Statement of Environmental Effects

Lower All Mountain MTB Trail Diversion

Thredbo Alpine Resort
Kosciuszko National Park, NSW

September 2022

Department of Planning and Environment

Issued under the Environmental Planning and Assessment Act 1979

Approved Application No DA 22/9798

Granted on the 8 November 2022

Signed M Brown

Sheet No 1 of 6

Lower All Mountain MTB Trail Diversion

Statement of Environmental Effects

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Document Control

REVISION	DATE	REVISION TYPE	AUTHOR	APPROVED BY
A	13.07.2022	Draft	C.Chalk	P.Fleming
0	15.07.2022	Final	C.Chalk	P.Fleming
1	01.09.2022	Inclusion of revised BDAR assessment	C.Chalk	P.Fleming

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Development Proposal	This Statement of Environmental Effects (SEE) has been prepared to support the Development Application (DA) for the All Mountain MTB Trail Diversion (the Project). The purpose of the Project is to provide a new section for the All Mountain trail that will allow KT to expand the Thredbo MTB Trail Network whilst minimising environmental impacts. The Project will ensure the continual operation of the All Mountain trail whilst allowing for future trail development within the Cruiser ski area. The Trail commences off the existing All Mountain trail to the east of the Gunbarrel Chairlift top station and terminates approximately 0.5 km downhill when it links back onto the existing All Mountain trail. The Trail will be a rolling contour trail with rollers, small jumps, drops and several berms. It will be similar to the Upper N4 style with an increased degree in difficulty for the features.
Site Details	**Lot Description**: Lot 876/DP 1243112
	Location within resort: Cruiser ski area
	Total disturbance area: 1,250 m^2 (0.125 ha)
	Zoning: Kosciuszko National Park (C1: National Parks and Nature Reserves)
Applicant	Kosciuszko Thredbo Pty Ltd
Key Planning Considerations	The proposed development is subject to the requirements of the *State Environmental Planning Policy (Precincts – Regional) 2021* (Precincts – Regional SEPP). As such, the Department of Planning and Environment (DPE) Minister for Planning is the consent authority for the DA. The Project has been assessed against the relevant requirements of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act), *Environmental Planning and Assessment Act 1979* (EP&A Act), *National Parks and Wildlife Act 1974* (NPW Act), *Biodiversity Conservation Act 2016* (BC Act), *Water Management Act 2000* (WM Act) and associated statutory instruments.
Key Environmental Matters	The Project requires the clearing of 0.1 ha of native vegetation, most of which is already highly modified. The Project will not result in any significant impacts on nationally and state conservation significant species, populations or ecological communities. However, the Project site does provide potential habitat for the Alpine She-oak Skink (Endangered under EPBC Act and BC Act) and known habitat for Broad-toothed Rat (Vulnerable under BC Act and EPBC Act). Appropriate environmental controls will be implemented during construction and operation to minimise potential impacts to the existing environment and surrounds. To meet offset obligations under the Biodiversity Offset Scheme (BOS), a payment of two (2) ecosystem offset credits and six (6) species credits is required to offset the unavoidable impacts to the following: 0.1 ha of Plant Community Type (PCT) 645 (Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion); 0.1 ha of habitat for Broad-toothed Rat; 0.1 ha of habitat for Alpine She-oak Skink; and 5 individual Anemone Buttercup. The Project will not cause any significant adverse impacts to the surrounding landscape characteristics or visual amenity. It is not anticipated the Project will increase the pressure on the existing social infrastructure, facilities and services within Thredbo. The Project will have positive impacts on the existing social and economic environment through the provision of a sustainable trail section which can be experienced by a range of mountain bikers of varying ability. The impacts of the Project are considered to be largely positive. The Project is consistent with the principles of ESD and it will not have any significant adverse environmental impacts. With the implementation of appropriate mitigation and management measures, the environmental impacts are considered acceptable. Therefore, the Project is considered suitable for the site and within the public interest.

1 Introduction

This Statement of Environmental Effects (SEE) has been prepared to support the Development Application (DA) for the Lower All Mountain MTB Trail Diversion (hereinafter referred to as the Project). The Applicant for the DA is Kosciuszko Thredbo Pty Ltd (KT) (ABN 95 000 139 015).

The Project will comprise the construction of a new intermediate trail section of the All Mountain trail within the Cruiser ski area. The site is located within Thredbo Alpine Resort (Thredbo), within Kosciuszko National Park (KNP), approximately 35 kilometres (km) south-west of Jindabyne, New South Wales (NSW).

The purpose of the Project is to provide a new section for the All Mountain trail that will allow KT to expand the Thredbo MTB Trail Network whilst minimising environmental impacts. The Project will ensure the continual operation of the All Mountain trail whilst allowing for future trail development within the Cruiser ski area.

Development in NSW alpine resort areas is governed by the *State Environmental Planning Policy (Precincts – Regional)* 2021 (Precincts – Regional SEPP). The Department of Planning and Environment (DPE) Minister for Planning is the consent authority for development in the alpine resort areas under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This SEE has been prepared in accordance with the relevant statutory requirements.

1.1 Purpose

The purpose of this SEE is to:

- describe the proposed development in relation to the existing environment;
- evaluate the proposed development against the relevant statutory planning framework; and
- assess the following key issues in relation to the proposed development –
    - the impacts of the development on the natural, human and built environment and how these impacts have been identified
    - mitigation and management measures that will be taken to protect the environment or to reduce expected environmental harm
    - any specific matters identified by the Secretary of DPE.

2 Site Context

2.1 Regional Context

The Project site is located in Thredbo, within the southern part of KNP, approximately 35 km south-west of Jindabyne in the Snowy Monaro Regional Local Government Area (LGA) (refer **Figure 1**).

2.2 Local Context

The Project site is located within the Cruiser ski area (predominately within Valley View and Ballroom runs), on land formally described as Lot 876 DP1243112 (**Figure 2**).

2.3 Site Description and Suitability

The Project site is predominately disturbed, with some areas of undisturbed native vegetation islands. The site is considered suitable for the Project given the following:

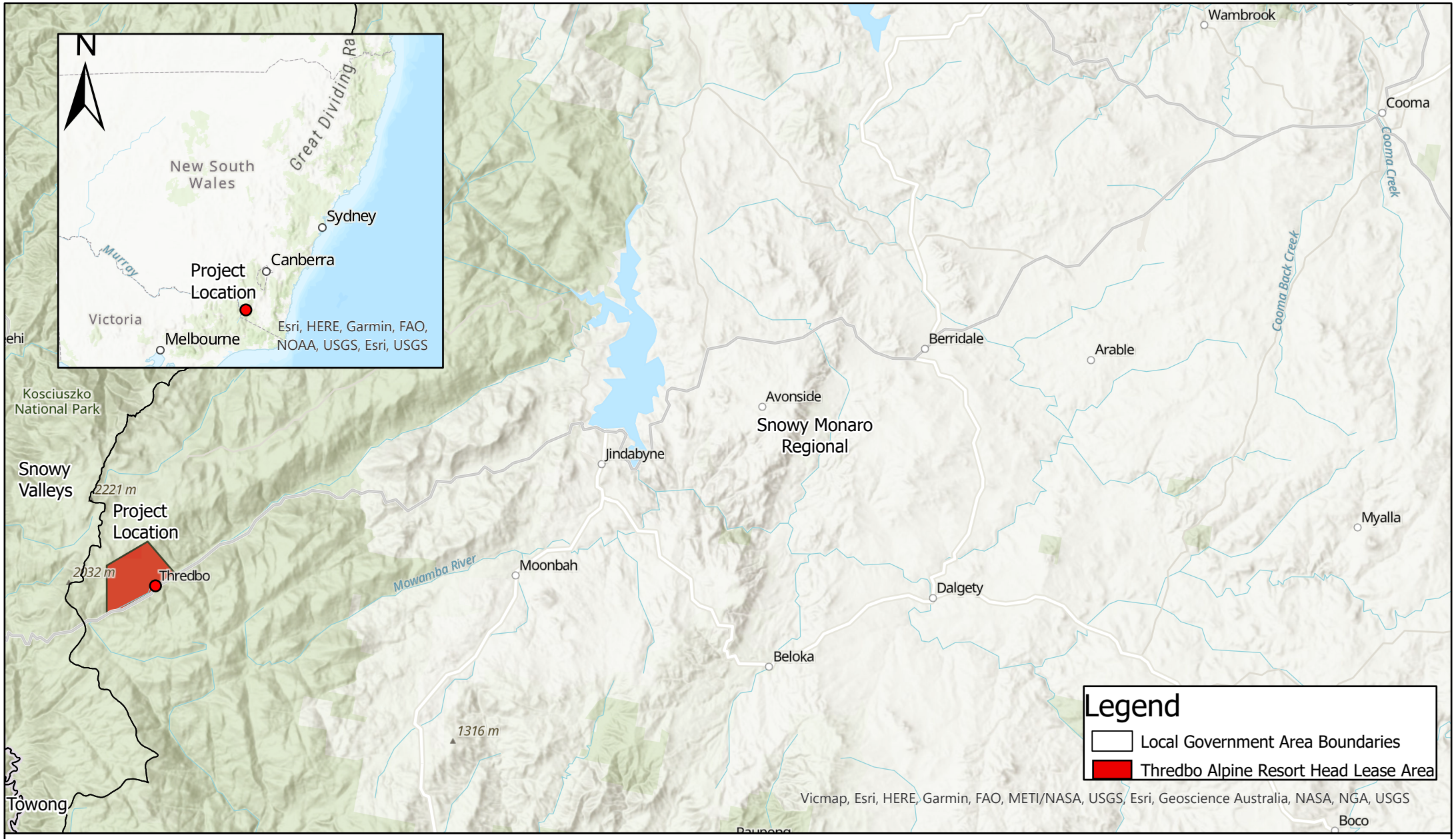
- the site is predominately located within disturbed ski runs (Valley View and Ballroom);
- minimal vegetation clearing is required (removal or further modification of approximately 0.1 ha of native vegetation, parts of which are already heavily modified);
- the site provides suitable terrain and natural features for an intermediate trail; and
- the site is easily accessible via the Gunbarrel and Cruiser Chairlifts during operation.

2.4 History of the Site / Present and Previous Land Uses

The Project site comprises existing ski runs and associated infrastructure, undisturbed native vegetation islands and access tracks.

2.5 Zoning

The site is zoned as C1 – National Parks and Nature Reserves (formerly E1) under the *Snowy River Local Environmental Plan 2013* (NSW Government 2022a).



Scale: 1:305,832

3 1.5 0 3 6 9 12

Kilometers

Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA 2020
Grid: GDA 2020 MGA Zone 55

N

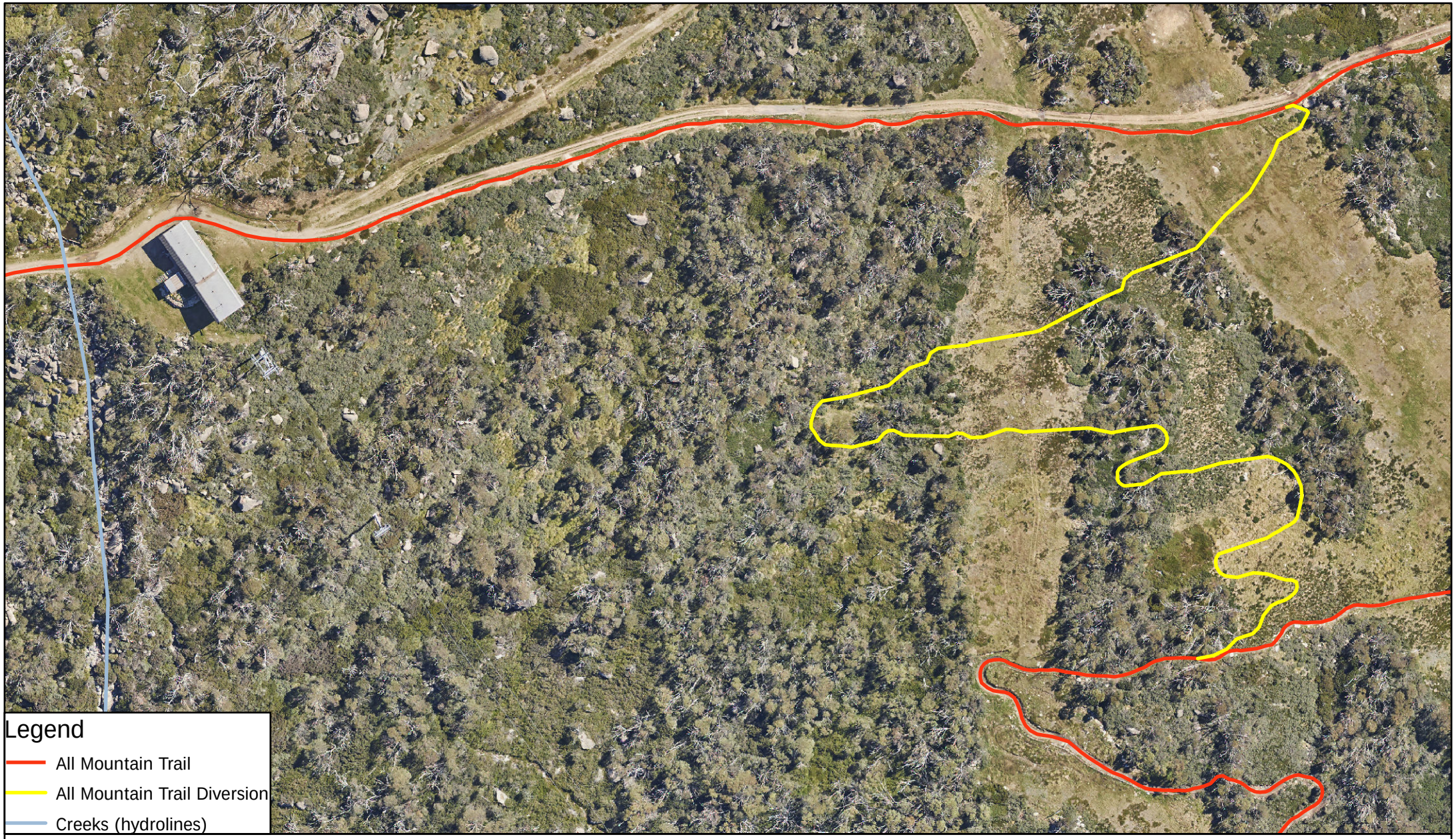
THREDBO

FIGURE 1: REGIONAL SITE CONTEXT

Revision: A

Date: 7/06/2022

Produced By: KO



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0 10 20 40 60 80 Meters

Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA 2020
Grid: GDA 2020 MGA Zone 55

N

THREDBO

PROJECT LOCATION

Project: Lower All Mountain Trail Diversion

Revision: 1

Date: 01/07/2022

Produced By: BB

3 Development Overview

3.1 Background

Thredbo has long been associated with mountain biking in the Snowy Mountains regions of NSW. As Australia's premier biking destination with lift accessed gravity trails, Thredbo has continued to attract both recreational and competitive mountain bikers to the resort since the early 1990s. Each year KT hosts a series of competitions and events, such as the Cannonball Mountain Bike Festival, Gravity Series and Australian Mountain Biking Interschools.

As part of KT's vision to remain a premier year-round destination, KT has developed multiple trails comprising varying length and difficulty of terrain for both recreational and competitive riders. The Thredbo Mountain Bike Trail Network (Thredbo MTB Trail Network) has been systematically developed with the influence of leading trail designers such as World Trail Pty Ltd and Dirt Art. This approach has allowed KT to manage risks and environmental impacts through extensive planning and best practice environmentally sustainable trail design.

3.1.1 Thredbo MTB Trail Network

3.1.1.1 Existing MTB Trails and Parks

As of the 2021/22 mountain bike season, the Thredbo MTB Trail Network consists of 16 trails (11 gravity and 5 cross-country) and five (5) parks (refer **Table 1**). The network is a mix of single track and shared use trails, with three (3) of the cross-country trails also being utilised as walking trails within the village.

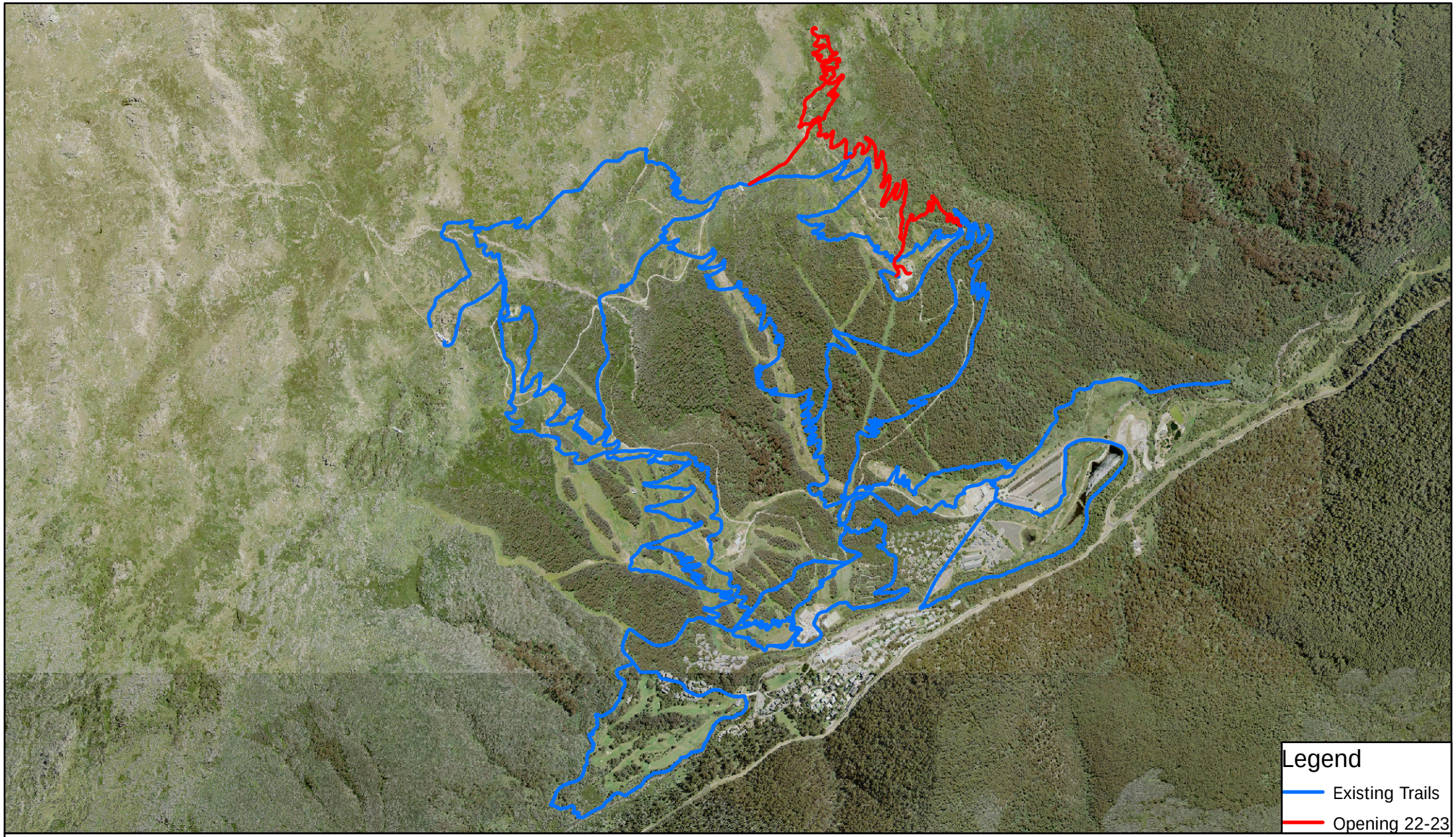
Table 1: Existing Mountain Bike Trails and Parks (as at 2021/22 MTB season)

Gravity Focused Trails	Cross Country Trails	Skills and Jumps Park
1. Sidewinder 🟢	1. Pipeline path 🟢	1. Kids Skills Park 🟢
2. Centre Link (formerly East Street) 🟢	2. Friday Flat Loop 🟦	2. Beginner Skills Park 🟢
3. Kosciuszko Flow 🟦	3. Village Loop 🟦	3. Pump Track 🟢
4. Woody's 🟢	4. Golf Course Loop 🟦	4. Boost Mobile Jumps Park 🟦
5. Richochet 🟦	5. Golf Course Link*	5. Valley Terminal Jumps Park ◆
6. Upper All Mountain 🟦		
7. Lower All Mountain 🟦		
8. Flow Link 🟦		
9. Cannonball Downhill ◆		
10. Gondola Connect 🟢		
11. Home Run 🟦		

*Note: 🟢 = beginner, 🟦 = intermediate, ◆ = advanced . * trail only used if required for cross country events*

Three (3) additional trails (Cruiser Green, Cruiser Blue and Upper N4) are currently in the construction / post-construction stage and will open for the 2022/23 season.

This Project forms another stage of the expansion of the Thredbo MTB Trail Network.



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0 137.5275 550 825 1,100

Meters

Map Projection: Universal Transverse Mercator
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Grid: GDA 2020 MGA Zone 55

N

THREDBO

THREDBO MTB PARK

Project: Lower All Mountain Trail Diversion

Revision: 1

Date: 13/07/2022

Produced By: BB

3.1.2 Broader Snowy Mountains Mountain Bike Trail Network

The broader Snowy Mountains region has a number of existing (e.g. Thredbo Valley Track (TVT)) and emerging mountain bike opportunities (e.g. proposed Mountain Bike and Adventure Park Sub-Precinct in the *Snowy Mountains Special Activation Precinct Master Plan* (DPE 2022) (Snowy SAP Master Plan).

The Trail will form part of the All Mountain trail which connects to the upper TVT. The upper TVT is accessible from Thredbo Village, which provides a link for riders to reach the broader trail network spanning across Lake Jindabyne and Tyrolean Village.

The Project will contribute to the expansion of mountain bike trail offerings and summer tourism in the Snowy Mountains region.

3.2 Purpose of Development

The purpose of the Project is to provide a new section for the All Mountain trail that will allow KT to expand the Thredbo MTB Trail Network whilst minimising environmental impacts. The Project will ensure the continual operation of the All Mountain trail whilst allowing for future trail development within the Cruiser ski area.

3.3 Project Need

KT plan to expand Thredbo's mountain bike offerings within the Cruiser ski area to cater for riders of varying abilities, from experienced riders through to beginners and first timers. To allow for this expansion, a section of the existing All Mountain trail within the Cruiser ski area will be utilised for the construction of new beginner trails (subject to a separate DA). As such, this Project is fundamental for the continual operation of the All Mountain trail, in addition to ensuring the trail objectives are not lost.

3.4 Project Description

The Trail commences off the existing All Mountain trail to the east of the Gunbarrel Chairlift top station and terminates approximately 0.5 km downhill when it links back onto the existing All Mountain trail.

The Trail will be a rolling contour trail with rollers, small jumps, drops and several berms. It will be similar to the Upper N4 style with an increased degree in difficulty for the features.

A summary of the Trail alignment and photos is provided in **Table 2**.

Table 2: Trail Description and Site Photos

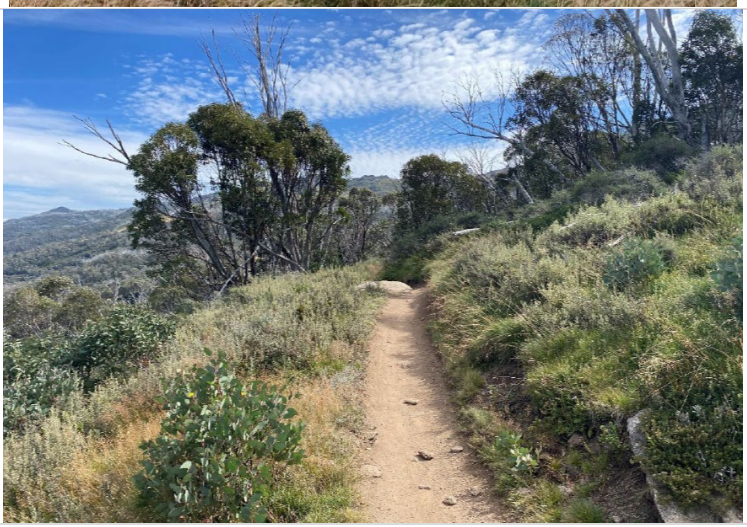
Trail Description	Site Photos
The Trail commences approximately 0.30 km east of the Gunbarrel Chairlift top station, off the existing All Mountain trail.	 Existing All Mountain trail (facing east towards start of new trail section)
The proposed trail initially traverses the Ballroom ski run which comprises exotic grassland.	
The Trail makes a long descent (to the west) across the open ski slopes and through two (2) native vegetation tree islands.	 Bottom of first berm, looking west across top of Ballroom ski run

The Trail entering the first native vegetation tree island.	
The Trail then exits the native vegetation island and heads across the open ski slope towards Valley View ski run.	

The Trail then enters into a second native vegetation island, looking towards Valley View ski run.	
The Trail then levels out across the Valley View ski run.	

The Trail then exits the open ski run and heads into the native vegetation on the skiers right of Valley View ski run.	
The Trail then enters the native vegetation.	

The Trail then traverses the native vegetation and makes a turn.	
The Trail exits the native vegetation and crosses Valley View ski run.	

The Trail then crosses Valley View, and enters the tree island for two berms.	
Upon exiting, the Trail re-joins the existing All Mountain trail near this point, approximately 150 m below (in a direct line) its commencement.	

3.5 Trail Design and Construction Techniques

The trail design and construction techniques have been developed with consideration of the following:

- criteria outlined in Chapter 4 of the *Guidelines for a Quality Trail Experience: Mountain Bike Trail Guidelines* (IMBA 2018) (IMBA MTB Guidelines);
- sections 6 and 7 of the *Trail Difficult Rating System – Build* (IMBA 2012);
- *Guidelines for trail planning, design and management: a toolkit for state and local government agencies, community groups and investors on how to plan, manage and market exceptional trail experiences* (TRC Tourism 2015); and
- design principles applied to the construction of the All-Mountain, Easy Street and Ricochet mountain bike trails within the resort, including: trails for everyone, recreation versus competition, one-way trails, trail difficulty ratings, trail names and minimise environmental impacts.

3.5.1 Trail Options Analysis

A preliminary site assessment was undertaken by key Project personnel (i.e. Project Manager, MTB trail designers, Environmental Officer) to identify potential constraints (e.g. ecological and construction) of the proposed trail alignment and to allow for appropriate controls to be incorporated into the design. During this assessment stage, several walkthroughs of the proposed trail alignment were undertaken to ensure the trail objectives are met whilst minimising the impacts on the natural environment as much as practicable.

This was then followed by a joint inspection with both DPE and NPWS as part of the preliminary site assessment process on 17 May 2022. Following this inspection, feedback was received and the original trail was modified to avoid the fragmentation of woodland areas where possible (refer **Figure 4** which identifies the original proposed route vs the alternate proposed section). The final alignment was achieved through the utilisation of existing tracks, trails and pre-disturbed open ski runs where possible.

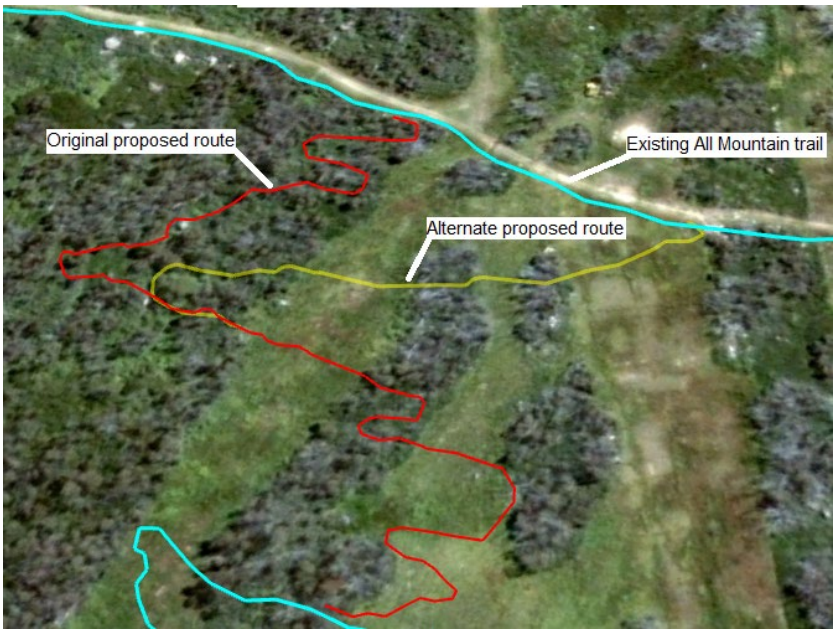


Figure 4: Trail Options Analysis

3.5.2 Trail Design

A summary of the trail design is provided in **Table 3**. Examples of trail design elements are provided in **Appendix B**.

Table 3: Trail Design

Element	Details
Trail length	0.5km
Trail difficulty rating	In accordance with the IMBA Trail Difficulty Rating System (IMBA 2012), the trail difficulty rating is Intermediate.
Trail tread width	The tread refers to the actual surface of the trail upon which users travel. The average trail tread width will be 600 mm which is in accordance with the Trail Difficulty Rating System Land Managers Guide (IMBA 2012) (**Appendix A**).
Trail corridor width	The trail corridor refers to the full dimensions of the trail, including the area on either side of the tread and the space overhead that needs to be cleared of brush and obstacles. The trail corridor is generally double the width of the tread, dependent upon the slope. The greater the slope, the wider the corridor due to the extent of the upper and lower batters. *Flexible trail corridor* A 20 m wide corridor is required to provide flexibility for the trail builders to respond to any unforeseen construction constraints (e.g. during excavation the uncovering of a large amount of rock just beneath the surface).
Trail type	One-way (descending) – This design component is a key risk management technique to minimise the likelihood of head-on collisions between riders.
Tread surface	The trail surface will be predominately natural soil, with local crushed granodiorite used where required. The surface will comprise possible sections of rocky or loose tread.
Natural Obstacles and Technical Trail Features (TTFs)	The trail will likely include unavoidable, rollable obstacles to 200 mm high. Avoidable, rollable obstacles up to 600 mm may also be present on the trail. Note, short sections may exceed the criteria.
Average trail grade	The climbs and descents will be mostly moderate gradients but may include steep sections. The average trail grade will be 10 % or less (IMBA 2012) (**Appendix A**).
Maximum trail grade	The trail grade will be a maximum of 20 % or greater (IMBA 2012) (**Appendix A**).
Trail Signage	Trail signage is installed to clearly mark the trail, inform users of their responsibilities, aid in navigation and provide key information. *Decision Point Signs* Decision point signs generally comprise posts with information in relation to important departure and destination locations along the trail. The signs generally include the following information: • name of the new trail departing from that point; • difficulty symbol (e.g. green circle, blue square, black diamond – the number on this symbol correlates to the trail descriptions on the Thredbo Mountain Bike Park Map; • trail type (e.g. flow, technical, shared, permitted/prohibited use); • arrow indicating the direction of the new trail; and • trail network logo. The signs are 400 mm wide x 200 mm high and attached to a 50 mm round post which is 1,800 mm high. Decision point signs will be located at the following locations along the trail: • trail head; and • junction with All Mountain trail. Standard signage plans are provided in **Appendix C**.

3.5.3 Construction Techniques

A summary of the construction techniques to be used for the Project is provided in **Table 4**. Examples of construction techniques are provided in **Appendix B**.

