lotus uliginosus*, *Trifolium repens*, *Rubus ulmifolius*.		
Condition	Moderate		
Variation and disturbance	The community has been highly modified structurally and floristically by historic disturbances and has substantial exotic grass and forb cover.		
No. sites sampled	1		
Threatened flora species	None		
Fauna habitats	Potential habitat for the Broad-toothed Rat.		
Composition	Structure	Function	Vegetation Integrity Score
74.7	31.5	-	48.5

3.5.3. Assessing vegetation integrity

A vegetation integrity assessment using the BAM Calculator (BAMC) was undertaken and the results are outlined in Table 9.

Table 9: Vegetation integrity scores

Veg Zone	PCT ID	Condition	Area (ha)	Composition Condition Score	Structure Condition Score	Function Condition Score	Presence of Hollow bearing trees	Current vegetation integrity score
1	3892	Moderate	0.04	74.7	31.5	-	No	48.5

3.6. Use of local data

Use of local data instead of benchmark integrity scores is not proposed.

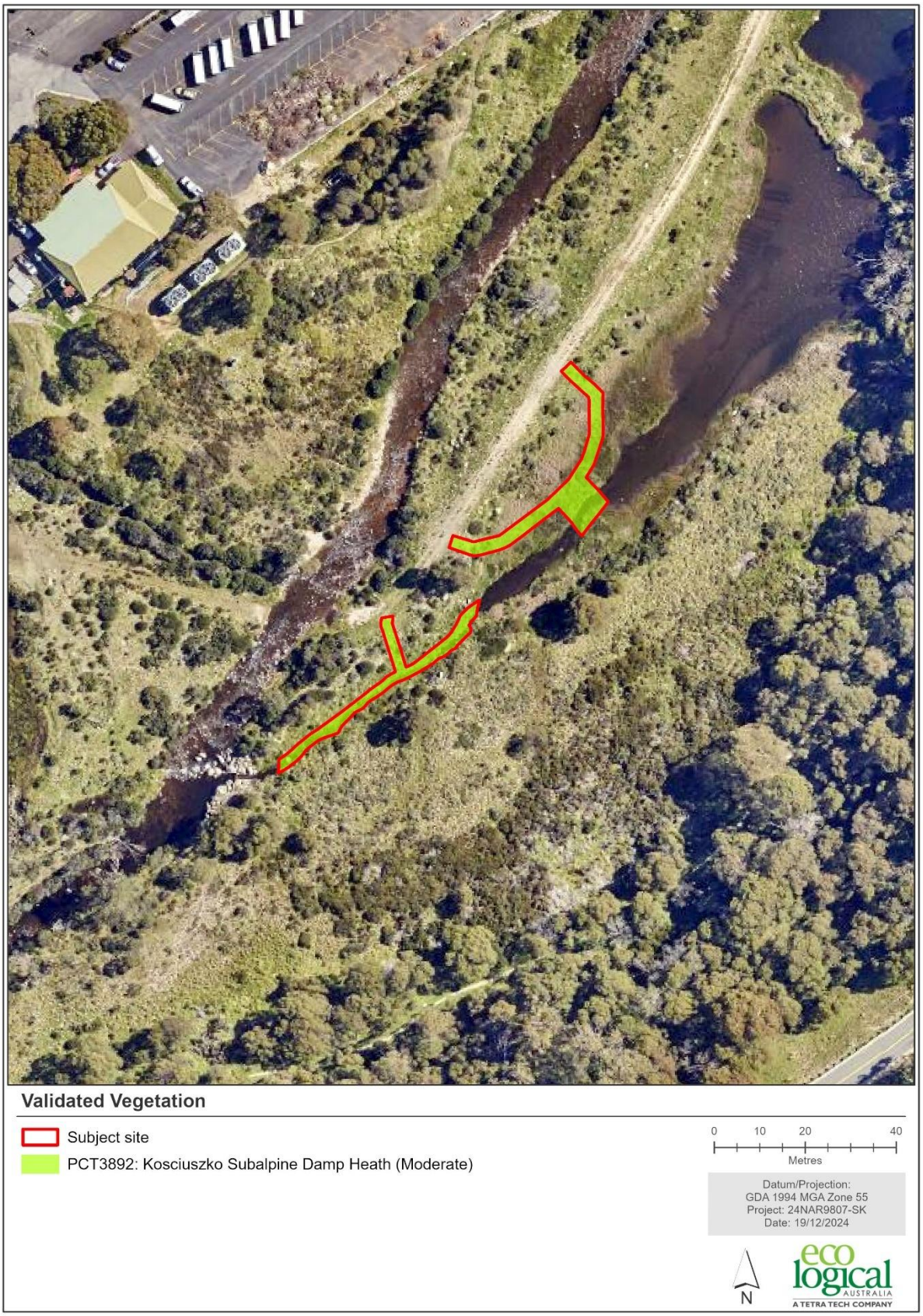

Figure 7: Plant Community Types

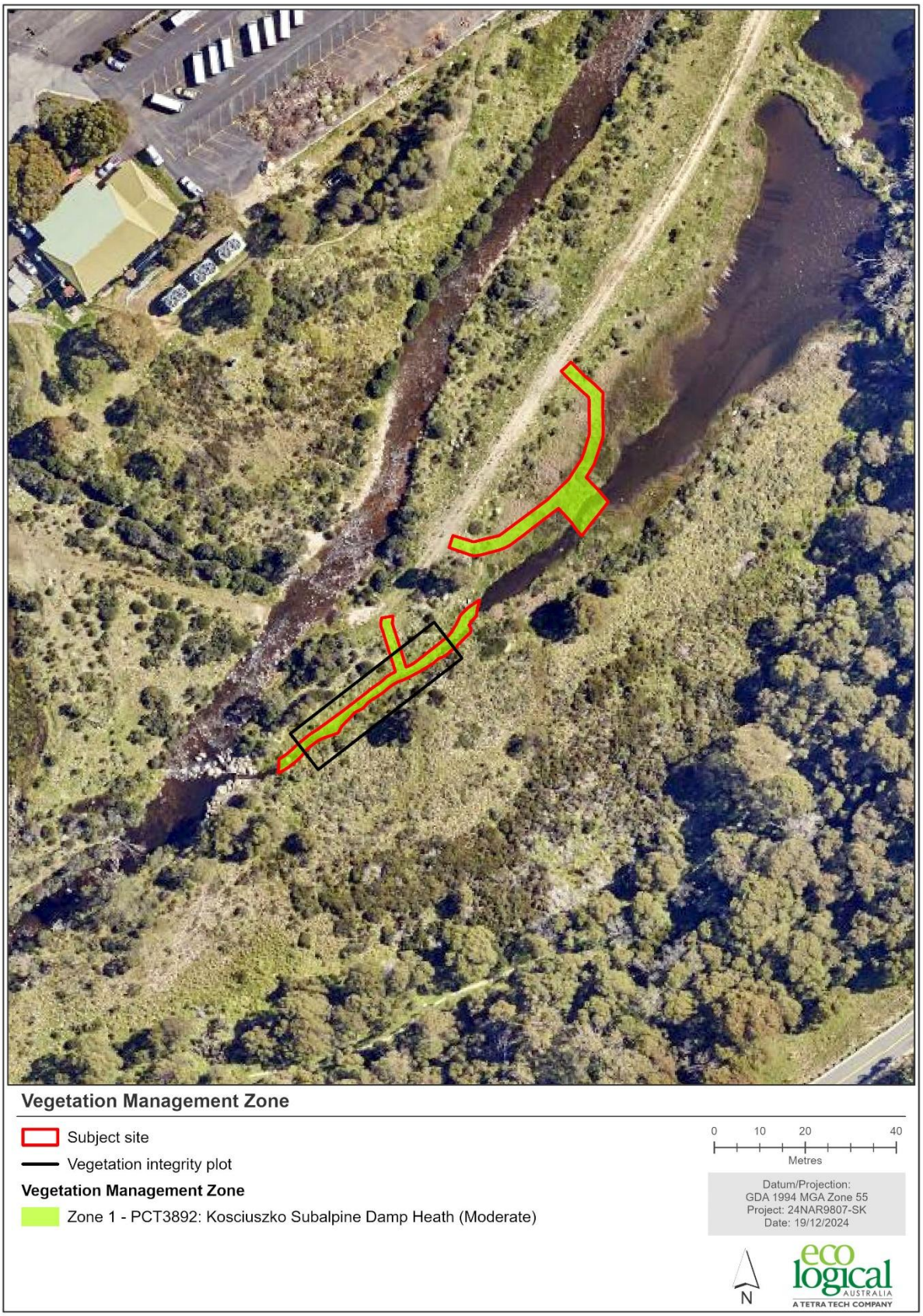

Figure 8: Vegetation Zones and Plots

Figure 9: Threatened Ecological Communities

4. Threatened species

4.1. Ecosystem credit species

Ecosystem credit species predicted to occur within the development site are generated by the BAMC following the input of VI data and the PCTs identified within Chapter 3. Ecosystem credit species predicted to occur at the development site, their associated habitat constraints, geographic limitations and sensitivity to gain class is included in Table 10.

4.2. Species credit species

4.2.1. Identification of species credit species

Species credit species that require further assessment on the development site (i.e. candidate species), their associated habitat constraints, geographic limitations and sensitivity to gain class is included in Table 11.

4.2.2. Assessment of habitat constraints and vagrant species

Justification for the exclusion of candidate species credit species is provided in Table 12.

Table 10: Predicted ecosystem credit species

Species	Common Name	Habitat Constraints	Geographic limitations	Sensitivity to gain class	BC Act listing status	EPBC Act Listing status
Artamus cyanopterus cyanopterus	Dusky Woodswallow	-	-	Moderate	Vulnerable	Not Listed
Callocephalon fimbriatum (foraging)	Gang-gang Cockatoo	-	-	Moderate	Endangered	Endangered
Daphoenositta chrysoptera	Varied Sittella	-	-	Moderate	Vulnerable	Not Listed
Dasyurus maculatus	Spotted-tailed Quoll	-	-	High	Vulnerable	Endangered
Ephippiorhynchus asiaticus	Black-necked Stork	Swamps; Shallow, open freshwater or saline wetlands or shallow edges of deeper wetlands within 300m of these swamps. Waterbodies; Shallow lakes, lake margins and estuaries within 300m of these waterbodies	-	Moderate	Endangered	Not Listed
