Prepared for Kosciuszko Thredbo Pty Ltd

Statement of Environmental Effects

Bobsled demolition and mountain bike trail works

2 Friday Drive, Thredbo

December 2023

Project Number: 230204

Document verification

Project Title:	Bobsled demolition and mountain bike trail works
Project Number:	230204
Project File Name:	"\\10.0.18.1\Active\Projects\2023\230204 Alpine bobsled demolition SEE\Report"

Revision	Date	Prepared by	Reviewed by	Approved by
Draft V1.0	7/08/2023	Johanna Duck	Lizzie Olesen – Jensen	Lizzie Olesen - Jensen
Final V1.0	13/12/2023	Johanna Duck	Stephanie Kurta	Stephanie Kurta

Table of Contents

1. Introduction

1.1. Background

This Statement of Environmental Effects (SEE) has been prepared by NGH on behalf of the applicant, Kosciuszko Thredbo Pty Ltd. This report supports a Development Application (DA) seeking the consideration of the demolition of the existing bobsled and construction of a mountain bike trail within the Thredbo Alpine Resort.

Development consent is sought under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This SEE has been prepared in accordance with the requirements of the EP&A Act, addresses the requirements set out in Chapter 4 of the State Environmental Planning Policy (Precincts – Regional) 2021 (Precincts – Regional SEPP) and has considered the Kosciuszko National Park Plan of Management (KPOM) and the specific provisions for Thredbo Village.

The purpose of this SEE is to describe the proposal and the likely impacts of the development on the environment and to detail the mitigation measures that would be implemented to minimise the potential impacts. This SEE should be read in conjunction with the accompanying plans and documentation, provided in the attached Appendices, listed in Table 1-1.

Table 1-1 List of supporting plans and documents

Appendix	Description/Title	Prepared by
A	Development Plans set	Kosciuszko Thredbo Pty Ltd
B	Trail design and construction techniques	Kosciuszko Thredbo Pty Ltd
C	Biodiversity reporting	NGH
D	Aboriginal Heritage reporting	NGH
E	Erosion and Sediment Control Plan	NGH

1.2. Applicant and land ownership

The applicant for the proposed development is Kosciuszko Thredbo Pty Ltd.

The subject land is leased to Kosciuszko Thredbo Pty Ltd within the Thredbo Head Lease Area. The land forms part of the Kosciuszko National Park, managed by NSW National Parks and Wildlife Service (NPWS).

1.3. Subject land and locality

The subject land is 2 Friday Drive, Thredbo, as shown in Figure 1-1 and Figure 1-2. The land is legally identified as Lot 876 DP1243112. The bobsled is located on the northern side of the Thredbo River adjacent to the 'Sundance' ski run. During construction, site access would be via the summer mountain access road.

Figure 1-1 Bobsled site within the subject land (Source: NSW Planning Portal, 2023)

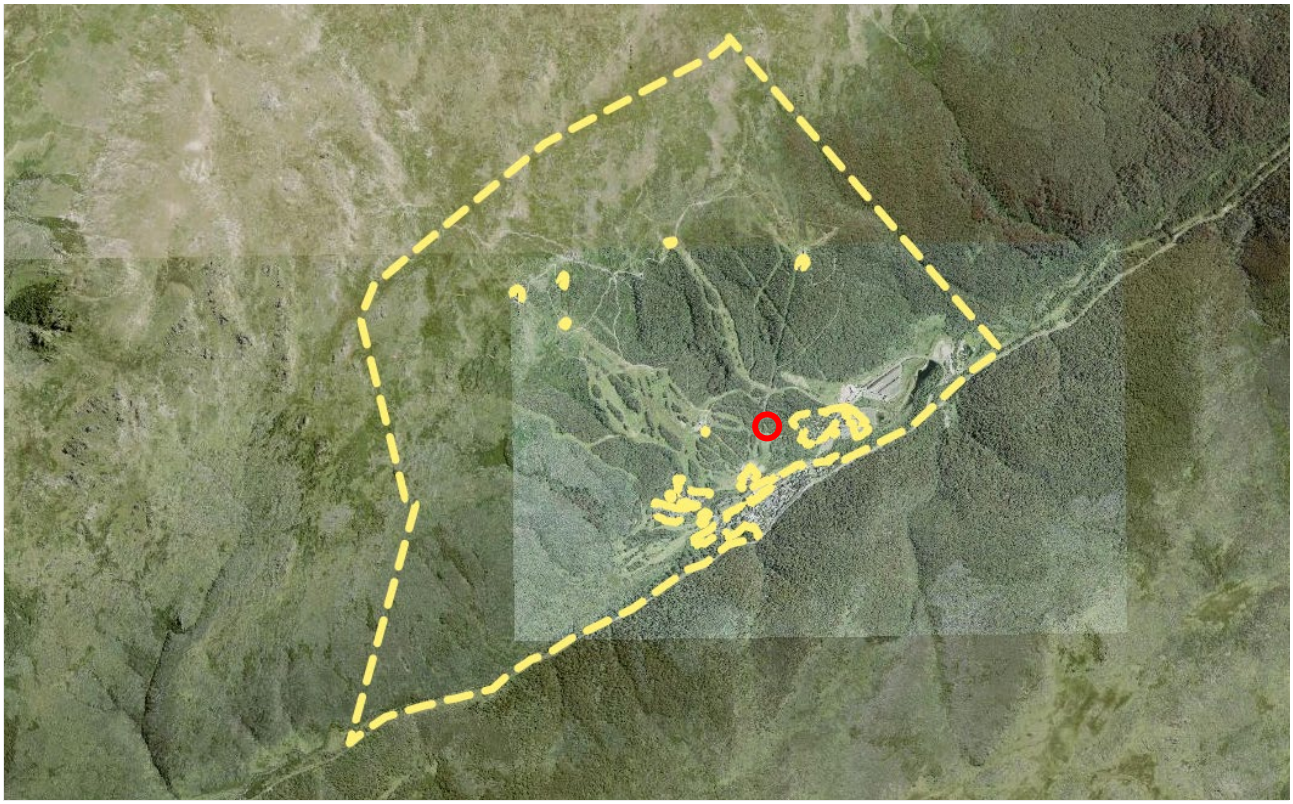


Figure 1-2 Subject land and locality (Source: NSW Planning Portal, 2023)

1.4. Pre-lodgement consultation

A meeting with the Department of Planning and Environment (DPE) Alpine Resorts Team was held on 14 June 2023. The project was introduced, and feedback was sought on the SEE approach, potential issues of note and documentation requirements for the DA. The DPE team provided the following comments and advice:

- Supporting documents should address the Precincts – Regional SEPP.
- Due to the location within 40m of the waterway a Controlled Activity Approval is likely required.
- Biodiversity and Aboriginal Heritage are to be addressed.
- The application would be referred to NPWS.

The included supporting assessments, and this SEE provide responses to the matters raised and address relevant legislation as needed.

2. Proposed development

2.1. Works summary

The proposed development would involve the following:

- The demolition of the existing bobsled located adjacent to the Valley Terminal (VT) precinct (Figure 2-1), off the footpath linking VT to Woodridge subdivision and Friday Flat. The proposed demolition would involve removal of the existing bobsled infrastructure, including the track, bottom station, and associated infrastructure.
- Mountain bike trail construction. The trail would commence at the junction with the existing Village Loop and Home Run mountain bike trails. The trail generally follows the downhill bobsled alignment and terminates when it links back onto the Village Loop trail. The proposed trail would be approximately 740m in length with rollers, hip, and table top jumps, drops, berms and a wall ride.
- Site stabilisation and revegetation works.

Design plans for the proposal are provided in Appendix A. The sections below provide further details for carrying out the proposed development.