Table 4: Summary of Construction Techniques

Construction Technique	Details
Follow the contours	The trail should be built on a side slope, aligned along the contours of the hillside (as demonstrated in **Appendix B**). The most sustainable trails are those that have a low overall grade (<10 % or a one in 10 change in elevation) and frequent undulations, which will ensure water flows across and not along the trail.
Partial or full bench-cut construction	Trails built on sloping ground require excavation to achieve a partial or full bench construction. *Partial bench* Partial bench tread involves using some of the excavated soil to construct the downhill side of the tread. This technique is prone to slipping and is not recommended, except in specific circumstances in which it must be supported by a retaining wall. *Full bench* Full bench tread involves excavating down and into the hillside and puts the entire tread width on mineral soil, thereby maximising stability and minimising ongoing maintenance.
Outslope	A method of tread construction that leaves the outside edge of a hillside trail lower than the inside, in order to shed water in sheet flow (refer **Appendix B**). The trail should slope gently (no greater than 5 %) down towards the lower, outside edge. It is noted that completely outsloping trails will not provide enjoyable and safe trails.
Rock armouring	Rock armouring is used to harden the trail to create an elevated trail tread above wet or soft terrain and to harden the trail tread against potential erosion from trail users (refer **Appendix B** for example).
Drainage crossings	Drainage crossings are a critical element of trail design and construction in areas which may have the greatest impact on water quality and the site where water has the greatest potential to damage the trail. Where minor drainage crossings are required, low level platforms will be constructed, similar to the structures used on the All-Mountain Trail as well as the TVT, which have been constructed from steel frames with fibre-glass mesh on top, as shown in **Appendix B**. Drainage crossings will be low profile and located close to the ground, and therefore handrails are unlikely required. However, if handrails are required, the steel posts will be pile driven (to refusal) for each section of the fibreglass mesh tread and bearers be installed with the fibreglass mesh on top.
Half rule	A trail's grade shouldn't exceed half the grade of the sideslope (e.g. if the gradient of the side slope is 20 %, the maximum allowable trail gradient would be 10 %). This will assist the sheeting of water across the trail. If the trail grade is steeper than half the grade of the side-slope, it is considered a fall-line trail (IMBA 2012).
10 % rule – average trail grade guideline	Generally, an average trail grade of 10 % or less is the most sustainable (IMBA 2012).
Grade reversals	A grade reversal is where the trail has to be briefly reversed (i.e. a climb briefly goes down, or a descent briefly goes up) to help divert water off the trail (as shown in **Appendix B**). Grade reversals are also beneficial before and after steep sections, with smooth transitions between different grades (TRC Tourism 2015).

3.6 Development Components

3.6.1 Project Timing

Construction of the Project is anticipated to commence during the summer of 2022/23, and will take approximately 6 weeks to complete.

3.6.2 Flexible Construction Corridor

The construction corridor for the Project comprises 10 m either side of the ground-truthed alignment.

3.6.3 Disturbance Footprint

The approximate disturbance footprint is 1,250 m^2 (0.125 ha).

The width of the trail corridor must not exceed 3 m at any location, with an average disturbance width not exceeding 2.5 m.

3.6.4 Site Access

During construction, the site access will be via the Mountain access road.

3.6.5 Construction Materials

Construction materials will likely include:

- trail signs e.g. decision point signs; and
- gravel / decomposed granite for the trail surface.

3.6.6 Machinery, Plant and Equipment

Equipment and machinery will likely include:

- mini excavator;
- motorised wheelbarrows;
- quad bikes;
- dump trucks (to and from stockpile sites);
- 4 WD vehicles;
- side-by-side vehicles; and
- handtools (i.e. chainsaws and brush-cutters).

The tread width of on-ground machinery used in trail construction must not exceed 1,500 millimetres (mm).

3.6.7 Stockpile sites

Temporary stockpiles will be required along the trail alignment for the effective management of gravel, soil and vegetation. These stockpiles will be located within pre-disturbed areas, on relatively flat land, away from watercourses and avoid native vegetation.

Excess materials from construction will be located within the main stockpile area within the resort (**Appendix F**). Access to these locations will be restricted to KT staff and contractors.

Soil stockpiles will be managed in accordance with the *Soil Stockpile Guidelines for the Resort Areas of Kosciuszko National Park, version 1.0* (OEH 2017) (Soil Stockpile Guidelines) and SEMP (**Appendix F**).

3.6.8 Site Facilities and Temporary Structures

There will be no site facilities or temporary structures within the construction corridor. Staff will be able to access amenities within the Merritts Mountain House.

3.6.9 Pre-construction Activities

Pre-construction activities will comprise:

- establishment of site boundary;
- marking significant vegetation to be retained and no-go zones;
- erection of site signage and traffic controls;
- flagging exact trail alignment using pin flags to mark the edges of the trail for construction; and
- mobilisation of machinery, equipment and construction materials to site.

3.6.10 Construction Activities

Construction activities will comprise the following:

- vegetation clearing (50 m increments) within the trail corridor to expose bare earth
    - excess cut vegetation to be spread into the surrounding heath and used for rehabilitation of exposed soil on the trail edges
    - topsoil and vegetation sods are to be stockpiled close to the trail tread;
- cut into the slope using a mini excavator and excavate the soil to achieve the appropriate depth of bench;
- remove loose rocks, roots and compact the trail;
- back slope the batter, ensuring outslope and appropriate drainage;
- define the trail line using rocks, logs and other obstacles; and
- re-instate the verge areas, topsoil and preserved vegetation sods.

Post-construction activities will comprise:

- rehabilitation in accordance with the *Detailed Rehabilitation and Monitoring Plan: Lower All Mountain Trail Diversion* (KT 2022) (provided separately as part of this DA);
- demobilisation of plant and machinery; and
- site clean-up.

3.6.11 Operational Activities

The Project will be operational during the Thredbo mountain biking season (generally end of November to end of April each year).

During operation, ongoing monitoring and maintenance of the trail is critical to ensure effective and sustainable trail management. A maintenance and monitoring program will be implemented as part of the overarching *Thredbo Mountain Bike Trail Management Plan* (KT 2022). The plan sets out the management requirements and guides the maintenance works required to sustainably manage the

Thredbo MTB Trail Network, as well as the monitoring and reporting requirements to effectively monitor the environmental condition of trails and their impact on the surrounding environment.

A summary of the trail maintenance and monitoring programs are provided below.

3.6.11.1 Trail Maintenance

The trail maintenance program includes (but not limited to) the following:

- drainage and erosion issues are to be addressed to achieve effective water management and minimise soil movement from the trail;
- exposure of tree roots/bases and sub surface rocks is to be addressed to ensure the protection of vegetation;
- braking ruts are to be addressed to ensure trail surface integrity;
- berms and embankments are to be re-instated/re-constructed where required to minimise soil movement and ensure trail surface integrity;
- stabilisation and revegetation of disturbed areas to minimise soil movement and inhibit weed colonisation;
- weed management within trail verges and adjacent to trail corridor;
- maintenance of revegetated areas to ensure effective establishment;
- delineation of trails to ensure riders stay on track;
- built structures are to be maintained to ensure protection of sensitive areas and rider safety.

The trail maintenance program is outlined in Section 3.5.1 of the Thredbo Mountain Bike Trail Management Plan (KT 2022).

3.6.11.2 Trail Monitoring

The trail monitoring program comprises four (4) main components:

1) operational safety monitoring;
2) environmental monitoring;
3) pre and post seasonal monitoring; and
4) annual monitoring.

Daily operational monitoring is primarily focused on rider safety and recording of any major environmental concerns.

Monthly environmental monitoring is used to direct maintenance works required to ensure minimal environmental impact is sustained from ongoing trail use.

Annual monitoring is carried in spring each year using the baseline data as reference points which is reported to NPWS.

The trail monitoring program is detailed in Section 4 of the of the Thredbo Mountain Bike Trail Management Plan (KT 2022). The plan will be updated to incorporate the proposed trail.

4 Legislative Context

A review of key legislation and planning instruments applicable to the Project is provided in **Table 5**.

Table 5: Legislative Review

Acts & Planning Instruments	Summary
Commonwealth	
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	The EPBC Act provides a legal framework to protect and manage nationally and internationally important aspects of the Australian environment. The EPBC Act is administered by the Department of Climate Change, Energy, the Environment and Water (DCCEEW) (formerly DAWE) and was established to: • provide for the protection of the environment, especially Matters of National Environmental Significance (MNES); • promote ecologically sustainable development (ESD) through the conservation and ecologically sustainable use of natural resources; • promote the conservation of biodiversity; • provide for the protection and conservation of heritage; • promote a cooperative approach to the protection and management of the environment involving governments, the community, landholders and Indigenous peoples; • assist in the cooperative implementation of Australia's international environmental responsibilities; • recognise the role of Indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity; and • to promote the use of Indigenous peoples' knowledge of biodiversity with the involvement of, and in cooperation with, the owners of the knowledge. Under Part 3 of the EPBC Act, a person must not undertake an action (e.g. a development) that will have, or is likely to have, a significant impact on a protected matter listed under the EPBC Act without approval from the Australian Government for the Environment. Refer to **Section 7.4** for details.
State	
Environmental Planning and Assessment Act 1979 (EP&A Act) Environmental Planning and Assessment Regulation 2021 (EP&A Regulation)	The EP&A Act is the primary piece of legislation governing development within NSW. Some of the key objects of the EP&A Act are to: • promote the social and economic welfare of the community and a better environment facilitate ESD; • promote the orderly and economic use and development of land and the delivery and maintenance of affordable housing; • protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats; • promote the sustainable management of built and cultural heritage; and • promote good design and amenity of the built environment, including the protection of the health and safety of their occupants. DPE assesses development proposals within NSW alpine resort areas where the Minister for Planning is the consent authority under Part 4 of the EP&A Act. Refer **Section 5.1** for matters to be considered. This SEE has been prepared in accordance with the requirements of the EP&A Regulation. Throughout the planning and design phases of the Development, KT has considered the principles of ESD.
National Parks and Wildlife Act 1974 (NPW Act)	The objects of the NPW Act include: • the conservation of nature; • the conservation of objects, places or features (including biological diversity) of cultural value within the landscape;

National Parks and Wildlife Regulation 2019	• fostering public appreciation, understanding and enjoyment of nature and cultural heritage and their conservation; and • providing for the management of land reserved under the Act in accordance with the management principles applicable for each type of reservation. As detailed in this report, appropriate environmental mitigation and management measures are proposed to ensure the Project results in acceptable environmental impacts. The NPW Act provides that a person who exercises due diligence in determining that their actions will not harm Aboriginal objects has a defence against prosecution if they later unknowingly harm an object without an Aboriginal heritage impact permit. A due diligence assessment has been undertaken in **Section 7.9.**
Biodiversity Conservation Act 2016 (BC Act) Biodiversity Conservation Regulation 2017 (BC Regulation)	The purpose of the BC Act is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ESD. The Development is consistent with principles of ESD, as demonstrated in the subsequent sections of this report. The BC Regulation sets out threshold levels for when the Biodiversity Offsets Scheme (BOS) will be triggered. The threshold has two elements: • whether the amount of native vegetation being cleared exceeds the area threshold; and • whether the impacts occur on an area mapped on the Biodiversity Values Map (BVM). If clearing and other impacts, including biodiversity impacts prescribed by Clause 6.1 of the BC Regulation, exceed either trigger, the BOS applies. The BOS also applies when: • the 'test of significance' in section 7.3 of the BC Act identifies that the development or activity is likely to significantly effect threatened species or ecological communities, or their habitats; or • the works are carried out on a declared area of outstanding biodiversity value. The Project is located within areas mapped as comprising high biodiversity value. Refer to **Section 7.3** for detail.
Environmental Planning Instruments	
State Environmental Planning Policy (Precincts – Regional) 2021 (Precincts – Regional SEPP)	The aim and objectives of the Policy for Kosciuszko National Park and alpine resorts (Chapter 4) are: • to encourage the carrying out of a range of development in the alpine resorts that do not result in adverse environmental, social or economic impacts on the natural or cultural environment; • provide planning controls to encourage ESD; and • minimise the risk of community exposure to environmental hazards within the alpine resort areas. Development in NSW alpine resort areas are governed by the Precincts – Regional SEPP. Key requirements are addressed in **Section 5.2**.

5 Planning Framework

An assessment against the relevant matters of the EP&A Act and relevant environment planning instruments, policies and plans is provided in this section.

5.1 Environmental Planning and Assessment Act 1979

DPE is to consider the matters listed in Part 4, Clause 4.15 of the EP&A Act (**Table 6**) in relation to the Project.

Table 6: Clause 4.15 – Matters for Consideration – General

(1) Matters for consideration – General	Comment
(a) the provisions of—	
(i) any environmental planning instrument	The Precincts – Regional SEPP is the only environmental planning instrument which applies to the Project. An assessment against the relevant sections of the Precincts – Regional SEPP have been addressed in **Section 0**.
(ii) any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority (unless the Planning Secretary has notified the consent authority that the making of the proposed instrument has been deferred indefinitely or has not been approved)	There are no draft Environmental Planning Instruments that are applicable to the Project.
(iii) any development control plan	There are currently no applicable development control plans.
(iiia) any planning agreement that has been entered into under section 7.4, or any draft planning agreement that a developer has offered to enter into under section 7.4	There are no planning agreements applicable to Thredbo under the Precincts – Regional SEPP.
(iv) the regulations (to the extent that they prescribe matters for the purposes of this paragraph)	The DA and supporting information has been prepared in accordance with the requirements of the EP&A Regulation.
(b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality	The likely impacts of the Project on the natural and built environment, and social and economic impacts in the locality have been assessed in **Section 7**.
(c) the suitability of the site for the development	The site is considered suitable for the Project as described in **Section 0.**
(d) any submissions made in accordance with this Act or the regulations	The Project is located more than 50 m from tourist accommodation and therefore is not required to be publicly notified or advertised in accordance with the *Community Participation Plan* (DPIE 2019).
(e) the public interest.	The Project is considered to be within the public interest for the following reasons: • the Project aligns with the aim and objectives of the Precincts – Regional SEPP (Chapter 4); • the Project will not have any significant adverse environmental impacts; • the Project is consistent with the principles of ESD; and • the Project will contribute to and improve the existing Thredbo MTB Trail Network.

5.2 Precincts – Regional SEPP

The relevant sections of Chapter 4 (Kosciuszko National Park and alpine resorts) of the Precincts – Regional SEPP are addressed in this section.

5.2.1 Section 4.9 – Land Use Table (Thredbo Alpine Resort)

Pursuant to the Land Use Table in Section 4.9 of the Precincts – Regional SEPP, 'recreation infrastructure' is permissible with consent within the Thredbo Alpine Resort. Recreation infrastructure is defined as: '*infrastructure provided for the purposes of active or passive recreation for tourists, including walking trails, mountain bike trails, directional signage, cross country ski trails and oversnow routes'*.

The Project is for the purpose of 'mountain bike trails' which falls under this definition, therefore the Project is permissible with consent.

5.2.2 Section 4.12 – Matters to be considered by Consent Authority

Matters to be considered by the Consent Authority (Section 4.12) in relation to the Project are provided in **Table 7**.

Table 7: Matters to be Considered by Consent Authority

Matters for Consideration	Comment
(1) In determining a development application that relates to land to which this Chapter applies, the consent authority must take into consideration any of the following matters that are of relevance to the proposed development—	
a) the aim and objectives of this Chapter, as set out in section 4.1	The Project is consistent with the objectives of the Chapter. The Project will contribute to the expansion of Thredbo's MTB Trail Network, providing positive social and economic impacts. The proposed environmental impacts will be mitigated through appropriate controls during construction and operation as demonstrated in subsequent sections of this report.
b) the extent to which the development will achieve an appropriate balance between the conservation of the natural environment and any measures to mitigate environmental hazards (including geotechnical hazards, bush fires and flooding)	The Project does not require any measures to mitigate environmental hazards (including geotechnical hazards, bush fires and flooding) that would impact on the conservation of the natural environment.
c) having regard to the nature and scale of the development proposed, the impacts of the development (including the cumulative impacts of development) on the following— i. the capacity of existing transport to cater for peak days and the suitability of access to the alpine resorts to accommodate the development ii. the capacity of the reticulated effluent management system of the land to which this Chapter applies to cater for peak loads generated by the development iii. the capacity of existing waste disposal facilities or transfer facilities to cater for peak loads generated by the development, iv. the capacity of any existing water supply to cater for peak loads generated by the development	The Project is not anticipated to impact the capacity of – • existing transport to cater for peak days; • the capacity of the reticulated effluent management system within Thredbo; and • waste disposal facilities or transfer facilities to cater for peak loads generated by the Project. The Project is intended to contribute to increased visitation during the mountain bike season (November – April), and therefore will not increase peak visitation which occurs during the ski season.
d) any statement of environmental effects required to accompany the development application for the development	This SEE has been prepared to support the DA.
e) if the consent authority is of the opinion that the development would significantly alter the character of the alpine resort—an analysis of the existing character of the site and immediate surroundings to assist in understanding how the development will relate to the alpine resort	The existing site and surrounds comprise native vegetation, ski runs and associated infrastructure, MTB trails and access roads and tracks. The Project will not significantly alter the character of the resort as it will form part of, and enhance the existing Thredbo MTB Trail Network.
f) the *Geotechnical Policy—Kosciuszko Alpine Resorts* (2003, Department of Infrastructure, Planning and Natural Resources) and any measures proposed to address any geotechnical issues arising in relation to the development	Not applicable.
g) if earthworks or excavation works are proposed—any sedimentation and erosion control measures proposed to mitigate any adverse impacts associated with those works	Earthworks and excavation are required for the Project, therefore erosion and sediment control measures will be implemented during construction and operation to mitigate and/or minimise potential impacts on the existing environment. Refer to the SEMP (**Appendix F**) for construction controls. Ongoing monitoring and maintenance of the Trail will mitigate any potential adverse impacts associated with use.

h) if stormwater drainage works are proposed—any measures proposed to mitigate any adverse impacts associated with those works	No stormwater drainage works are proposed. The Project incorporates sustainable trail design principles which will aid in effective surface water diversion and minimise potential impacts from erosion and water pooling.
i) any visual impact of the proposed development, particularly when viewed from the Main Range	Visual impacts of the Project are expected to be minimal as the trail is predominately located within the existing All Mountain trail, open ski runs and short sections undisturbed native vegetation islands. The tread of the trail is shaped using natural materials (rocks and soil) to provide features that blend within the existing landscape. It is not anticipated the Project will negatively impact on the visual amenity of the resort. The Project is not visible from the Main Range.
j) the extent to which the development may be connected with a significant increase in activities, outside of the ski season, in the alpine resort in which the development is proposed to be carried out	The Project will form part of the existing Thredbo MTB Network which aims to increase summer tourism and enhance visitation.
k) if the development involves the installation of ski lifting facilities and a development control plan does not apply to the alpine resort— i. the capacity of existing infrastructure facilities, and ii. any adverse impact of the development on access to, from or in the alpine resort	Not applicable.
l) if the development is proposed to be carried out in Perisher Range Alpine Resort— i. the document entitled *Perisher Range Resorts Master Plan*, as current at the commencement of this Chapter, that is deposited in the head office of the Department, and ii. the document entitled *Perisher Blue Ski Resort Ski Slope Master Plan*, as current at the commencement of this Chapter, that is deposited in the head office of the Department	Not applicable.
m) if the development is proposed to be carried out on land in a riparian corridor— i. the long term management goals for riparian land, and ii. whether measures should be adopted in the carrying out of the development to assist in meeting those goals.	The Project will not be carried out on land in a riparian corridor.
(2) The *long term management goals* for riparian land are as follows—	
a) to maximise the protection of terrestrial and aquatic habitats of native flora and native fauna and ensure the provision of linkages, where possible, between such habitats on that land,	Refer above – not applicable.
b) to ensure that the integrity of areas of conservation value and terrestrial and aquatic habitats of native flora and native fauna is maintained,	
c) to minimise soil erosion and enhance the stability of the banks of watercourses where the banks have been degraded, the watercourses have been channelised, pipes have been laid and the like has occurred.	
(3) A reference in this clause to land in a riparian corridor is a reference to land identified as being in such a corridor on a map referred to in section 4.4.	

5.3 Plans, Policies and Guidelines

5.3.1 Snowy Mountains Special Activation Precinct Master Plan

The Snowy SAP Master Plan sets out the vision, principles, and precinct-wide performance criteria to support the planning controls in three Environmental Planning Instruments (EPIs):

- *State Environmental Planning Policy (Precincts – Regional) 2021* (Precincts – Regional SEPP) (Chapter 3 and 4);
- Snowy River Local Environmental Plan 2013; and
- Kosciuszko National Park Plan of Management (KNP POM).

The protection of the natural, cultural and social values of KNP is a primary focus of the Snowy Mountains Special Activation Precinct. As demonstrated in this SEE and supporting technical report, the Project will not result in any significant adverse impacts on natural values. The Project has been designed to first avoid impacts on biodiversity, then minimise and mitigate impacts through a range of mitigation measures implemented during construction and operation. Where unavoidable impacts native vegetation and conservation significant species are proposed, offsets have been provided.

The Project will not adversely impact on any cultural values. The Project will contribute to the social values of KNP as it will ensure the continual operation of the existing All Mountain trail whilst allowing for the expansion of Thredbo's MTB Network within the Cruiser ski area.

5.3.2 Kosciuszko National Park Plan of Management

The KNP POM outlines objectives and management strategies to guide the long-term management of values within specific areas of KNP. The KNP POM includes several management zones, which comprise of seven management units that contain places and values of exceptional significance. Thredbo is included in the Thredbo Management Unit, considered an area of exceptional recreational significance. As such, the management provisions in Section 10 of the KNP POM applicable to this unit apply.

Section 8.11 of the KNP POM also recognises a range of cycling opportunities exist to encourage visitors to appreciate the values of KNP in ways that minimise adverse impacts, including permitting cycling on management trails, purpose-built cycling tracks, shared-use tracks and multiple-use trails within the Visitor Services Zone (including Thredbo Management Unit) subject to risk and environmental assessments and approval.

The cycling management objective in Section 8.11.1 of the KNP POM is to provide a range of cycling opportunities that encourages visitors to appreciate the values of the park in ways that minimise adverse impacts. The Project is a purpose-built cycling track which has undergone a comprehensive environmental impact assessment to avoid and minimise adverse impacts on existing environmental values. As such, the Project is consistent with the cycling management objective.

5.3.3 Kosciuszko National Park Cycling Strategy 2017

The *Kosciuszko National Park Cycling Strategy* (OEH 2017) (KNP Cycling Strategy) was prepared for the management of cycling (on-road and off-road) within KNP and aims to achieve the following outcomes:

- increased contribution towards conservation of park values through growth in new markets that enjoy and value national parks;
- environmentally sustainable, fit-for-purpose cycling opportunities that enhance or protect conservation, recreational, social and cultural values;
- increased visitation including overnight stays to the Kosciuszko National Park and surrounding region; and
- transparent and consistent assessment of new proposals to ensure they achieve the outcomes above.

As demonstrated in subsequent sections, the Project will enhance the recreational and social values of KNP, whilst minimising potential impacts to the natural environment, therefore is considered consistent with the KNP Cycling Strategy.

6 Assessment Method

The assessment for the Project consisted of a desktop review of publicly available data sources and information. The desktop review was followed by a preliminary site assessment and subsequent field surveys carried out within the Project area to describe the environmental values present on the site and to aid the evaluation of potential impacts of the Project to those values. A summary of the assessment methods is provided in the following sections.

6.1 Desktop Assessment Method

A desktop assessment was carried out to identify relevant environmental values, that potentially occur within the Project area. Database and information sources that were utilised in the assessment include:

- ePlanning Spatial Viewer (NSW Government 2022a);
- Biodiversity Values Map and Threshold Tool (NSW Government 2022b);
- NSW BioNet (NSW Government 2022c);
- Water Management (General) Regulation 2018 hydroline spatial data 1.0 (NSW Government 2022d);
- Protected Matters Search Tool (DAWE 2022); and
- Aboriginal Heritage Information Management System Web Services (Heritage NSW).

Other resources listed in **Section 10** were also investigated to inform the impact assessment.

6.2 Site Assessment

As discussed in **Section 3.5.1**, a site assessment was undertaken by key Project personnel (i.e. Project Manager, MTB trail designers, Environmental Officer) to identify potential constraints (e.g. ecological and construction) of the proposed trail alignment and to allow for appropriate controls to be incorporated into the design, and to ensure the trail objectives are met whilst minimising the impacts on the natural environment as much as practicable.

6.3 Flora and Fauna Assessment

The flora and fauna assessment was undertaken by Ryan Smithers (Senior Ecologist and Accredited Person) from Eco Logical Australia Pty Ltd (ELA). The assessment comprised an ecological survey undertaken on 27 April 2022 and the preparation of a Biodiversity Development Assessment Report (BDAR). The results of the assessment are summarised in **Sections 7.3** and **7.4** and a copy of the BDAR (ELA 2022) is provided in **Appendix E**.

The 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 Project. The residual unavoidable impacts of the Project were calculated in accordance with the Biodiversity Assessment Method (BAM) by utilising the BAM Calculator (BAMC) as required under the BC Act.

7 Existing Environment and Impact Assessment

7.1 Land

7.1.1 Topography

The Project site is located between approximately 1760-1725 metres (m) Australian Height Datum (AHD).

7.1.2 Soils and Disturbance

To create the trail form, earthworks comprising cut and fill are required using a mini excavator. The disturbance corridor will range from 2-3 m in width, containing the upper and lower batters and the trail surface when the trail is traversing across moderate to steep slopes. On gentler slopes the disturbance corridor will be closer to 1.5 m. The average disturbance width is expected to be 2.5 m.

Due to the nature of the works, the final trail alignment will not be rehabilitated. However, the Project will be constructed to effectively manage erosion and run-off in accordance with best practice environmentally sustainable trail design outlined in the IMBA Guidelines.

The construction of the trail will incorporate key sustainable trail design concepts and construction techniques such as rolling contours, outslope, the half rule and 10% average guideline and use of frequent grade reversals (refer **Table 3** and **Table 4**) to minimise erosion and soil stability risks.

Where areas of disturbance do not form part of the final trail alignment, they will be stabilised and/or revegetated in accordance with the *Detailed Rehabilitation and Monitoring Plan: Lower All Mountain Trail Diversion* (KT 2022) which will assist in achieving an erosion resistant state.

7.1.3 Land Use

The Project area comprises existing ski runs and associated infrastructure for winter operations and MTB trails and associated infrastructure for summer operations. There are several tracts of undisturbed native vegetation within the area.

The expansion of MTB trail offerings within Thredbo does not introduce any land uses which are not permitted under the head lease. The Project is consistent with surrounding land uses, therefore no adverse impacts are proposed.

7.2 Water

7.2.1 Mapped Watercourses

There are no mapped watercourses within the Project site (refer **Figure 5**). The closest watercourse is located more than 230 m west of the site.

7.2.2 Waterfront Land and Riparian Corridors

The site is not mapped within waterfront land (**Figure 6**), therefore no further assessment is required.

7.2.3 Surface Water Drainage

Surface water diversion is an important component of trail construction. If not managed appropriately, water run-off could result in erosion of the trail surface and pooling of water resulting in soft boggy conditions for riders.

During construction appropriate drainage controls will be implemented to divert and/or manage stormwater run-off entering and leaving the site.

The incorporation of rolling contours, grade reversals and outsloping the trail will minimise the potential impacts associated with surface water run-off during operation of the trail.

Figure 5: Watercourses within proximity of the Project site (Source: NSW Government 2022d)

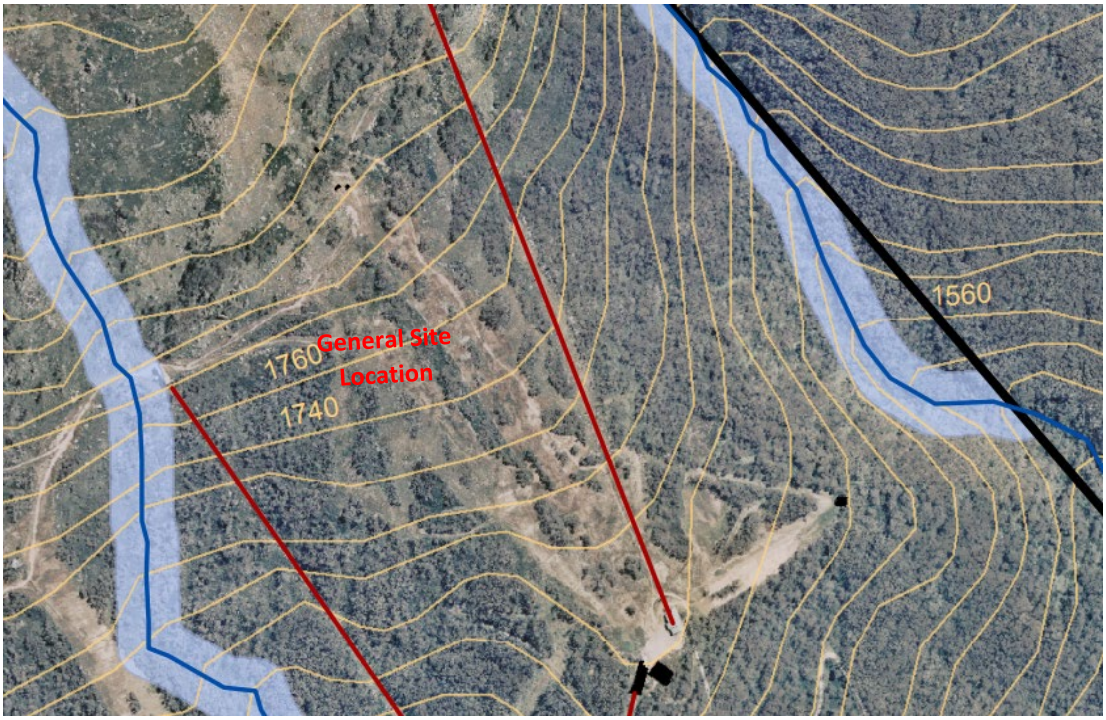


Figure 6: Alpine SEPP Thredbo Alpine Resorts Riparian Corridor Land (Source: DoP 2006)

7.3 Flora and Fauna

7.3.1 Biodiversity Values Map

The *Biodiversity Values Map (BVM) and Threshold Tool* (NSW Government 2022b) identifies land with high biodiversity value that is particularly sensitive to impacts from development and clearing.

A review of the BVM and Threshold Tool was undertaken on 01 June 2022 which identified a portion of the Project site is within an area mapped on the BVM (**Figure 7**).

Figure 7: Biodiversity Values Map (NSW Government 2022b)

7.3.2 Area of Outstanding Biodiversity Value

The Project is not located within an area of outstanding biodiversity value.

7.3.3 Plant Community Types and Threatened Ecological Communities

A total of 0.1 ha of the following Plant Community Type (PCT) was identified within the Project site:

- PCT ID 645: Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion – 0.05 ha in Good Condition and 0.05 ha in Low Condition.

PCT 645 does not comprise any Threatened Ecological Community (TEC) which is listed under the BC Act or EPBC Act (ELA 2022).

PCT 637 (comprising endangered ecologically communities (ECCs)) was identified just beyond the Project site, however the Project has been designed to avoid impacts to these communities (refer Section 3.4-3.6 of the BDAR (**Appendix E**) for further detail).

7.3.4 Threatened Species

7.3.4.1 Summary of Predicted Ecosystem Credit Species and Species Credit Species

Ecosystem credit species predicted to occur within the Project site are generated by the BAMC following the input of VI data and the PCTs identified above. Ecosystem credit species predicted to occur within the Project site are included in **Table 8**.