Haliaeetus leucogaster (Foraging)	White-bellied Sea-Eagle	Waterbodies; Within 1km of a rivers, lakes, large dams or creeks, wetlands and coastlines	-	High	Vulnerable	Not Listed
Hirundapus caudacutus	White-throated Needletail	-	-	High	Vulnerable	Vulnerable
Pachycephala olivacea	Olive Whistler	-	-	Moderate	Vulnerable	Not Listed
Petroica boodang	Scarlet Robin	-	-	Moderate	Vulnerable	Not Listed
Petroica phoenicea	Flame Robin	-	-	Moderate	Vulnerable	Not Listed
Pycnoptilus floccosus	Pilotbird	-	-	Moderate	Vulnerable	Not Listed

Table 11: Candidate species credit species

Species	Common Name	Habitat Constraints	Geographic limitations	Sensitivity to gain class	BC Act listing status	EPBC Act Listing status
Calotis glandulosa	Mauve Burr-daisy	-	South of Michelago	Moderate	Vulnerable	Vulnerable
Mastacomys fuscus	Broad-toothed Rat	-	-	High	Endangered	Endangered
Pimelea bracteata	Pimelea bracteata	Swamps; Associated with Sub-Alpine Peat Swamps Waterbodies; Found on the immediate stream bank of subalpine streams	Only above 1100m elevation ASL (sub-alpine species)	High	Critically Endangered	Critically Endangered
Pseudophryne corroboree	Southern Corroboree Frog	Swamps; Within 200 m of high montane and sub-alpine bog or ephemeral pool environments	above 1000 m asl	Very High	Critically Endangered	Critically Endangered
Pterostylis oreophila	Blue-tongued Greenhood	-	-	High	Critically Endangered	Critically Endangered

Table 12: Justification for exclusion of candidate species credit species

Species	Common Name	Sensitivity to gain class	BC Act listing status	EPBC Act Listing status	Justification for exclusion of species
Pseudophryne corroboree	Southern Corroboree Frog	Very High	Critically Endangered	Critically Endangered	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 Smiggin Holes in the south. Its range is entirely within Kosciuszko National Park. This species is all but extinct in the wild. It is no longer present at its former southern limit at Smiggin Holes. It is considered highly unlikely that it would occur within the development site and it was not detected there opportunistically.
Pterostylis oreophila	Blue-tongued Greenhood	High	Critically Endangered	Critically Endangered	In New South Wales, the Blue-tongued Greenhood is known from a few small populations within Kosciuszko National Park and a population of about 40 plants (possibly now extinct) in Bago State Forest and adjoining Crown Leases south of Tumut. It grows along sub-alpine watercourses under more open thickets of Mountain Tea-tree in muddy ground very close to water. It less commonly grows in peaty soils and sphagnum mounds. It flowers from November to January. The development site is too degraded to provide habitat for this species.