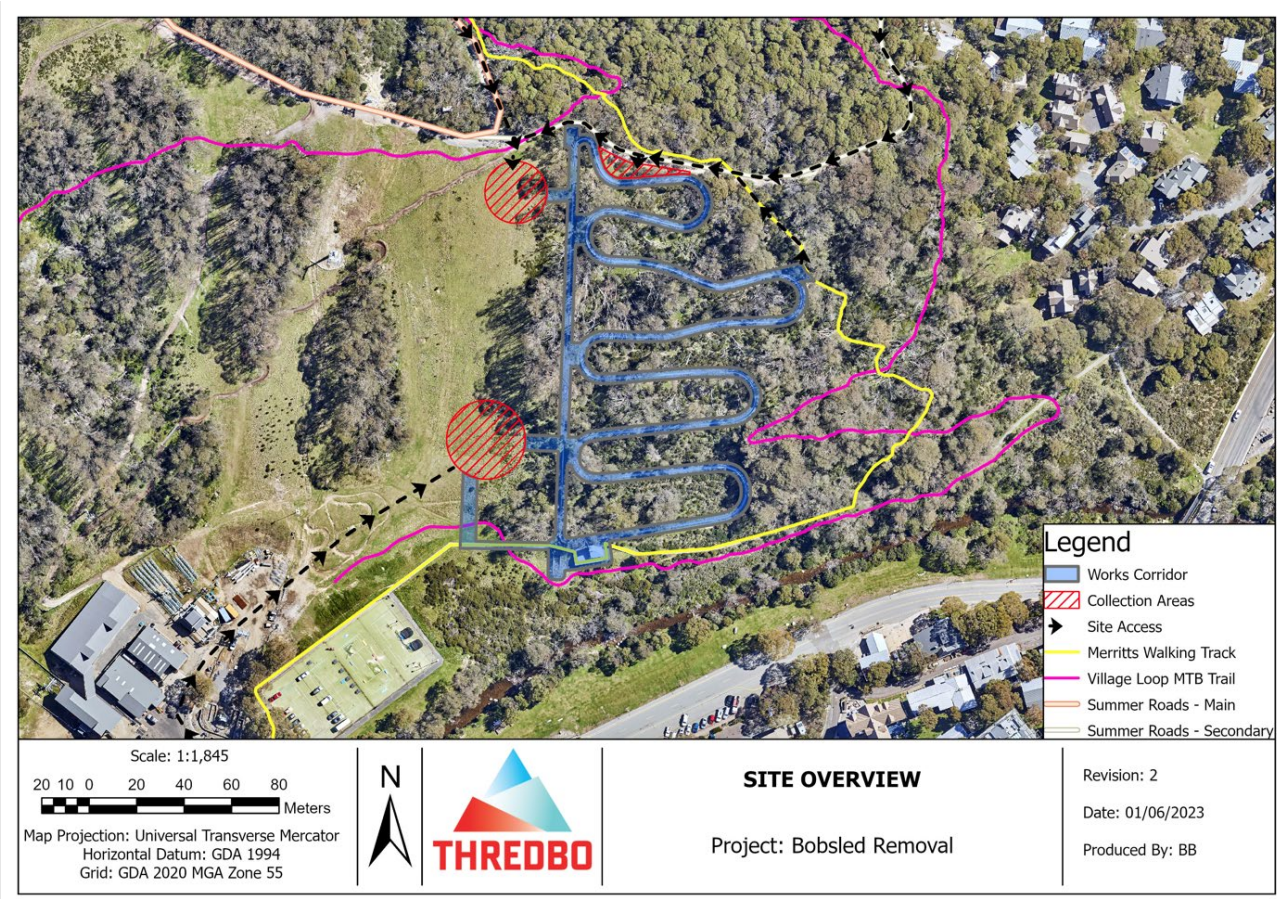


Figure 2-1 Bobsled demolition project location (Source: KT 2023)

2.2. Early works (site preparation)

Early works are required to prepare the site for the proposed demolition and trail construction works, refer to Table 2-1 for details.

Table 2-1 Early works proposed (Details)

Proposed works	Details
Pre-construction activities	Pre-construction activities would 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. • Mobilisation of machinery, equipment, and construction materials to site.
Making the site safe - setting up no-go areas, fencing/ boundary of works marked area	The site would be made safe as per WHS/SafeWork NSW requirements including defining the boundaries of the site (fenced appropriately) prior to any demolition works commencing. Site fencing and signage would be erected during works around the bottom station to prevent pedestrian access to the site. Temporary closures and diversions would be required for the Village Loop Mountain Bike (MTB) trail and Merritts Nature Track when works are being carried out in proximity. Closures would be managed by KT or contractor using signage and temporary fencing as required. Given there is restricted public access to the upper section of the site it is not practical to fence the entire works corridor. Signage would be erected on the boundary of the site along the summer mountain access road to warn vehicle and machinery operators of workers/machinery in proximity. Only authorised persons are permitted to use this road during summer. Limited vehicle traffic along this route is expected as the main mountain access is via Friday Flat. Temporary material collection areas would be located on the heavily disturbed Sundance ski run (refer collection areas in Figure 2-1 and Figure 3-1). These areas would be demarcated with rope/flagging, as required. Track parts would be transported on foot or by small rubber tracked machinery to these collection areas. Removal of track parts from the upper eastern section would likely utilise the existing Merritts Nature Track to the mountain access road. Removal of infrastructure and track parts on the lower section would likely utilise the existing Village Loop MTB trail to minimise environmental disturbance. If required, some sections of the fibreglass decking (FRP) that form part of the Merritts Nature Track may need to be temporarily removed to allow for machinery to access the bottom station.

Establishing site areas - laydown and demolition material storage areas, parking, proposed site access from roads	The Friday Flat area would be fenced or flagged as needed. Stockpiling of track parts would occur within designated collection areas as shown in Figure 2-1. Materials would then be relocated to the Friday Flat carpark (refer Friday Flat Laydown Area shown in Figure 2-2) and transported offsite. Site access would be via two locations off Friday Drive (refer Site Access shown in Figure 2-1): • Via VT base station between Snowgums and Merritts Gondola base stations; and • Via the summer mountain access road (authorised access only) via Mountain Drive. Project vehicles and machinery would be contained within the works corridor and limited to pre-disturbed areas as much as practicable. Public parking is available within the resort for construction workers.
Stockpile areas	The existing lower overflow carpark stockpile site would be used for any construction or bulk materials needed to construct the bike trail. Materials would be moved to site stockpile areas as needed.
Site facilities and temporary structures	There would be no site facilities or temporary structures within the construction corridor. Staff would be able to access amenities at VT base station.

Figure 2-2 Friday Flat Laydown Area (Source: KT 2023)

2.3. Demolition details

The bobsled is located on the northern side of the Thredbo River adjacent to the Sundance ski run. The proposed demolition involves removal of the bobsled infrastructure within an approximate 3m wide corridor as indicated in Figure 2-3. Refer to the detailed description of works in Table 2-2.

Figure 2-3 Approximate bobsled demolition works corridor (Source: KT, 2023 and NGH, 2023)

Table 2-2 Demolition works proposed (details)

Proposed works	Detail
Demolition of track	Demolition would be undertaken with a small excavator to lift the track sections from the ground, then walk them or use a side-by-side vehicle to the collection areas. There are no footings for the track, each section has feet which simply sit on the soil. There are about four (4) or so small footings along the uphill track, these could be left in-situ to avoid disturbance to vegetation. Bobsled Track / Uphill line • Cut joins in track. • Removal of trafficable sections inclusive of structural footings. • Removal of concrete footings on uphill line. • Rehabilitation of the site.
Demolition of bottom station (operators hut)	The proposal would include demolition of the operators hut at the base. The concrete footings for the bottom station would be removed by excavator and disposed of. Footings would either be transport to Jindabyne Landfill for disposal or could be left in-situ with the bolts ground flush to prevent disturbance. Following removal of the operators' hut, the elevated FRP footpath from the VT side would be extended approximately 25m to continue the paved footpath towards Woodridge and Friday Flat. Bottom station (operators hut) • Disconnection of services. • Removal of roof sheets and wall cladding. • Removal of internal wall linings. • Demolition of structure /frame. • Removal of piers and footings. • Rehabilitation of site.
Demolition of drive and return stations	The drive station (located at the bottom of the uphill line) and return station (top of uphill line) and associated infrastructure (fencing, concrete footings etc.) would be removed and disposed of. Drive station (bottom of uphill line) • Removal of fencing. • Disconnection of services. • Removal of drive and associated fittings. • Demolition of concrete base pad and footings. • Rehabilitation of site. Return station (top of uphill line) • Removal of fencing. • Removal of return bull wheel and associated fittings. • Demolition of concrete base pad and footings.

	• Removal of camera and phone. • Rehabilitation of site.
Disconnection of services	Bottom station – disconnection of electricity and telecommunications. Removal of camera and phone at top station.
Machinery and equipment	Machinery and equipment requirements include small excavator, utility and side-by-side vehicles, telescopic handler, angle grinders and oxygen / acetylene gas torch.
Workers, vehicles, and access	There is likely to be a maximum of 6 workers on site at any one time. Vehicles and machinery would follow existing disturbed ski runs and access roads. Site access via the Summer Mountain Access Road restricted to authorised persons only.
Material storage	Example of collection areas and access paths are shown Figure 2-1. Materials would then be regrouped down at Friday Flat carpark within the designated laydown area to aid loading onto road transport to new owner. Materials would be transported from the collection areas to Friday Flat for removal offsite.
Waste minimisation and management	All bobsled equipment would be sold-on or gifted or re-purpose at another site. Bottom station building and deck materials to be scrapped or taken away for recycling by a third party.