Species credit species that require further assessment (i.e. candidate species) are included in **Table 8**. Refer to Section 4 of BDAR (**Appendix E**) for further detail.

Table 8: Predicted Ecosystem Credit Species and Species Credit Species.

Species	NSW Listing Status	EPBC Act Listing Status
Predicted Ecosystem Credit Species (Table 11 of BDAR)		
Artamus cyanopterus cyanopterus Dusky Woodswallow	Vulnerable	Not listed
Callocephalon fimbriatum (foraging) Gang-gang Cockatoo	Vulnerable	Endangered
Daphoenositta chrysoptera Varied Sitella	Vulnerable	Not listed
Falsistrellus tasmaniensis Eastern False Pipistrelle	Vulnerable	Not listed
Hieraaetus morphnoides (foraging) Little Eagle	Vulnerable	Not listed
Hirundapus caudacutus White-throated Needletail	Not listed	Vulnerable
Petroica boodang Scarlet Robin	Vulnerable	Not listed
Petroica phoenicea Flame Robin	Vulnerable	Not listed
Species credit species (Table 12 of BDAR)		
Liopholis guthega Guthega Skink	Endangered	Endangered
Cyclodomorphus praealtus Alpine She-oak Skink	Endangered	Endangered
Mastacomys fuscus Broad-toothed Rat	Vulnerable	Vulnerable
Pseudophryne corroboree Southern Corroboree Frog	Critically Endangered	Critically Endangered
Ranunculus anemoneus Anemone Buttercup	Vulnerable	Vulnerable

7.3.4.2 Threatened Species – Field Survey Results

Anemone Buttercup

Targeted surveys for Anemone Buttercup known from the locality were undertaken within the Project site and immediate surrounds. The species was incidentally recorded within the Project site or immediate surrounds (ELA 2022).

Broad-toothed Rat

Targeted surveys for Broad-tooth Rat were undertaken within the Project site and immediate surrounds. The characteristic scats of the Broad-toothed Rat were scattered in low densities throughout the Project site and surrounds, as they are in suitable habitats throughout much of the locality (ELA 2022).

Guthega Skink

The Guthega Skink was not detected during surveys within the Project site or immediate surrounds. The nearest records of the Guthega Skink are approximately 1.6 km to the west, in the Ramshead Range. It is considered unlikely that the species would occur within the Project site, given that the species has not been detected nearby, despite considerable survey effort by Ryan Smithers (ecologist) over that last decade in and around the Cruiser ski area (ELA 2022).

Southern Corroboree Frog

Targeted surveys were not undertaken for the Southern Corroboree Frog given the absence of suitable habitats for the species, including suitable bog breeding habitat. The extant populations of this species are currently well known and heavily monitored. It is considered highly unlikely that it would occur within the development site and it was not detected there opportunistically (ELA 2022).

Alpine She-oak Skink

The Alpine She-oak Skink was assumed to be present given the presence of potentially suitable habitat and the species' cryptic nature (ELA 2022).

7.3.4.3 Species Credit Species

The Project will impact on the following threatened species and threatened species habitat (ELA 2022):

- 0.1 ha of habitat for Broad-toothed Rat;
- 0.1 ha of habitat for Alpine She-oak Skink; and
- 5 individual Anemone Buttercup.

7.3.5 Summary of Impacts to Flora and Fauna

The proposed impacts on flora and fauna identified in the BDAR (**Appendix E**) are summarised below:

- Direct impacts (refer Section 6.1 of BDAR) –
    - Clearing of 0.1 ha of PCT 645 (Subalpine Woodlands), comprising 0.05 ha in Good condition and 0.05 ha in Low Condition;
    - Direct impacts on threatened species and threatened species habitat, including
        - 0.1 ha of habitat for Broad-toothed Rat
        - 0.1 ha of habitat for Alpine She-oak Skink;
        - 5 individual Anemone Buttercup;
- Indirect impacts – Given the nature of the Project, and the proposed mitigation measures, indirect impacts (in the form of increased light and wind penetration) are only anticipated to extend a maximum of 5 m into vegetation surrounding the Project site (refer Section 6.3 and Figure 8 of BDAR);
- The Project does not include any prescribed additional biodiversity impacts (refer Section 6.4 of BDAR);

- The Project has been designed to avoid and minimise direct and indirect impacts as much as practicable. In particular, this includes (refer Section 5.1.1 of BDAR):
    - locating the proposed trail predominately in disturbed areas
    - minimising the disturbance footprint associated with construction
    - changing the location of the trail to minimise impacts on less disturbed native vegetation
    - changing the location of the trail to avoid wet areas
    - designing and constructing the trail to avoid the need for mature tree removal
    - using low impact construction methods
    - undertaking post construction rehabilitation; and
- The Project does not have any Serious and Irreversible Impacts (SAII) (refer Section 7.1 of BDAR).

7.3.6 Invasive Species

The following invasive species were identified within the flora survey plots or incidentally elsewhere within the Project site or immediate surrounds:

- *Acetosella vulgaris* Sheep Sorrel;
- *Agrostis capillaris* Browntop Bent; and
- *Hydrocotyle algida* Pennywort.

None of these invasive species are identified within the *Regional Pest Management Strategy 2012-17: Southern Ranges Region* (OEH 2012). The invasive species currently occurring within the Project area are not expected to significantly proliferate in response to Project activities given appropriate controls measures will be implemented during construction and via the trail maintenance program during operation to ensure the risk of proliferation is prevented, eliminated or minimised, so far as is reasonably practicable (refer **Section 8**).

7.3.7 Offsets

The impacts to non-native vegetation do not require offsets (refer Section 7.3 of BDAR).

The BAMC calculated that a total of two (2) ecosystem credits and 16 species credits are required to offset the unavoidable impacts to:

- 0.05 ha of PCT 645 (Good) – 1 ecosystem credit;
- 0.05 ha of PCT 645 (Low) – 1 ecosystem credit;
- 0.1 ha of habitat for Broad-toothed Rat – 3 species credits;
- 0.1 ha of habitat for Apine She-oak Skink – 3 species credits; and
- 5 individual Anemone Buttercup – 10 species credits.

Refer to section 7.5 and Appendix F of the BDAR (**Appendix E**) for further detail.

7.4 Matters of National Environmental Significance

A search of the EPBC Act Protected Matters Search Tool (PMST) (DAWE 2022) (records within a 1 km buffer of the Project site was undertaken on 12 May 2022 to determine whether any MNES are likely to occur within the Project area (refer **Appendix D)**. The Protected Matters Report (PMR) identified the five (5) categories (as listed under the EPBC Act) of MNES (**Table 9**) that may be relevant to the Project area and surrounds.

Table 9: Summary of MNES

MNES Categories	No.[1]	Comment
National Heritage Places	**2**	**Historic – Snowy Mountains Scheme** The Project is unlikely to cause one or more of the National Heritage values of the Snowy Mountain Scheme to be lost, degraded, damaged or notably altered, modified, obscured or diminished. No further assessment is required. **Natural – Australian Alps National Parks and Reserves (AANP)** The Project is located in KNP, part of the AANP. The Project is unlikely to cause one or more of the National Heritage values of the Snowy Mountain Scheme to be lost, degraded, damaged or notably altered, modified, obscured or diminished. An assessment is provided in **Section 7.4.1**.
Wetlands of International Importance	**1**	**Ramsar Site – Blue Lake** Blue Lake is located approximately 9 km north of the site. No impacts to Blue Lake are anticipated, therefore no further assessment is required.
Listed Threatened Ecological Communities (TECs)[2]	**2**	No TECs were identified within the Project site (ELA 2022).
Listed Threatened Species[2]	**30**	Three (3) listed species which are known or considered to have the potential to occur within the study area were identified in the BDAR (Appendix D of **Appendix E**): Alpine She-oak Skink, Broad-toothed Rat and Anemone Buttercup. **Endangered Species** The study area provides potential habitat for the Alpine She-oak Skink. The significant impact assessment (Appendix D of **Appendix E**) concluded that it is unlikely that the Project would significantly impact on the Alpine She-oak Skink (ELA 2022, pp.48-49). **Vulnerable Species** The study area provides known habitat for the two (2) Commonwealth listed Vulnerable species: Broad-toothed Rat and Anemone Buttercup. The significant impact assessment (Appendix D of **Appendix E**) concluded that Project is unlikely to have a significant impact on Broad-toothed Rat or Anemone Buttercup (ELA 2022, pp.49-51).
Listed Migratory Species[2]	**11**	The proposed action will not have any adverse impacts on any listed migratory species (ELA 2022).

[1]Number of MNES identified in the PMR (**Appendix D**)

[2]While based on some species records, the PMST relies on predictive modelling of suitable habitats and does not necessarily reflect an actual record of the species/community for a particular location.

The assessment of impacts to MNES concluded the Project will not result in any significant impacts on MNES, nor will it directly or indirectly affect Commonwealth Land. No referral to the Australian Government Minister for the Environment is required under the EPBC Act.

7.4.1 National Heritage Places – Australian Alps National Parks and Reserves

Approval under the EPBC Act is required for any action occurring within, or outside, a National Heritage place that has, will have, or is likely to have a significant impact on the National Heritage values of the National Heritage place.

The Australian Alps National Parks and Reserves (AANP) were included on the National Heritage List on 7 November 2008 for their –

1) course or pattern of Australia's natural or cultural history;
2) possession of uncommon, rare or endangered aspects of Australia's natural or cultural history;
3) importance in demonstrating the principal characteristics of: (i) a class of Australia's natural or cultural places, or (ii) a class of Australia's natural or cultural environment
4) importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
5) strong or special association with a particular community or cultural group for social, cultural or spiritual reasons; and
6) special association with the life or works of a person, or group of persons, of importance in Australia's natural or cultural history.

In total, three reserves, seven national parks and one wilderness area comprise the National Heritage Place. The Project site is located in KNP, within the Australian Alps.

To determine whether a referral and formal assessment is required for the Project, an assessment against the significant impact criteria in the *Matters of National Environmental Significance: Significant Impact Guidelines 1.1* (DEE 2013) has been undertaken in **Table 10**.

Criteria: An action is likely to have a significant impact on the National Heritage values of a National Heritage place if there is a real chance or possibility that it will cause:

- *one or more of the National Heritage values to be lost,*
- *one or more of the National Heritage values to be degraded or damaged, or*
- *one or more of the National Heritage values to be notably altered, modified, obscured or diminished.*

Table 10: Significant Impact Assessment – Australian Alps National Parks and Reserves

	National Heritage Values of the Australian Alps National Parks and Reserves	Significant Impact Assessment
1)	The AANP are of outstanding landscape value and are important in the pattern of Australia's natural history, containing glacial and periglacial features, fossils, karst, biological heritage, moth feasting, transhumant grazing, scientific research, water harvesting and recreation. The AANP have outstanding heritage value for the longevity and diversity of its recreational use (Commonwealth of Australia 2008).	The Project will not have an adverse impact on these values. The Project will provide direct benefits for summer tourism, whilst supporting economic investment in the resort, therefore contributing to the recreational value of the AANP.
2)	The high altitude peaks and plateaus, glacial lakes and alpine and sub-alpine ecosystems of the alps are rare in Australia's mostly flat, dry and hot continent. The AANP contain a vast range of mountain environments and plant communities adapted to cold climates including tall, wet, fern-filled forests to snowgum woodlands and open expanses of alpine meadows. The alps also contain landforms created by glaciers, remarkable fish fossils and unique fauna including Mountain Pygmy Possum (*Burramys parvus*) and Bogong moth (*Agrotis infusa*) (Commonwealth of Australia 2008; DAWE 2021).	The Project will result in minimal impacts to the overall landscape of the Australian Alps.
3)	The AANP are listed for the north-east Kosciuszko pastoral landscape values which demonstrate the use of mountain resources, namely the summer grasses and herbfields.	The Project is not located within the north-eastern area of KNP, therefore it will not impact on these landscape values.

	The landscape demonstrates the past grazing leases which convey the principal characteristics of transhumance and permanent pastoralism in a remote environment (Commonwealth of Australia 2008). The area contains stockman's huts, homestead complexes, stock yards and stock routes which reflect 150 years of summer grazing on the alpine high plains (DAWE 2021).	
4)	The AANP is a powerful, spectacular and distinctive landscape and natural beauty. The mountain vistas, alpine streams and rivers, lakes, snow-covered eucalypts, high plain grasslands, summer alpine wildflowers, forests and natural sounds are highly valued by community groups (Commonwealth of Australia 2008; DAWE 2021).	The Project will not directly impact on any of these values.
5)	The AANP have a strong association with Australia's pioneering history, while the snowfields and national parks have long been popular recreation areas. Many community groups have a strong association with the alps for social and cultural reasons. The pioneering history of the high country is valued as an important part of the construction of the Australian identity featuring in myths, legends and literature. The mountain huts constructed for grazing, mining and recreation are valued by communities as physical expression of the cultural history of the region (Commonwealth of Australia 2008; DAWE 2021).	The Project will not have an adverse impact on these values. The Project will expand Thredbo's MTB Trail Network, therefore enhancing the recreation and social values.
6)	There is a long history of scientific research and endeavour in the AANP and its associated with the life or works of highly recognised persons such as Baron Ferdinand von Mueller (botanist), Eugen Von Guerard (artist), and writers/poets, Andrew Barton 'Banjo' Paterson, Elyne Mitchell and David Campbell (Commonwealth of Australia 2008; DAWE 2021).	The Project will not impact on the life or works of a person, or group of persons, of importance in Australia's natural or cultural history.

As identified in **Table 10** the proposed Project will not cause any of the heritage values of the Australian Alps to be lost, degraded, damaged or to be notably altered, modified, obscured or diminished. Therefore, a referral to the Australian Government Minister for the Environment is not required.

7.5 Transport

7.5.1 Access Tracks and Local Roads

During construction, the Project will be accessible via Friday Drive and the Mountain access road at the base of Friday Flat.

During operation, no adverse impacts to the resort's transport routes are proposed.

7.5.2 Existing MTB Trails

The Trail will form part of the All Mountain trail. The Trail will start at a junction off the existing All Mountain trail (within the lower Cruiser traverse ski run), and rejoin the All Mountain trail approximately one third of the way down the Valley View ski run.

7.5.2.1 Integration into Regional Mountain Bike Trail Network

The Project will provide a new section to the existing All Mountain trail which connects to the upper TVT. The upper TVT is accessible from Thredbo Village, which provides a link for riders to reach the broader trail network spanning across Lake Jindabyne and Tyrolean Village.

7.5.3 Chairlift Infrastructure

Once operational, the trail will be accessible via the Gunbarrel Chairlift and Cruiser Chairlift top stations.

7.6 Landscape Character and Visual Amenity

The existing site and surrounds comprise native vegetation, ski runs and associated infrastructure, MTB trails and access tracks.

The Project will not significantly alter the character of the resort as it will form part of the existing Thredbo MTB Trail Network. The tread of the trail is shaped using natural materials (rocks and soil) to provide features that blend within the existing landscape. It is not anticipated the Project will negatively impact on the landscape character or visual amenity of the resort.

7.7 Air and Noise

7.7.1 Air Quality

Dust can be a nuisance and decrease the amenity value of an area. Dust impacts are likely to be generated during construction from activities including:

- vegetation clearing and earthworks; and
- vehicle movements.

There are no sensitive receptors located within close proximity of the Project site. With the implementation of appropriate controls during construction, there will be no significant impact on the existing air quality from the Project.

7.7.2 Noise

It is proposed construction hours of works will be undertaken during standard working hours. This includes 7:00am – 6:00pm Monday to Friday, 8:00am – 1:00pm Saturdays, and no work on Sundays or public holidays. Out-of-hours works are not anticipated.

There are no sensitive land uses within close proximity of the site, as such no significant adverse noise impacts are anticipated.

7.8 Heritage

A review of the Precincts – Regional SEPP, NSW historic inventory and the Thredbo Alpine Village Conservation Plan, Vol.2 Inventory (Clive Lucas, Stapleton and Partners 1997) was undertaken on 12 May 2022. No heritage items are located within the Project site or within close proximity. No further assessment is required.

7.9 Aboriginal Cultural Heritage

To establish due diligence for the Project, an assessment against the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DECCW 2010) has been provided in **Table 11**.

Table 11: Aboriginal Cultural Heritage Due Diligence Process

Due Diligence Process	Comment
1. Will the activity disturb the ground surface or any culturally modified trees?	The Project will require ground disturbance and the removal of 0.1 ha of native vegetation. There are no cultural modified trees identified within the site.
2. Are there any: a) relevant confirmed site records or other associated landscape feature information on AHIMS? And/or	A search of the Aboriginal Heritage Information Management System (AHIMS) was undertaken on 01 June 2022. The search results (**Appendix D**) identified no Aboriginal sites are recorded in or near the Project site.
b) Any other sources of information of which a person is already aware? And/or	Several historical independent assessments have been undertaken within the resort by Past Traces Heritage Consultants (2017), NGH Environmental (2017), Iron Bark (2013), and URS Australia Pty Ltd (2004; 2005). All studies provide an indication that the ski slope areas have low archaeological potential due to the level of disturbance associated with the previous ski slope work. The studies also concluded that given the steepness and exposed aspect/lack of sheltering tors, the ski slopes are unlikely to have been favourable campsite locations.
c) landscape features that are likely to indicate presence of Aboriginal objects?	The Project site is located within a predominately highly disturbed environment, which has been subject to previous disturbance for the construction of existing ski slopes and associated snowmaking infrastructure. Previous disturbance has comprised extensive earthworks, vegetation clearing and removal and disturbance to top soils and soil profiles, thus removing potential for Aboriginal sites to remain within the area. No landscape features that are likely to indicate presence of Aboriginal objects were identified within the site. It is considered the Project has low potential to impact on unrecorded Aboriginal objects or sites. There is no requirement to move onto Steps 3 and 4.
3. Can harm to Aboriginal objects listed on AHIMS or identified by other sources of information and/or can the carrying out of the activity at the relevant landscape features be avoided?	Not applicable.
4. Does a desktop assessment and visual inspection confirm that there are Aboriginal objects or that they are likely?	Not applicable.

7.10 Social and Economic

7.10.1 Social

KT have been developing mountain bike trails within the resort since the 1990s. Consequently, the level of understanding of the existing landscape and industry will ensure that the trail is designed and constructed to comply with best-practice environmentally trail design principles; and provides targeted mountain biking objectives and difficulty with consideration of the natural, social and operational setting.

The Trail will provide a positive social impact as it will ensure the continual operation of the existing All Mountain trail whilst allowing for the expansion of Thredbo's MTB Network within the Cruiser ski area.

7.10.2 Economic

Whilst the Trail will result in ongoing trail maintenance costs, the economic impacts will be largely positive as the trail will contribute to improved economic stability for the resort through the provision of an enhanced trail network which will cater to a broader range of mountain bikers and boost summer visitation. The Project will also result in construction and ongoing operational jobs.

7.11 Waste

The Project will generate general solid waste (putrescible) e.g. waste from litter bins and general solid waste (non-putrescible) e.g. plastic, paper, cardboard, construction waste.

The following waste receptacles will be provided for the storage and disposal of waste associated with the construction of the Project:

- general litter bins for waste such as food waste and non-recyclable plastic;
- recyclable bins for waste such as carboard packaging, paper, plastic; and
- KT's waste transfer facility (materials to be segregated for re-use, recycling etc.).

Waste minimisation and management strategies that will be implemented for the Project are provided in **Section 8**.

8 Mitigation and Management Measures

Recommended mitigation and management measures to reduce potential impacts on the key values of the natural, built and human environment within the site and surrounds are provided in **Table 12**.

Table 12: Recommended Mitigation and Management Measures

	Mitigation and Management Measures	Timing
General		
1	Prepare and implement SEMP prior to the commencement of construction activities. The SEMP will address matters such as construction hours, vegetation and fauna management, waste management, erosion and sediment controls, biosecurity and complaints management.	Prior to and during construction
2	Prepare and implement Thredbo Mountain Bike Trail Management Plan, including trail maintenance and monitoring programs.	Prior to operation
3	All Project staff and contractors should undergo a site-specific induction which will cover environmental awareness training, environmental obligations and compliance requirements (e.g. limit of disturbance footprint and other environmental safeguards), emergency and incident response, reporting, and relevant procedures.	Prior to construction
4	The Project site will be temporarily fenced, roped or flagged to clearly delineate the construction area and no-go zones.	Prior to and during construction
Land and Water		
1	Appropriate drainage, erosion and sediment controls will be implemented at the site to minimise impacts to the water quality of run-off and the potential for sediment to leave the site and impact on the surrounding environment during construction and operational use.	During and post-construction, operation
	Erosion and sediment controls to be inspected and maintained in accordance with the SEMP.	During construction, post-construction
2	All stockpiles will be managed in accordance with the Soil Stockpile Guidelines.	During construction
3	All storage of petroleum products, oils or chemicals to be in accordance with Australian Standards.	During construction
4	Refuelling procedures to be implemented to minimise spills of fuel products.	During construction

5	Progressive rehabilitation of disturbed areas to reduce erosion risks in accordance with the *Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park* (DECC 2007) (Rehabilitation Guidelines) and *Detailed Rehabilitation and Monitoring Plan: Lower All Mountain Trail Diversion* (KT 2022).	Post-construction
6	New signs to be located in existing disturbed areas or areas disturbed for construction of the Project.	During construction
7	The incorporation of sustainable design principles, such as following the contours of the hillside, outsloping, the half rule, the 10 % average guideline and use of frequent grade reversals will minimise erosion during operation of the trail.	During construction, operation
8	The incorporation of sustainable design principles, such as frequent grade reversals, avoidance of wet/boggy areas and installation of drainage crossings will assist in surface water diversion and minimise impacts on water quality.	During construction, operation
Flora and Fauna		
1	Reasonable and practicable native fauna management measures will be implemented during construction to avoid environmental harm and nuisance to native fauna, known habitats and breeding places.	During construction
2	Vegetation clearing to only occur within approved construction corridor. Appropriate mitigation measures to be implemented for clearing works to minimise impacts to native vegetation and fauna habitats e.g. removal of native vegetation by chainsaw, rather than heavy machinery, is preferable in situations where partial clearing is proposed (ELA 2022).	Prior to and during construction
3	Prior to the commencement of construction works, all relevant weed species identified within the construction corridor are to be treated in accordance with best practice methods to ensure these weeks are not spread further within the site or throughout KNP. Relevant weed species include those listed in the *Regional Pest Management Strategy 2012-17, Southern Ranges Region: a new approach for reducing impacts on native species and park neighbours* (OEH 2012).	Prior to construction
4	All equipment, machinery and vehicles used during construction of the Development must be cleaned prior to entry into the Park and prior to Subject site mobilisation to ensure they are free of mud and vegetative propagules.	Prior to and during construction
5	Equipment, machinery, and vehicles must be regularly maintained and manoeuvred to prevent the spread of exotic vegetation. Storage of equipment, machinery, vehicles and material is to be restricted to existing disturbed areas and not be stored on native vegetation.	During construction
6	Disposal and storage of putrescible wastes must be undertaken appropriately to ensure feral animals aren't attracted to the site.	During construction
7	Rehabilitation of all disturbed areas (excluding the trail tread) is to be undertaken in accordance with the Rehabilitation Guidelines and *Detailed Rehabilitation and Monitoring Plan: Lower All Mountain Trail Diversion* (KT 2022).	Post-construction
8	If any active wombat burrows are detected in close proximity to the trail alignment during the construction phase, then the trail should be realigned to avoid the burrow (ELA 2022).	During construction
9	Identify with flagging tape the trail alignment where it encroaches upon relatively undisturbed native vegetation, prior to construction (ELA 2022).	Prior to and during construction
10	Restrict work to daylight hours to reduce impacts of light spill, and seasonal timing of construction and operational activities to reduce impacts of noise (ELA 2022).	During construction, operation
Transport		
1	Traffic and construction vehicle access will be managed as per regular daily operation in the resort.	During construction
2	All vehicle and plant operators will be licensed and trained.	During construction
3	Appropriate signage will be installed to ensure the safety of road users, cyclists and pedestrians during construction and operation.	Prior to and during construction, operation
Air Quality		
1	Reasonable and practicable measures (e.g. water sprays, vehicles carrying rubble must be covered) will be implemented to prevent dirt and dust from affecting the amenity or the surrounding environment during construction. Measures will be detailed in the SEMP.	During construction
2	In the event a complaint is received in relation to air quality/dust nuisance, the source of the complaint will be investigated, and if required corrective actions will be implemented to minimise or avoid impacts.	During construction

Noise and Vibration		
1	Project staff will take reasonable and practicable management measures to avoid and mitigate environmental nuisance from noise associated with the works e.g. turn off plant that is not being used.	During construction
2	Construction works and operation of plant will comply with Australian Standard *AS 2436-2010 Guide to noise and vibration control on construction, demolition and maintenance sites* and the *Interim Construction Noise Guideline* (DECC 2009) e.g. ensure plant is regularly maintained, and repair or replace equipment that becomes noisy, keep drivers informed of designated vehicle routes and parking locations	During construction
3	Construction works will be conducted during standard hours stipulated in the conditions of approval.	During construction
4	In the event a noise complaint is received, the source of the complaint will be investigated, and if required corrective actions will be implemented to minimise or avoid noise impacts.	During construction
Cultural Heritage		
1	Where unexpected items of potential archaeological, built or Aboriginal cultural heritage significance are discovered, works will cease, relevant authorities (i.e. NPWS) will be notified and the site will be secured by erecting a no-go zone. If human remains are found, works will cease, the site will be secured and NSW Police will be notified immediately.	During construction
Waste		
1	Waste to be managed in accordance with the waste hierarchy – avoid and reduce → reuse waste→ recycle waste → recover energy→ treat waste→ dispose of waste.	During construction
2	All construction waste and litter to be minimised and contained within appropriate receptacles. All receptacles will be in good condition.	During construction
3	All waste to be managed and disposed of in accordance with legislative requirements and relevant standards.	During construction
4	All waste transportation vehicles should be covered appropriately to ensure waste cannot spill, leak or escape onto the road or wash into stormwater drains.	During construction

9 Conclusion

In order to create a comprehensive and inclusive mountain bike destination, Thredbo's MTB Trail Network must cater for riders of varying abilities, from experienced riders through to beginners and first timers. The purpose of the Project is to provide a new section for the All Mountain trail that will allow KT to expand the Thredbo MTB Trail Network whilst minimising environmental impacts. The Project will ensure the continual operation of the All Mountain trail whilst allowing for future trail development within the Cruiser ski area.

In accordance with the requirements of the EP&A Act, EP&A Regulations and Precincts – Regional SEPP, this SEE has assessed the potential impacts of the Project on the human, built and natural environment of the Project site and surrounds.

The Project will require the clearing or further modification of 0.1 ha of native vegetation (understorey and groundcovers only), including PCT 645 (Subalpine woodland). It will not result in the removal of any mature trees, or any associated fauna habitats such as hollows. The Project site provides known habitat for Broad-toothed Rat and potential habitat for Alpine She-oak Skink.

To meet offset obligations under the BOS, a payment of two (2) ecosystem offset credits and six (6) species credits is required to offset the unavoidable impacts to PCT 645 (Subalpine woodland), Broad-toothed Rat and Alpine She-oak Skink.

Appropriate environmental controls will be implemented during construction and operation to minimise potential impacts to the environment. The Project will not result in any significant impacts on nationally and state conservation significant species, populations or ecological communities.

The Project will not cause any significant adverse impacts to the surrounding landscape characteristics or visual amenity.

The Project will have positive impacts on the existing social and economic environment through the provision of a sustainable trail section which can be experienced by a range of mountain bikers of varying ability. It is not anticipated the Project will significantly increase the pressure on the existing social infrastructure, facilities and services within Thredbo.

The impacts of the Project are considered to be largely positive. The Project is consistent with the principles of ESD and it will not have any significant adverse environmental impacts. With the implementation of appropriate mitigation and management measures during construction and operation, the environmental impacts are considered acceptable. Therefore, the Project is considered suitable for the site and within the public interest.

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11 Acronyms and Abbreviations

Acronyms and Abbreviations	
AHD	Australian Height Datum
AHIP	Aboriginal heritage impact permit
BC Act	*Biodiversity Conservation Act 2016*
BCA	Building Code of Australia
BVP	Biodiversity Values Map
BC Regulation	Biodiversity Conservation Regulation 2017
DA	Development Application
DAWE	Department of Agriculture, Water and the Environment (now DCCEEW)
DCCEEW	Department of Climate Change, Energy, the Environment and Water (formerly DAWE)
DPE	NSW Department of Planning and Environment
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2021*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
IMBA MTB Guidelines	*Guidelines for a Quality Trail Experience: Mountain Bike Trail Guidelines* (IMBA 2018)
KNP	Kosciuszko National Park
KNP Cycling Strategy	Kosciuszko National Park Cycling Strategy 2017
KNP POM	Kosciusko National Park Plan of Management 2006
km	kilometres
OEH	Office of Environment and Heritage (NSW)
m	metres
m^2	square metres
mm	millimetres
NPW Act	*National Parks and Wildlife Act 1974*
NPWS	National Parks and Wildlife Service
NSW	New South Wales
Precincts – Regional SEPP	*State Environmental Planning Policy (Precincts—Regional) 2021*
Soil Stockpile Guidelines	*Soil Stockpile Guidelines for the Resort Areas of Kosciuszko National Park, version 1.0* (OEH 2017)
SEE	Statement of Environmental Effects
Thredbo	Thredbo Alpine Resort

12 Appendices

Appendix A IMBA Trail Difficulty Rating System

8.0 Trail Difficulty Rating System Land Managers Guide

	Very easy White Circle	Easy Green Circle	Intermediate Blue Square	Difficult Single Black Diamond	Extreme Double Black Diamond
Description	Likely to be a fire road or wide single track with a gentle gradient, smooth surface and free of obstacles. Frequent encounters are likely with other cyclists, walkers, runners and horse riders.	Likely to be a combination of fire road or wide single track with a gentle gradient, smooth surface and relatively free of obstacles. Short sections may exceed these criteria. Frequent encounters are likely with other cyclists, walkers, runners and horse riders.	Likely to be a single trail with moderate gradients, variable surface and obstacles. Dual use or preferred use Optional lines desirable	Likely to be a challenging single trail with steep gradients, variable surface and many obstacles. Single use and direction Optional lines XC, DH or trials	Extremely difficult trails will incorporate very steep gradients, highly variable surface and unavoidable, severe obstacles. Single use and direction Optional lines XC, DH or trials
Trail Width	2100mm plus or minus 900mm	900mm plus or minus 300mm for tread or bridges.	600mm plus or minus 300mm for tread or bridges.	300mm plus or minus 150mm for tread and bridges. Structures can vary.	150mm plus or minus 100mm for tread or bridges. Structures can vary.
Trail Surface	Hardened or smooth.	Mostly firm and stable.	Possible sections of rocky or loose tread.	Variable and challenging.	Widely variable and unpredictable.
Average Trail Grade	Climbs and descents are mostly shallow. Less than 5% average.	Climbs and descents are mostly shallow, but may include some moderately steep sections. 7% or less average.	Mostly moderate gradients but may include steep sections. 10% or less average.	Contains steeper descents or climbs. 20% or less average.	Expect prolonged steep, loose and rocky descents or climbs. 20% or greater average
Maximum Trail Grade	Max 10%	Max 15%	Max 20% or greater	Max 20% or greater	Max 40% or greater
Level of Trail Exposure	Firm and level fall zone to either side of trail corridor	Exposure to either side of trail corridor includes downward slopes of up to 10%	Exposure to either side of trail corridor includes downward slopes of up to 20%	Exposure to either side of trail corridor includes steep downward slopes or freefall	Exposure to either side of trail corridor includes steep downward slopes or freefall

Natural Obstacles and Technical Trail Features (TTFs)	No obstacles.	Unavoidable obstacles to 50mm (2") high, such as logs, roots and rocks. Avoidable, rollable obstacles may be present. Unavoidable bridges 900mm wide. Short sections may exceed criteria.	Unavoidable, rollable obstacles to 200mm (8") high, such as logs, roots and rocks. Avoidable obstacles to 600mm may be present. Unavoidable bridges 600mm wide. Width of deck is half the height. Short sections may exceed criteria.	Unavoidable obstacles to 380mm (15") high, such as logs, roots, rocks, drop-offs or constructed obstacles. Avoidable obstacles to 1200mm may be present. Unavoidable bridges 600mm wide. Width of deck is half the height. Short sections may exceed criteria.	Large, committing and unavoidable obstacles to 380mm (15") high. Avoidable obstacles to1200mm may be present. Unavoidable bridges 600mm or narrower. Width of bridges is unpredictable. Short sections may exceed criteria.