4.2.3. Candidate species requiring further assessment

For a Streamlined Assessment – Small Area, only candidate SAII species require further assessment and will require targeted surveys. All of the candidate species are SAII species. However, the development site is too degraded to provide potential habitat for *Pterostylis oreophila* and the Southern Corroboree Frog is no longer present as far south as Thredbo. The only candidate species that require further assessment following site survey to assess the condition of the development site and the presence of microhabitats were *Calotis glandulosa, Pimelea bracteata* and *Mastacomys fuscus* (Broad-toothed Rat).

4.2.4. Targeted surveys

Targeted surveys were undertaken within the development site on 12 November 2024 for *Calotis glandulosa* and *Pimelea bracteata,* as identified in Table 13. They were not detected there. The Broad-toothed Rat, which is well know from similar habitats within the Thredbo Resort area, was assumed to be present. Relevant experience of staff undertaking surveys is provided in Appendix E.

Table 13: Targeted surveys

Date	Surveyors	Target species
12 November 2024	Ryan Smithers	*Calotis glandulosa* and *Pimelea bracteata*

Weather conditions during the targeted surveys are outlined in Table 14.

Table 14: Weather conditions

Date	Rainfall (mm)	Minimum temperature °C	Maximum temperature °C
12 November 2024	<1	20	20

Survey effort for the targeted surveys is outlined in Table 15.

Table 15: Survey effort

Method	Habitat (ha)	Stratification units	Total effort	Target species
Targeted searches	0.04	PCT 3892	0.5 hr	*Calotis glandulosa* and *Pimelea bracteata*

4.2.5. Species credit species included in the assessment

One species credit species, the Broad-toothed Rat, has been included in the assessment as the proposed development will impact on habitat for the species, as shown in Table 16. A species polygon for the Broad-toothed Rat is included as Figure 10.

Table 16: Species credit species included in the assessment

Species	Common Name	Species presence	Geographic limitations	Habitat (ha) / count	Biodiversity Risk Weighting
Mastacomys fuscus	Broad-toothed Rat	Yes	-	0.04	2

4.3. Identification of prescribed additional biodiversity impact entities

The proposed development does not include any prescribed additional biodiversity impact entities.

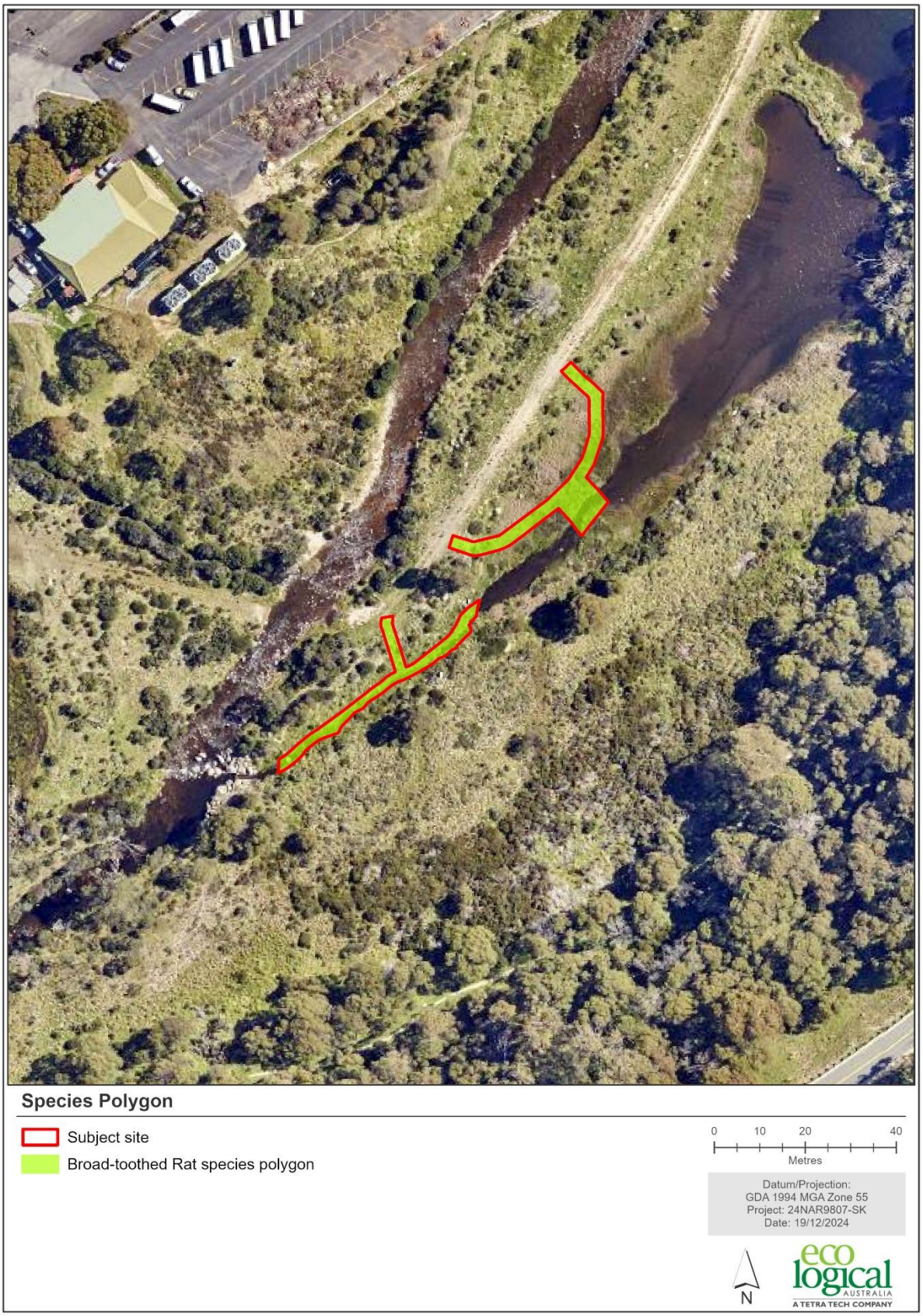

Figure 10: Species polygon

5. Avoiding and Minimising Impacts on Biodiversity Values

5.1. Locating a project to avoid and minimise impacts on biodiversity values

5.1.1. Direct and indirect impacts

The proposal has been designed to avoid and minimise direct and indirect impacts. In particular, this has involved.