2.4. Mountain bike trail construction

The proposed trail would replace the bobsled track within the same disturbance corridor and link into the existing Village Loop trail.

The trail commences at the junction with the Village Loop and Home Run mountain bike trails. The proposed trail would generally follow the downhill bobsled alignment and link back onto the Village Loop trail. The trail would be approximately 740m in length with rollers, hip, and table top jumps, drops, berms and a wall ride.

Refer to the trail description and imagery of the site in the table on the following page.

Table 2-3 Trail works proposed

Proposed works	Detail
Start of the trail	The trail head commences at the junction with the existing Village Loop and Home Run MTB trails. The trail crosses a pre-cleared section before it intersects with the top of the bobsled uphill track. The start of the trail would traverse across the existing uphill line of the bobsled. Disturbance would be limited to removal of shrubs and groundcover as shown below.  
Trail alignment	The trail would follow the existing downhill track for the bobsled.
Trail exit	The trail would depart the existing bobsled corridor and link onto the existing Village Loop Trail. Disturbance would be limited to removal of shrubs, ground cover and two dead Eucalypt trees.


AT ALL TIMES KEEP A FIRM GRIP ON THE BRAKE HANDLE


Two dead Eucalypt trees may require removal

Photo taken looking back towards the bottom of the bobsled.

2.4.1. Background

Currently, the Snowgums Chairlift is not compatible with mountain bikes. The Kosciuszko Express Chairlift is the main uphill transport from VT base station to the Trail Network. With the planned upgrade of the Snowgums Chairlift to a new 6-seat mountain bike compatible lift in summer 2025/26, the disturbed bobsled site has been identified as a key site to provide mountain bike riders direct access to the bottom station. Once operational, the new Snowgums Chairlift would become the main uphill lift for bike riders.

Currently VT base station is accessible via the Cannonball Downhill, Flow and Home Run trails. During peak visitation, these trails and the line for Kosciusko Express Chairlift become quite congested. The proposed new trail would aim to alleviate the rider traffic currently experienced on these trails during peak visitation by providing an alternative option.

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 proposed trail would comprise various trail features and jumps to enable riders to progressively build confidence and skills.

2.4.2. Purpose

The purpose of the project is to provide an alternate route for riders to access the VT base station. This would aid in the distribution of rider traffic entering the VT base station and provide direct access to the Snowgums Chairlift bottom station from the eastern side, as opposed to having to navigate through the highly trafficked base station area from the western side.

2.4.3. Trail design details and approach

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).
- 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.

A summary of the proposed trail design details is provided in Table 2-4.

Table 2-4 Trail design details

Element	Details
Trail length	Approximately 740m
Trail difficulty rating	In accordance with the IMBA Trail Difficulty Rating System (IMBA 2012), the trail difficulty rating would be Intermediate.
Trail width	The tread refers to the actual surface of the trail upon which users travel. The average trail width for an intermediate trail is generally 600mm (plus or minus 300mm for tread) which is in accordance with the Trail Difficulty Rating System Land Managers Guide (IMBA 2012).
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. The average disturbance corridor for mountain bike trails is generally 2.5m wide.
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 would be predominately natural soil, with local crushed granodiorite used where required. The surface would comprise possible sections of rocky or loose tread.

Natural Obstacles and Technical Trail Features (TTFs)	The trail would likely include unavoidable, rollable obstacles to 200mm high. Avoidable, rollable obstacles up to 600mm may also be present on the trail. Note, short sections may exceed the criteria.
Average trail grade	The climbs and descents would be mostly moderate gradients but may include steep sections. The average trail grade would be 10% or less (IMBA 2012).
Maximum trail grade	The trail grade would be a maximum of 20% or greater (IMBA 2012).
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 400mm wide x 200mm high and attached to a 50mm round post which is 1,800mm high. Decision point signs would be located at the following locations along the trail: • Trail head; and • Junction with the Village Loop MTB trail. A typical signage plan is provided in Appendix A.

2.4.4. Construction technique details

A summary of the proposed construction techniques t is provided in Table 2-5. Imagery and examples of construction types listed are provided in Appendix B.

Table 2-5 Trail 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) with frequent undulations, which would 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 would 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.
Half rule	Trail grade should not 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 would 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).
Flexible construction corridor	Generally, for mountain bike trail construction across the resort a 20m wide corridor is deemed sufficient to provide flexibility for the trail builders to respond to any unforeseen construction constraints. A flexible trail corridor of 20m wide would not be required for the existing bobsled corridor as the alignment is already pre-disturbed, except for the entry and exit point.

2.4.5. Construction management details

The proposed construction would be managed in accordance with the approved Site Environmental Management Plan (SEMP). Included in Table 2-6 are the provisions that would guide the works and be incorporated into the SEMP as needed.

Table 2-6 Construction management details for inclusion in SEMP

Proposed works	Details
Construction corridor and disturbance footprint	The average disturbance corridor for mountain bike trails is 2.5m with an average 600mm trail width for intermediate trails. The current bobsled alignment comprises a cleared corridor of approximately 3m in width for the entire downhill alignment. Vegetation disturbance within this cleared bobsled corridor would be confined to trimming of low hanging branches and removal of ground cover to allow for the construction of the trail tread. For the entry and exit points, the removal of two dead Eucalypt trees, and some minor shrub and ground cover clearing would be required.
Construction materials	Construction materials would likely include: • Trail signs e.g., decision point signs; and • Gravel / decomposed granite for the trail surface.
Machinery, plant and equipment	Equipment and machinery would likely include: • Mini excavator. • Motorised wheelbarrows. • Quad bikes. • Dump trucks (to and from stockpile sites). • 4 WD vehicles. • Side-by-side vehicles; and • Hand tools (i.e., chainsaws and brush-cutters). The tread width of on-ground machinery used in trail construction must not exceed 1,500mm.

Stockpile sites	Temporary stockpiles would be required along the trail alignment for the effective management of gravel, soil, and vegetation. These stockpiles would be located within pre-disturbed areas, on relatively flat land, away from watercourses and avoid native vegetation. Excess materials from construction would be located in the main stockpile area within the resort (lower overflow carpark area, refer to plans in Appendix A). Access to these locations would be restricted to KT staff and contractors. Soil stockpiles would 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.

Construction activities	Construction activities would comprise the following:
	• Removal of ground cover to expose bare earth.
	  ○ Excess cut vegetation from the entry and exit points 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.

2.5. Rehabilitation, operation, and monitoring

The proposed demolition and construction works would disturb the proposed works area, keeping impacts to the minimum extent necessary as discussed in this SEE and supporting reports for biodiversity and heritage.

Due to the proposed impacts, rehabilitation of the site would be needed, refer to the approach for rehabilitation, operation, monitoring, and ongoing maintenance in Table 2-7.

Table 2-7 Rehabilitation and maintenance works proposed (approach)

Proposed works	Detail
Compliance with rehabilitation guide	All disturbed areas to be rehabilitated in accordance with the 'Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park' (NGH 2007).
Operational activities	The proposed trail would 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 would be implemented as part of the overarching *Thredbo Mountain Bike Trail Management Plan*. 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.
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.
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. The plan would be updated to incorporate the proposed trail.

3. Environmental analysis

3.1. Subject land and site analysis

The bobsled site is located on the northern side of the Thredbo River east of VT and Sundance ski run, see Figure 3-1. The site is sloped land with a fall from the north (next to the summer access road) down to the south (adjacent to Merritts Track parallel to the Thredbo River).

The bobsled track is approximately 3m wide with side paths connecting to the track off Sundance ski run. The proposed mountain bike trail would connect with existing trails within the resort, see Figure 3-2.

The bobsled track starts at the bottom station via an upslope straight track and then weaves back down the hill to the bottom station. Figure 3-3 indicates the top of the bobsled and Figure 3-5 showing the entry (bottom station).