Source: Section 8.0 Trail Difficulty Rating System Land Managers Guide of (IMBA 2012, p.10).

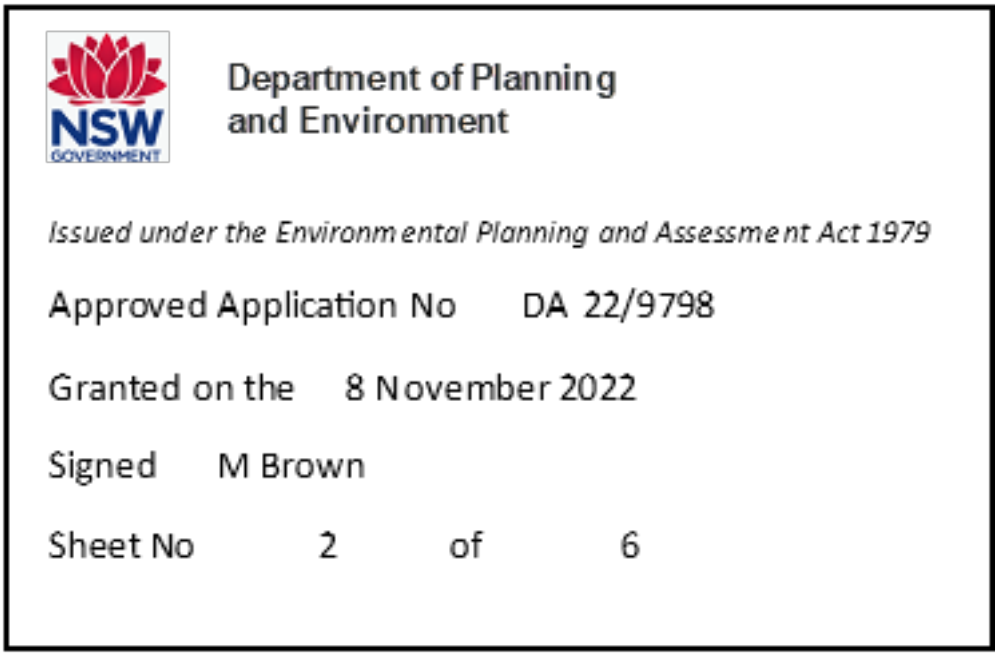
Appendix B Trail Design and Construction Techniques

Trail Design Elements and Construction Techniques	
Berm	
Decision point sign	
Partial and full bench	

	Source: IMBA 2001
Outslope	
Rock armour	
Natural feature	

Half rule		
Grade reversals		
Drainage		

Appendix C Standard Signage Plans


Department of Planning
and Environment

Issued under the Environmental Planning and Assessment Act 1979

Approved Application No DA 22/9798

Granted on the 8 November 2022

Signed M Brown

Sheet No 2 of 6

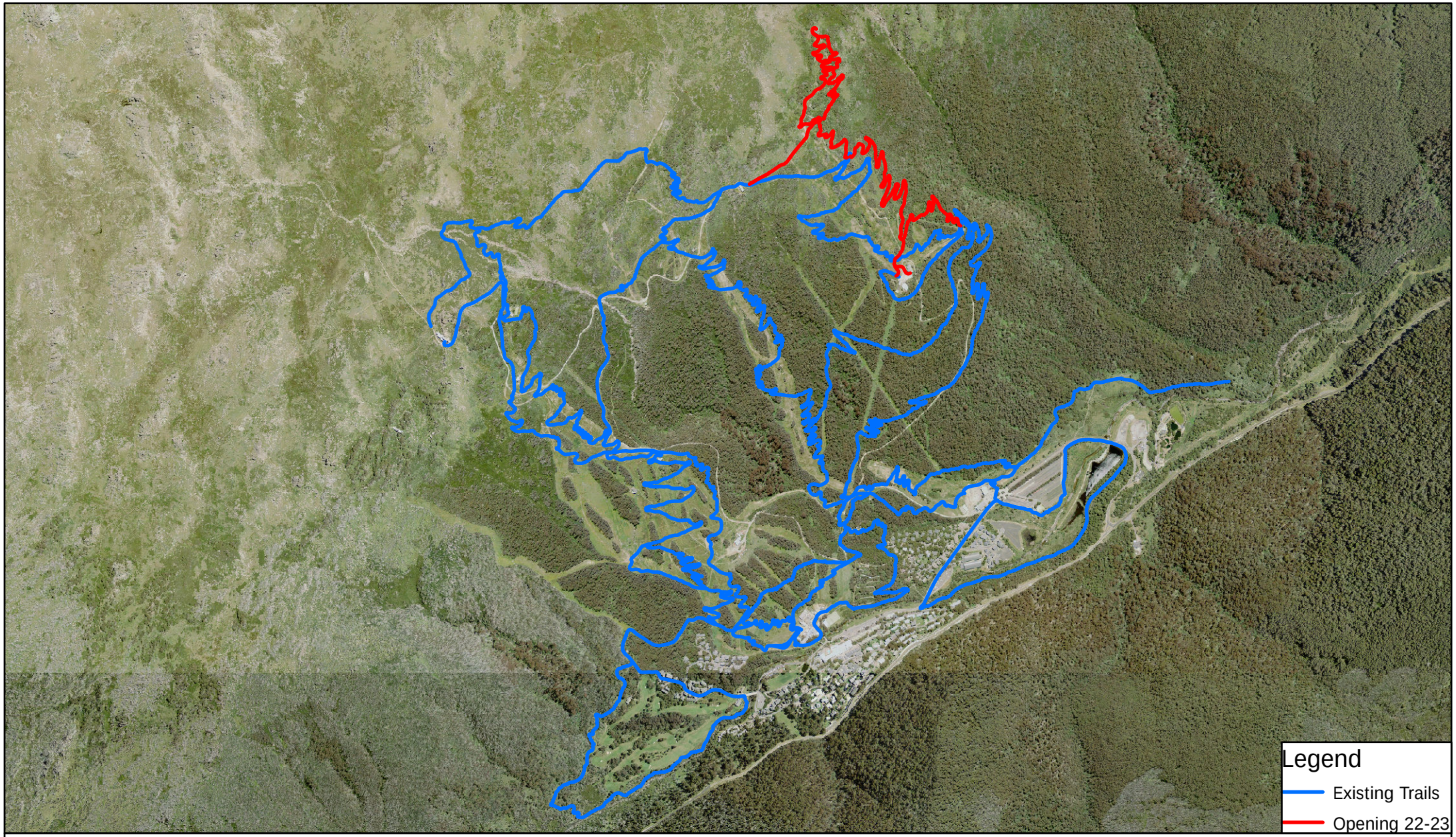
Decision Point Sign

200 mm

400 mm

Date: 14/06/2022 Revision: 0 Kosicuszko Thredbo Pty Ltd **Not to scale**	**Standard Signage Plans** **Project: Lower All Mountain MTB Trail Diversion**	THREDBO

Appendix D Desktop Search Results



Scale: 1:19,599

0 137.5275 550 825 1,100

Meters

Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA 2020
Grid: GDA 2020 MGA Zone 55

N

THREDBO

THREDBO MTB PARK

Project: Lower All Mountain Trail Diversion

Revision: 1

Date: 13/07/2022

Produced By: BB

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : New All Mountain section

Client Service ID : 687530

Kosciuszko Thredbo Pty Ltd

Po Box 92

Thredbo New South Wales 2625

Attention: Chloe Chalk

Email: chloe_chalk@evt.com

Date: 01 June 2022

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -36.4913, 148.2991 - Lat, Long To : -36.487, 148.3068, conducted by Chloe Chalk on 01 June 2022.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.

A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

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Australian Government
Department of Agriculture, Water and the Environment

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 12-May-2022

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	2
Wetlands of International Importance (Ramsar	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	30
Listed Migratory Species:	11

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	16
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	1
Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	4
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places			[Resource Information]
Name	State	Legal Status	Buffer Status
Historic			
Snowy Mountains Scheme	NSW	Listed place	In feature area
Natural			
Australian Alps National Parks and Reserves	ACT	Listed place	In feature area

Wetlands of International Importance (Ramsar Wetlands)		[Resource Information]
Ramsar Site Name	Proximity	Buffer Status
Blue lake	Within 10km of Ramsar site	In feature area

Listed Threatened Ecological Communities			[Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Alpine Sphagnum Bogs and Associated Fens	Endangered	Community known to occur within area	In feature area
Natural Temperate Grassland of the South Eastern Highlands	Critically Endangered	Community may occur within area	In feature area

Listed Threatened Species			[Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Callocephalon fimbriatum			
Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Hirundapus caudacutus			
White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Numenius madagascariensis			
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pycnoptilus floccosus			
Pilotbird [525]	Vulnerable	Species or species habitat known to occur within area	In feature area
Rostratula australis			
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area	In feature area
FISH			
Prototroctes maraena			
Australian Grayling [26179]	Vulnerable	Species or species habitat may occur within area	In feature area
FROG			
Litoria verreauxii alpina			
Alpine Tree Frog, Verreaux's Alpine Tree Frog [66669]	Vulnerable	Species or species habitat likely to occur within area	In feature area
MAMMAL			
Burramys parvus			
Mountain Pygmy-possum [267]	Endangered	Species or species habitat likely to occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population)			
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area	In feature area
Mastacomys fuscus mordicus			
Broad-toothed Rat (mainland), Tooarrana [87617]	Vulnerable	Species or species habitat known to occur within area	In feature area
Petauroides volans			
Greater Glider [254]	Vulnerable	Species or species habitat may occur within area	In feature area
Petaurus australis australis			
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)			
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat likely to occur within area	In feature area
Pseudomys fumeus			
Smoky Mouse, Konoom [88]	Endangered	Species or species habitat likely to occur within area	In feature area
PLANT			
Argyrotegium nitidulum			
Shining Cudweed [82043]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calotis glandulosa			
Mauve Burr-daisy [7842]	Vulnerable	Species or species habitat may occur within area	In feature area
Colobanthus curtisiae			
Curtis' Colobanth [23961]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Glycine latrobeana			
Clover Glycine, Purple Clover [13910]	Vulnerable	Species or species habitat may occur within area	In feature area
Leucochrysum albicans subsp. tricolor			
Hoary Sunray, Grassland Paper-daisy [89104]	Endangered	Species or species habitat may occur within area	In feature area
Pimelea bracteata			
[8125]	Critically Endangered	Species or species habitat may occur within area	In feature area
Prasophyllum bagoense			
Bago Leek-orchid [84276]	Critically Endangered	Species or species habitat may occur within area	In feature area
Prasophyllum petilum			
Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area	In feature area
Pterostylis oreophila			
Blue-tongued Orchid, Kiandra Greenhood [22903]	Critically Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Ranunculus anemoneus			
Anemone Buttercup [14889]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Rytidosperma pumilum			
Feldmark Grass [66716]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thesium australe			
Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Xerochrysum palustre			
Swamp Everlasting, Swamp Paper Daisy [76215]	Vulnerable	Species or species habitat may occur within area	In feature area
REPTILE			
Cyclodomorphus praealtus			
Alpine She-oak Skink [64721]	Endangered	Species or species habitat likely to occur within area	In feature area
Liopholis guthega			
Guthega Skink [83079]	Endangered	Species or species habitat known to occur within area	In feature area

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Hirundapus caudacutus			
White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Motacilla flava			
Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Myiagra cyanoleuca			
Satin Flycatcher [612]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat may occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Neophema chrysostoma			
Blue-winged Parrot [726]		Species or species habitat likely to occur within area overfly marine area	In feature area
Numenius madagascariensis			
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Rhipidura rufifrons			
Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato)			
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Kosciuszko	National Park	NSW	In feature area

Regional Forest Agreements		[Resource Information]
Note that all areas with completed RFAs have been included.		
RFA Name	State	Buffer Status
Southern RFA	New South Wales	In feature area

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
Aerial baiting for wild dog control	2006/2713	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action	Post-Approval	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (particular manner)				
		(Particular Manner)		

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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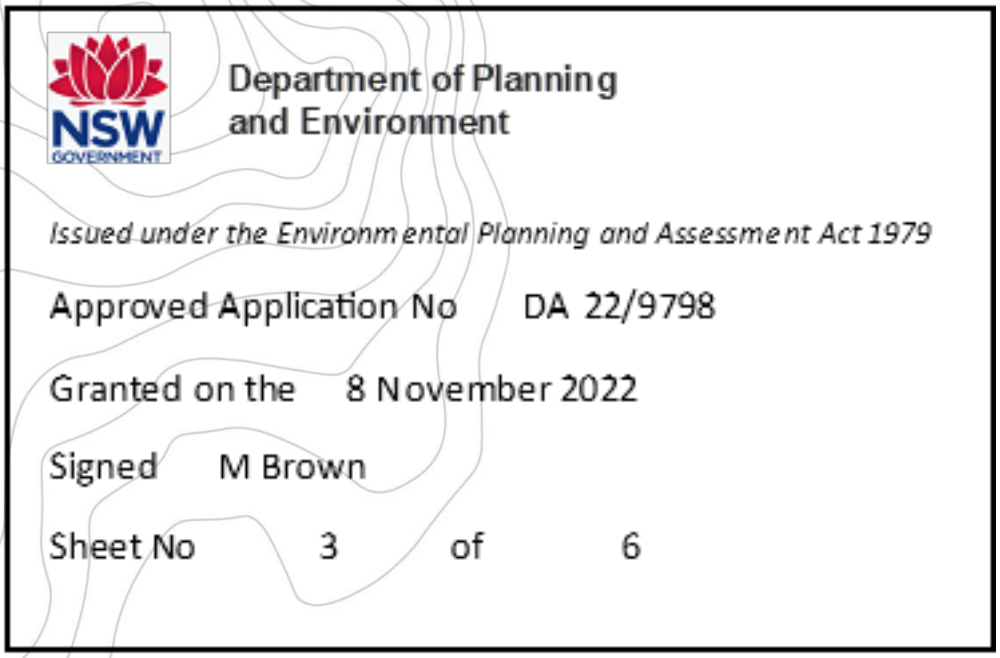
Appendix E Biodiversity Development Assessment Report

Proposed Lower All Mountain Trail Diversion, Thredbo Alpine Resort
Biodiversity Development Assessment Report

Kosciuszko Thredbo Pty Ltd



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A TETRA TECH COMPANY

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DOCUMENT TRACKING

Project Name	Proposed Lower All Mountain Trail Diversion, Thredbo Alpine Resort
Project Number	2029
Project Manager	Ryan Smithers
Accredited Assessor Certification	
Prepared by	Ryan Smithers
Reviewed by	Frank Lemckert
Approved by	Ryan Smithers
Status	**Final**
Version Number	**3**
Last saved on	**30 August 2022**

This report should be cited as 'Eco Logical Australia 2022. *Proposed Lower All Mountain Trail Diversion, Thredbo Alpine Resort*. Prepared for Kosciuszko Thredbo Pty Ltd.'

ACKNOWLEDGEMENTS

This document has been prepared by Eco Logical Australia Pty Ltd with support from Kosciuszko Thredbo Pty Ltd

Template 2.8.1

Executive Summary

Eco Logical Australia Pty Ltd was engaged by Kosciuszko Thredbo Pty Ltd to prepare a BDAR for the proposed construction of a new mountain bike trail and associated works in the Cruiser ski area and associated Cruiser Chairlift, 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). A portion of the native vegetation within the development site is mapped on the Biodiversity Values map.

The proposed development has been located to take advantage of existing disturbed areas and minimize the required clearing. As a result, it is anticipated that the proposal will involve the clearing or further modification of only 0.1 ha of vegetation. The proposal will require the clearing of understorey and groundcovers only, and will not result in the removal of any mature trees, or any associated fauna habitats such as hollows.

The development footprint supports one Plant Community Type (PCT) PCT 645 Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion in two condition states; good and low. PCT 645 does not conform to any Endangered Ecological Communities (EEC) listed under the NSW BC Act or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Targeted surveys within the development site and immediate surrounds identified one threatened fauna species, *Mastacomys fuscus* (Broad-toothed Rat), and one threatened flora *species Ranunculus anemoneus* (Anemone Buttercup), as occurring 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). *Cyclodomorphus praealtus* (Alpine She-oak Skink) has been assumed to be present within the development site. Whilst The Alpine She-oak Skink was not detected within the development site and is not a candidate Serious and Irreversible Impact (SAII) species, offsets for the species have been provided.

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 Biodiversity Assessment Method Credit Calculator. A total of two ecosystem credits and 16 species credits are 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.

Contents

List of Figures

List of Tables

Abbreviations

Abbreviation	Description
BAM	Biodiversity Assessment Method
BAMC	Biodiversity Assessment Method Credit Calculator
BC Act	NSW *Biodiversity Conservation Act 2016*
BDAR	Biodiversity Development Assessment Report
CEEC	Critically Endangered Ecological Community
DAWE	Commonwealth Department of Agriculture, Water and the Environment
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
NSW	New South Wales
NOW	NSW Office of Water
PCT	Plant Community Type
SEPP	State Environmental Planning Policy
TEC	Threatened Ecological Community
VIS	Vegetation Information System

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 33789. Consistent with the BAM, the streamlined (small area) assessment module has been used for this assessment.

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

1.1. General description of the development site

The development site comprises existing ski slopes and remnant native vegetation on the edges or in the middle of the ski slopes in the Cruiser ski area, within Thredbo Alpine Resort. Parts of the development site are already heavily modified in association with existing ski slopes and associated infrastructure.

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 proposed development comprises an intermediate flow style mountain bike trail that commences off the existing All Mountain Trail to the east of the Gunbarrel Chairlift top station and descends over approximately 500 m of trail downhill to connect back into the existing All Mountain Trail. The proposed trail will result in an expected average disturbance footprint of 2.5 m. The proposed works are expected to affect 0.1 ha of native vegetation, most of which is already highly modified.

The impacts of the proposed trail can be summarized as follows:

- The clearing of shrubs and groundcovers in a 2-3 m wide corridor where the trail traverses native vegetation. The disturbance corridor is required to contain the upper and lower batters and the trail surface when the trail is traversing across moderate to steep slopes. On gentler slopes the disturbance corridor will be closer to 1.5 m. The average disturbance width is expected to be 2.5 m. The clearing will be undertaken with a mix of hand tools i.e. chainsaws and brush-cutters, and machinery i.e. mini-excavator.
- In general, it is possible to align the trail to avoid tree removal. However, there will be some areas where the removal of some saplings is likely to be unavoidable.
- Earthworks (cut and fill) to create the trail form. This will be undertaken with a mini-excavator.
- Importation of some decomposed granite for the track surface.

The proposal is further identified in Figure 3 and Photo 1 – Photo 5.

Photo 1: The proposed trail initially traverses the "super-groomed" "Ballroom" ski run which comprises exotic grassland.

Photo 2: Much of the trail traverses existing ski runs that support a mix of exotic and native groundcovers derived from the clearing of Alpine Snow Gum shrubby open woodland. It will also traverse two "tree islands" approximately 20 m wide which separates the "Valley View" and "Ballroom" ski runs. One of these tree islands are shown in the background of Photo 2.

Photo 3: Approximately 90 m of the trail will extend into the large patch of Alpine Snow Gum shrubby open woodland that extends to the south of the Cruiser area.

Photo 4: The trail alignment has been designed to avoid wet heath and bog including this small patch of bog on the edge of the Ballroom Ski Run.

Photo 5: The trail will join the existing All Mountain Trail near this point, approximately 150 m below (in a direct line) its commencement.

1.3. Development site footprint

It is anticipated that the proposed development will result in the removal or modification of 0.1 ha of native vegetation, parts of which are already heavily modified. Approximately 0.01 ha of exotic grassland, on Ballroom Ski Run, will also be disturbed in association with the proposed trail.

The development site footprint is identified in Figure 2. The proposal is identified in Figure 3.

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.

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		
Environment 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.	-
Environmental 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 Department of Environment and Climate Change (DECC).	-
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.	-

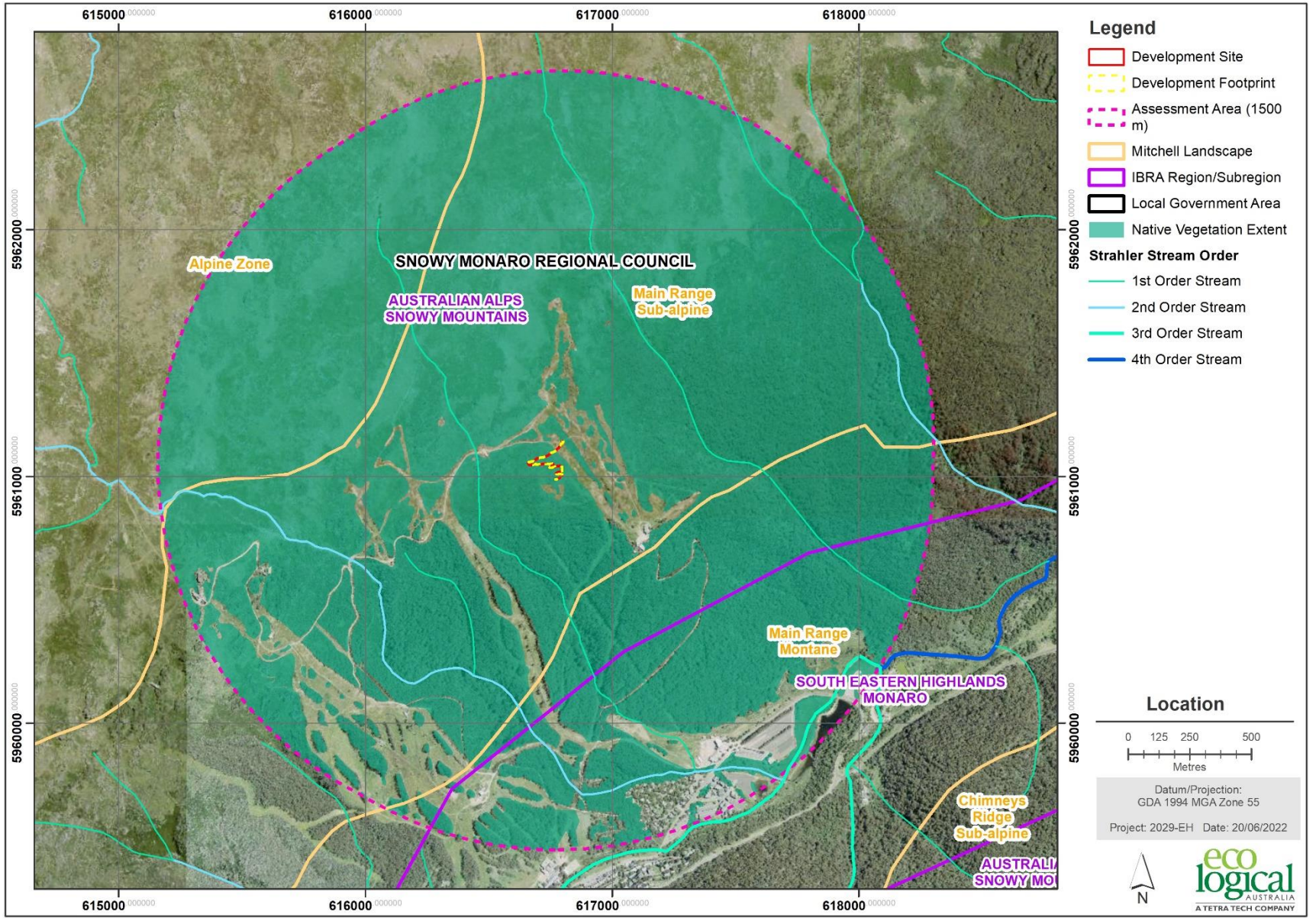

Figure 1: Location Map

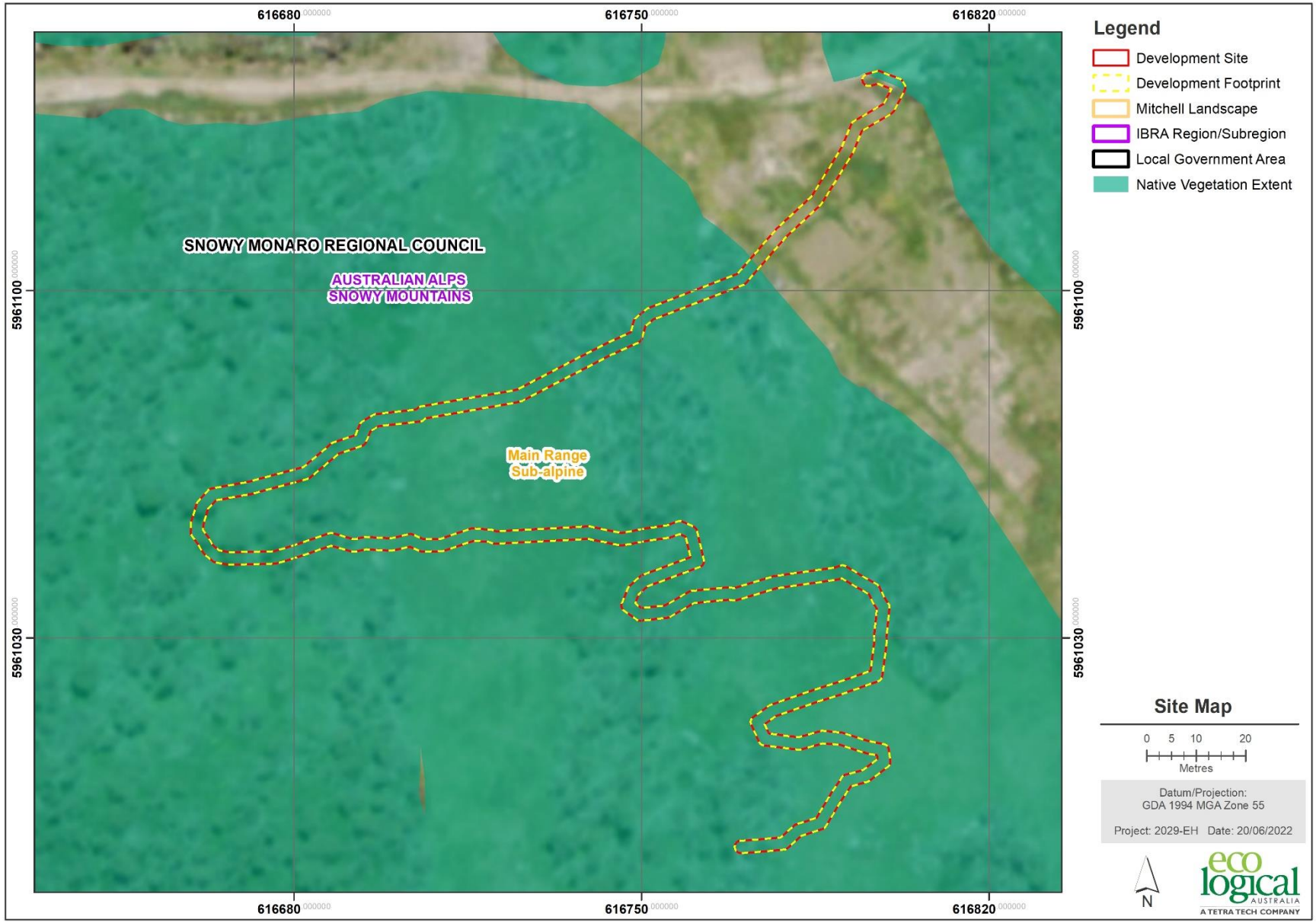

Figure 2: Site Map

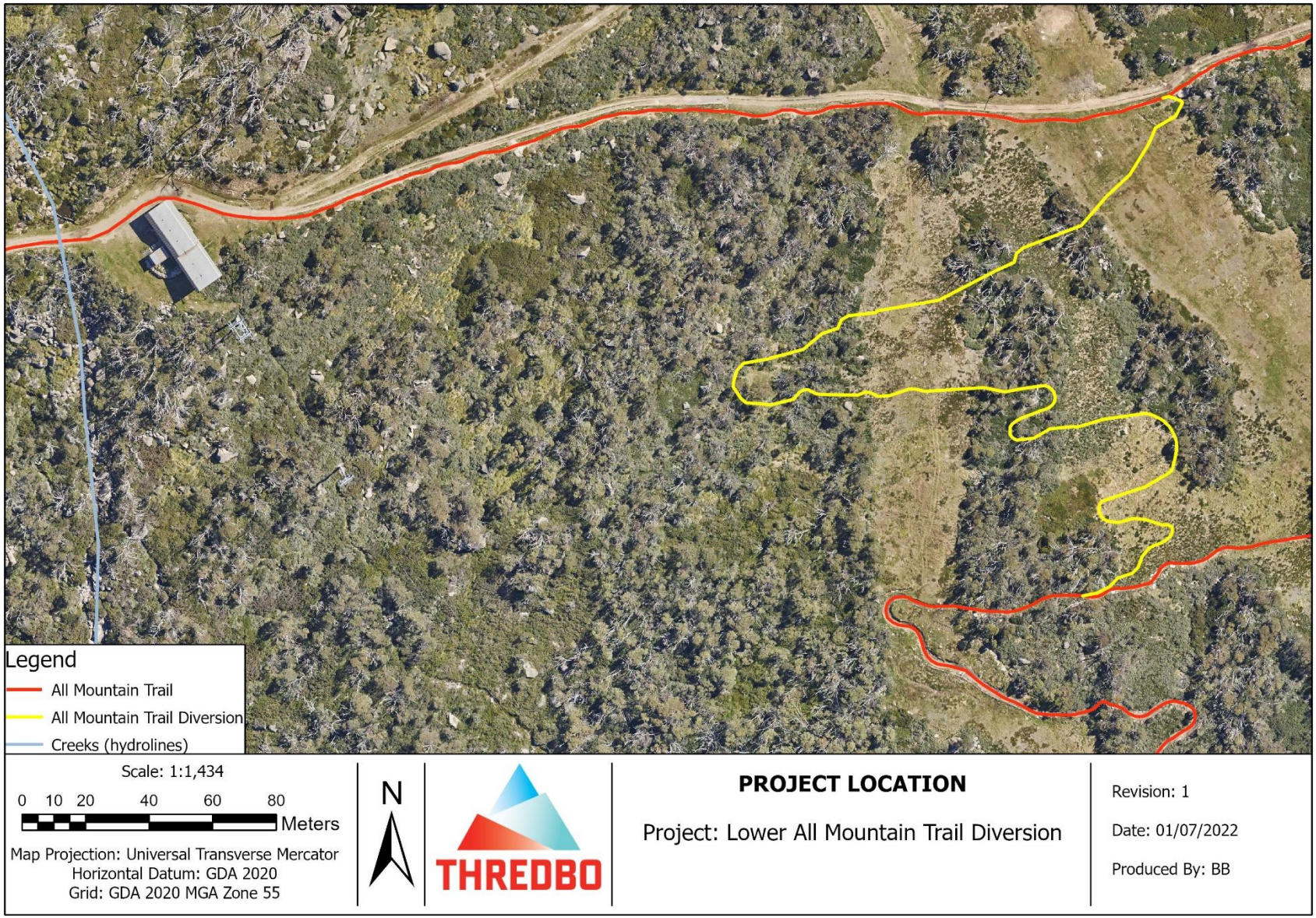

Figure 3: The proposal

2. Landscape features

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

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

Table 2: Landscape features

Landscape feature	Development Site	Assessment Area	Data source
IBRA Region(s)	Australian Alps	Australian Alps	Interim Biogeographic Regionalisation for Australia, Version 7
IBRA subregion(s)	Snowy Mountains	Snowy Mountains	Interim Biogeographic Regionalisation for Australia, Version 7
Rivers and streams	Minor unmapped watercourses that are tributaries of Merritts Creek.	Minor unmapped watercourses that are tributaries of Merritts Creek	NSW LPI Waterway mapping
Estuaries and wetlands	No	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	The rock outcropping in the development site is very typical of the locality and not of any particular geological significance.	No	Site observation
Areas of Outstanding Biodiversity Value	No	No	Register of Declared Areas of Outstanding Biodiversity Value (DPIE 2020)
NSW (Mitchell) Landscapes	Main Range Subalpine	-	NSW (Mitchell) Landscapes - version 3.1 (DPIE 2016)
Percent (%) native vegetation extent	88	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 27 April 2022 (Figure 4).