- Locating the proposed works in heavily disturbed areas.
- Minimising the disturbance footprint associated with construction.
- Using low impact construction methods.

5.1.2. Prescribed biodiversity impacts

The proposal does not involve any prescribed biodiversity impacts.

5.2. Designing a project to avoid and minimise impacts on biodiversity values

5.2.1. Direct and indirect impacts

The proposal has been designed to avoid and minimise direct and indirect impacts on biodiversity values as described in Section 5.1.1.

5.2.2. Prescribed biodiversity impacts

Prescribed biodiversity impacts have been avoided and minimised by incorporating the design features identified in Section 5.1.1.

6. Assessment of Impacts

6.1. Direct impacts

The direct impacts of the development on:

- native vegetation and threatened ecological communities are outlined in Table 17
- threatened species and threatened species habitat is outlined in Table 18
- prescribed biodiversity impacts is outlined in Section 6.4.

Direct impacts on native vegetation including the final project footprint (construction and operation) are shown in Table 17.

Table 17: Direct impacts to native vegetation

PCT ID	PCT Name	BC Act listing	EPBC Act listing	Direct impact (ha)
3892	Kosciuszko Subalpine Valley Damp Heath	Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions	Not listed	0.04

Direct impacts on candidate threatened species or threatened species habitat are outlined in Table 18.

Table 18: Direct impacts on threatened species and threatened species habitat

Species	Common Name	Direct impact number of individuals / habitat (ha)	BC Act listing status	EPBC Act Listing status
Mastacomys fuscus	Broad-toothed Rat	0.04	Endangered	Endangered

6.2. Change in vegetation integrity

The change in vegetation integrity as a result of the development is outlined in Table 19.

Table 19: Change in vegetation integrity

Veg Zone	PCT ID	Condition	Area (ha)	Current vegetation integrity score	Future vegetation integrity score	Change in vegetation integrity
1	3892	Moderate	0.04	48.5	0	-48.5

6.3. Indirect impacts

The indirect impacts of the development are outlined in Table 20. Indirect impact zones are shown on Figure 11. Given the nature of the proposed development, and the proposed mitigation measures, indirect impacts are only anticipated to extend a maximum of 10 m into vegetation surrounding the proposed development site.

6.4. Prescribed biodiversity impacts

The development does not have any prescribed biodiversity impacts.

Table 20: Indirect impacts

Indirect impact	Project phase	Nature	Extent	Frequency	Duration	Timing
Sedimentation and contaminated and/or nutrient rich run-off	Construction and post construction	Minor potential for sedimentation during and immediately after works. However, the proposed sediment control measures have been effective during the many other similar developments.	Minor	During and after any heavy rainfall	12 month maximum	Intermittently during and post construction phase
Noise, dust or light spill	Construction	Minor during construction.	Minor	Intermittently during construction phase	During construction	Intermittently during construction phase
Inadvertent impacts on adjacent habitat or vegetation	Construction	Minor. The proposed construction methods will prevent inadvertent impacts beyond the development footprint.	Minor	Not expected, but possible	During construction	Not expected
Transport of weeds and pathogens from the site to adjacent vegetation	Construction	Not expected. The development site includes and abuts areas that are already heavily modified and which support weeds which are common within the Thredbo Resort area and elsewhere within the NSW Alps.	Not expected	Not expected, but possible	Not expected	Not expected
Vehicle strike	Construction	Minor. It is considered unlikely that the proposal will include vehicle strike impacts. Any vehicles used during construction will be travelling at very slow speeds within the development site and the noise and vibration associated with vehicle movements is expected to deter any fauna within or adjoining the development site from the path of any vehicles.	Not expected	Not expected, but possible	During construction	Not expected
Trampling of threatened flora species	Construction	Minor. There are no threatened flora species within the development site.	Minor	Not expected	During construction	Not expected
Rubbish dumping	Construction	Not expected. Materials used during the proposed works will be removed from the site regularly and no rubbish will be dumped or otherwise left to pollute the surrounding environment.	Not expected	Not expected	Not expected	Not expected
Wood collection	Construction	Not expected.	Not expected	Not expected	Not expected	Not expected

Indirect impact	Project phase	Nature	Extent	Frequency	Duration	Timing
Bush rock removal and disturbance	Construction	Minor. A relatively small amount of rock will be removed as part of the development. No additional indirect impacts are expected.	Minor	Intermittently during construction phase	During construction	Intermittently during construction phase
Increase in predatory species populations	Construction and post construction	Not expected. The proposed development occurs within an already disturbed area and will not increase the populations of predatory species such as foxes and cats.	Not expected	Not expected	Not expected	Not expected
Increase in pest animal populations	Construction and post construction	Not expected.	Not expected	Not expected	Not expected	Not expected
Increased risk of fire	Construction	Minor potential for increased risk of fire during construction.	Minor	Intermittently during construction phase	During construction	Intermittently during construction phase
Disturbance to specialist breeding and foraging habitat, e.g. beach nesting for shorebirds	Construction and post construction	Not expected as none as none are known to be present.	Not expected	Not expected	Not expected	Not expected

6.5. Mitigating and managing direct and indirect impacts

Measures proposed to mitigate and manage impacts at the development site before, during and after the proposed works are outlined in Table 21.

6.6. Mitigating prescribed impacts

The development does not have any prescribed biodiversity impacts.

6.7. Adaptive management strategy

This section is required for those impacts that are infrequent, cumulative or difficult to predict. Impacts associated with the proposed development have been considered extensively and addressed in Section 5 and Section 6. Further consideration of infrequent, cumulative or difficult to predict impacts is not considered to be necessary.