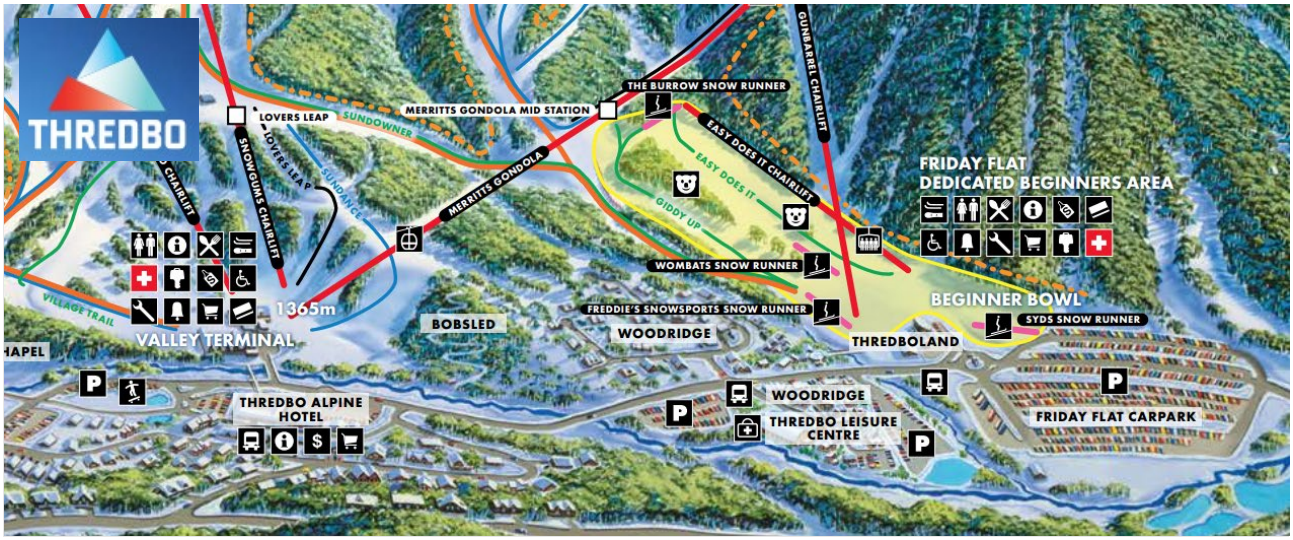


Figure 3-1 Thredbo Winter Trail Map (Source: KT , 2023)

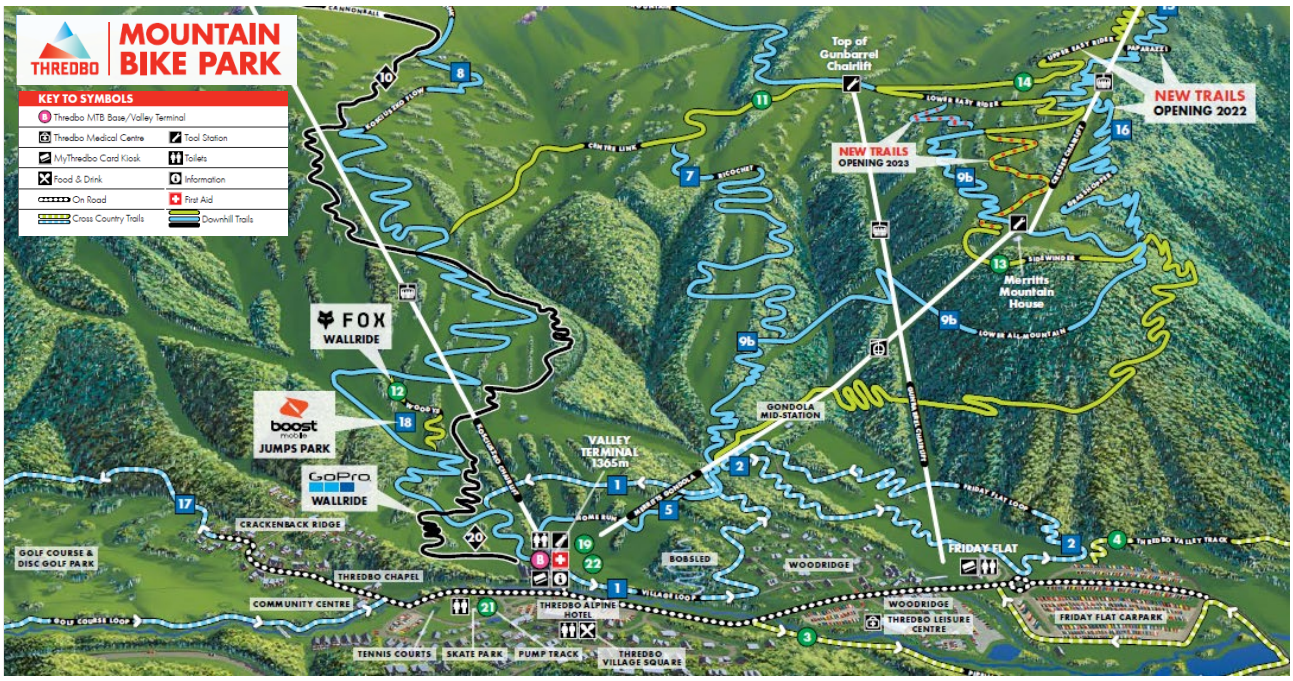


Figure 3-2 Thredbo mountain bike park trail map (Source: Adapted from KT, 2023)

Figure 3-3 Top of bobsled track, adjacent to the summer access road (NGH, 2023)

Figure 3-4 Top Station bull wheel (NGH, 2023)

Figure 3-5 Bottom Station (NGH, 2023)

3.2. Economic or social impacts

The bobsled would be replaced by the alpine coaster which would provide a year-round all weather offer as opposed the bobsled that is unable to operate in rain or snow conditions.

The alpine coaster would provide a new social/recreation experience in Thredbo and would be the first and only alpine coaster in Australia.

3.3. General environmental impacts

3.3.1. Noise and vibration

Noise associated with demolition and construction would be temporary, with works planned to be conducted during the summer work period (generally October to April the following year). The proposed work hours are:

- Monday to Friday: 7am-6pm.
- Saturday: 8am-1pm.
- Sundays or public holidays: No work.

Noise control would be consistent with the NSW EPA Interim construction noise guidelines. Due to the minimal ground disturbance proposed and distance from accommodation sites, no discernible vibration impacts are expected.

No notable noise or vibration is expected from the use of the proposed bike trail.

3.3.2. Contamination

No asbestos is known to be present in the bobsled buildings or structures. The construction contractor would be responsible for implementing appropriate protocols in the event unexpected contaminated materials are uncovered.

3.4. Waterways

The proposed development site is adjacent to the Thredbo River. Under the Strahler system, the Thredbo River, adjacent to the proposed development site is classified as a 3rd order stream. The channel width adjacent to the site is approximately 10.9m as indicated in Figure 3-6.

A portion of the proposed works would be within 40m of the Thredbo River, given part of the existing bobsled lies within this corridor. The works include:

- Demolition of the bottom station, fencing around the bull wheel and a section of bobsled track, as indicated in Figure 3-7.
- Construction of the MTB trail within the disturbed bobsled corridor.
- Site stabilisation and rehabilitation works.

Works within 40m of a waterway are considered to be undertaken on waterfront land according to the provisions of the *Water Management Act 2000* (WM Act). A controlled activity approval (CAA) is required for works on waterfront land and this is discussed in further detail, including an assessment against the relevant guideline, in section 4.2.3.

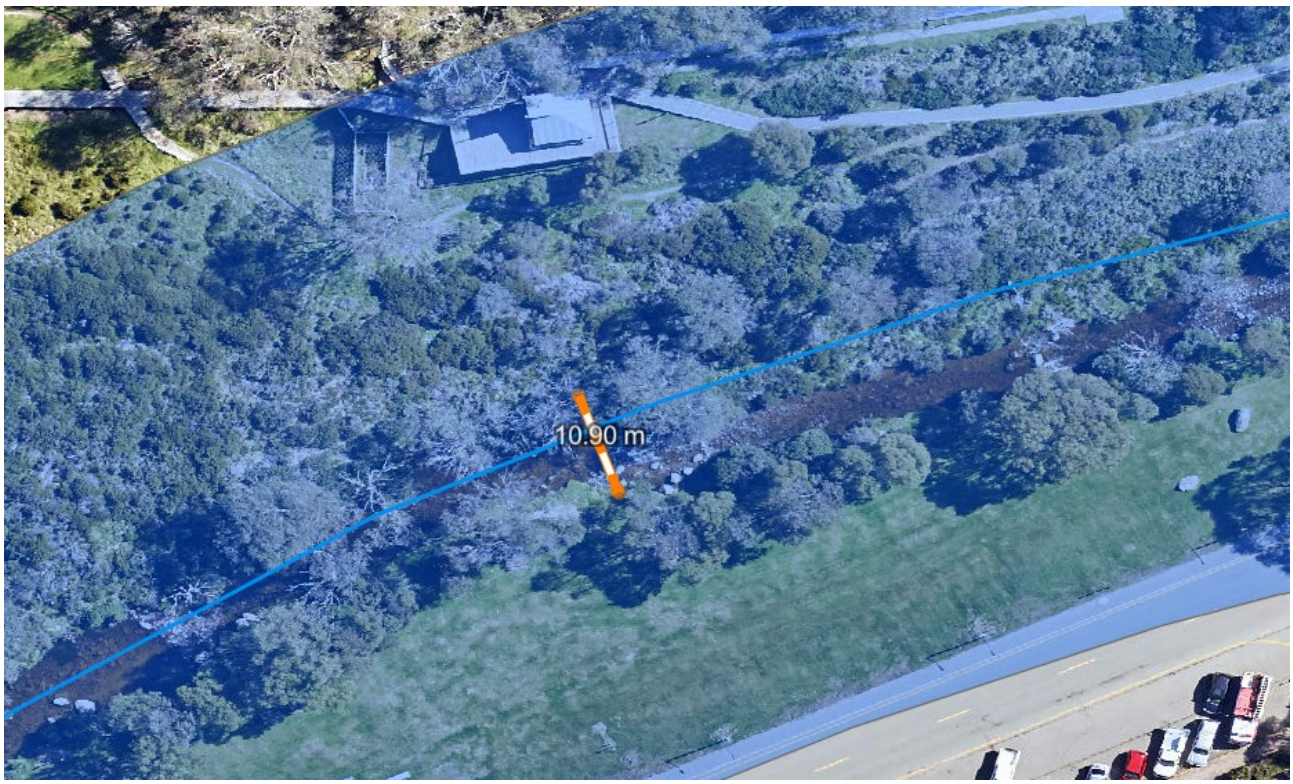


Figure 3-6 Channel width of Thredbo River adjacent to the subject site (NGH, 2023)