One full-floristic vegetation plot was surveyed to identify Plant Community Types (PCTs) and Threatened Ecological Communities (TECs) on the development site (Table 3). 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. A second full-floristic and vegetation integrity plot that had been collected nearby by ELA for the Cruiser Blue project (ELA 2022) was used in the assessment.

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
645	Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion	2

3.2. Native vegetation extent within the development site

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 shown in Table 3. Further detail with respect to the PCTs identified within the development site is presented in Table 4, and their distribution identified in Figure 4.

Table 4: Plant Community Types

PCT ID	PCT Name	Vegetation Class	Vegetation Formation	Area within the development site (ha)	Percent cleared
645	Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion	Subalpine Woodlands	Grassy Woodland	0.1	5

3.3.1. Plant Community Type selection justification

In determining the PCTs 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. There are only a small number of PCTs in the alpine and sub-alpine so there are very few PCT options, as shown in Table 5.

Table 5: Potential PCTs

Selected PCT ID	PCT Name	Other PCT options
645	Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion	644

3.4. Threatened Ecological Communities

PCT 645 does not comprise any TEC which is listed on the BC Act or EPBC Act, as identified in Table 6. PCT 637, which occurs just beyond the development site comprises the *Montane Peatland 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 (EEC) (hereafter referred to as the Montane Peatland and Swamps), which is listed on the BC Act. It also comprises the *Alpine Sphagnum Bogs and Associated Fens* EEC (hereafter referred to as the Alpine Sphagnum Bogs and Associated Fens) which is listed on the EPBC Act. The proposed development has been designed to avoid impacts on these communities.

Table 6: Threatened Ecological Communities

PCT ID	BC Act			EPBC Act		
	Listing status	Name	Area (ha)	Listing status	Name	Area (ha)
645	Not listed	-	-	Not listed	-	-
637	Endangered	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	-	Endangered	Alpine Sphagnum Bogs and Associated Fens	-

3.5. Vegetation integrity assessment

3.5.1. Vegetation zones

Two vegetation zones were identified within the development site or immediate surrounds based on the broad condition states of PCT 645, as shown in Figure 5. A total of two vegetation integrity survey plots were collected within the development site or immediate surrounds, which is consistent with the BAM (Table 7). Descriptions of vegetation zones are provided in Table 8 and Table 9.

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 ≥100 ha was determined for the development site.

3.5.3. Assessing vegetation integrity

A vegetation integrity assessment using the BAM Calculator (BAMC) was undertaken and the results are outlined in Table 10.

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	645	Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion	Good	0.05	101	1	1
2	645	Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion	Low	0.05	101	1	1
			Total	0.1	101	2	2

Table 8: Zone 1 PCT 645 Good Condition

645 - Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion			
Vegetation formation	Grassy Woodlands		
Vegetation Class	Subalpine Woodlands		
Conservation status	Widespread and well conserved. Not listed as a TEC on the BC Act or EPBC Act		
Description	This community is common in the locality but highly variable. It is poorly described by the current PCTs and associated benchmarks which don't well describe the variety of vegetation communities covered by PCT 645 and the variation in composition and structure values within "benchmark" occurrences.		
Characteristic canopy trees	*Eucalyptus niphophila*.		
Characteristic mid-storey	*Grevillea australis, Ozothamnus cupressoides*, *Prostanthera cuneata, Nematolepis ovatifolia, Ozothamnus secundiflorus, Ozothamnus alpinus, Olearia phlogopappa, Orites lancifolius, Oxylobium ellipticum.*		
Characteristic groundcovers	*Acaena novae-zelandiae , Asperula gunnii , Carex breviculmis, Lycopodium fastigiatum, Pimelea alpina, Poa fawcettiae, Polystichum proliferum, Senecio gunnii.*		
Mean native richness	22		
Exotic species / HTW cover	*Acetosella vulgaris*		
Condition	Good		
Variation and disturbance	PCT 645 is in good condition within the zone with minor variations in shrub cover.		
No. sites sampled	1		
Threatened flora species	-		
Fauna habitats	Broad-toothed Rat and Flame Robin.		
Composition	**Structure**	**Function**	**Vegetation Integrity Score**
64.8	89	49.5	65.9

Table 9: Zone 2 PCT 645 Low Condition

645 - Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion			
Vegetation formation	Grassy Woodlands		
Vegetation Class	Subalpine Woodlands		
Conservation status	Widespread and well conserved. Not listed as a TEC on the BC Act or EPBC Act		
Description	This community is common in the locality but highly variable. It is poorly described by the current PCTs and associated benchmarks which don't well describe the variety of vegetation communities covered by PCT 645 and the variation in composition and structure values within "benchmark" occurrences.		
Characteristic canopy trees	*Eucalyptus niphophila*.		
Characteristic mid-storey	*Grevillea australis, Ozothamnus cupressoides, Prostanthera cuneata, Nematolepis ovatifolia, Ozothamnus secundiflorus, Ozothamnus alpinus, Olearia phlogopappa, Orites lancifolius, Oxylobium ellipticum.*		
Characteristic groundcovers	*Acaena novae-zelandiae, Asperula gunnii, Carex breviculmis, Lycopodium fastigiatum, Pimelea alpina, Poa fawcettiae, Polystichum proliferum, Senecio gunnii.*		
Mean native richness	33		
Exotic species / HTW cover	*Acetosella vulgaris, Agrostis capillaris*		
Condition	Low		
Variation and disturbance	PCT 645 is in low condition within the zone and has been affected by historic and ongoing tree removal and pruning for ski slopes management and other disturbances which have resulted in considerable exotic grass cover.		
No. sites sampled	1		
Threatened flora species	-		
Fauna habitats	Broad-toothed Rat and Flame Robin.		
Composition	**Structure**	**Function**	**Vegetation Integrity Score**
65.1	79.5	15.4	43.1

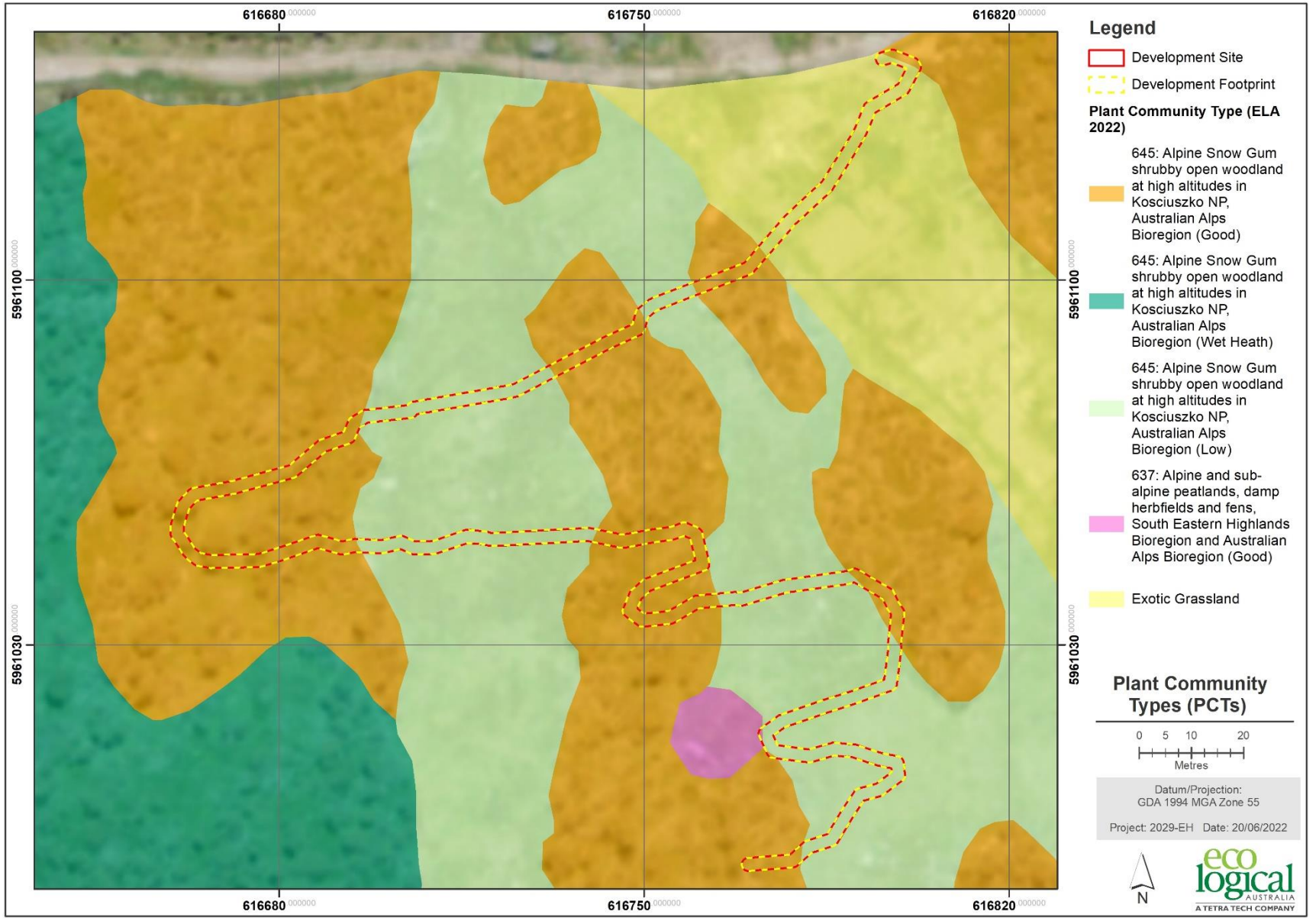

Figure 4: Plant Community Types

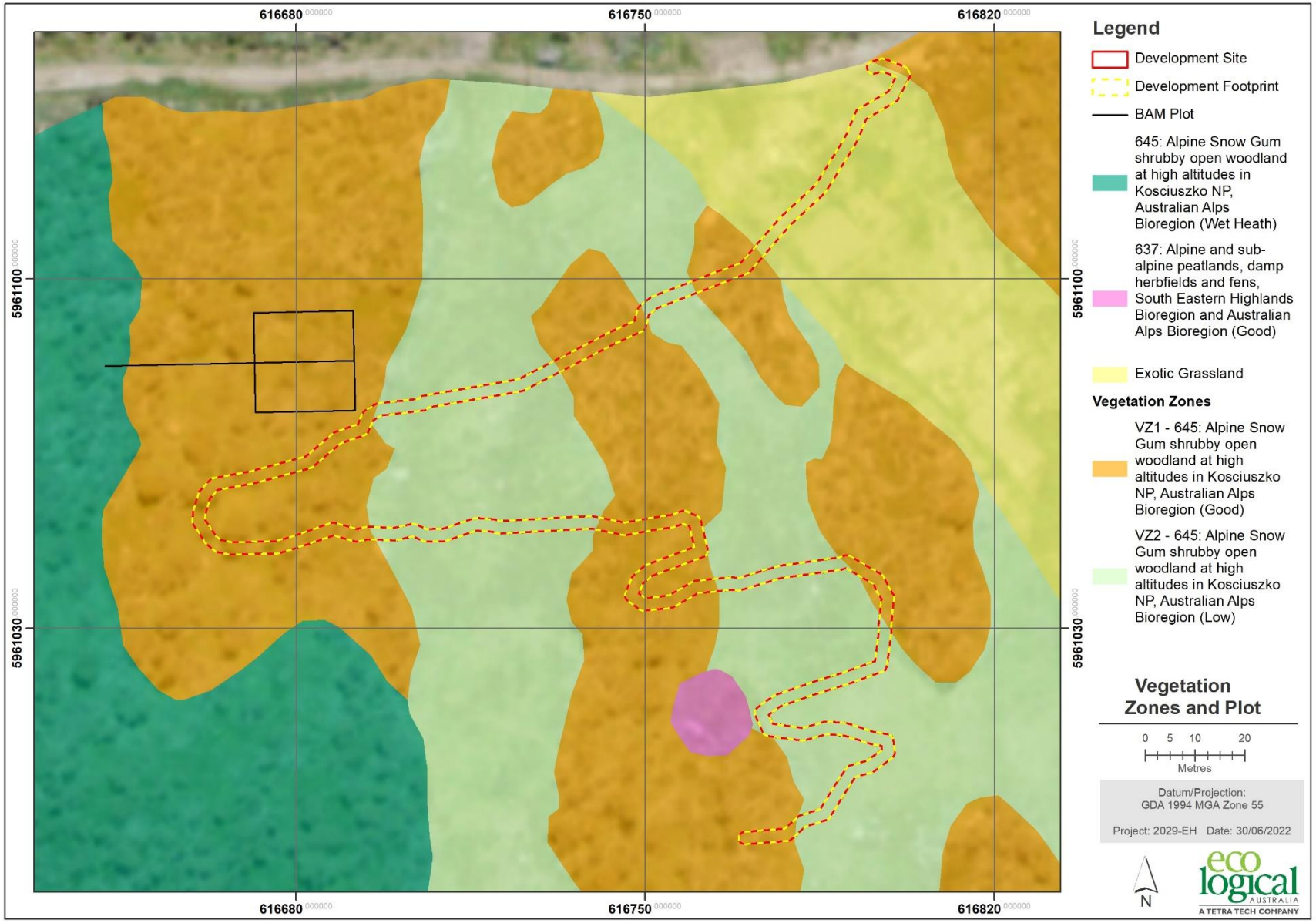

Figure 5: Vegetation Zones and Plots

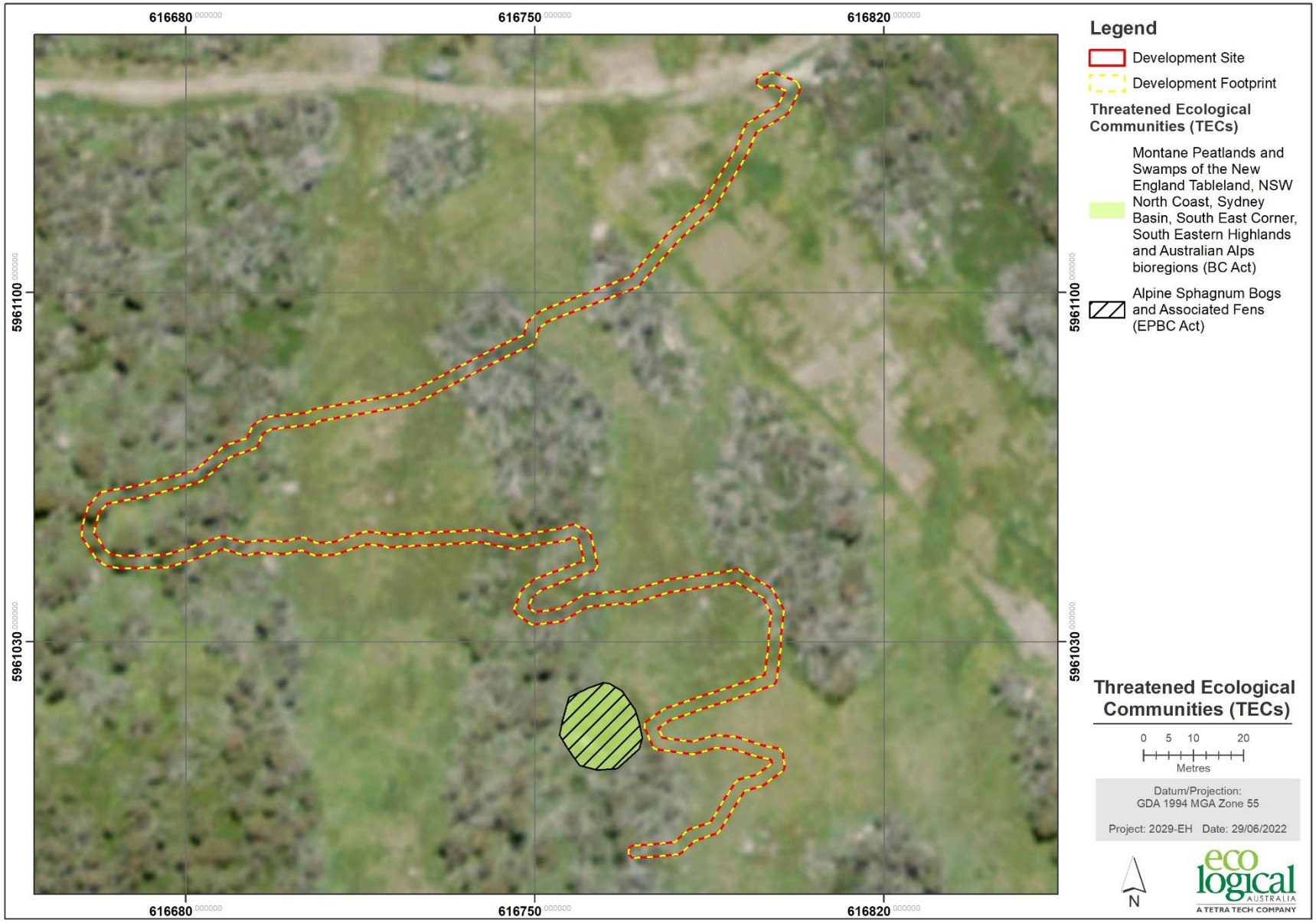

Figure 6: Threatened ecological communities

Table 10: 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	645	Good	0.05	64.8	89	49.5	No	65.9
2	645	Low	0.05	65.1	79.5	15.4	No	43.1

3.6. Use of local data

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

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 are included in Table 11.

Table 11: Predicted ecosystem credit species

Species	Common Name	Habitat Constraints	Geographic limitations	Sensitivity to gain class	NSW listing status	EPBC Listing status
Artamus cyanopterus cyanopterus	Dusky Woodswallow	-	-	Moderate	Vulnerable	Not Listed
Callocephalon fimbriatum (foraging)	Gang-gang Cockatoo	-	-	Moderate	Vulnerable	Endangered
Daphoenositta chrysoptera	Varied Sittella	-	-	Moderate	Vulnerable	Not Listed
Falsistrellus tasmaniensis	Eastern False Pipistrelle	-	-	High	Vulnerable	Not Listed
Hieraaetus morphnoides (Foraging)	Little Eagle	-	-	Moderate	Vulnerable	Not Listed
Hirundapus caudacutus	White-throated Needletail	-	-	High	Not Listed	Vulnerable
Petroica boodang	Scarlet Robin	-	-	Moderate	Vulnerable	Not Listed
Petroica phoenicea	Flame Robin	-	-	Moderate	Vulnerable	Not Listed

4.2. Species credit species

4.2.1. Identification of species credit species

Species credit species that require further assessment within the development site (i.e. candidate species), their associated habitat constraints, geographic limitations and sensitivity to gain class are included in Table 12.

Table 12: Candidate species credit species

Species	Common Name	Habitat Constraints	Geographic limitations	Sensitivity to gain class	NSW listing status	EPBC Listing status
Liopholis guthega	Guthega Skink	Granite substrate and decomposing granite soils		High	Endangered	Endangered
Cyclodomorphus praealtus	Alpine She-oak Skink	-	-	High	Endangered	Endangered
Mastacomys fuscus	Broad-toothed Rat	-	-	High	Vulnerable	Vulnerable
Pseudophryne corroboree	Southern Corroboree Frog	NA/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
Ranunculus anemoneus	Anemone Buttercup	Treeless vegetation above 1000 m in altitude	Above 1400 m	High	Vulnerable	Vulnerable

4.2.2. Assessment of habitat constraints and vagrant species

Justification for the exclusion of other candidate species credit species is provided in Table 13.

Table 13: Justification for exclusion of candidate species credit species

Species	Common Name	NSW listing status	EPBC Listing status	Sensitivity to gain class	Justification for exclusion of species
Liopholis guthega	Guthega Skink	Endangered	Endangered	High	The nearest records of the Guthega Skink are approximately 400 m to the west, above the Cruiser chairlift top station. The species has not been detected closer to the development footprint despite considerable survey effort by the author over that last decade in and around the Cruiser area.
Pseudophryne corroboree	Southern Corroboree Frog	Critically Endangered	Critically Endangered	Very High	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.

4.2.3. Candidate species requiring further assessment

Two species credit species required further assessment following site survey to assess the condition of the development site and the presence of microhabitats; *Mastacomys fuscus* (Broad-toothed Rat) and *Ranunculus anemoneus* (Anemone Buttercup).

4.3. Targeted surveys

The streamlined assessment method only requires targeted surveys for candidate SAII species. The development site does not meet the habitat constraints of any of the candidate species credit species that are candidate SAII species. Two species credit species, the Broad-toothed Rat and the Anemone Buttercup, were incidentally recorded within the development site or immediate surrounds and were added as candidate species.

Targeted surveys for relevant threatened species known from locality the were undertaken within the development site and immediate surrounds on the dates outlined in Table 14. Weather conditions during the targeted surveys are outlined in Table 15 and survey effort is outlined in Table 16.

Table 14: Targeted surveys

Date	Surveyors	Target species
27 April 2022	Ryan Smithers	Broad-toothed Rat and Anemone Buttercup

Table 15: Weather conditions

Date	Rainfall (mm)	Minimum temperature 0C	Maximum temperature 0C
27 April 2022	-	9	10

Table 16: Survey effort

Method	Habitat (ha)	Stratification units	Total effort	Target species
Targeted searches	Approx. 0.2 ha	Suitable habitats within and immediately surrounding the development site	2 person hours	Broad-toothed Rat
Targeted threatened flora searches	Approx. 0.2 ha	Suitable habitats within and immediately surrounding the development site	2 person hours	Anemone Buttercup

The characteristic scats of the Broad-toothed Rat were scattered in low densities throughout the development site and surrounds, as they are in suitable habitats throughout much of the locality.

The Guthega Skink was not detected within the development site or immediate surrounds during the field assessment. The nearest records of the Guthega Skink are approximately 1 are approximately 400 m to the west, above the Cruiser chairlift top station. It is considered unlikely that the species would occur within the development site, given that the species has not been detected closer to the development footprint, despite considerable survey effort by the author and others over that last decade in and around the Cruiser area.

Targeted surveys were not undertaken for the Southern Corroboree Frog given the absence of suitable habitats for the species, including suitable bog breeding habitat. The extant populations of this species are currently well known and heavily monitored.

The Alpine She-oak Skink was assumed to be present given the presence of potentially suitable habitat and the species' cryptic nature.

Following completion of field surveys, the species credit species included in the assessment are outlined in Table 17.

Table 17: 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	-	0.1	2
Ranunculus anemoneus	Anemone Buttercup	Yes	-	5 individuals	2
Cyclodomorphus praealtus	Alpine She-oak Skink	Assumed present	-	0.1	2

4.3.1. Species credit species included in the assessment

Three species credit species, the Broad-toothed Rat, Anemone Buttercup and Alpine She-oak Skink, have been included in the assessment as the proposed development will impact on habitat for these species. Species polygons for the Broad-toothed Rat, Anemone Buttercup and Alpine She-oak Skink are included as Figure 7.

4.4. Identification of prescribed additional biodiversity impact entities

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

Figure 7: Species polygons

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 trail predominately in disturbed areas.
- Minimising the disturbance footprint associated with construction.
- Changing the location of the trail to minimise impacts on less disturbed native vegetation.
- Changing the location of the trail to avoid wet areas.
- Designing and constructing the trail to avoid the need for mature tree removal.
- Using low impact construction methods.
- Undertaking post construction rehabilitation.

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 are outlined in Table 18.
- Threatened species and threatened species habitat is outlined in Table 19.
- Prescribed biodiversity impacts is outlined in Section 6.4.

Table 18: Direct impacts to native vegetation

PCT ID	PCT Name	BC Act listing	EPBC Act listing	Direct impact (ha)
645	Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion	Not listed	Not Listed	0.1

Table 19: 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	0.1	Vulnerable	Vulnerable
Ranunculus anemoneus	Anemone Buttercup	5 individuals	Vulnerable	Vulnerable
Cyclodomorphus praealtus	Alpine She-oak Skink	0.1	Endangered	Endangered

6.2. Change in vegetation integrity

The change in vegetation integrity as a result of the development is outlined in Table 20.

Table 20: Change in vegetation integrity

Veg Zone	PCT ID	Condition	Area (ha)	Current vegetation integrity score	Future vegetation integrity score	Change in vegetation integrity
1	645	Good	0.05	65.9	0	-65.9
2	645	Poor	0.05	43.1	0	-43.1

6.3. Indirect impacts

The indirect impacts of the development are outlined in Table 21. Given the nature of the proposed development, and the proposed mitigation measures, indirect impacts (in the form of increased light and wind penetration) are only anticipated to extend a maximum of 5 m into vegetation surrounding the proposed development site. Indirect impact zones are shown on Figure 8.

6.4. Prescribed biodiversity impacts

The proposal does not involve any prescribed biodiversity impact.

Figure 8: Indirect impact zones

Table 21: 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 post-construction. However, the proposed sediment control measures have been effective during the many other similar developments that have been undertaken within the alpine resorts in recent years.	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 construction methods used at Thredbo have been effective at preventing impacts on adjacent vegetation during the many other similar developments that have been undertaken in recent years.	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. The proposal will include post construction rehabilitation and weed control.	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. Vehicles 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. Construction materials 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 on the edge of 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 construction are outlined in Table 22.

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 22: Measures proposed to mitigate and manage impacts

Measure	Risk before mitigation	Risk after mitigation	Action	Outcome	Timing	Responsibility
Displacement of resident fauna	Medium	Low	If any active wombat burrows are detected in close proximity to the trail alignment during the construction phase, then the trail should be realigned to avoid the burrow	Fauna within the disturbance footprint should move and thus any injury to fauna species during construction should be avoided	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 the trail alignment where it encroaches upon relatively undisturbed native vegetation, prior to construction	Risk of disturbance beyond proposed disturbance corridor 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 fencing and hay bales	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

Measure	Risk before mitigation	Risk after mitigation	Action	Outcome	Timing	Responsibility
Programming construction activities to avoid impacts; for example, timing construction activities for when migratory species are absent from the site, or when particular species known to or likely to use the habitat on the site are not breeding or nesting	Low	Low	None proposed	NA	NA	NA
Temporary fencing to protect significant environmental features such as riparian zones	Low	Low	The trail alignment will be delineated with flagging tape where it encroaches upon relatively undisturbed native vegetation	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	Medium	Low	Post construction rehabilitation consistent with standard Thredbo rehabilitation strategies	Post construction vegetation within the development footprint with high medium-term recovery potential	Immediately post construction	Thredbo
Monitoring	Low	Low	None proposed	NA	NA	NA

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 23 and shown on Figure 9. The impacts of the development requiring offset for species credit species and their habitats are outlined in Table 24 and on Figure 9.

Table 23: Impacts to native vegetation that require offsets

Vegetation Zone	PCT ID	PCT Name	Vegetation Class	Vegetation Formation	Direct impact (ha)
1	645	Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion	Subalpine Woodlands	Grassy Woodlands	0.05
2	645	Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion	Subalpine Woodlands	Grassy Woodlands	0.05

Table 24: 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	0.1	Vulnerable	Vulnerable
Ranunculus anemoneus	Anemone Buttercup	5 individuals	Vulnerable	Vulnerable
Cyclodomorphus praealtus	Alpine She-oak Skink	0.1	Endangered	Endangered

7.3. Impacts not requiring offsets

All the impacts of the development on native vegetation and on the Broad-toothed Rat, Anemone Buttercup and Alpine She-oak Skink require offsets. The impacts of the proposed development on non-native vegetation do not require offsets. Those impacts that do not require offsets area shown in Figure 10.

7.4. Areas not requiring assessment

No parts of the proposed development do not require assessment.