Table 21: Measures proposed to mitigate and manage impacts

Measure	Risk before mitigation	Risk after mitigation	Action	Outcome	Timing	Responsibility
Displacement of resident fauna	Medium	Low	NPWS should be contacted if any animals are disturbed or injured during the proposed works.	Direct impacts on resident fauna will be reduced	During construction	Thredbo
Timing works to avoid critical life cycle events such as breeding or nursing	Low	Low	None proposed.	NA	NA	NA
Instigating clearing protocols including pre-clearing surveys, daily surveys and staged clearing, the presence of a trained ecologist or licensed wildlife handler during clearing events	Low	Low	None proposed.	NA	NA	NA
Clearing protocols that identify vegetation to be retained, prevent inadvertent damage and reduce soil disturbance; for example, removal of native vegetation by chainsaw, rather than heavy machinery, is preferable in situations where partial clearing is proposed	Medium	Low	Identify with flagging tape or other markers the limits of clearing for the proposed works prior to construction	Risk of disturbance beyond proposed disturbance footprint is reduced	Prior to construction	Thredbo
Sediment barriers or sedimentation ponds to control the quality of water released from the site into the receiving environment	Medium	Low	Sediment control measures as necessary such as booms and hay bales etc	Risk of sedimentation of water quality impacts substantially reduced	During and post-construction	Thredbo
Noise barriers or daily/seasonal timing of construction and operational activities to reduce impacts of noise	Low	Low	Restrict work to daylight hours	Noise impacts mitigated	During construction	Thredbo
Light shields or daily/seasonal timing of construction and operational activities to reduce impacts of light spill	Low	Low	Restrict work to daylight hours	Light impacts mitigated	During construction	Thredbo
Adaptive dust monitoring programs to control air quality	Low	Low	None proposed	NA	NA	NA
Programming construction activities to avoid impacts; for example, timing construction activities for when migratory species are absent from the	Low	Low	None proposed	NA	NA	NA

Measure	Risk before mitigation	Risk after mitigation	Action	Outcome	Timing	Responsibility
site, or when particular species known to or likely to use the habitat on the site are not breeding or nesting						
Temporary fencing to protect significant environmental features such as riparian zones	Low	Low	Identify with flagging tape or other markers the limits of clearing for the proposed works prior to construction	Protection of vegetation and habitats beyond the disturbance footprint	Prior to and during construction	Thredbo
Hygiene protocols to prevent the spread of weeds or pathogens between infected areas and uninfected areas	Medium	Low	Any machinery or vehicles involved with the proposed works that are not owned by Thredbo will be washed down to remove all soil and vegetative matter before entering the site to limit spread of weeds and disease such as *Phytophthora cinnamomi*	Risk of weed or pathogen spread substantially reduced	Prior to and during construction	Thredbo
Staff training and site briefing to communicate environmental features to be protected and measures to be implemented	Medium	Low	Brief all workers as to limit of disturbance footprint and other environmental safeguards	Risk of disturbance beyond proposed disturbance corridor is reduced	Prior to and during construction as necessary	Thredbo
Making provision for the ecological restoration, rehabilitation and/or ongoing maintenance of retained native vegetation habitat on or adjacent to the development footprint	Low	Low	None proposed	NA	NA	NA
Monitoring	Low	Low	None proposed	NA	NA	NA

Figure 11: Indirect impact zones

7. Impact summary

Following implementation of the BAM and the BAMC, the following impacts have been determined.

7.1. Serious and Irreversible Impacts (SAII)

The development does not have any Serious and Irreversible Impacts (SAII).

7.2. Impacts requiring offsets

The impacts of the development requiring offset for native vegetation are outlined in Table 22 and shown on Figure 12. Impacts requiring offset for species credit species and their habitat are outlined in Table 23 and Figure 12.

Table 22: Impacts to native vegetation that require offsets

Vegetation Zone	PCT ID	PCT Name	Vegetation Class	Vegetation Formation	Direct impact (ha)
1	3892	Kosciuszko Subalpine Valley Damp Heath	Alpine Bogs and Fens	Alpine Complex	0.04

Table 23: Impacts on threatened species and threatened species habitat that require offsets

Species	Common Name	Direct impact number of individuals / habitat (ha)	BC Act listing status	EPBC Act Listing status
Mastacomys fuscus	Broad-toothed Rat	0.04	Endangered	Endangered

7.3. Impacts not requiring offsets

All the impacts of the development on native vegetation require offsets.

7.4. Areas not requiring assessment

There are no areas within the development site that do not require assessment.

7.5. Credit summary

The number of ecosystem credits required for the development are outlined in Table 24. The number of species credits required for the development are outlined in Table 25. A biodiversity credit report is included in Appendix F.

Table 24: Ecosystem credits required

Vegetation Zone	PCT ID	PCT Name	Credit Class	Direct impact (ha)	Credits required
1	3892	Kosciuszko Subalpine Valley Damp Heath	Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions	0.04	1

Table 25: Species credit summary

Species	Common Name	Direct impact number of individuals / habitat (ha)	Credits required
Mastacomys fuscus	Broad-toothed Rat	0.04	1

Figure 12: Impacts requiring offset

8. Consistency with legislation and policy

8.1. Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

An impact assessment under the EPBC Act was undertaken on MNES known to occur within the development footprint or immediate surrounds or with potential to occur there. These MNES were:

- *Mastacomys fuscus mordicus* (Broad-toothed Rat).

The outcome of this assessment was that it is unlikely that the development would significantly impact on those MNES assessed (Appendix D).

A referral to the Commonwealth under the EPBC Act is not recommended.

9. Recommendations

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

- The mitigation measures identified in Table 20 should be incorporated into the proposal.
- The mitigation measures identified in aquatic ecology impact assessment undertaken for the proposal (ELA 2025) should be incorporated into the proposal.

10. Conclusion

Eco Logical Australia Pty Ltd was engaged by Kosciuszko Thredbo Pty Ltd to prepare a BDAR for the proposed widening of the upper snowmaking pond channel, within Thredbo Alpine Resort.

This report has been prepared to meet the requirements of the BAM 2020 established under Section 6.7 of the BC Act.