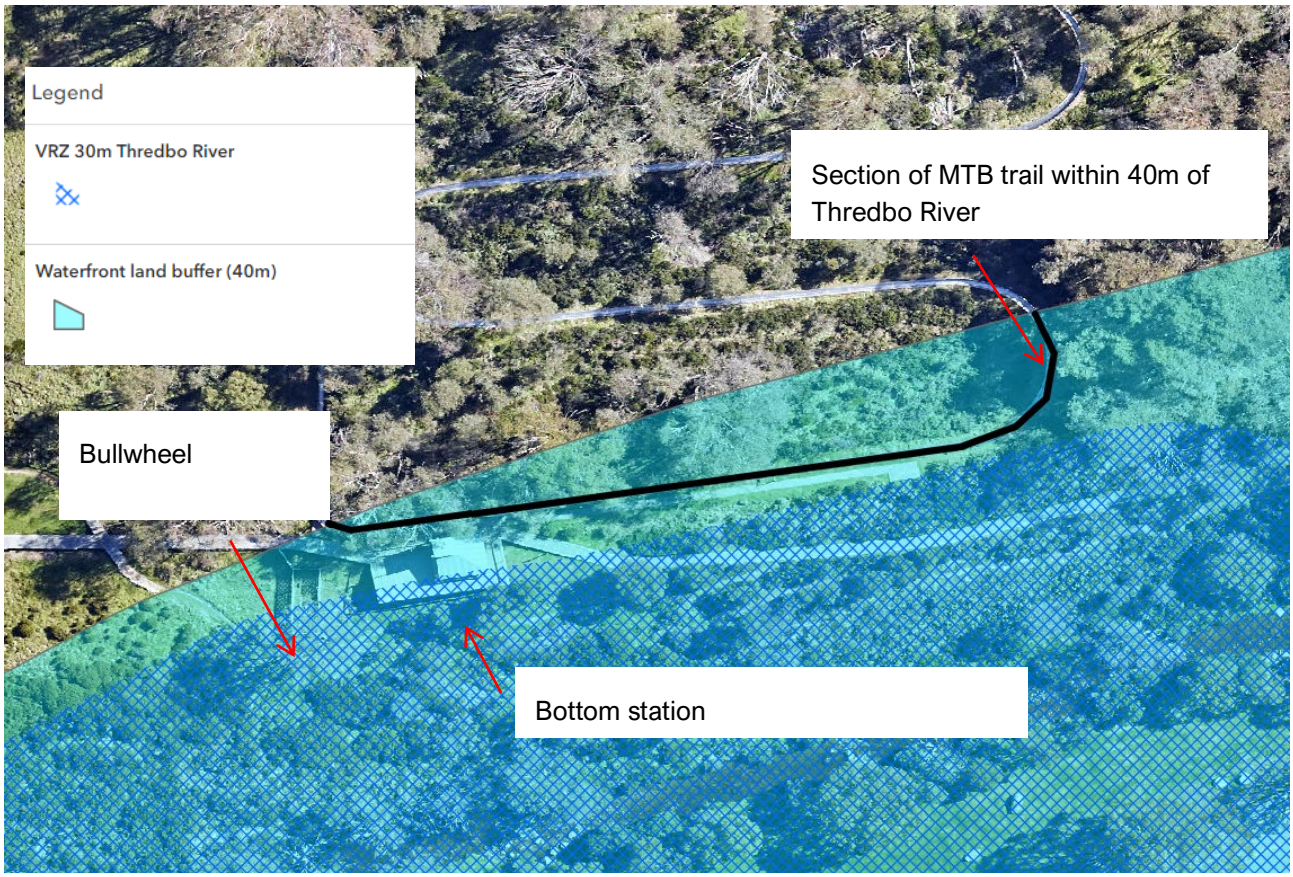


Figure 3-7 30m vegetation riparian zone (VRZ) and 40m waterfront land buffer to Thredbo River (KT, 2023)

No adverse impacts to the Thredbo River are anticipated given the following:

- Removal of riparian vegetation has been avoided.
- The works on waterfront land comprise of demolition of existing historic structures and would return the site to a state that is more compatible with riparian functions. All disturbed areas would be stabilised and rehabilitated following the works.
- The existing Village Loop mountain bike trail is located between the proposed development footprint and Thredbo River. This trail was constructed in accordance with sustainable trail design principles including permanent erosion controls which act as an additional buffer between the subject site and Thredbo River.
- A controlled activity approval (CAA) would be sought prior to commencement of works. Any imposed conditions in any CAA would be implemented during the works.
- The proposed development would be carried out in accordance with the development consent, CAA conditions and mitigation measures outlined in the SEMP and ESCP.

Overall, the proposed development would have a beneficial impact on riparian land and the Thredbo River. It would return the waterfront land to a more compatible function of recreation, by removal of the bobsled infrastructure and carrying out of rehabilitation works. It is considered that the carrying out of the proposed development would result in no more than temporary, minimal harm to waterfront land. Safeguards and mitigation measures in the SEMP and ESCP would protect the ecological functions of the river and riparian area.

3.5. Bushfire risk

The land is mapped as bushfire prone land (BFPL) Vegetation Category 1, as shown in Figure 3-8.

As there is potential for fire risk, the provisions of the NSW Rural Fire Service Planning for Bushfire Protection 2019 (PBP) have been considered for the proposal and relevant matters addressed. This SEE demonstrates that the proposal satisfies the requirements, and meets the Aim and Objectives, of PBP.

Figure 3-8 Bushfire prone land mapping (NSW Planning Portal, 2023)

The provisions of the PBP have been considered for the proposal and relevant matters are addressed in Table 3-1 below. Appropriate bushfire protection measures (BPMs) should be implemented as needed, including those listed in Table 3-1 below.

Table 3-1 Planning for Bushfire Protection considerations for 'other' developments.

PBP consideration	Comment
Aims and objectives of the PBP	The aim of PBP is to provide for the protection of human life and minimise impacts on property from the threat of bushfire, while having due regard to development potential, site characteristics and protection of the environment. The objectives are to: • *Afford buildings and their occupants protection from exposure to a bushfire.* • *Provide for a defendable space to be located around buildings.* • *Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings.* • *Ensure that appropriate operational access and egress for emergency service personnel and occupants is available.* • *Provide for ongoing management and maintenance of BPMs.*

	• *Ensure that utility services are adequate to meet the needs of firefighters.* Land adjacent to the subject site comprises a mix of managed and unmanaged land, including tracts of native vegetation, maintained grass areas/ski runs and riparian vegetation associated with Thredbo River. Adjacent land is identified as Vegetation Category 1 BPL. The proposal would be consistent with the objectives of the PBP, specifically as the location of the works proposed (predominately cleared areas) provide for the protection and safety of workers. Removal of the existing bottom station building removes the need for persons to occupy the building, therefore reducing the level of risk. Existing access tracks and roads would provide for evacuation needs during a bushfire event. The adjacent Valley Terminal area is nominated in Thredbo's Bushfire Evacuation Plan as an assembly point in the event of fire threat and evacuation. Mitigation measure/commitment: The construction contractor would be responsible for implementing site safety procedures and ensuring staff are aware of bushfire avoidance, evacuation, and management measures during demolition/construction, such as confirming there are no current fire bans prior to commencement works. Emergency services contact details are provided in the SEMP. Consideration of the measures outlined in the Demolition work Code of Practice (SafeWork NSW, 2019) as they relate to fire should be considered during demolition of the existing bobsled infrastructure.
BPM - Access	The existing public and restricted access roads have a carriageway width of the minimum requirement of 4m. Turning areas are available at the bobsled site.
BPM - Water Storage	The subject land has a reticulated water connection. A portable water source may need to be made available during the demolition depending on proximity to reticulated water connection and potentially for any higher fire risk works proposed during the demolition, particularly as works are likely to be carried out in summer.
BPM - Defendable Space	The existing public roads, access tracks and ski runs provide a suitable defendable space between the bobsled area and nearby accommodation.