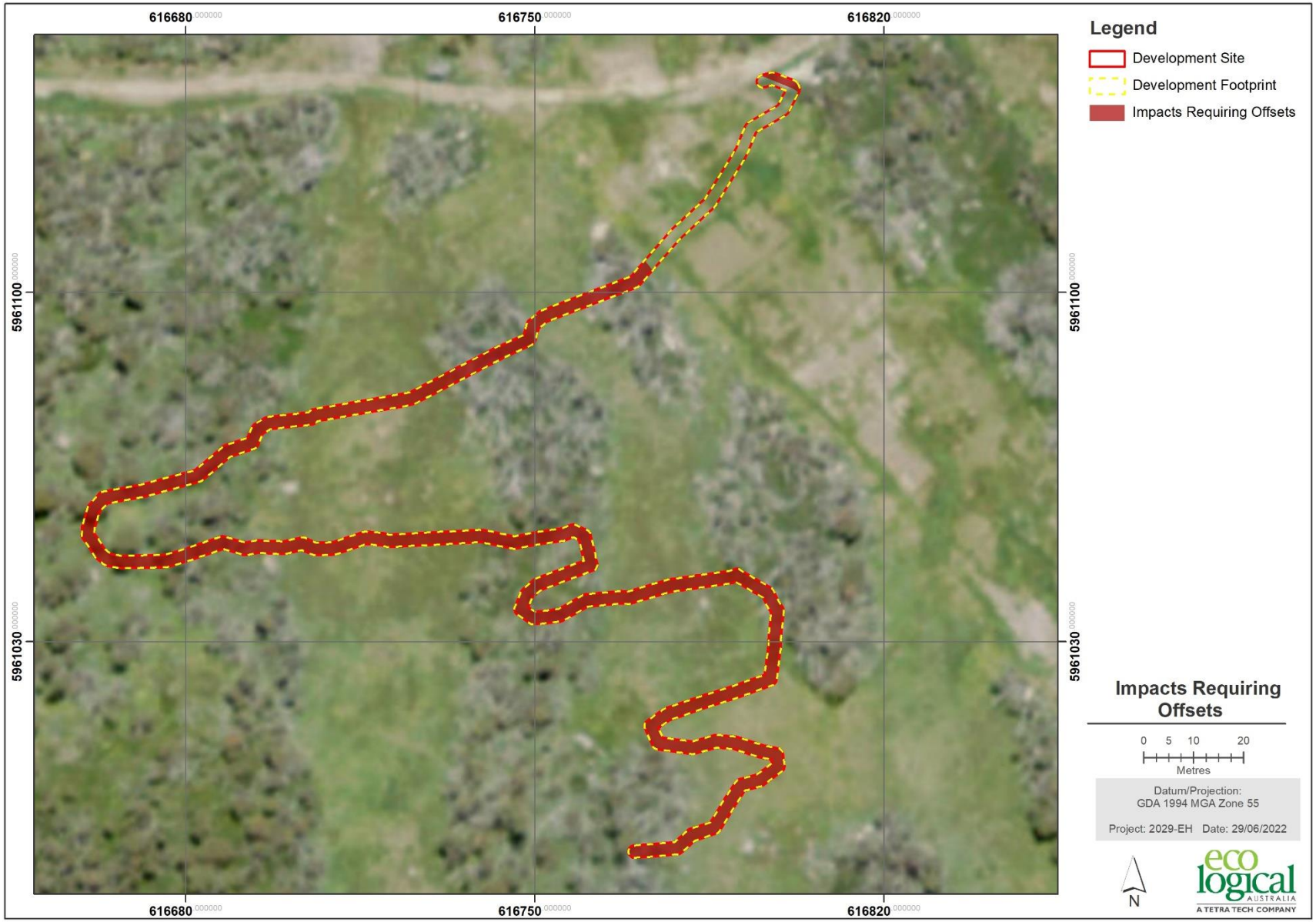

Figure 9: Impacts requiring offset

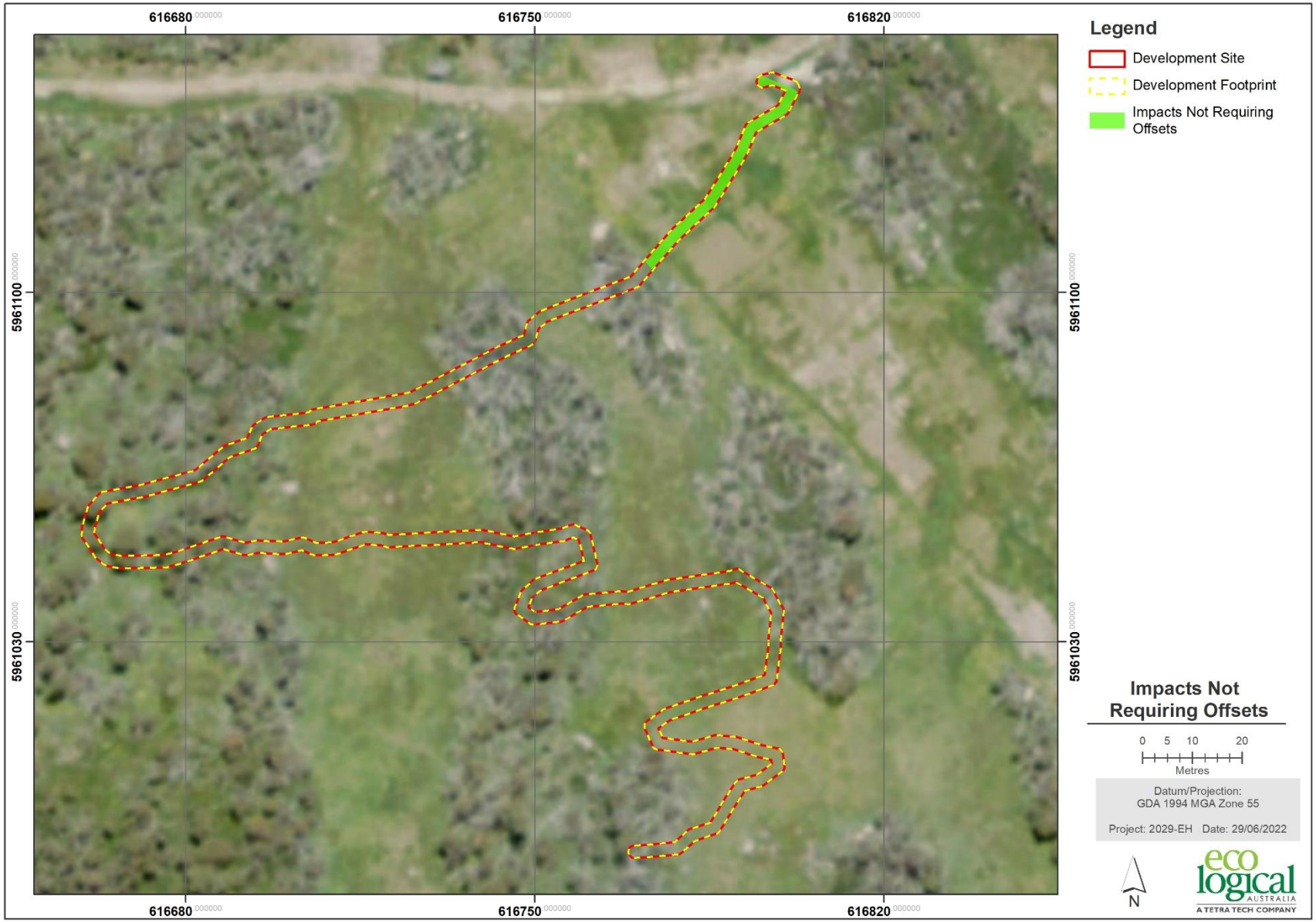

Figure 10: Impacts not requiring offset

7.5. Credit summary

The number of ecosystem credits required for the development are outlined in Table 25.

The number of species credits required for the development are outlined in Table 26.

A biodiversity credit report is included in Appendix F.

Table 25: Ecosystem credits required

Vegetation Zone	PCT ID	PCT Name	Condition	Credit Class	Direct impact (ha)	Credits required
1	645	Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion	Good	Grassy Woodlands	0.05	1
2	645	Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion	Low	Grassy Woodlands	0.05	1

Table 26: Species credit summary

Species	Common Name	Direct impact number of individuals / habitat (ha)	Credits required
Mastacomys fuscus	Broad-toothed Rat	0.1	3
Ranunculus anemoneus	Anemone Buttercup	5 individuals	10
Cyclodomorphus praealtus	Alpine She-oak Skink	0.1	3

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:

- Alpine She-oak Skink
- Broad-toothed Rat
- Anemone Buttercup.

The outcome of this assessment was that it is highly 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 22 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 construction of a new mountain bike trail and associated works in the Cruiser ski area and associated Cruiser Chairlift, 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 two ecosystem credits and 16 species credits are 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).

Terminology	Definition
NSW (Mitchell) landscape	Landscapes with relatively homogeneous geomorphology, soils and broad vegetation types, mapped at a scale of 1:250,000.
Multiple fragmentation impact development	Developments such as wind farms and coal seam gas extraction that require multiple extraction points (wells) or turbines and a network of associated development including roads, tracks, gathering systems/flow lines, transmission lines.
Operational Manual	The Operational Manual published from time to time by DPIE, which is a guide to assist assessors when using the BAM.
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.

Terminology	Definition
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

Table 27: Species recorded in the plots and incidentally elsewhere within the development site or immediate surrounds.

Family	Species	Common Name	Listing Status	Exotic	High Threat Weed	Growth Form Group	Plot 1			Plot 2		
							Stratum & Layer	Cover	Abundance	Stratum & Layer	Cover	Abundance
Rosaceae	*Acaena* sp.	Sheep's Burr	-			Forb (FG)	g	0.1	3	g	2	50
Polygonaceae	*Acetosella vulgaris*	Sheep Sorrel	-	Yes	Yes	-	g	0.1	10	g	0.1	100
Apiaceae	*Aciphylla simplicifolia*	Mountain Aciphyll	-			Forb (FG)				g	0.1	2
Poaceae	*Agrostis capillaris*	Browntop Bent	-	Yes	Yes	-				g	0.1	20
Rubiaceae	*Asperula gunnii*	Mountain Woodruff	-			Forb (FG)	g	0.2	20	g	0.1	20
Myrtaceae	*Baeckea gunniana*	Alpine Baeckea	-			Shrub (SG)				m	1	5
Cyperaceae	*Carex breviculmis*		-			Grass & grasslike (GG)				g	0.1	50
Cyperaceae	*Carex inversa*	Knob Sedge	-			Grass & grasslike (GG)				g	0.1	20
Asteraceae	*Celmisia pugioniformis*		-			Forb (FG)	g	0.1	20	g	1	100
Poaceae	*Chionochloa frigida*	Robust Wallaby Grass	-			Grass & grasslike (GG)		0		g	6	50
Asteraceae	*Coronidium scorpioides*	Button Everlasting	-			Forb (FG)				g	3	500
Asteraceae	*Craspedia aurantia*		-			Forb (FG)				g	0.1	20
Poaceae	*Deyeuxia crassiuscula*		-			Grass & grasslike (GG)				g	0.1	20
Phormiaceae	*Dianella tasmanica*		-			Forb (FG)	g	0.1	5			
Restionaceae	*Empodisma minus*		-			Grass & grasslike (GG)				g	2	100
Ericaceae	*Epacris paludosa*	Swamp Heath	-			Shrub (SG)				m	1	5
Myrtaceae	*Eucalyptus niphophila*		-			Tree (TG)	u	25	20	m	3	20

Family	Species	Common Name	Listing Status	Exotic	High Threat Weed	Growth Form Group	Plot 1			Plot 2		
							Stratum & Layer	Cover	Abundance	Stratum & Layer	Cover	Abundance
Geraniaceae	*Geranium potentilloides* var. *potentilloides*		-			Forb (FG)	g	0.1	1			
Haloragaceae	*Gonocarpus montanus*		-			Forb (FG)	g	0.1	5	m	6	50
Fabaceae (Faboideae)	*Hovea montana*		-			Shrub (SG)	m	10	100			
Apiaceae	*Hydrocotyle algida*	Pennywort	-	Yes		-	g	0.1	1			
Asteraceae	*Olearia phlogopappa*		-			Shrub (SG)	m	5	100	g	3	100
Fabaceae (Faboideae)	*Oxylobium ellipticum*	Common Shaggy Pea	-			Shrub (SG)	g	3	50	g	8	100
Asteraceae	*Ozothamnus secundiflorus*	Cascade Everlasting	-			Shrub (SG)	m	30	50	m	15	10
Thymelaeaceae	*Pimelea alpina*		-			Shrub (SG)	g	0.1	5	g	0.1	20
Thymelaeaceae	*Pimelea ligustrina* subsp. *ciliata*						m	0.5	20			
Poaceae	*Poa fawcettiae*	Smooth Blue Snowgrass	-			Grass & grasslike (GG)	g	40	2000	g	20	1000
Podocarpaceae	*Podocarpus lawrencei*	Mountain Plum Pine	-			Shrub (SG)	m	2	10			
Dryopteridaceae	*Polystichum proliferum*	Mother Shield Fern	-			Fern (EG)	g	0.1	1	g	0.2	20
Lamiaceae	*Prostanthera cuneata*	Alpine Mint-bush	-			Shrub (SG)	m	15	50	g	0.1	10
Asteraceae	*Senecio gunnii*		-			Forb (FG)	g	0.1	1	g	0.1	5
Sphagnaceae	*Sphagnum cristatum*		-			-	g	0.1	2	g	0.1	2
Caryophyllaceae	*Stellaria pungens*	Prickly Starwort	-			Forb (FG)	g	0.2	20			

Family	Species	Common Name	Listing Status	Exotic	High Threat Weed	Growth Form Group	Plot 1			Plot 2		
							Stratum & Layer	Cover	Abundance	Stratum & Layer	Cover	Abundance
Winteraceae	*Tasmannia xerophila* subsp. *xerophila*	Alpine Pepperbush	-			Shrub (SG)	g	0.1	1	g	0.1	1

Appendix C - Vegetation Integrity Plot Data

Table 28: Plot location data

Plot no.	PCT	Condition	Easting	Northing	Bearing
1	645	Good	616692	5961085	240
2	645	Low	616811	5961599	150

Table 29: Vegetation integrity data (composition)

Composition (number of species)						
Plot	Tree	Shrub	Grass	Forb	Fern	Other
1	1	9	1	10	1	0
2	1	5	4	11	0	0

Table 30: Vegetation integrity data (Structure)

Structure (Total cover)						
Plot	Tree	Shrub	Grass	Forb	Fern	Other
1	25.0	65.7	45.0	1.2	0.1	0
2	0.5	38	45.4	9.1	0	0

Table 31: 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	29	40	1	1	1	0	0	1	0.1
2	0	0	7	0	0	0	0	0	0	1	1.5

Appendix D - EPBC Act Significant Impact Criteria

The EPBC Act Administrative Guidelines on Significance (DoE 2013) 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:

- Alpine She-oak Skink
- 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 does provide potential habitat for the following Commonwealth listed endangered species: Alpine She-oak Skink. 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. The impacts associated with the proposed action will result in the removal of only a very small area (0.1 ha) of potential habitat for the Alpine She-oak Skink. It is considered highly unlikely that the proposed works would result in injury or death of any Alpine She-oak Skink individuals as the disturbances associated with the proposed works are likely to temporarily deter any individuals from using the locations where works are being undertaken, and there is adequate alternative habitat available for individuals to use. Under these circumstances, it is considered highly unlikely that the proposed action will lead to a long-term decrease in the size of the Alpine She-oak Skink population. b. reduce the area of occupancy of the species. The proposed action will be limited to the removal of a very small (0.1 ha) amount of vegetation in the context of the extent of this resource in the locality and is highly unlikely to affect any key

Matters to be considered	Impact
	habitat resources for the Alpine She-oak Skink; nor affect its ability to access habitats within or beyond the development site. Under these circumstances, the proposed action is highly unlikely to reduce the area of occupancy of the local population of the Alpine She-oak Skink. c. fragment an existing population into two or more populations The proposed action will be limited to the removal of a very small (0.1 ha) amount of vegetation and rocks in the context of the extent of these resources in the locality and is highly unlikely to affect any key habitat resources for the Alpine She-oak Skink; nor affect its ability to access habitats within or beyond the development site. Under these circumstances, the proposed action will not fragment an existing population of the Alpine She-oak Skink 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 Alpine She-oak Skink. There are thousands of hectares of similar habitats in the alpine and subalpine zones of the Australian alps, including elsewhere within the Thredbo Resort area. There is sufficient retained habitat such that individuals can continue to survive. e. disrupt the breeding cycle of a population It is possible although unlikely that the Alpine She-oak Skink may breed within the development site. However, any local population of these species is highly unlikely to be limited to the development site, which represents only a very small proportion of the potential habitat available to the species in the locality and so breeding can proceed as normal in the other available areas. Under these circumstances, it is highly unlikely that the proposed action would disrupt the breeding cycle of a population of the Alpine She-oak Skink. f. modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline The proposed action will modify a very small area of potential habitat for the Alpine She-oak Skink, but this area is unlikely to be important to these species in the context of the extent of potential habitat in the locality. Under these circumstances it is highly unlikely that the proposed action would modify- destroy- remove or isolate or decrease the availability or quality of habitat to the extent that the Alpine She-oak Skink 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 Alpine She-oak Skink. 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 Alpine She-oak Skink to decline. i. interfere substantially with the recovery of the species. As the proposed action is not considered to decrease or fragment any existing populations the recovery of the Alpine She-oak Skink is unlikely to be adversely impacted.
Any impact on Commonwealth Listed Vulnerable Species;	Yes. The study area provides known habitat for two Commonwealth listed vulnerable species: the Broad-toothed Rat and the Anemone Buttercup. The significant impact criteria in terms of the vulnerable species are discussed below: a. lead to a long-term decrease in the size of an important population of a species. Whilst the proposed action will affect some known Broad-toothed Rat habitat, it will affect only a very small amount (0.1 ha) of the potential habitat for the species in the immediate area. As such, the proposed works are 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

Matters to be considered	Impact
	which could isolate individuals or a population of the Broad-toothed Rat. The noise and vibration associated with the proposed works is likely to temporarily deter any Broad-toothed Rat individuals that may be near the affected areas. As such, it is unlikely that any individuals would be killed during the implementation of the proposed action. The Anenome Buttercup has recovered well from the brink of extinction since the cessation of grazing in the NSW alpine areas, and is now locally common throughout the main range. The local population of the species is likely to comprise many thousands of plants. The species is common in the Cruiser area and elsewhere throughout the higher parts of the Thredbo Resort Area. 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 or the Anenome Buttercup . b. reduce the area of occupancy of an important population It is highly likely that the Broad-toothed Rat will continue to occur within the development site 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 area of occupancy of the Broad-toothed Rat. The proposed action will reduce the area of occupancy of the Anenome Buttercup by a very small amount, approximately 0.5 m2. c. fragment an existing important population into two or more populations The proposed action will not fragment an existing important population of either the Broad-toothed Rat or the Anenome Buttercup into two or more populations. Both species populations extend beyond the development site and the Thredbo Resort Area. d. adversely affect habitat critical to the survival of a species No habitat within the development site is considered to be critical to the survival of the Broad-toothed Rat or the Anenome Buttercup. e. disrupt the breeding cycle of an important population The proposed action and affected area is too small to disrupt the breeding cycle of a population of the Broad-toothed Rat or the Anenome Buttercup.. f. modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline The proposed action will not modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the Broad-toothed Rat or the Anenome Buttercup is likely to decline as the habitat to be affected is very small in the context of the available habitat within the Thredbo Resort Area and the proposal will not cause any additional fragmentation of habitat or barriers to movement. g. result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat The proposed action will not result in invasive species that are harmful becoming established in habitat for the Broad-toothed Rat or Anemone Buttercup. Invasive species, including foxes and cats, are already present. h. introduce disease that may cause the species to decline The proposed action is unlikely to introduce disease that may cause the Broad-toothed Rat or Anemone Buttercup to decline. i. interferes substantially with the recovery of the species. Whilst there have been documented declines in some Broad-toothed Rat populations within the Snowy Mountains, these declines have been attributed to factors such as major bushfire events and early snow thaws, and not impacts of the nature of those proposed. The local population of the Broad-toothed Rat appears to continue to be relatively large on the basis of the abundance of the species scat throughout the Thredbo Resort Area- including within the village, and in areas that have been subject to the sorts of activities proposed. As such, it is considered highly unlikely that proposed action will substantially interfere with the recovery of the Broad-toothed Rat.

Matters to be considered	Impact
	The Anenome Buttercup has recovered well from the brink of extinction since the cessation of grazing in the NSW alpine areas, and is now locally common throughout the main range. The local population of the species is likely to comprise many thousands of plants.
Any impact on a Commonwealth Endangered Ecological Community	No 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

CURRICULUM VITAE

Ryan Smithers

SENIOR ECOLOGIST

QUALIFICATIONS

BEnvSc (Land Resources Management)- University of Wollongong with 1st Class Honours 1995.
Accredited BBAM- FBA- and BAM Assessor
Alpine Ecology Course Australian Alpine Institute and La Trobe University
Senior First Aid- St. Johns Ambulance.

Ryan brings to ELA more than 20 years' experience in natural resource management (21 years as a consultant- and 3 years with Sydney Catchment Authority as a Catchment Protection Officer). He has extensive practical experience in flora and fauna surveying- fire-fighting- planning and land management throughout southern NSW and has undertaken numerous 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 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 Biobanking (BBAM)- Framework for Biodiversity Assessment (FBA) and Biodiversity Assessment Method (BAM) assessor and has undertaken may surveys using BBAM-BAM and DPIE Vegetation Survey Standard or very similar methodologies. Ryan project managed ELAs contributions to the Full-floristic Vegetation Survey and Condition Assessment for the South-east Highlands and Australian Alps of the Upper Murrumbidgee Catchment and South-east Corner Biometric Benchmark projects which involved the collection of more than 250 plots.

Ryan has particular ecological expertise in the NSW southern tablelands and Alps- gained from 15 years of survey and assessment across the Alps- including many assessments within the Charlotte Pass- Thredbo and Perisher Ski Resorts- and assessments on the Monaro including around Jindabyne.

Ryan has undertaken assessments in the region for a broad range of clients including NSW NPWS, Local Land Services, Biodiversity Conservation Trust, Kosciuszko Thredbo, Vail Resorts and Charlotte Pass Ski Resort.

RELEVANT PROJECT EXPERIENCE

Monaro and Werriwa Snow Gum Woodland and Grasslands Conservation Tender
Monaro Grasslands Conservation Tender
Kosi Walk Realignment Review of Environmental Factors
Diggings Campground Upgrade Review of Environmental Factors
Mount Perisher Chairlift Biodiversity Development Assessment Report
Merritts Gondola Biodiversity Development Assessment Report
Corin Forest Ski Slope Assessment
Montane Peatlands Strategic Action Plan
Perisher Guthega Skink Targeted Surveys
Numerous Mountain Bike Ecological Assessments at Thredbo
Leichardt Chairlift Ecological Assessment
Thredbo Masterplan Ecological Assessment
Guthega Quad Chair Flora and Fauna Assessment
Thredbo Chairlift Constraints Analysis
Friday Flat Ecological Assessment
Sponars Traverse Flora and Fauna Assessment
Lobs Hole Review of Environmental Factors
Lake Wallace Flora and Fauna Assessment for Cooma Monaro Shire at Nimmitabel
Numerous Impact Assessments in alpine and sub-alpine environments for OEH- Vail- Kosciuszko- Thredbo and Charlotte Pass Ski Resorts
Boco Rock Wind Farm Ecological Assessment and Offsets Analysis
South-east Highlands and Australian Alps of the Upper Murrumbidgee Catchment Full Floristic Survey and Condition Assessment
South-east Corner Biometric Benchmark Project
Queanbeyan Biodiversity Study
Mount Jerrabomberra Ecological Assessment
Eurobodalla Bio-certification Project
Jervis Bay Biodiversity Assessment
Broulee and South Moruya Biocertification Project
North Moruya Biodiversity Study
Eurobodalla Vegetation Mapping Validation
Eurobodalla Biodiversity Study for future Urban Expansion Lands
Merimbula STP Upgrade Terrestrial Ecological Assessment
Cobowra LALC Lands Biobanking 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
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.

Appendix F - Biodiversity credit report

BAM Biodiversity Credit Report (Variations)

Proposal Details

Assessment Id
00033789/BAAS17061/22/00033790

Proposal Name
Lower All Mountain Trail Diversion

BAM data last updated *
16/06/2022

Assessor Name
Ryan Smithers

Assessor Number
BAAS17061

BAM Data version *
54

Proponent Name(s)

Report Created
30/08/2022

BAM Case Status
Finalised

Assessment Revision
2

Assessment Type
Part 4 Developments (Small Area)

Date Finalised
30/08/2022

BOS entry trigger
BOS Threshold: Biodiversity Values Map

* 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

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
645-Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion	Not a TEC	0.1	0	2	2.00

645-Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Subalpine Woodlands This includes PCT's: 644, 645, 650, 677, 679, 952, 1190, 1191, 1196, 1199	Subalpine Woodlands <50%	645_Good	No	1	Snowy Mountains,Bondo, Monaro, Murrumbateman, Snowy Mountains and South East Coastal Ranges. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Subalpine Woodlands This includes PCT's: 644, 645, 650, 677, 679, 952, 1190, 1191, 1196, 1199	Subalpine Woodlands <50%	645_Poor	No	1	Snowy Mountains,Bondo, Monaro, Murrumbateman, Snowy Mountains and South East Coastal Ranges. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

BAM Biodiversity Credit Report (Variations)

645-Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion	Variation options					
	Formation	Trading group	Zone	HBT	Credits	IBRA region
	Grassy Woodlands	Tier 4 or higher threat status	645_Good	No	1	IBRA Region: Australian Alps, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Grassy Woodlands	Tier 4 or higher threat status	645_Poor	No	1	IBRA Region: Australian Alps, 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
Cyclodomorphus praealtus / Alpine She-oak Skink	**645_Good, 645_Poor**	0.1	3.00
Mastacomys fuscus / Broad-toothed Rat	**645_Good, 645_Poor**	0.1	3.00
Ranunculus anemoneus / Anemone Buttercup	**645_Good**	5.0	10.00

Credit Retirement Options

Like-for-like options

Cyclodomorphus praealtus/ Alpine She-oak Skink	Spp	IBRA region	
	Cyclodomorphus praealtus/Alpine She-oak Skink	Any in NSW	
	Variation options		
	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act	IBRA region

		shown below	
	Fauna	Endangered	Snowy Mountains, Bondo, Monaro, Murrumbateman, Snowy Mountains and South East Coastal Ranges. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Mastacomys fuscus/ Broad-toothed Rat	Spp	IBRA region	
	Mastacomys fuscus/Broad-toothed Rat	Any in NSW	
	Variation options		
	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region
	Fauna	Vulnerable	Snowy Mountains, Bondo, Monaro, Murrumbateman, Snowy Mountains and South East Coastal Ranges. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Ranunculus anemoneus/ Anemone Buttercup	Spp	IBRA region	
	Ranunculus anemoneus/Anemone Buttercup	Any in NSW	
	Variation options		
	Kingdom	Any species with same or	IBRA region

		higher category of listing under Part 4 of the BC Act shown below	
	Flora	Vulnerable	Snowy Mountains, Bondo, Monaro, Murrumbateman, Snowy Mountains and South East Coastal Ranges. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

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Appendix F Site Environmental Management Plan

Site Environmental Management Plan (SEMP)

Lower All Mountain MTB Trail Diversion

Thredbo Alpine Resort
Kosciuszko National Park, NSW

September 2022

Lower All Mountain MTB Trail Diversion

Site Environmental Management Plan (SEMP)

Kosciuszko Thredbo Pty Ltd
1 Friday Drive, Thredbo, New South Wales 2625
www.thredbo.com.au

Document Control

REVISION	DATE	REVISION TYPE	AUTHOR	APPROVED BY
A	13.07.2022	Draft	C.Chalk	P.Fleming
0	15.07.2022	Final	C.Chalk	P.Fleming
1	01.09.2022	Inclusion of NPWS referral comments	C.Chalk	P.Fleming

Contents

Figures

Tables

1 Introduction

This Site Environmental Management Plan (SEMP) has been prepared for implementation by Kosciuszko Thredbo Pty Ltd (KT) (and its contractors) for the Lower All Mountain MTB Trail Diversion (the Project).

KT requires a SEMP to support the Development Application (DA) for the Project, situated in Thredbo Alpine Resort (Thredbo), approximately 35 kilometres (km) south-west of Jindabyne, New South Wales.

1.1 Purpose

This SEMP has been developed to outline how construction processes for the Project are to be managed in order to maintain and protect the environmental values of the Project site and surrounds.

1.2 Objective

The objectives of this SEMP are to:

- Provide mitigation measures to minimise the potential for environmental harm and/or environmental nuisance;
- Provide guidance for the development of detailed construction environmental management plans;
- Ensure all Project Personnel understand individual roles and responsibilities;
- Provide corrective actions to be implemented in the event of environmental harm and/or environmental nuisance; and
- Ensure Project personnel understand incident and emergency response procedures.

1.3 Environmental and Social Sustainability Policy

All activities undertaken by KT will be in accordance with the Company's *Environmental and Social Sustainability Policy 2021* (KT083).

1.4 Applicable Legislation

The Project will be carried out in accordance with the applicable legislative requirements outlined in the following Acts and subordinate legislation:

- *Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)*;
- *Biodiversity Conservation Act 2016*;
- *Environmental Planning and Assessment Act 1979*;
- *Environmentally Hazardous Chemicals Act 1985*;
- *Heritage Act 1977*;
- *National Parks and Wildlife Act 1974*;
- *Protection of the Environment Operations Act 1997*;
- *Waste Avoidance and Resource Recovery Act 2001;*
- *Water Management Act 2000;* and
- *Work Health and Safety Act 2011.*

2 Project Description

The Project will comprise the construction of an intermediate mountain bike trail which forms part of the existing All Mountain trail.

The Trail commences off the existing All Mountain trail to the east of the Gunbarrel Chairlift top station and terminates approximately 0.5 km downhill when it links back onto the existing All Mountain trail.

The Trail will be a rolling contour trail with rollers, small jumps, drops and several berms. It will be similar to the Upper N4 style with an increased degree in difficulty for the features.

2.1 Project Location

The Project site is located within the Cruiser ski area (predominately within Valley View and Ballroom runs). Refer **Appendix B** for site plan.

2.2 Site Description

The Project site is predominately disturbed ski runs, with some areas of undisturbed native vegetation islands.

2.3 Construction Detail and Activities

A summary of the construction program and activities is provided in **Table 1**.

Table 1: Construction Detail and Activities

Aspect	Details
Site Access	During construction, the site access will be via the Mountain access road.
Construction Corridor	A 20 m wide corridor is required to provide flexibility for the trail builders to respond to any unforeseen construction constraints.

Construction Program and Activities	Pre-construction activities will comprise:
	• establishment of site boundary;
	• marking significant vegetation to be retained and no-go zones;
	• erection of site signage and traffic controls;
	• flagging exact trail alignment using pin flags to mark the edges of the trail for construction;
	• a survey for *Ranunculus anemoneus* (Anemone Buttercup) is to be undertaken during the trail alignment/flagging stage; and
	• mobilisation of machinery, equipment and construction materials to site.
	
	Construction activities will comprise the following:
	• vegetation clearing (50 m increments) within the trail corridor to expose bare earth
	  ○ excess cut vegetation to be spread into the surrounding heath and used for rehabilitation of exposed soil on the trail edges
	  ○ topsoil and vegetation sods are to be stockpiled close to the trail tread;
	• cut into the slope using a mini excavator and excavate the soil to achieve the appropriate depth of bench;
	• remove loose rocks, roots and compact the trail;
	• back slope the batter, ensuring outslope and appropriate drainage;
	• define the trail line using rocks, logs and other obstacles; and
	• re-instate the verge areas, topsoil and preserved vegetation sods.
	
	Post-construction activities will comprise:
	• rehabilitation in accordance with the Rehabilitation Management Plan;
	• demobilisation of plant and machinery; and
	• site clean-up.

Machinery, Plant and Equipment	Construction vehicles and plant will include (but not limited to): • Mini excavator; • Motorised wheelbarrows; • Quad bikes; • Dump trucks (to and from stockpile sites); • 4WD vehicles; • Side-by-side vehicles; and • Handtools (i.e. chainsaws and brush-cutters).
Stockpile Sites	Temporary stockpiles will be required along the trail alignment for the effective management of gravel, soil and vegetation. These stockpiles will be located within pre-disturbed areas, on relatively flat land, away from watercourses and avoid native vegetation. Excess materials from construction will be located within the main stockpile area within the resort (**Appendix B**). Access to these locations will be restricted to KT staff and contractors. Soil stockpiles will be managed in accordance with the *Soil Stockpile Guidelines for the Resort Areas of Kosciuszko National Park, version 1.0* (OEH 2017) (Soil Stockpile Guidelines) and SEMP (**Appendix C**).
Site Facilities and Compound	There will be no site compound within the construction corridor. Amenities will be available at the Merritts Mountain House.
Construction timing	Construction of the Project is anticipated to commence during the summer of 2022/23, and will take approximately 6 weeks to complete. The trail construction works must cease by 30 April, with rehabilitation and stabilisation works able to continue until 30 May. Construction must not commence when snow is located on the trail corridor and machinery must not be used to remove snow from areas containing native vegetation.
Working Hours	The working hours for construction will be stipulated in the conditions of consent.