This BDAR outlines the measures taken to avoid, minimise and mitigate impacts to the vegetation and habitats present within the development footprint during the design, construction and operation of the development. The residual unavoidable impacts of the proposed development were calculated in accordance with the BAM by utilising the BAMC. The BAMC calculated that a total of one ecosystem credit and one species credit is required to offset the unavoidable impacts to the vegetation and fauna habitats present within the development footprint.

SAII values have been considered as part of this assessment. The proposal will not result in any SAII.

Following consideration of the administrative guidelines for determining significance under the EPBC Act, it is concluded that the proposal is unlikely to have a significant impact on MNES or Commonwealth land, and a referral to the Commonwealth Environment Minister is therefore not recommended

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Appendix A: Definitions

The following terminology has been used throughout this report for the purposes of describing the impacts of the proposal in the context of a biodiversity assessment in accordance with the NSW Biodiversity Assessment Method 2020. This terminology may or may not align with other technical documents associated with the proposed development.

Terminology	Definition
Biodiversity credit report	The report produced by the Credit Calculator that sets out the number and class of biodiversity credits required to offset the remaining adverse impacts on biodiversity values at a development site, or on land to be biodiversity certified, or that sets out the number and class of biodiversity credits that are created at a biodiversity stewardship site.
BioNet Atlas	The BioNet Atlas (formerly known as the NSW Wildlife Atlas) is the OEH database of flora and fauna records. The Atlas contains records of plants, mammals, birds, reptiles, amphibians, some fungi, some invertebrates (such as insects and snails) and some fish
Broad condition state:	Areas of the same PCT that are in relatively homogenous condition. Broad condition is used for stratifying areas of the same PCT into a vegetation zone for the purpose of determining the vegetation integrity score.
Connectivity	The measure of the degree to which an area(s) of native vegetation is linked with other areas of vegetation.
Credit Calculator	The computer program that provides decision support to assessors and proponents by applying the BAM, and which calculates the number and class of biodiversity credits required to offset the impacts of a development or created at a biodiversity stewardship site.
Development	Has the same meaning as development at section 4 of the EP&A Act, or an activity in Part 5 of the EP&A Act. It also includes development as defined in section 115T of the EP&A Act.
Development footprint	The area of land that is directly impacted on by a proposed development, including access roads, and areas used to store construction materials.
Development site	An area of land that is subject to a proposed development that is under the EP&A Act.
Ecosystem credits	A measurement of the value of EECs, CEECs and threatened species habitat for species that can be reliably predicted to occur with a PCT. Ecosystem credits measure the loss in biodiversity values at a development site and the gain in biodiversity values at a biodiversity stewardship site.
Extent of occurrence (EOO)	Measures the spatial spread of a taxon to determine the degree to which risks from threatening factors could impact an entire population, and is not intended to be an estimate of the amount of occupied or potential habitat.
High threat exotic plant cover	Plant cover composed of vascular plants not native to Australia that if not controlled will invade and outcompete native plant species.
Hollow bearing tree	A living or dead tree that has at least one hollow. A tree is considered to contain a hollow if: (a) the entrance can be seen; (b) the minimum entrance width is at least 5 cm; (c) the hollow appears to have depth (i.e. you cannot see solid wood beyond the entrance); (d) the hollow is at least 1 m above the ground. Trees must be examined from all angles.
Important wetland	A wetland that is listed in the Directory of Important Wetlands of Australia (DIWA) and SEPP 14 Coastal Wetlands
Linear shaped development	Development that is generally narrow in width and extends across the landscape for a distance greater than 3.5 kilometres in length
Local population	The population that occurs in the study area. In cases where multiple populations occur in the study area or a population occupies part of the study area, impacts on each subpopulation must be assessed separately.
Local wetland	Any wetland that is not identified as an important wetland (refer to definition of Important wetland).
NSW (Mitchell) landscape	Landscapes with relatively homogeneous geomorphology, soils and broad vegetation types, mapped at a scale of 1:250,000.
Operational Manual	The Operational Manual published from time to time by DPIE, which is a guide to assist assessors when using the BAM

Terminology	Definition
Patch size	An area of intact native vegetation that: a) occurs on the development site or biodiversity stewardship site, and b) includes native vegetation that has a gap of less than 100 m from the next area of native vegetation (or ≤30 m for non-woody ecosystems). Patch size may extend onto adjoining land that is not part of the development site or stewardship site.
Proponent	A person who intends to apply for consent to carry out development or for approval for an activity.
Reference sites	The relatively unmodified sites that are assessed to obtain local benchmark information when benchmarks in the Vegetation Benchmarks Database are too broad or otherwise incorrect for the PCT and/or local situation. Benchmarks can also be obtained from published sources.
Regeneration	The proportion of over-storey species characteristic of the PCT that are naturally regenerating and have a diameter at breast height <5 cm within a vegetation zone.
Residual impact	An impact on biodiversity values after all reasonable measures have been taken to avoid, minimise or mitigate the impacts of development. Under the BAM, an offset requirement is determined for the remaining impacts on biodiversity values.
Retirement of credits	The purchase and retirement of biodiversity credits from an already-established biobank site or a biodiversity stewardship site secured by a biodiversity stewardship agreement.
Riparian buffer	Riparian buffers applied to water bodies in accordance with the BAM
Sensitive biodiversity values land map	Development within an area identified on the map requires assessment using the BAM.
Site attributes	The matters assessed to determine vegetation integrity. They include: native plant species richness, native over-storey cover, native mid-storey cover, native ground cover (grasses), native ground cover (shrubs), native ground cover (other), exotic plant cover (as a percentage of total ground and mid-storey cover), number of trees with hollows, proportion of over-storey species occurring as regeneration, and total length of fallen logs.
Site-based development	a development other than a linear shaped development, or a multiple fragmentation impact development
Species credits	The class of biodiversity credits created or required for the impact on threatened species that cannot be reliably predicted to use an area of land based on habitat surrogates. Species that require species credits are listed in the Threatened Biodiversity Data Collection.
Subject land	Is land to which the BAM is applied in Stage 1 to assess the biodiversity values of the land. It includes land that may be a development site, clearing site, proposed for biodiversity certification or land that is proposed for a biodiversity stewardship agreement.
Threatened Biodiversity Data Collection	Part of the BioNet database, published by DPIE and accessible from the BioNet website.
Threatened species	Critically Endangered, Endangered or Vulnerable threatened species as defined by Schedule 1 of the BC Act, or any additional threatened species listed under Part 13 of the EPBC Act as Critically Endangered, Endangered or Vulnerable.
Vegetation Benchmarks Database	A database of benchmarks for vegetation classes and some PCTs. The Vegetation Benchmarks Database is published by OEH and is part of the BioNet Vegetation Classification.
Vegetation zone	A relatively homogenous area of native vegetation on a development site, land to be biodiversity certified or a biodiversity stewardship site that is the same PCT and broad condition state.
Wetland	An area of land that is wet by surface water or ground water, or both, for long enough periods that the plants and animals in it are adapted to, and depend on, moist conditions for at least part of their life cycle. Wetlands may exhibit wet and dry phases and may be wet permanently, cyclically or intermittently with fresh, brackish or saline water
Woody native vegetation	Native vegetation that contains an over-storey and/or mid-storey that predominantly consists of trees and/or shrubs