3.6. Geotechnical considerations

The proposed development site is within the mapped area subject to the Geotechnical Policy – Kosciuszko Alpine Resorts as shown in Figure 3-9.

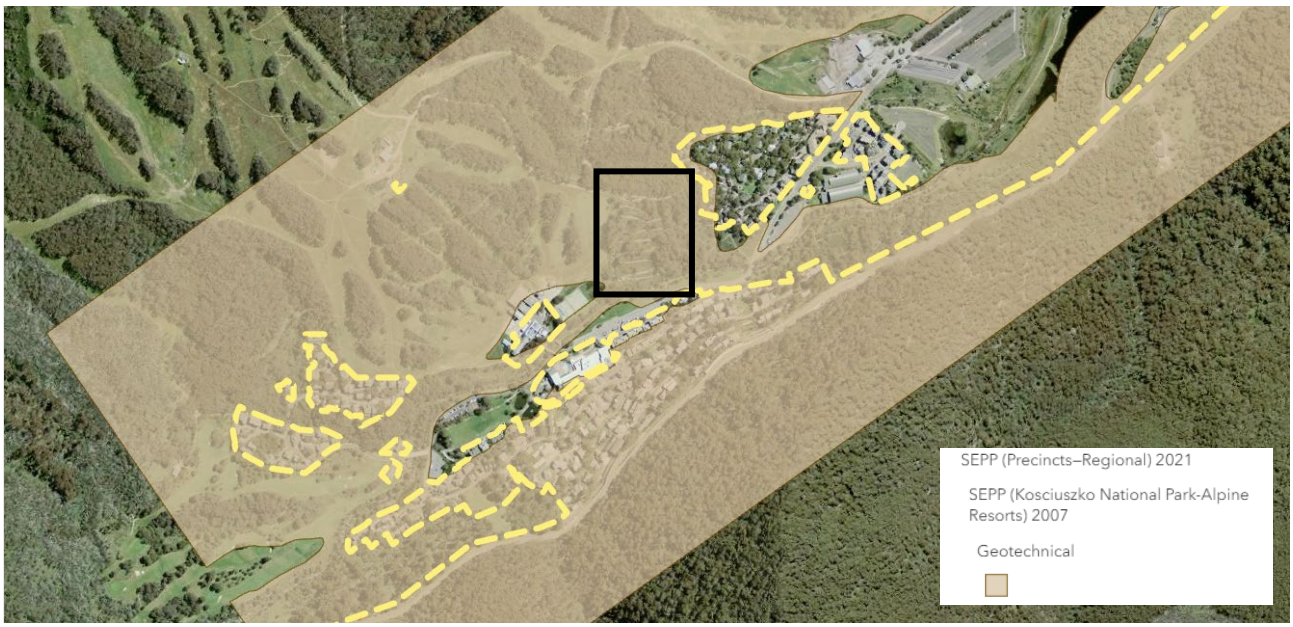


Figure 3-9 Geotechnical Policy – Kosciuszko Alpine Resorts overlay (NSW Planning Portal, 2023)

The geotechnical provisions of the State Environmental Planning Policy (Precincts—Regional) 2021 are addressed in section 4.2.5 of this report. A geotechnical assessment and Form 4 Minimal Impact Certification accompany this application (Appendix F).

3.7. Biodiversity

The impacts of the demolition and construction to biodiversity have been assessed by NGH ecologists as part the preparation of the SEE. A summary of the assessment of the proposal against the Biodiversity Conservation Act 2016, Biodiversity Offset Scheme (BOS) triggers is provided in Table 3-2. The assessment also considered the works against the provisions of the Environment Protection Biodiversity Conservation Act 1999.

Table 3-2 Impact assessment against the BC Act BOS provisions.

<table>
<tr><th>Threshold</th><th>Application to the Proposal</th><th>Trigger for BDAR</th></tr>
<tr><td>The development is likely to significantly affect threatened species, populations or ecological communities (clause 7.2(1)(a))</td><td>A significant impact to threatened entities considered unlikely.</td><td>No</td></tr>
<tr><td colspan="3">The development exceeds the biodiversity offsets scheme threshold (clause 7.2(1)(b))
Note: there are two potential BOS thresholds, pursuant to clause 7.1(1) of the BC Regulation.</td></tr>
<tr><td><table><tr><th>Minimum lot size associated with the property</th><th>Threshold for clearing of native vegetation</th></tr><tr><td>1000 ha or more</td><td>2 ha or more</td></tr></table></td><td>No minimum lot size is specified for the property and the minimum lot size becomes the size of the lot (greater than 1000ha). 0.61ha of native vegetation would be</td><td>No</td></tr>
</table>

	potentially removed. This is below the threshold.	
The clearing of native vegetation, or other action prescribed by clause 6.1, on land identified on the Biodiversity Values (BV) map;	The land is not identified on the Biodiversity Values map which is located along the Thredbo River. This area can be avoided, and no native vegetation is proposed to be removed or impacted and no prescribed actions to be undertaken in BV land.	No
The development is in an area of Outstanding Biodiversity Value (clause 7.2(1)(c))	The site is not an area of Outstanding Biodiversity Value.	No

A field survey and BOS assessment of the proposed development was carried out by NGH ecologists. It concluded that the proposed development would not involve native vegetation clearing that would exceed the area threshold. There would be no impact on designated Biodiversity Values (BV) mapped land or Areas of Outstanding Biodiversity.

Potential impacts on threatened entities were considered, and Tests of Significance (ToS) prepared where required, as outlined below. It was concluded that a significant effect on threatened entities was not likely, given the extent of clearing is of small magnitude and ample high-quality foraging and breeding habitat remains in the immediate area for relevant species. The proposed development was not considered to cause a significant detrimental impact nor interfere with the recovery of these species.

Table 3-3 Potential impacts on threatened entities

Threatened species	Habitat clearing (ha)	Potential for impact
Gang-gang Cockatoo *Callocephalon fimbriatum*	0.46 (forest habitat)	High – species listed as endangered, habitat listed as critical to survival. ToS undertaken.
Olive Whistler *Pachycephala olivacea*	0.46 (forest habitat)	Moderate – despite many nearby records, this magnitude of clearing is unlikely to affect breeding, foraging or dispersal ability of this species in a well-connected and heavily forested landscape.
Flame Robin *Petroica phoenicea*	0.46 (forest habitat)	Moderate – despite many nearby records, this magnitude of clearing is unlikely to affect breeding, foraging or dispersal ability of this species in a well-connected and heavily forested landscape.
Pink Robin *Petroica rodinogaster*	0.46 (forest habitat)	Low – subject site likely to provide secondary habitat. Thredbo River riparian area likely to provide primary habitat. This magnitude of clearing is unlikely to affect breeding, foraging or dispersal ability of this species in a well-connected and heavily forested landscape.
Pilotbird *Pycnoptilus floccosus*	0.46 (forest habitat)	Low – while dense undergrowth occurs adjacent to the bobsled run (**Error! Reference source not found.**), the majority of the run itself is grassed; therefore providing impacts are contained to the development footprint, Pilotbird habitat is unlikely to be impacted.
Spotted-tailed Quoll	0.61 (forest and	Low – the home range area estimates for a Spotted-

Threatened species	Habitat clearing (ha)	Potential for impact
Dasyurus maculatus	grassy habitat)	tailed Quoll are between 88 ha to 2561 ha. Minor land use change and minor clearing affecting 0.61 ha of a home range would have minimal effect upon this species (Claridge, et al., 2005).
Broad-toothed Rat *Mastacomys fuscus mordicus*	0.15+ (grassy habitat and open forest patches/edges)	High – suitable habitat occurs in development footprint (**Error! Reference source not found.**), numerous records occur nearby; the species is highly likely to occur. Works would be undertaken in summer/autumn; at this time Broad-toothed Rat is solitary with large home range and high activity (Milner, Starrs, Hayes, & Evans, 2016). ToS undertaken.

The following mitigation measures are proposed to ensure that works have minimal impact on threatened entities.