2.4 Imported materials and stabilising agents

- NPWS requests that its authorisation is sought where the proponent intends to utilise either of the following in construction or maintenance of the trail:
    - Imported gravel or fill material; or
    - soil stabilising or adhesive agents.
- The proponent may obtain imported gravel or fill material from sources already assessed by NPWS as appropriate for use in KNP, being gravel or fill material from:
    - the McMahons Earthmoving quarry, located on Alpine Way, Crackenback NSW; or
    - the Kraft Earthmoving / Snowy Mountains Sand and Gravel quarry located on Kosciuszko Road, Jindabyne NSW.

3 Environmental Management

3.1 Environmental Management Structure and Responsibility

3.1.1 Project Team Structure

The Project team structure is provided in **Figure 1**.

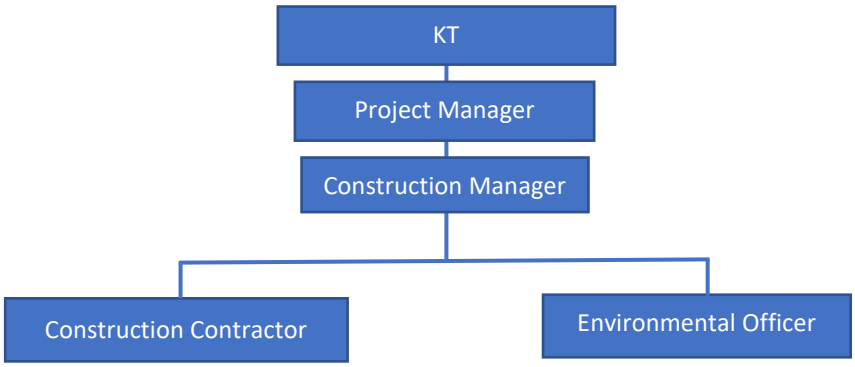


Figure 1: Project Team Structure

3.1.2 Roles and Responsibilities

The roles and responsibilities are outlined in **Table 2**.

Table 2: Roles and Responsibilities

Role	Responsibilities
Project Manager	• Ensure the SEMP is made available, communicated, maintained and understood by all Project staff; • Responsible for the overall management of the construction and operation of the Project; • Ensure the SEMP is updated with applicable conditions of approval following the provision of Development Consent from DPE; • Ensure that the requirements of the SEMP and sub-plans have been addressed in all contractor environmental management documentation; • Review of incidents, non-conformances and non-compliance; and • Ensuring Project personnel and contractors are adequately trained and qualified to fulfil their roles.
Construction Manager	• Implement and maintain the SEMP; • Ensure all Project personnel comply with the requirements of the SEMP; and • Report any incidents, non-conformances to the Project Manager.
Construction Contractor	• Comply with SEMP and legislative requirements; and • Construction contractor to develop and implement management plans in accordance with this SEMP, conditions of approval and contractual obligations.
Environmental Officer	• Oversee all works which are part of the Project on behalf of KT; • Ensure compliance with all environmental protection measures detailed in the SEMP, supporting management plans and conditions of approval; • Ensure all environmental controls are in place and adequately functioning during construction; and • Conduct construction inspections and complete reporting requirements e.g. progress reports, environmental incidents, non-compliance, corrective action and auditing.
All Personnel	• Comply with requirements of this SEMP; • Report any actual or potential environmental incidents to the Construction Manager immediately; • Identify and report non-conforming or potentially hazardous work practices, equipment, machinery or products; • Only perform tasks for which they are trained and competent; • Assist with environmental incident investigations and applying corrective actions; and • Ensure all machinery, plant and equipment are in good working order and condition prior to use.

3.2 Key Contacts

Key contacts for the Project are provided in **Table 3**. Prior to commencement of works, contact details (name and contact number) will be provided for Project personnel.

Table 3: Key Project Personnel Contact Details

Company / Agency	Role / Reason	Name	Contact
Key Project Personnel			
TBC	Project Manager	TBC	TBC
KT	Environmental Officer	Brent Bourke	TBC
TBC	Construction Manager	TBC	TBC
TBC	Construction Contractor	TBC	TBC
Government Agency Contacts			
DPE (Alpine Resorts Team)	Development approval and compliance	-	(02) 6456 1733
National Parks and Wildlife Service (NPWS)	Flora, fauna, archaeology	-	(02) 6450 5600
Environment Protection Agency (EPA)	Water, noise, air pollution and regulation	-	131 555
NSW Soil Conservation Service	Soil erosion and sediment control	-	02 9842 8300
Thredbo Village Services			
Thredbo Medical Centre	General medical attention	-	(02) 6457 6254
Fire and Rescue Thredbo, NSW	Incident / emergency	-	(02) 6457 6144
Emergency Contacts			
NSW Police	In case of fire, medical or police emergency	-	000
NSW Fire and Rescue		-	
NSW Ambulance		-	

3.3 Communication

KT is committed to ensuring effective communication and consultation is undertaken to inform the development of this SEMP and ensure it is implemented on-site as per the Project roles and responsibilities in **Section 3.1.** Where required, communication with key external stakeholders such as DPE and NPWS will be undertaken. A summary of the key consultation activities is provided in **Table 4**.

Table 4: Summary of Consultation Activities

Consultation Activity	Communication Method	Frequency
Internal	Site inductions	Prior to commencement of works
	Pre-start meetings and toolbox talks	Daily
	Reports to Project Manager identifying project progress, any environmental incidents, and review of any complaints or enquiries	Weekly
External	Face-to-face meetings, phone and email correspondence with relevant Government Departments / Agencies	As required
	In-writing notifications to Government Departments / Agencies and relevant parties	As required

3.3.1 Notification Protocols

A summary of the key notification protocols is provided in **Table 5.** Notification requirements will be updated as required.

Table 5: Regulatory Agency Notification Protocols

Party to Notify	What to Notify	When to Notify	Responsibility to Notify Regulatory Agency
DPE	Commencement of construction	DPE will be notified in writing at least 48 hours prior to the commencement of construction.	Project Manager
NPWS	Details of any material suspected of being a European or Aboriginal culturally significant site, relic or artefact.	Immediately upon discovery of any archaeological/culturally significant site or relic that are encountered. NSW Police to also be notified immediately upon discovery of human remains.	Project Manager
NSW Environmental Protection Agency	Details of pollution incident – who, what, when, where, how, any other supporting information and evidence (e.g. photos)	Immediately upon identification of pollution incident causing or threatening material harm to the environment, in accordance with ***KT's Construction site Incident and Emergency Procedures Thredbo Village 2021/2022***.	KT Environmental Manager

3.4 Competence and Training

All Project staff will be made aware of the site-specific environmental controls through a site induction, and pre-start meetings / toolbox talks prior to the commencement of construction.

The site induction will cover the following key aspects:

- Roles and responsibilities;
- Overview of environmental risks and specific locations of environmental and/or cultural heritage significance;
- The scope of legislative requirements and other licences and approvals;
- Communication and notification requirements e.g. procedures for notifying and reporting incidents and complaints;
- Environmental management and controls stipulated in this SEMP;
- Workplace health and safety issues;
- Emergency preparedness and response; and
- Procedures for notifying and reporting incidents and complaints.

3.5 Environmental Incident and Emergency Response

All Project personnel are required to follow KT's ***Construction site Incident and Emergency Procedures Thredbo Village 2021/2022***. The procedure will be available on-site and all Project staff will be trained on their implementation through the site induction. The procedure classifies examples of emergencies and incidents and provides specific procedures for response to such events, such as:

- Serious injuries requirement urgent medical help;
- There are threats to property or life;
- Criminal activity e.g. you have witnessed a serious crime or accident;
- Sewer or water service breaks;
- Bushfire, building fire, spot fire on-site;
- Electricity service faults;
- Leaking gas;
- Fires and explosions; and

- Release of pollution e.g. release of sediment into watercourse, chemical spill.

The procedure also outlines general site management principles, incident reporting and notification requirements and provides an emergency contacts list.

In the event of an environmental incident, emergency or near-miss, the following steps should be taken:

1) **STOP** works in the area and if safe to do so ensure the safety of personnel within the vicinity;
2) **NOTIFY** relevant persons e.g. emergency services or Construction Manager;
3) **ISOLATE** the risk or hazard e.g. turn off machinery/plant, implement immediate site controls, set up exclusion zone; and
4) **REPORT** and notify relevant persons (e.g. Project Manager, regulatory agencies).

Environmental incident and near-miss reporting requirements are detailed in **Section 7.1**. Contact details for key Project personnel and emergency services are provided in **Table 3**.

External contractors are required to prepare and implement an emergency and incident response procedure. The contractor will be responsible for responding to any environmental emergency caused by any action (or inaction) of the contractor's staff, including notification requirements to external parties such as EPA and Fire, Fire and Rescue NSW.

4 Risk Assessment

To ensure that potential environmental risks are identified and managed, an environmental risk review has been included in **Table 6**. A risk matrix (**Appendix A**) was used to consider the likelihood and consequence of impacts identified in the SEE (KT 2022).

Table 6: Environmental Risk Assessment

Aspect	Activity / Project Phase	Potential Impact	Inherent Risk			Controls	Residual Risk		
			Likelihood	Consequence	Risk Rating		Likelihood	Consequence	Risk Rating
Clearing beyond the approved construction corridor	Vegetating clearing	Non-compliance with conditions of approval.	2	2	Low (4)	Flora and Fauna Management (**Section 5.3**)	2	2	Low (4)
Reduction in native vegetation and fauna habitat as a result of vegetation clearing activities	Vegetating clearing	Loss of native vegetation (0.1 ha), loss of known habitat for Broad-toothed Rat and potential habitat for Alpine She-oak Skink.	3	2	Mod (6)	Flora and Fauna Management (**Section 5.3**)	2	2	Low (4)
Injury/death to fauna as a result of vegetation clearing activities	Vegetation clearing	Loss in population of fauna	2	2	Low (4)	Flora and Fauna Management (**Section 5.3**)	1	2	Low (2)
Release of sediments and soils through disturbance of land	Vegetating clearing; earthworks; stockpiling	Loss of topsoil, reduction in water quality from the release of sediment laden water	2	3	Mod (6)	Soil and Water Management (**Section 5.2**)	2	2	Low (4)
Generation of dust through operation of vehicles and plant	Vegetating clearing; stockpiling; construction activities	The potential impacts on air quality from the works are considered to be low. No sensitive receptors within close proximity of site.	2	2	Low (4)	Air Quality Management (**Section 5.7**)	2	1	Low (2)
Leak or spill of fuel or oil from fuel storage, plant and vehicles	Vegetating clearing; Construction activities	Land and water contamination caused by the release of hydrocarbons.	2	3	Mod (6)	Soil and Water Management (**Section 5.2**)	2	2	Low (4)
Release of noise and/or vibrations through use of heavy/loud plant or equipment	Earthworks; construction activities	Noise and/or vibration nuisance caused through the use of heavy/loud plant or equipment is considered low. No sensitive receptors within close proximity of site.	2	2	Low (4)	Noise and Vibration Management (**Section 5.6**)	2	1	Low (2)
Transport and loading/unloading of goods and materials and equipment and plant operation	All Project phases	Potential noise impacts on sensitive land uses considered low. No sensitive receptors within close proximity of site.	2	2	Low (4)	Noise and Vibration Management (**Section 5.6**)	2	1	Low (2)
Introduction and/or proliferation of weed/pest species from vehicles, plant and materials	All Project phases	Loss of biodiversity.	2	2	Low (4)	Biosecurity Management (**Section 5.4**)	2	1	Low (2)

Excavation works	Vegetation clearing; earthworks	Potential damage or destruction of unknown Aboriginal or European cultural heritage items or sites; loss of cultural heritage values.	2	2	Low (4)	Cultural Heritage Management (**Section 5.9**)	2	1	Low (2)
Storage and disposal of waste	All project phases	Increase in pest numbers; impacts to road users and/or the environmental from vehicles with uncovered waste loads.	2	2	Low (4)	Waste Management (**Section 5.5**)	2	1	Low (2)
Construction vehicles and plants utilising existing road/trail network	All project phases	Inconvenience to existing transport networks/potential traffic impacts from the works are considered to be low.	2	1	Low (2)	Traffic and Transport Management (**Section 5.10**)	1	1	Very low (1)
Rehabilitation of disturbed areas (not part of the final alignment or parks)	During construction; post-construction	Failure of rehabilitation and stabilisation works resulting in increased erosion.	2	3	Mod (6)	Flora and Fauna Management (**Section 5.3**)	2	2	Low (4)

5 Mitigation and Management Measures

To mitigate and manage potential Project impacts identified in the risk review (**Table 6**), the following environmental management activities and controls will be implemented.

A SEMP checklist is provided in **Appendix D** which specifies the timing/frequency for implementation of controls, responsibilities and verification/sign-off. The checklist comprises general environmental management controls and will be updated following the provision of development consent and conditions of approval to ensure all site-specific requirements are met. The checklist should be completed prior to, during and post construction.

5.1 General

The following measures will be implemented:

- Ensure works are conducted by suitably qualified and trained personnel;
- Ensure all site environmental management controls relevant to that stage of work are implemented in accordance with the approved plans and conditions of consent (refer **Appendix D** for controls checklist);
- Provide approved plans and relevant documentation in the site office or other suitable location so that they are easily assessible by all construction staff; and
- Prior to commencement of works, the construction corridor will be temporarily fenced, roped or flagged to clearly delineate the construction area and no-go zones.

5.2 Soil, Water Quality and Stockpile Sites

	Soil, Water Quality and Stockpile Sites Management
Objective	• Minimise potential impacts to receiving water sources; and • Reduce the potential for erosion and sediment moving offsite.
Mitigation Measures	*General protocols* • Where required, implement erosion and sediment controls in **Appendix C**; • Erosion and sediment controls (ESCs) must be regularly checked and maintained, particularly immediately following precipitation events; • All straw bales used for sediment and erosion control or rehabilitation must be weed free; • Construction works should not be undertaken in periods of significant rainfall; • Progressive rehabilitation of disturbed areas should be undertaken in accordance with the *Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park* (DECC 2007) (Rehabilitation Guidelines); *Stockpile sites* • All stockpiles will be managed in accordance with the Soil Stockpile Guidelines; • Proposed stockpile sites, including materials storage areas, parking and waste management receptors (e.g. skip bins) and storage of soils and sods must not impact on native vegetation. Materials removed during construction must be stockpiled within the designated stockpile areas or areas of cleared vegetation only. • Temporary stockpile sites within the construction corridor will adhere to the following criteria: – Avoid impacts to native vegetation and be located on disturbed areas – Located directly adjacent to the works – Located on relatively flat ground, where possible – Not within 40 m of any watercourse – In areas with sufficient room to accommodate the volume of material being stockpiled – Be surrounded by sediment control fencing and protected from run-off.

	On-ground machinery requirements • On-ground machinery used in vegetation removal and trail construction must adhere to the following: – the tread width of on-ground machinery used in trail construction must not exceed 1500 mm – disturbance/works must be entirely contained within the 3 m disturbance corridor.
Performance Criteria	No significant sediment deposition observed leaving the site.
Corrective Actions	If sediment is observed leaving the site, identify the source and amend the ESCs on-site to ensure appropriate controls are in place. If required, additional ESCs to be installed.

5.3 Flora and Fauna

Flora and Fauna Management	
Objective	• Minimise potential impacts to native flora; • Minimise potential impacts to native fauna, their breeding places and habitat; • Minimise the introduction or proliferation of invasive species; and • Rehabilitate the site as soon as possible following completion of works to restore the habitat.
Mitigation Measures	*Vegetation clearing and rock removal* • Identify with flagging tape the trail alignment where it encroaches upon relatively undisturbed native vegetation, prior to construction (ELA 2022); • Prior to clearing, vegetation should be inspected for fauna and habitat e.g. tree hollows; • The trail alignment should avoid the need to fell large or mature trees (e.g. > 200 mm in diameter); • Mature trees and rocks required to be removed are to be clearly marked; • Removal of native vegetation by chainsaw, rather than heavy machinery, is preferable in situations where partial clearing is proposed (ELA 2022); • The construction works will be confined to the approved construction corridor; • Clearing should remove habitats in stages to allow movement of fauna away from disturbed areas; • Clearing should be undertaken in 50 m sections at a time to reduce the amount of soil exposed • All excess native vegetation to be dispersed on exposed soil along the trail edge, placed on batters and embankments for erosion control or carefully spread further into bushland to avoid smothering of understory vegetation communities; • To the extent reasonably practicable, live tree roots are to be protected (and not removed) within the timbered areas of the trail corridor. This could occur through rock armouring, grade reversals or other construction methods. • To the extent reasonably practicable, trail alignment must be adjusted to avoid the removal of mature trees, large boulders and rock outcrops. Mature trees and rocks required to be removed must be clearly marked. • Any trees required to be removed must not be felled in a manner which damages surrounding vegetation. All vegetation (trees and understory) removed must either be cut into smaller pieces to be used for rehabilitation, discreetly dispersed amongst adjoining native vegetation without damaging existing native vegetation or removed from site completely if it contains any exotic vegetation species. • All clearing must occur solely within approved development corridors and to be clearly identified with flagging tape to mark no-go/no clearing zones prior to construction. • All vegetation must be checked for fauna habitats and fauna by the proponent's Environmental Officer immediately prior to felling/removal. Vegetation with active nests must not be removed until the young have left the nest. If fauna is present, then the proponent must contact NPWS to assist with mitigation actions. • The proponent's staff and contractors undertaking vegetation clearance for the development must be able to accurately identify *Podocarpus lawrencei* (Mountain Plum Pine) and *Ranunculus anemoneus* (Anemone Buttercup). These species must be avoided when creating the trail corridor, and protected from trampling by foot, equipment, or the placement of construction material.

	• A survey for *Ranunculus anemoneus* (Anemone Buttercup) is to be undertaken during the trail alignment/flagging stage and if identified, realign the trail within the 20m buffer or transplant the affected individuals of the species. The proponent is to seek NPWS advice on transplanting prior to the disturbance of any individuals of this species. All rocks removed during the works must be placed in the surrounding landscape without damaging existing native vegetation, used in the trail construction (e.g., rock armouring) or removed from site completely.*Fauna management* • Maintain a clean and tidy work area to ensure animals are not attracted to the site, including provision of covered bins during proposed works; • Restrict work to daylight hours to reduce impacts of light spill, and seasonal timing of construction to reduce impacts of noise (ELA 2022); • If any active wombat burrows are detected in close proximity to the trail alignment during the construction phase, then the trail should be realigned to avoid the burrow (ELA 2022); Vegetation with active nests must not be removed until the young have left the nest. If fauna is present, contact NPWS to assist with mitigation actions.*Rehabilitation* • Rehabilitation of all disturbed areas (excluding the trail tread) is to be undertaken in accordance with the Rehabilitation Guidelines and *Detailed Rehabilitation and Monitoring Plan: Lower All Mountain Trail Diversion* (KT 2022).
Performance Criteria	No death or injury to fauna as a result of on-site activities. No disturbance outside the approval disturbance area.
Corrective Actions	• Review and implement suitable strategies to dissuade fauna from coming to site; and • Contact NPWS / LAOKO if injured fauna is identified as a result of site activities.

5.4 Biosecurity

Biosecurity Management	
Objective	Reduce the risk of introducing invasive pest species
Mitigation Measures	*Exotic species management* • All relevant weed species that occur within the proposed trail corridor and associated staging and stockpile sites must be treated prior to works commencing to ensure these weeds are not spread further at the site or within KNP. In addition, ongoing weed management is essential to ensure relevant weed coverage does not increase in area or number, especially immediately surrounding the trails where weed seed could be easily spread through tyre movement on the trails. Routine assessment of the site must be conducted, including following completion of construction, with relevant weeds identified to be treated or removed. • If an area of vegetation proposed for removal includes any relevant weed species then the vegetation must be removed completely from site, not spread out within the existing vegetation or used in rehabilitation and stabilisation works. *Machinery, equipment and materials* • To minimise weed vectors and other biosecurity issues, all machinery and equipment used during construction must be cleaned prior to entry into KNP and prior to site mobilisation to ensure the machinery is free of mud, vegetative propagules, and pathogens. This includes machinery that may have been working in an area of the Thredbo Alpine Resort that contains weeds and is preparing to be redeployed in the trail construction corridor and associated stockpile and staging areas. • Any and all machinery and equipment must be stored on existing disturbed areas (i.e. at the stockpile and staging areas proposed on the ski slopes) and should not be stored on native vegetation. • All vehicles and machinery entering Thredbo must adhere to the ***Standard Operating Procedure: Use and Maintenance of Wash Down Bay, March 2019 (KT055)***.
Performance Criteria	No introduction of invasive species as a result of construction activities.
Corrective Actions	Review existing biosecurity procedures (e.g. clean down procedure) and implement additional controls if required.

5.5 Waste

	Waste Management
Objective	• Minimise construction waste as much as practicable; and • Reduce the impact of waste on-site and beyond the site boundary.
Mitigation Measures	• All waste management receptors must be able to be covered to ensure waste cannot blow away or be disturbed by scavenging fauna or must be emptied or removed from site each day. • All waste will be managed and disposed of in accordance with the KT's waste management procedures; • Where possible, construction materials will be salvaged for reuse to divert waste from landfill; • All waste will be separated into waste streams and contained within appropriate receptacles and/or disposed of in accordance with the EPA guidelines; • All receptacles will be in good condition; and • All waste transportation vehicles will be covered appropriately to ensure waste cannot spill, leak or escape onto the road or wash into stormwater drains.
Performance Criteria	No litter or waste material to be released from site in an uncontrolled manner.
Corrective Actions	• Investigate cause of inappropriate waste disposal/management; • Review on-site waste handling facilities and implement corrective actions e.g. change in receptacle size and/or waste management signage; • If required, implement administrative controls e.g. additional waste management training for staff.

5.6 Noise and Vibration

	Noise and Vibration Management
Objective	Minimise potential noise and vibration nuisance in the surrounding environment.
Mitigation Measures	• Project staff will take reasonable and practicable management measures to avoid and mitigate environmental nuisance from noise associated with the works; • Works will be undertaken during standard work hours as stipulated in the conditions of approval; and • Appropriate noise management strategies will be implemented for construction works and operation of plant in accordance with the Australian Standard AS 2436-2010 *Guide to noise and vibration control on construction, demolition and maintenance sites* and the *Interim Construction Noise Guideline* (DECC 2009) e.g. ensure plant is regularly maintained, and repair or replace equipment that becomes noisy, turn off plant that is not being used.
Performance Criteria	No construction related noise and vibration complaints received.
Corrective Actions	If complaints are received, the following steps will be taken: • Investigate specific cause of complaint; • Review site activities/processes and identify the source of the noise emissions; • Implement immediate corrective actions e.g. swap out noisy equipment; and • If required, implement administrative controls e.g. additional staff training or change work hours to minimise noise.

5.7 Air Quality

	Air Quality Management
Objective	Minimise potential impacts to the existing air quality in the surrounding environment.
Mitigation Measures	• Construction staff will take reasonable and practicable measure to prevent dirt and dust from affecting the amenity or the surrounding environment during construction e.g. minimise the area of soil disturbance; • Plant and equipment to be maintained and operated in an efficient manner to reduce air pollution; • All vehicles carrying spoil or rubble to/from site should be covered to prevent the escape of dust or other material; and

	• When there is a risk of works creating dust nuisance, the Project site is to be watered.
Performance Criteria	No complaints received in relation to air pollution.
Corrective Actions	If complaints are received, the following steps will be taken: • Investigate specific cause of complaint; • Review site activities/processes and identify the source of air emissions; • Implement immediate corrective actions on-site e.g. water site, replace equipment deemed to be poorly maintained; and • If required, implement administrative controls e.g. additional staff training, alter construction methods or timing for undertaking dust generating activities.

5.8 Fuels, Chemicals and Hazardous Substances

Fuels, Chemicals and Hazardous Substances Management	
Objective	Eliminate the potential for release of fuels, chemicals and hazardous substances to the environment
Mitigation Measures	• In the event on an on-site spill, construction staff will follow KT's ***Construction Site Incident and Emergency Procedures Thredbo Village, 2021/2022***; • A copy of KT's ***Thredbo Spill Kit Map (June 2019)*** will be available on-site and all Project staff will be made aware of their locations in the site induction; • Hazardous substances, toxic materials or dangerous goods must not be stored or processed on-site at any time without prior approval from the DPE Secretary or nominee; • Hazardous chemicals will be appropriately labelled in accordance with the *Code of Practice: Labelling of Workplace Hazardous Chemicals, August 2019* (NSW Government 2019); • Hazardous chemicals will be managed in accordance with the *Code of Practice: Managing risks of hazardous chemicals in the workplace, August 2019* (NSW Government 2019); and • Appropriate controls will be implemented when refuelling Project vehicles and machinery e.g. with appropriate spill kit.
Performance Criteria	No fuel, chemical or hazardous substance spills.
Corrective Actions	Corrective actions will be taken in accordance with the ***Construction Site Incident and Emergency Procedures Thredbo Village, 2021/2022,*** including: immediate spill response, implementation of any necessary control measures as directed by authorities. Where required, an investigation will be undertaken to determine the root cause.

5.9 Cultural Heritage

Cultural Heritage Management (Indigenous and Non-indigenous)	
Objective	Minimise potential impacts on places and objects of cultural heritage significance
Mitigation Measures	• All Project personnel will be made aware of their obligations in relation to the management of cultural heritage via the site induction; • Project staff will take all reasonable and practicable measures to avoid harm to cultural heritage; and • Where unexpected items of potential archaeological, built or Aboriginal cultural heritage significance are discovered, Project personnel will follow the below procedure: – **STOP:** Stop work and leave the site or item where it is. – **NOTIFY:** Notify the Project Manager and NPWS to arrange for representatives to inspect the site. If human remains are found, the NSW Police must also be notified. – **MANAGE:** Management may involve securing the find by erecting a no-go zone. – **REPORT:** The Project Manager will complete any reporting requirements, as directed by NPWS.
Performance Criteria	No loss of cultural heritage values.
Corrective Actions	If a suspected item/artefact of Aboriginal, built or archaeological cultural heritage significance is encountered, follow procedure above – Stop, notify, manage and report. All Project personnel to be made aware of any additional management requirements e.g. no-go zones.

5.10 Traffic and Transport

Traffic and Transport Management	
Objective	Minimise potential impacts on existing road network
Mitigation Measures	• Traffic and construction vehicle access will be managed as per regular daily operation in the resort; • All construction vehicles to enter/exit site via dedicated access; • Bike riders and pedestrian using trails within the construction corridor will be managed through the use of signage, and exclusion from the construction corridor.
Performance Criteria	• No impacts to existing road network or users; and • No complaints in relation to traffic or vehicle operators.
Corrective Actions	If complaints are received, traffic management procedures will be reviewed and amended (if necessary).

6 Monitoring and Review

6.1 Environmental Monitoring

The Environmental Officer will conduct monitoring during all Project phases (pre-construction, during construction and post-construction) to ensure compliance with this SEMP, associated management plans and conditions of approval (refer **Appendix D** for SEMP checklist).

The Environmental Officer will also undertake weekly inspections utilising the **Weekly Inspection Report** (**Appendix E**).

6.2 SEMP Review

This SEMP is a live document and will undergo reviews and amendments as necessary. Reviews will generally be undertaken –

- If there is a change in the scope of the Project;
- Prior to commencement of construction to ensure any relevant conditions of consent and/or other approval, licence or permit requirements are incorporated;
- If there is a need to improve environmental controls to protect environmental values;
- If there is an increase or introduction of a new environmental risk or impacts; and
- At the end of a Project to allow for improvements in subsequent Projects.

The Environmental Officer will be responsible for reviewing the SEMP and the Project Manager is responsible for approving these changes.

7 Reporting

7.1 Weekly Environmental Reporting

The Environmental Officer will provide copies of the **Weekly Inspection Report** (**Appendix E**) to the Project Manager on a weekly basis. All records will be stored within KT's files and distributed to relevant persons / regulatory authorities as required.

The Environmental Officer will report on the effectiveness of drainage, erosion and sediment controls using the **Erosion and Sediment Control Inspection Report** (**Appendix E**). The report forms

part of the weekly environmental inspections and will be provided to the Project Manager with weekly internal reporting requirements.

7.2 Environmental Incident Reporting

All incidents and near misses will be managed in accordance with KT's ***Construction site Incident and Emergency Procedures Thredbo Village 2021/2022***. The document provides procedures for responding to incidents and emergences, reporting and notification requirements and emergency contacts.

The following information should be recorded:

- Time and date of the incident / near miss;
- A description of the incident / near miss;
- A sequence of events that led to the incident / near miss occurring;
- Person/s involved in the incident / near miss (including witnesses);
- Written statements from person/s involved (as applicable); and
- Details of corrective actions.

The **Environmental Incident Report Form (KT068)** (**Appendix E**) should be completed for all environmental incidents. All parts of the form must be completed in accordance with KT's incident procedure and following the instructions within the form. The form must be signed by the person making the report and the Project Manager/person in charge of the site/activity.

7.3 Complaints Management

Should complaints be received from the public in relation to the Project they will be recorded using the **Complaints Form** (**Appendix E**). The Project Manager will be responsible for investigating, recording and closing out any complaints received. All records will be stored within KT's files and distributed to relevant persons / regulatory authorities as required.

7.4 Non-conformance

A non-conformance is the failure to comply with the requirements of this SEMP and supporting management plans. Non-conformances identified via site inspection or during day to day activities will be documented on the **Environmental Weekly Inspection Form** (**Appendix E**) and closed out in subsequent inspections. The Environmental Officer is responsible for investigation and managing corrective and preventative actions in the event of non-conformance or a situation likely to cause environmental harm.

7.5 Corrective Actions

Corrective actions should be prioritised on the following hierarchy of controls:

1. **Elimination** – can activities and processes be eliminated to reduce the risk of reoccurrence?
2. **Substitution** – can activities be substituted with another activity of lesser risk?
3. **Isolation** – can you isolate the hazard from any person exposed to it?
4. **Engineering controls** – can you reduce the risk of reoccurrence through engineering changes?
5. **Administrative controls** – can a change in work practices, additional training or additional checks reduce the risk?
6. **Personal Protective Equipment (PPE)** – can PPE be worn to protect personnel from harm?

The Construction Manager will be responsible for managing the implementation of corrective actions on-site.

7.6 Document Control

All Project related documentation will be maintained within KT's Project file. Documents stored within the file include (but not limited to) the following:

- Copies of relevant planning approvals and documents, licences and permits;
- All completed induction forms and visitor sign-on register;
- Records of routine environmental inspections; and
- Records of any environmental incidents, complaints, non-conformances and no-compliances.

8 References

Department of Environment and Climate Change (DECC) 2007, Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park, NSW Government.

Department of Environment and Climate Change (DECC) 2009, Interim Construction Noise Guideline, July 2009, https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/noise/09265cng.pdf?la=en&hash=EF4576FD79DBB25D5AC22DFA1A883A2BADA1F77B

Department of Infrastructure, Planning and Natural Resources (DIPNR) 2004*, Guideline for the Preparation of Environmental Management Plans*, https://www.planning.nsw.gov.au/~/media/Files/DPE/Guidelines/guideline-for-the-preparation-of-environmental-management-plans-2004.ashx?la=en

Department of Planning & Environment (DPE) (2017) *What to include with your development application*, version January 2017, https://www.planning.nsw.gov.au/Policy-and-Legislation/~/media/65E2BA89886F426991525FF25707A9A9.ashx

Eco Logical Australia Pty Ltd (ELA) 2022, Proposed Lower All Mountain Trail Diversion, Thredbo Alpine Resort. Prepared for Kosciuszko Thredbo Pty Ltd.

Kosciuszko Thredbo Pty Ltd (KT) 2022, Statement of Environmental Effects for Cruiser Beginner Mountain Bike Trail and Parks.