Appendix B: Vegetation Floristic Plot Data

Family	*Species*	Common Name	Exotic	High Threat Weed	Growth Form Group	Plot 1		
						Stratum & Layer	Cover	Abundance
Asteraceae	*Achillea millefolium*	Yarrow	Yes	Yes	-	g	0.2	100
Poaceae	*Agrostis capillaris*	Browntop Bent	Yes	Yes	-	g	5	2000
Poaceae	*Anthoxanthum odoratum*	Sweet Vernal Grass	Yes	-	-	g	10	2000
Myrtaceae	*Baeckea utilis*	Mountain Baeckea	-	-	Shrub (SG)	m	1	5
Fabaceae (Faboideae)	*Bossiaea foliosa*	Leafy Bossiaea	-	-	Shrub (SG)	m	2	20
Cyperaceae	*Carex gaudichaudiana*	-	-	-	Grass & grasslike (GG)	g	10	2000
Cyperaceae	*Carex incomitata*	-	-	-	Grass & grasslike (GG)	g	15	100
Asteraceae	*Cassinia aculeata* subsp. *aculeata*	-	-	-	-	m	0.5	10
Cyperaceae	*Cyperus spp.*	-	-	-	Grass & grasslike (GG)	g	0.5	50
Poaceae	*Dactylis glomerata*	Cocksfoot	Yes	-	-	g	20	2000
Ericaceae	*Epacris breviflora*	-	-	-	Shrub (SG)	m	5	20
Myrtaceae	*Eucalyptus stellulata*	Black Sally	-	-	Tree (TG)	u	5	2
Geraniaceae	*Geranium solanderi* var. *solanderi*	-	-	-	Forb (FG)	g	0.1	5
Proteaceae	*Hakea microcarpa*	Small-fruited Hakea	-	-	Shrub (SG)	m	5	20
Poaceae	*Holcus lanatus*	Yorkshire Fog	Yes	-	-	g	20	2000
Juncaceae	*Juncus australis*	Rush	-	-	Grass & grasslike (GG)	g	2	100
Rutaceae	*Leionema phylicifolium.*	Mountain Phebalium	-	-	Shrub (SG)	m	0.8	5
Myrtaceae	*Leptospermum grandifolium*	Woolly Teatree	-	-	Shrub (SG)	m	0.3	1

Family	*Species*	Common Name	Exotic	High Threat Weed	Growth Form Group	Plot 1		
						Stratum & Layer	Cover	Abundance
Fabaceae (Faboideae)	*Lotus uliginosus*	Birds-foot Trefoil	Yes	-	-	g	10	2000
Asteraceae	*Olearia phlogopappa*	-	-	-	Shrub (SG)	m	1	5
Polygonaceae	*Persicaria* sp.	Knotweed	-	-	Forb (FG)	g	0.1	1
Thymelaeaceae	*Pimelea pauciflora*	-	-	-	Shrub (SG)	m	0.3	1
Poaceae	*Poa fawcettiae*	Smooth Blue Snowgrass	-	-	Grass & grasslike (GG)	g	5	100
Poaceae	*Poa helmsii*	Broad-leaved Snowgrass	-	-	Grass & grasslike (GG)	g	1	5
Poaceae	*Poa labillardierei* var. *labillardierei*	Tussock	-	-	Grass & grasslike (GG)	g	0.5	10
Fabaceae (Faboideae)	*Trifolium repens*	White Clover	Yes	-	-	g	1	20
Iridaceae	*Iridaceae*	-	Yes	-	Assign to species or growth form group-	g	5	2000
Rosaceae	*Rubus ulmifolius*	Blackberry	Yes	Yes	-	m	0.5	1
Polygonaceae	*Rumex* sp.	Dock	-	-	Forb (FG)	g	0.1	1
Ranunculaceae	*Ranunculus repens*	Creeping Buttercup	Yes	Yes	-	g	0.2	20

Appendix C: Vegetation Integrity Plot Data

Plot location data

Plot no.	PCT	Condition	Easting	Northing	Bearing
1	3892	Moderate	617680	5959731	30

Vegetation integrity data (composition)

Composition (number of species)						
Plot	Tree	Shrub	Grass	Forb	Fern	Other
1	1	8	7	3	0	0

Vegetation integrity data (Structure)

Structure (Total cover)						
Plot	Tree	Shrub	Grass	Forb	Fern	Other
1	5.0	15.4	34.0	0.3	0.0	0.0

Vegetation integrity data (Function)

Function											
Plot	Large Trees	Hollow trees	Litter Cover	Length Fallen Logs	Tree Stem 5-9	Tree Stem 10-1 9	Tree Stem 20-29	Tree Stem 30-49	Tree Stem 50-79	Tree Regen	High Threat Weed Cover
1	0	0	17	0	1	1	0	0	0	0	5.9

Appendix D: 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
- 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 Commonwealth listed species which are known or considered to have the potential to occur within the study area are 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 proposed action does not impact on a World Heritage Property or a National Heritage Place - (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 a wetland of international importance.
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 a small area of potential habitat for the Broad-toothed Rat, it will affect only a very small amount (0.04 ha) of the habitat for the species spread over multiple locations predominately on the edge of tree islands. 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. 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 action will be limited to the loss or further modification of 0.04 ha of native vegetation which is a small amount of habitat in the context of the extent of similar habitats in

Matters to be considered	Impact
	the locality generally. The proposed works will not affect any key habitat resources for the Broad-toothed Rat; nor affect the species ability to access habitats within or beyond the study area. c. fragment an existing population into two or more populations The proposed action will be limited to the loss or further modification of 0.04 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; nor 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 habitat in the alpine and subalpine zones of the Australian alps, including contiguous areas 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 proposed works would disrupt the breeding cycle of the local population of the Broad-toothed Rat given the small area of habitat to be affected relative to the extensive area of similar and superior habitat contiguous with the development site. 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 habitat for the Broad-toothed Rat, but this area is unlikely to be important to the 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. 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 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 provide potential habitat for any Commonwealth listed vulnerable species.
Any impact on a Commonwealth Endangered Ecological Community	No Commonwealth listed endangered ecological communities occur within the development site.
Any environmental impact on Commonwealth Listed Migratory Species;	No. The proposed action 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.