- Clearly delineate approved clearing area (or conversely, areas for protection) with temporary fencing or flagging or similar. On-ground delineation is more effective than digital maps in machinery.
- Ensure stockpile areas are within the development footprint.
- Consider using woodchip mulch from cleared vegetation for site remediation rather than grass seeding. This would support natural regeneration of local species.
- If grass must be sown, it is recommended that a native grass seed mix be used.
- Any imported topsoil should be certified weed free.
- Utilise weed quarantine measures such as cleaning down loose soil from machinery and vehicles entering and exiting site.
- A weed brush-down area should be identified for this purpose.
- Basic level hygiene measures should be in place consistent with Hygiene guidelines (DPIE, 2020), including:
  - Undertaking works in dry weather
  - Restricting movement of soil and plant material to and from site
  - Cleaning down soil and material from shoes, machinery and vehicles.
- Do not disturb wombat burrows.
- If wombat burrows must be disturbed, seek advice from NPWS.
- Adhere to the Code of Practice for injured, sick and orphaned wombats (DPE, 2022) if such wombats are encountered during works.
- Relocate dead wood (e.g. logs, felled trees) on ground within nearby vegetation to retain this resource in subject land.
- In the event a Broad-toothed Rat (or other unexpected ground-dwelling species) is found breeding on site during works, works would cease. Consultation with NPWS would be undertaken to relocate or otherwise protect the nest so that works may continue.

Accordingly, it has been determined that the proposed development would have an acceptable biodiversity impact.

3.8. Heritage

3.8.1. Historic heritage

Kosciuszko National Park forms part of the Australian Alps National Parks and Reserves (AANP) which is a National Heritage Place listed National Landscape under the EPBC Act. Although the Kosciusko National Park is of National Landscape significance, the bobsled site is not heritage listed and no heritage listed sites are adjacent.

It is considered the proposed removal of bobsled infrastructure and replacement with a mountain bike trail would have no adverse impact on the National Landscape significance.

3.8.2. Aboriginal Cultural heritage

Part of the proposed development site is within an area considered by the Snowy Mountains Special Activation Precinct (SAP) Master Plan and supporting technical studies as having Low Aboriginal Cultural Heritage potential, see section 4.2.5, for information. Other parts are unmapped, and therefore, a Due Diligence desktop assessment has been completed for the proposed development. A summary of findings is provided below, refer to Appendix D for the full assessment report.

On 8 June 2023, a search of the Aboriginal Heritage Information Management System (AHIMS) database was undertaken over an area measuring approximately 7km in length and 3km in width, centred on the proposal area. There were 22 Aboriginal sites recorded within this search area and zero declared Aboriginal Places. None of the archaeological sites currently recorded on AHIMS are located within or directly adjacent to the proposed development site, however, five sites occur within 600m. Historical texts and past studies were considered as well as a landscape assessment, consideration of Aboriginal site prediction, opportunities for impact avoidance and desktop assessment and concluded that the proposed activity is unlikely to harm Aboriginal objects and further archaeological assessment is not required.

The recommendations are as follows:

1. The proposed work can proceed with caution without further archaeological assessment.
2. Any activity proposed outside of the current proposal area should also be subject to an Aboriginal heritage assessment.
3. If any items suspected of being Aboriginal in origin are discovered during the work, all work in the immediate vicinity must stop and the NSW Environment Line (1300 361 967) notified. The find would need to be assessed and, if found to be an Aboriginal object, further detailed assessment, and an application for an Aboriginal Heritage Impact Permit (AHIP) may be required.
4. In the unlikely event that human remains are identified during development works, all work must cease in the immediate vicinity and the area must be cordoned off. The proponent must contact the local NSW Police who would make an initial assessment as to whether the remains are part of crime scene or possible Aboriginal remains. If the remains are thought to be Aboriginal, Heritage NSW must be notified by ringing the Enviroline (131 555).

3.9. Infrastructure and service provisions

3.9.1. Haulage, traffic generation and impacts

The demolition and additional mountain bike trail works are not considered a traffic generating development as limited additional vehicles would be expected.

The site would be accessed via the Alpine Way, onto Friday Drive to the site laydown area at Friday Flat. From there the site would be accessed via Friday Drive and the summer mountain access road, or by travelling past the VT Base Station and across the Sundance ski run.

Materials would be transported from the collection areas to Friday Flat for removal offsite. Vehicles and machinery would follow existing disturbed ski runs and access roads where possible.

Site access via the summer mountain access road would be restricted to authorised persons only, minimising potential for safety issues or delays to public traffic.

Due to the minimal nature of the works a full traffic management plan is not considered necessary. Relevant management measures are included in the SEMP. Safe management of traffic with respect of existing road users would be the responsibility of the construction contractor.

3.9.2. Site Access and worker parking

Traffic and construction vehicle access would be managed as per regular daily operation in the resort. All construction vehicles to enter/exit site via the summer mountain access road and VT (between Snowgums and Merritts bottom stations), refer to Figure 2-1.

Temporary diversions or closures of the Village Loop MTB trail and Merritts Nature Track would be managed as per daily resort operations.

Parking for workers would be within the site compound to be established at Friday Flat or within other public parking areas within the resort.

3.9.3. Utilities and services

Services and utility connections are near the site and this infrastructure includes Essential Energy – HV underground cables. Impacts to infrastructure would be avoided. Service connections for providing power to any future development within the site would be maintained and made safe for future reconnection as needed.

Mitigation measures for the work would be as follows:

- Contractor responsible for carrying out relevant searches (Kosciuszko Thredbo, DBYD, etc) as needed to confirm accuracy of plans.
- Work would be carried out in accordance with relevant management plans and/or Demolition work Code of Practice (SafeWork NSW, 2019), or as agreed with service providers/in accordance with relevant conditions/approvals.
- Services would be disconnected and made safe for reconnection with any future development. Any work on services would be carried out by a suitably qualified person.

4. Statutory framework

4.1. Commonwealth legislation

4.1.1. Environment Protection and Biodiversity Conservation Act 1999

The accompanying Biodiversity Assessment concluded the proposed development is unlikely to result in any significant impacts to listed threatened species or ecological communities under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Therefore, a referral to the Commonwealth Environment Minister is not recommended in this instance.

4.2. State planning legislation

4.2.1. Environmental Planning and Assessment Act 1979

Application is being made for the proposed development in accordance with Part 4, Section 4.12 of the *Environmental Planning and Assessment Act 1979.*

Matters of consideration for the DA

This SEE has considered the relevant matters of Section 4.15 of the EP&A Act and State Environmental Planning Policies. Section 4.15 of the EP&A Act also states that in determining a Development Application, a consent authority is to take into consideration other relevant matters. These matters are listed in Table 4-1.

Table 4-1 Relevant 4.15 matters

Other relevant 4.15 matters for consideration	
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	There are no known proposed instruments that are considered imminent and that are applicable to the proposal.
any planning agreement	There are no known planning agreements applicable to the development proposal.
the suitability of the site for the development	This report has found that the subject land is suitable for the development. The works are for demolition of the existing bobsled to allow for redevelopment of the site as a bike trail. Environmental impacts are minimised and managed through the recommended mitigation measures in the SEMP.
any submissions	The Minister (as the determining authority) would undertake appropriate public notification and would consider any submissions made.
the public interest	The proposal has been found to comply with the relevant legislated planning policies and guidelines. As such, approval of the demolition and proposed bike trail is not inconsistent with the public interest.

Integrated development

The proposed development is integrated development under Section of the 4.46 EP&A Act. The relevant provisions apply under the following Act:

- *Water Management Act 2000.*
    - ss 91 activity approval under Part 3 of Chapter 3.

An assessment against the relevant WM Act provisions and the guideline is provided in section 4.2.3 of this SEE. A CAA would be applied for prior to construction.

The proposed development is not integrated development under the following Acts:

- *Coal Mine Subsidence Compensation Act 2017.*
- *Fisheries Management Act 1994.*
- *Heritage Act 1977.*
- *Mining Act 1992.*
- *National Parks and Wildlife Act 1974.*
- *Petroleum (Onshore) Act 1991.*
- *Protection of the Environment Operations Act 1997.*
- *Roads Act 1993.*
- *Rural Fires Act 1997.*

4.2.2. Biodiversity Conservation Act 2016

In accordance with the provisions of the *Biodiversity Conservation Act 2016* (BC Act), the consent authority is required to take the likely impacts to biodiversity into consideration when determining a Part 4 DA. Refer to section 3.7 for the summary of the biodiversity assessment. The assessment, relevant searches and test of significance are provided at Appendix C.

4.2.3. Water Management Act 2000

The proposed development would involve works within 40m of the Thredbo River. The proposed development is therefore considered to be undertaken on waterfront land according to the provisions of the *Water Management Act 2000* (WM Act). A controlled activity approval (CAA) is required for works undertaken on waterfront land.

Section 91 of the WM Act states:

91 Activity approvals

(1) There are two kinds of activity approvals, namely, controlled activity approvals and aquifer interference approvals.