Office of Environment and Heritage (OEH) 2017, *Soil Stockpile Guidelines for the Resort Areas of Kosciuszko National Park, version 1.0, October 2017*, NSW National Parks and Wildlife Service.

9 Appendices

Appendix A Risk Matrix

Likelihood and consequence is defined as follows:

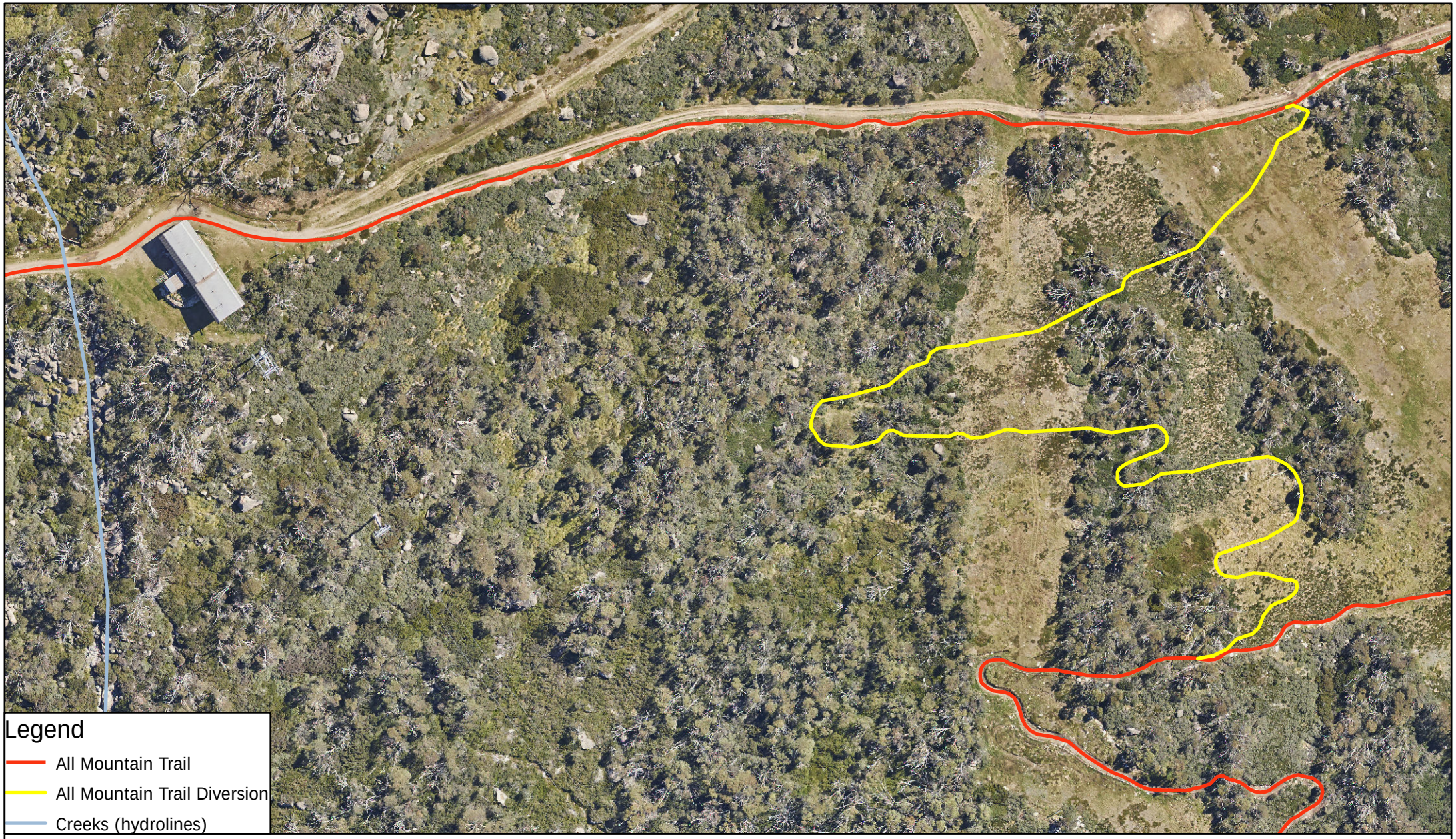
- **Likelihood**: the chance that something might happen; and
- **Consequence:** the outcome of an event which may have the potential to change the existing environmental values.

Likelihood	Consequence				
	Extreme (5)	**Major (4)**	**Moderate (3)**	**Minor (2)**	**Insignificant (1)**
Almost certain (5)	Extreme (25)	Extreme (20)	Extreme (15)	High (10)	Moderate (5)
Likely (4)	Extreme (20)	Extreme (16)	High (12)	Moderate (8)	Low (4)
Possible (3)	Extreme (15)	High (12)	Moderate (9)	Moderate (6)	Low (3)
Unlikely (2)	High (10)	Moderate (8)	Moderate (6)	Low (4)	Low (2)
Rare (1)	Moderate (5)	Low (4)	Low (3)	Low (2)	Very low (1)

Likelihood Rating		Definitions
Rare	**1**	Unlikely to occur during a lifetime or very unlikely to occur
Unlikely	**2**	Could occur but considered unlikely
Possible	**3**	Might occur at some time
Likely	**4**	Will probably occur
Almost certain	**5**	Is expected to occur in most circumstances

Consequence Rating		Definitions
Insignificant	**1**	Very low environmental impact confined to a small area within the Project area. Prompt (typically within a shift) clean-up.
Minor	**2**	Low environmental impact confined within the Project area. Short-term (typically within a week) clean-up.
Moderate	**3**	Reversible offsite environmental impact, requiring short-term clean-up (weeks). On-site medium term (weeks) clean-up.
Major	**4**	Major, offsite, environmental impact requiring medium-term clean-up (months). On-site impact requiring significant clean-up effort (months).
Extreme	**5**	Prolonged or severe, offsite or regional environmental impact requiring long-term clean-up (years) with irreversible residual damage. Extensive, Project area impact requiring long-term clean-up and recovery (years).

Appendix B Figures and Maps



Scale: 1:1,434

0 10 20 40 60 80 Meters

Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA 2020
Grid: GDA 2020 MGA Zone 55

N

THREDBO

PROJECT LOCATION

Project: Lower All Mountain Trail Diversion

Revision: 1

Date: 01/07/2022

Produced By: BB

Figure B1: Main stockpile location within Thredbo's Waste Transfer Station

Appendix C Erosion and Sediment Controls

Appropriate drainage, erosion and sediment controls will be required to manage soil and surface water during the construction of the development. A summary of proposed controls and associated requirements are outlined in **Table C1**.

Table C1: Construction Erosion and Sediment Controls

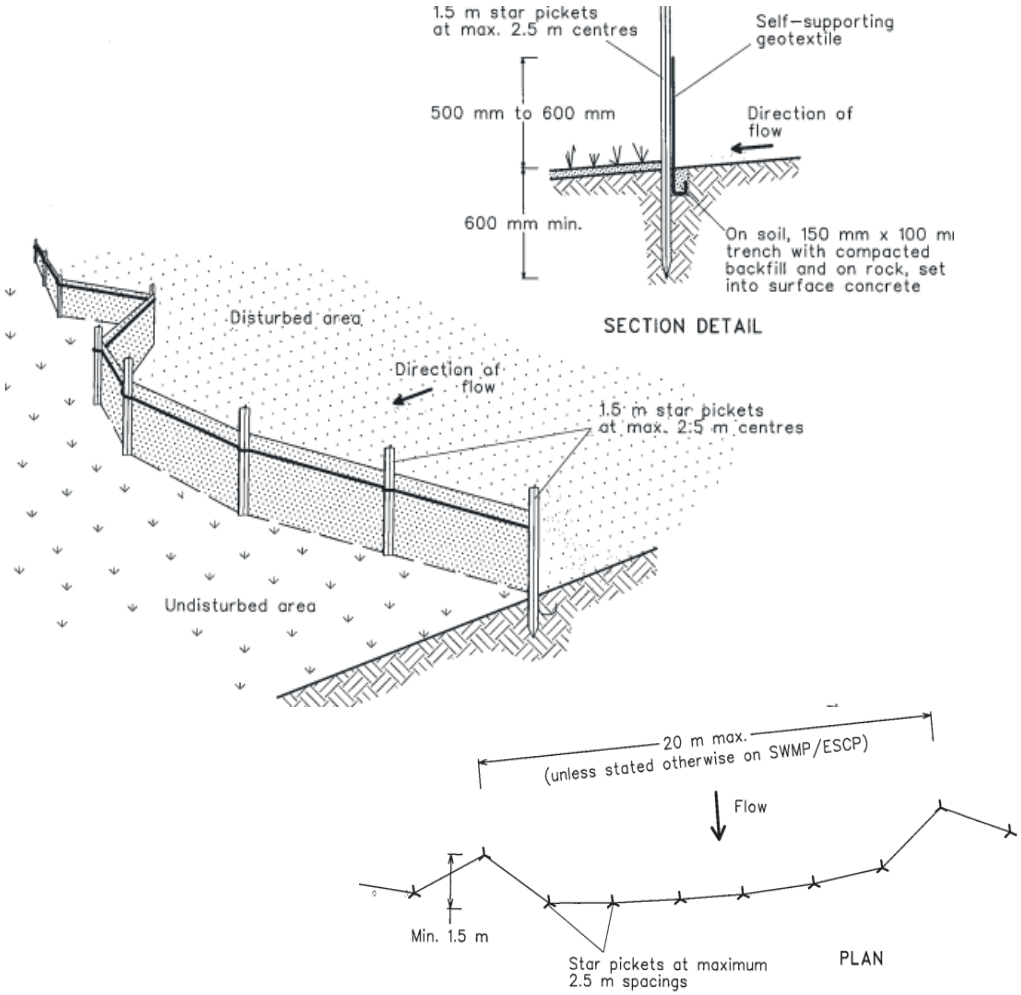
Activity	Control	Purpose	Timing	Location	Installation
Excavations; trenching; Stockpiling	Sediment fence	To prevent sediment run-off	Where required, installed prior to commencement of activity and retained in place until exposed areas of soil are stabilised / rehabilitated	Downslope side of any excavations; wetter areas of trenches; surrounding soil stockpiles	Refer to control installation notes below.
	Straw bale filter fencing	To prevent sediment run-off	Where required, during excavation	Drier areas of excavation, across or at the toe of slope	Refer to control installation notes below.
Down-slope excavations	Straw bales; sediment fence	Divert water around and away from open excavation works	Where required, installed once footings and service trenches are excavated and retained in place until excavations are stabilised/rehabilitated	To be placed at each end of the open trenches	Refer to control installation notes below.
Cross-slope excavations	Straw bales	Divert water around and away from excavation works	Installed once trenches have been excavated, where required	To be installed on the uphill side of excavations running cross-slope (where required)	Refer to control installation notes below.

Control Installation Notes

Sediment Fence

Construction notes:

1) Construct sediment fences as close as possible to being parallel to the contours of the site, but with small returns to limit the catchment area of any one section. **The catchment area should be small enough to limit water flow if concentrated at one point to 50 L/s in the design storm event, usually the 10-year event.*
2) Dig a 150 mm deep trench along upslope line of fence for the bottom of the fabric to be entrenched.
3) Install 1.5 m long star pickets into ground at 2.5 m intervals (max) on the downslope edge of the trench. **Fit star pickets with safety caps.*
4) Fix geotextile to the upslope side of the posts ensuring it goes to the base of the trench.



Standard Sediment Fence Installation (Source: Landcom 2004)

Cross Drainage and Sediment Barriers

The recommended spacing for cross drainage and sediment barriers is provided below:

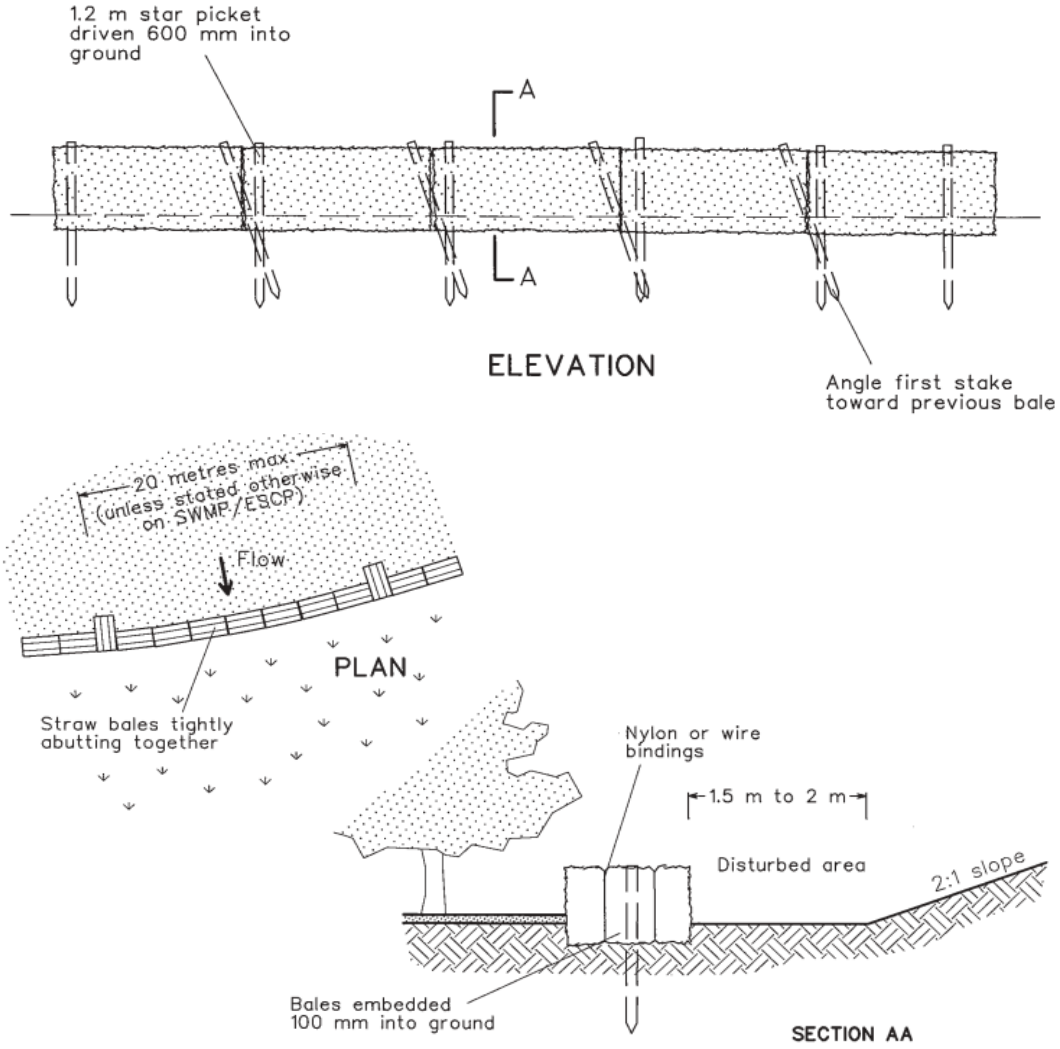
Slope Grade (%)	Cross Drain / Sediment Barrier (m)
5-10	15-20
10-15	10-15
15-25	8-10
>25	5-8

Source: NPWS 2007; Parr-Smith and Polley (1998)
Note: To calculate the grade of a slope: (rise/run) x 100 = slope grade

Straw Bale Filter

Construction notes:

1) Construct the straw bale filter as close as possible to being parallel to the contours of the site.
2) Place bales lengthwise in a row with ends tightly abutting (1 bale = max height of filter). Fill gaps between bales with straw and wrap with geofabric where necessary.
3) Embed each bale in the ground 75-100 mm and anchor with two 1.2 m stakes/star picket. Angle the first stake in each bale towards the previously laid bale. Stakes should be driven 600 mm into ground, sitting flush with top of bale (if possible). **If using star pickets which protrude above bales, fit with safety caps.*
4) Where a straw bale filter is constructed downslope from a disturbed batter, ensure the bales are placed 1-2 m downslope from the toe.

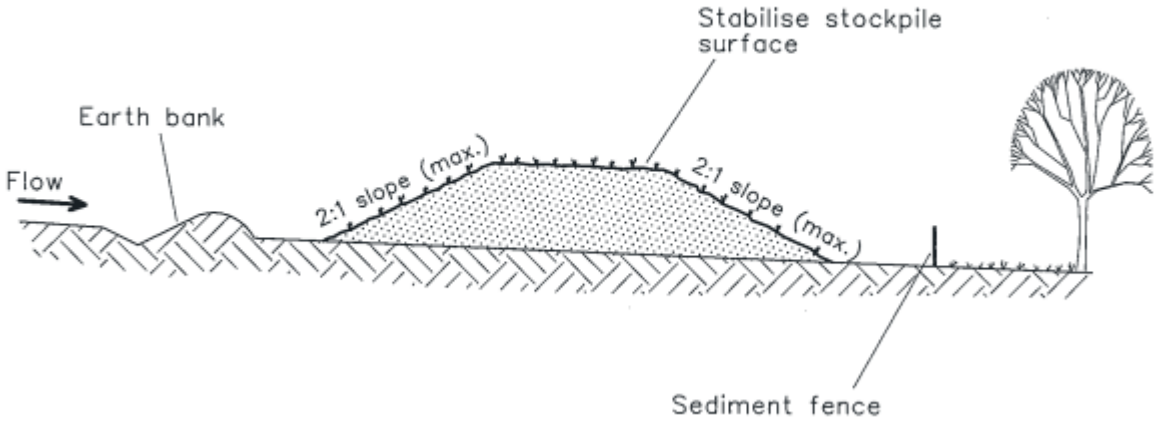


Standard Straw Bale Filter Installation (Source: Landcom 2004)

Soil Stockpile Management

Construction notes:

1) Stockpiles should be located at least 2 m (preferably 5 m) from existing vegetation and waterbodies, concentrated water flows, roads and hazard areas. Recommended location within weed free, disturbed area if possible.
2) Construct stockpiles as low, flat mounds (<2 m high) with a slope <50% (26°).
3) Install appropriate sediment controls (e.g. sediment barriers 1-2 m downslope) around stockpiles.
    - It is recommended to cover stockpiles (e.g. with anchored geofabric) during strong wind or high rainfall events.
    - Straw bales used for sediment and erosion control must be certified weed free.



Stockpile Management (Source: Landcom 2004)

Appendix D Environmental Management Activities and Controls Checklist

Environmental Management Activities and Controls Checklist						
Project Name:			**Location:**			
Environmental Management Control	**Responsibility**	**Timing / Frequency**	**Date of Completion**	**Sign Off**	**Reference**	**Comment /Observations**
General						
All approvals, licences and permits have been obtained for the Project and available on-site	Project Manager	Pre-construction				
Site inductions have been provided to all Project personnel on-site	Project Manager	Pre-construction				
All Project personnel have undergone relevant training / hold relevant permits and qualifications to perform their role	Project Manager	Pre-construction				
Construction site boundary and no-go zones have been clearly delineated	Construction Manager	Pre-construction				
Site access to be restricted to authorised personnel	Construction Manager	During construction				
All plant, materials and equipment to be located in existing disturbed corridors	Construction Manager	During construction				
All plant and equipment to be removed off-site post-construction	Construction Manager	Upon completion				
Maintain incident and complaints register	Project Manager	During construction				
Maintain copies of inspection and monitoring reports	Environmental Officer	During construction				
Drainage, Erosion and Sediment Control						
Drainage, erosion and sediment controls designed and installed in accordance with this plan	Construction Manager	Pre- construction; during construction			**Appendix C** of SEMP	
Drainage, erosion and sediment controls to be inspected each day and prior to, and immediately following a significant rainfall event to ensure controls are in good working condition.	Construction Manager	During construction (daily / following significant rainfall event)			**Appendix C** of SEMP	
Stockpiles						
Stockpiles are managed appropriately e.g. erosion and sediment controls installed around stockpiles, stockpiles shall not encroach within the dripline of trees, stabilise stockpiles to prevent weed infestation	Construction Manager	During construction			**Appendix C** of SEMP	

All exposed areas shall be progressively stabilised/rehabilitated	Construction Manager	During and post-construction			**Section 5.3** of SEMP	
Flora and Fauna						
Ensure equipment and construction materials are stored on previously disturbed areas to avoid impacts to native vegetation.	Construction Manager	All Project phases			**Section 5.3** of SEMP	
A survey for *Ranunculus anemoneus* (Anemone Buttercup) is to be undertaken during the trail alignment/flagging stage	Environmental Officer	Pre-construction, during trail alignment/flagging stage			**Section 5.3** of SEMP	
Reasonable and practicable native fauna management measures have been undertaken to avoid environmental harm and nuisance to native fauna, known habitats and breeding places	Construction Manager / Environmental Officer	Pre-construction, during construction			**Section 5.3** of SEMP	
Maintain a clean and tidy work area to ensure animals are not attracted to the site, including provision of covered bins during proposed works	Construction Manager	During construction			**Section 5.3** of SEMP	
Biosecurity						
All weed species that occur within the construction corridor and could spread through disturbance or seed dispersion are treated to ensure no further spread	Environmental Officer	Pre-construction, during construction			**Section 5.4** of SEMP	
Machinery and personnel to arrive at and depart from the site in a clean condition, free of mud and vegetative propagules	Construction Manager	Pre-construction, during construction			**Section 5.4** of SEMP	
Machinery to be regularly maintained and manoeuvred to prevent the spread of weeds and pathogens	Construction Manager	Pre-construction, during construction			**Section 5.4** of SEMP	
Follow up weed control to be carried out if deemed necessary	Environmental Officer	As required			**Section 5.4** of SEMP	
Rehabilitation						
All disturbed areas not part of the final alignment/parks are to be progressively stabilised and/or revegetated in accordance with the *Detailed Rehabilitation and Monitoring Plan: Lower All Mountain Trail Diversion* (KT 2022) (and in consultation with the Environmental Officer) so that no areas remain exposed if works are completed in that area	Construction Manager	During construction			**Section 5.3** of SEMP	
Disturbance areas are to be rehabilitated immediately following the completion of work	Construction Manager	Post-construction			**Section 5.3** of SEMP	

Waste						
Site is free from litter and waste is contained within dedicated areas / appropriate receptacles e.g. building waste shall be separated from litter bins	Construction Manager	During construction			**Section 5.5** of SEMP	
Where possible, waste avoidance and resource recovery strategies for construction waste have been implemented	Construction Manager	During construction			**Section 5.5** of SEMP	
All waste that cannot be recycled shall be disposed of appropriately at a licenced landfill site	Construction Manager	During construction, upon completion			**Section 5.5** of SEMP	
No burning or burying of waste on-site	Construction Manager	During construction, upon completion			**Section 5.5** of SEMP	
The site shall be left in a tidy state with no evidence of waste left on-site	Construction Manager	Post-construction			**Section 5.5** of SEMP	
Noise and Vibration						
Works conducted during hours stipulated in conditions of consent	Construction Manager	During construction			**Section 5.6** of SEMP	
Machinery and equipment fitted with appropriate noise control devices	Construction Manager	During construction			**Section 5.6** of SEMP	
Machinery and equipment maintained and serviced in accordance with the manufacturer's specification	Construction Manager	During construction			**Section 5.6** of SEMP	
All justifiable noise complaints have been investigated, managed and reported	Environmental Officer	During construction			**Sections 5.6** and **7.3** SEMP	
Air Quality						
Areas of exposed soil restricted as much as practicable	Construction Manager	During construction			**Section 5.7** of SEMP	
Trucks carrying spoil/rubble/waste covered to reduce dust nuisance	Construction Manager	During construction			**Section 5.7** of SEMP	
All justifiable air quality-related complaints have been investigated, managed and reported	Environmental Officer	During construction			**Section 5.7** of SEMP	
Fuels, Chemicals and Hazardous Substances						
Emergency procedure developed and available on-site at all times	Project Manager	Pre-construction, during construction			**Section 5.8** of SEMP	
Spill response material is adequate for the type and quality of hazardous materials used / stored on-site	Construction Manager	Pre-construction, during construction			**Section 5.8** of SEMP	
Fuel and chemical storage in accordance with the relevant Australian Standards	Construction Manager	Pre-construction, during construction			**Section 5.8** of SEMP	
All construction plant and machinery shall be properly maintained and inspected to avoid spills / leaks	Construction Manager	Daily during construction			**Section 5.8** of SEMP	
Appropriate controls implemented when refuelling Project vehicles and machinery	Construction Manager	During construction			**Section 5.8** of SEMP	

Cultural Heritage						
All Project personnel and contractors shall be made aware of the requirement to notify and cease works if cultural heritage (Aboriginal or archaeological) items are discovered during ground disturbance.	Project Manager	Site induction			**Section 5.9** of SEMP	
In the event of an unexpected discovery of Aboriginal or Historic Cultural Heritage items, works shall cease and NPWS notified.	All personnel	Earthworks; during construction			**Section 5.9** of SEMP	
Traffic and Access						
All Project vehicles and machinery to adhere to speed limits and signage and stay within construction corridor	All personnel	All Project phases			**Section 5.10** of SEMP	
Appropriate traffic controls implemented to direct pedestrians and MTB users (where required) e.g. exclusion from the construction corridor.	Construction Manager	Prior to construction			**Section 5.10** of SEMP	

Appendix E Environmental Schedules

This Appendix includes the following environmental schedules:

- Weekly Inspection Report;
- ESC Inspection Report;
- Complaints Form template; and
- Environmental Incident Report Form.

THREDBO ENVIRONMENTAL SERVICES

SEMP WEEKLY INSPECTION REPORT

Sheet _____of_____

Project: _____ Inspection Date: _____

Inspected by: _____

Weather:	**Morning** Clear/Overcast/ Fine/Rain/Snow	**Afternoon** Clear/Overcast/Fine/Rain/Snow

Operation	Condition	Plant/Labour	Comments
Silt Fence			
Hay Bale retention ponds			
Hay Bale sediment protection			
Stormwater Pit protection			
Cyclone Fence (including gates)			
Para-web Fence			
Site Signage			
Paint Washout facility			
Vehicle Wash-down			
Waste Skips			
Tree Protection			

Verbal Discussion with Contractor:	Verbal discussion with others:
Materials Received / Required:	Site Instructions Issued:
Inspectors Report / Summary:	Action required:

Signature: _____ Date: _____

THREDBO ENVIRONMENTAL SERVICES

INSPECTION REPORT FOR TEMPORARY EROSION/SEDIMENTATION CONTROLS

Sheet _____of_____

Project: _____ Inspection Date: _____

Inspected by: _____ Inspect the site weekly or immediately after rain.

1. Are temporary drains effective in diverting all runoff from exposed areas to silt traps or other sediment structures before leaving site? If No, state location and action required:	Yes/No
2. Have new areas been disturbed which need temporary controls? If Yes, state where:	Yes/No
3. Are there any disturbed areas where work is sufficiently advanced for revegetation to be undertaken? If Yes, state where:	Yes/No
4. Is any dirty runoff water bypassing or overflowing existing silt traps/sediment control structures? Do existing traps need to be increased in capacity? Are any additional traps needed? If Yes, state location, action needed and priority:	Yes/No Yes/No Yes/No
5. Do any silt traps/sediment control structures need maintenance or repair to operate effectively? If Yes, state location, action needed and priority	Yes/No
6. Are any silt/sediment control structures more than 60% full or otherwise in need of cleaning out? If Yes, state location	Yes/No
7. Are actions taken after last inspection adequate and effective? If NO, list outstanding actions:	Yes/No
Signature:_____ _____Date:_____	

THREDBO ENVIRONMENTAL SERVICES

Record of complaint

Sheet _____of_____

Project: _____ Date / Time: _____

Received by: _____ Reference Number: _____

Complainant details:	Witness details:

Nature of complaint:

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..... Complainant sign:

Action taken:

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Kosciuszko Thredbo Pty Ltd

Environmental Incident Reporting Form

Confidential document after first entry

The purpose of this form is to report any incident that may have resulted in Environmental harm on Kosciuszko Thredbo Pty Ltd premises. Remember to be succinct, stick to the facts and do not make assumptions. Only record information you know to be correct.

The only persons authorised to contact external agencies eg EPA in relation to environmental incidents are the Kosciuszko Thredbo General Manager and Environmental Services Manager or their approved delegates.

Return completed form to the Environmental Services Manager as soon as practicle, on completion of the Environmental incident. It is important to capture photos at the time of the incident as part of this investigation.

Date of Incident:	**Time of incident:**
Reported by:	**Department:**

Location of Incident

EXACT location of the incident (include landmarks and features, nearest cross street etc to make it easier to identify later)		
Site:	Building:	Room:

Description of incident

Provide description and extent of incident: ……... ……... ……... ……... ……...
Have relevant photos been taken and attached? Yes □ No □
If 'No', provide sketch and attach to the rear of this document.
What was the estimated duration of the incident?

Type of incident

□ Spill (including fuel,oil,waste material or other polluting substance)	□ Erosion and sedimentation incident	□ Contaminated water discharge
□ Noise emission/complaint	□ Unauthorised/accidental damage to heritage item	□ Unauthorised/accidental vegetation removal or harm
□ Air Emission	□ Wildlife habitat/nesting area disturbed	□ Other (specify)

Environmental Incident Reporting Form

Level of incident

Level	Example
□ Minor	eg. No material has escaped the site or caused material harm to the environment – it is easy to clean up without additional assistance.
□ Major	eg. Material has escaped the site causing pollution downhill/downstream areas, which will require clean up involving other agencies and/or additional resources not available to local site management. Damage has occurred or is likely to occur to the environment.

Hazardous Material Spilt

□ Petroleum based products/ Hydrocarbons	□ Chemicals domestic or industrial grade
□ Biological waste / Clinical and related waste	□ PCB insulating liquids
□ CFC containing equipment	□ Paints or paint products
□ Radioactive waste	□ Other (specify)
Detail type/ingredient spilt: (UN, MSDS details)	
Detail concentration of material spilt:	
Detail quantity of material spilt:	

Type of Spill

□ Spilt onto ground	□ Spilt into stormwater drain
□ Spilt into waterway	□ Poured down sink
□ Poured down sewer	□ Released into atmosphere
□ Caused odour	□ Caused fire/explosion
□ Caused infectious contamination	□ Other (specify)

Immediate Actions

Was spill contained? Yes □ No □
Detail immediate actions/controls measures taken to rectify or contain the incident …… …… …… …… …… …… …… ……

Environmental Incident Reporting Form

Corrective Actions

Detail corrective clean up action taken

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Disposal

Detail disposal method/plans and location

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Recommended follow up and preventative actions

Detail recommendations

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Persons present at Incident

Were there any witnesses to the accident? Yes ☐ No ☐ If 'Yes', please provide names

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Spill Kit stock used – for restock purposes

Name Spill Kit(s) used: e.g. *'Waste Transfer Station 80Litre Spill Kit'*

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Environmental Incident Reporting Form

Spill Kit Product	Quantity used
Enviropeat Oil Absorbent Material – 25L bag	
1.2m Absorbent sock	
3m Absorbent sock	
Absorbent pads	
Chemical resistant disposable gloves	
Disposable face masks	
Roll of plastic bin bags	
Cable ties	

Declaration

The information and answers given above are true in every detail and no information has been withheld.

Departmental Supervisors Name:	
Departmental Supervisors signature:	*Date:*

Departmental Managers Name:	
Departmental Managers signature:	*Date:*

Spill Kit Replenished

Staff Members Name and Role:	
Staff Members signature:	*Date:*

Created By: Paul Corcoran on 24 Mar 2009
Review Date: 16 Jan 2019