Appendix E: Staff CVs

Ryan Smithers

Principal Ecologist

Ryan brings to ELA 30 years experience in ecology and natural resource management. He has extensive practical experience in flora and fauna surveying, firefighting, planning and land management throughout southern NSW and has undertaken hundreds of flora and fauna surveys, biodiversity plans, environmental impact assessments, vegetation management plans, fire management plans and weed management plans.

Ryan has extensive experience in general and targeted fauna surveys using a diverse range of survey techniques. Ryan is based in the Eurobodalla (Narooma) and has undertaken many flora and fauna surveys on the NSW south coast, southern tablelands and in the Australian Alps, and in other parts of Australia including in the Northern Territory.

Ryan is an accredited BAM Assessor and has undertaken numerous surveys using the NSW Vegetation Survey Standard or very similar methodologies. Ryan project managed ELAs contributions to the Full-floristic Vegetation Survey for the South-east Highlands and Australian Alps of the Upper Murrumbidgee which involved more than 250 plots.

QUALIFICATIONS

- BEnvSc (Land Resources Management), University of Wollongong with1st Class Honours.
- Accredited Biodiversity Assessment Method (BAM) Assessor
- Alpine Ecology Course Australian Alpine Institute and La Trobe University
- NSW RFS Bush Firefighter and Village Firefighter.

PROJECT EXPERIENCE

Hundreds of flora and fauna surveys and assessments in southeast NSW

Specific experience includes:

- Mirador Estate Ecological Assessment
- Merimbula STP Upgrade Terrestrial Ecological Assessment
- Broulee and South Moruya Biocertification Project
- North Moruya Biodiversity Study
- Eurobodalla Vegetation Mapping Validation
- Eurobodalla Biodiversity Study for future Urban Expansion Lands
- Far South Coast Biometric Benchmarks
- Cobowra LALC Lands Biobanking Assessment
- Jervis Bay Biodiversity Assessment
- Lake Wallace Flora and Fauna Assessment for Cooma Monaro Shire at Nimmitabel
- South-east Highlands and Australian Alps of the Upper Murrumbidgee Catchment Full Floristic Survey and Condition Assessment
- Guthega Quad Chair Flora and Fauna Assessment

- Numerous Impact Assessments in alpine and sub-alpine environments for OEH, Perisher Blue, Kosciuszko-Thredbo and Charlotte Pass Ski Resorts
- Boco Rock Wind Farm Ecological Assessment and Offsets Analysis
- Queanbeyan Biodiversity Study
- Mount Jerrabomberra Ecological Assessment
- Upper Lachlan Shire Biodiversity Planning Framework
- Parkes, Cabonne, Bland, Upper Lachlan and Temora Shires Biodiversity Assessment and NRM Projects
- Old Comma Road deviation Species Impact Statement
- Flora and Fauna Assessment Edwin Lane Parkway Extension
- Ecological Studies – Proposed Googong township
- Jumping Creek Threatened Biodiversity Report
- Ecological Assessment & VMP Stringybark Reserve Queanbeyan
- Tarrawonga Biobanking Assessment – Boggabri
- Katherine to Gove Pipeline – Mitchell Ranges fauna surveys
- Darwin regional flora and fauna survey RAAF Darwin, defence establishment Berrimah and Shoal Bay receiving station.

RELEVANT LAND AND ENVIRONMENT COURT EXPERIENCE

- EPA Investigation of harvesting planning and operations at Mogo State Forest (2018)
- NSW Office of Environment and Heritage v Forestry Corporation of NSW – Compartments 2021 Badja State Forest. No. 160286 of 2016
- NSW Office of Environment and Heritage v Forestry Corporation of NSW – Compartments 2330 and 2335 Glenbog State Forest. No. 160286 of 2016
- Allan James Hanson v Eurobodalla Shire Council LEC Proceedings No. 11180,11181,11182,11183 of 2011
- Kim Elzerman v Eurobodalla Shire Council LEC Proceedings No. 10284 of 2010

Appendix F: Biodiversity credit report

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00053851/BAAS17061/24/00053852

Proposal Name
Thredbo Snowmaking Pond Widening

BAM data last updated *
05/08/2025

Assessor Name
Ryan Smithers

Assessor Number
BAAS17061

BAM Data version *
Current classification (live - default) (82)

Proponent Names

Report Created
08/08/2025

BAM Case Status
Finalised

Assessment Revision
1

BOS entry trigger
BOS Threshold: Biodiversity Values Map

Assessment Type
Part 4 Developments (Small Area)

Date Finalised
08/08/2025

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
Nil		

Species
Nil

Additional Information for Approval

BAM Biodiversity Credit Report (Like for like)

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
No Changes

Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
3892-Kosciuszko Subalpine Valley Damp Heath	Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions	0.0	0	1	1

BAM Biodiversity Credit Report (Like for like)

3892-Kosciuszko Subalpine Valley Damp Heath

Like-for-like credit retirement options

Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions This includes PCT's: 607, 766, 1270, 3888, 3890, 3891, 3892, 3919, 3926, 3927, 3932, 3934, 3936, 3939, 3942, 3948, 3951, 3952	-	3892_Moderate	No	1	Monaro, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Species Credit Summary

Species	Vegetation Zone/s	Area / Count	Credits
Mastacomys fuscus mordicus / Broad-toothed Rat	**3892_Moderate**	0.0	1.00

Credit Retirement Options

Like-for-like credit retirement options

Mastacomys fuscus mordicus / Broad-toothed Rat	Spp	IBRA subregion
	Mastacomys fuscus mordicus / Broad-toothed Rat	Any in NSW