(2) A controlled activity approval confers a right on its holder to carry out a specified controlled activity at a specified location in, on or under waterfront land.

Guidelines for riparian corridors on waterfront land

The overarching objective of the controlled activities provisions of the WM Act is to establish and preserve the integrity of riparian corridors. The 'Controlled activities – Guideline for riparian corridors on waterfront land' (DPE 2022) provides guidance for assessing impacts to waterfront land, and to ensure the environmental functions of riparian corridors are maintained or rehabilitated.

Under the Strahler system, the Thredbo River, adjacent to the proposed development site is classified as a 3rd order stream. The channel width adjacent to the site is approximately 10.9m as indicated in Figure 3-6). According to the Guideline, the vegetated riparian zone (VRZ) is 30m for a 3rd order stream, therefore the total riparian corridor width (60m + channel width) of Thredbo River in this location is considered to be 70.9m (60m + 10.9m).

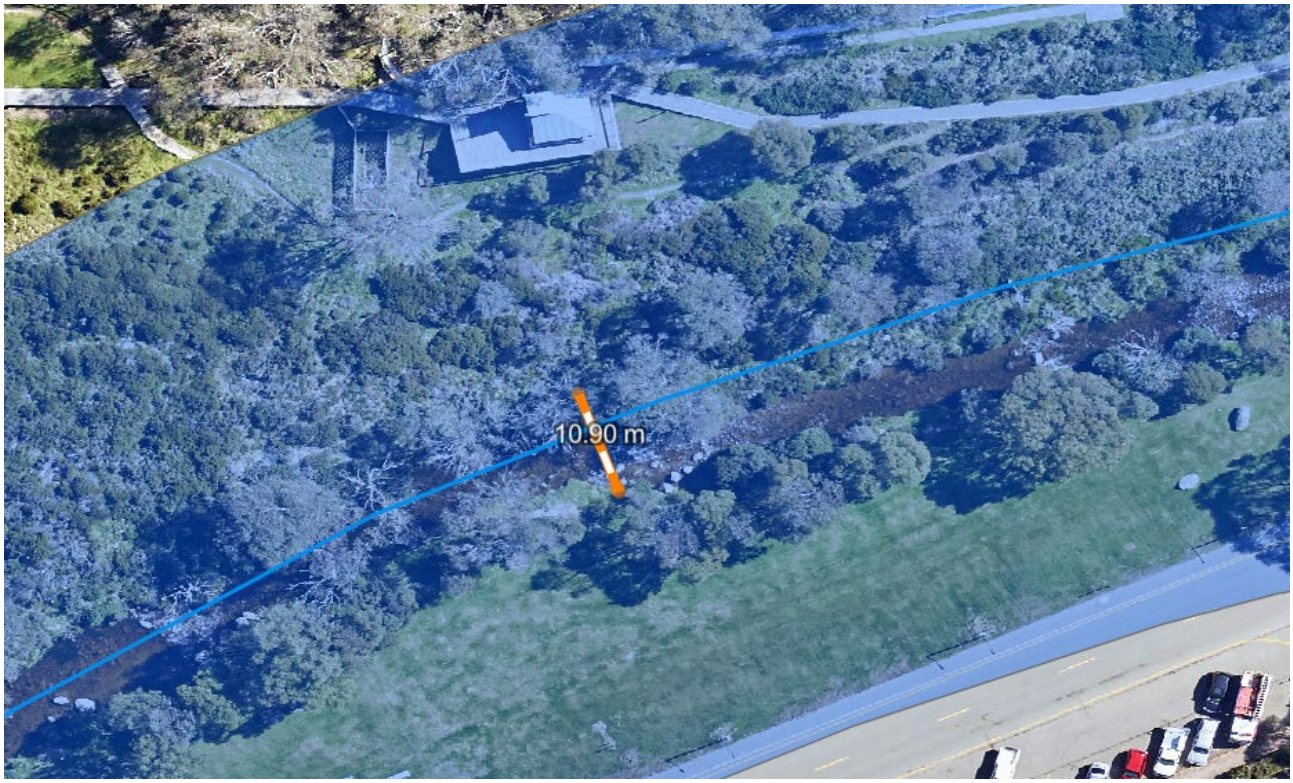


Figure 4-1 Channel width of Thredbo River adjacent to the subject site (NGH, 2023)

As indicated in Figure 4-2, the following works would be carried out within the 30m VRZ:

- Demolition of part of the existing bottom station and bullwheel
- Site stabilisation and rehabilitation works.

The following works would be avoid the 30 m VRZ but would be carried out within 40m of Thredbo River:

- Demolition of the bottom station, fencing around the bullwheel and a section of bobsled track
- Construction of the MTB trail within the disturbed bobsled corridor
- Site stabilisation and rehabilitation works.

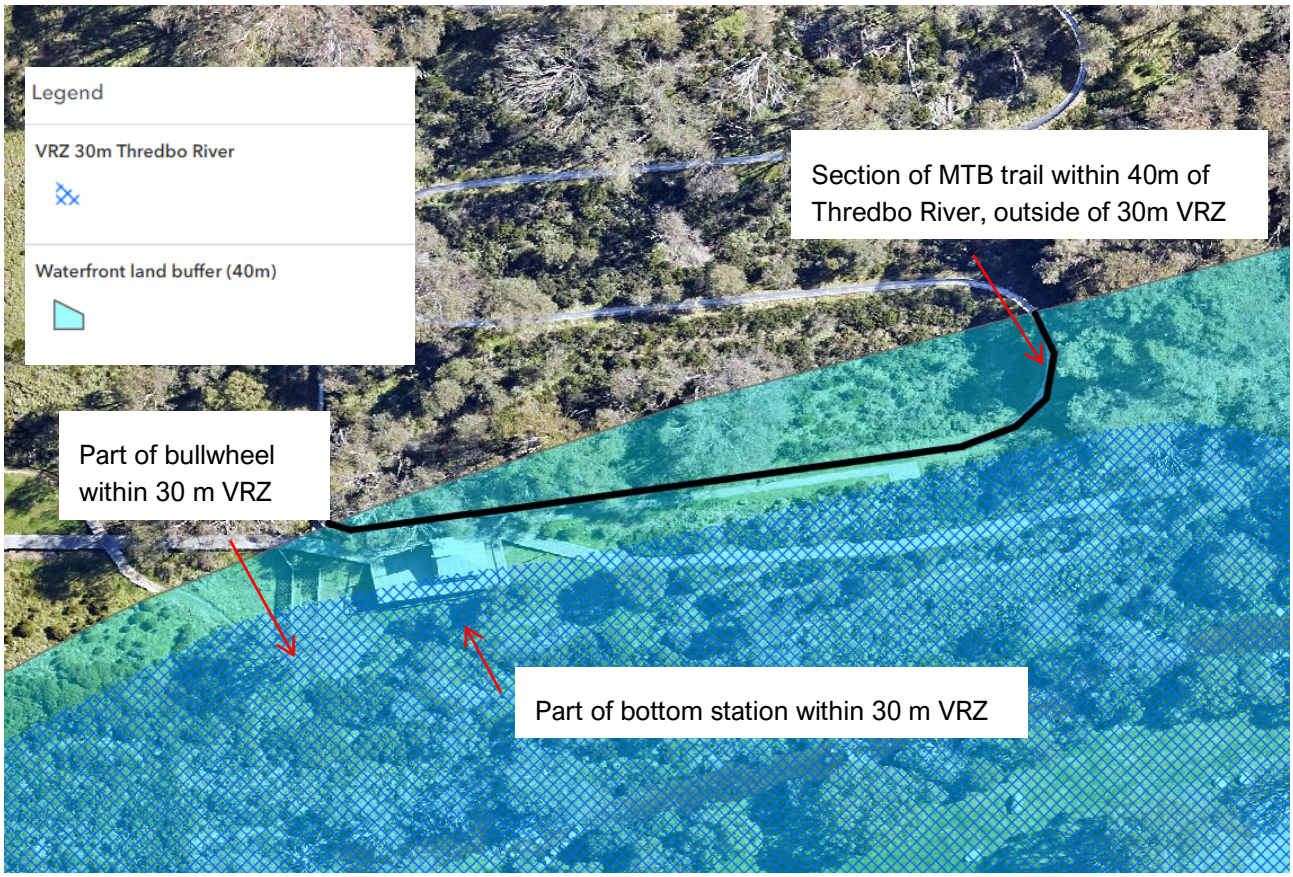


Figure 4-2 30m vegetation riparian zone (VRZ) and waterfront land buffer (40m), Thredbo River

Certain activities are permitted within the riparian corridor if the design criteria outlined in the riparian corridor matrix (Table 2 of the DPE Waterfront land Guidelines) can be met. The proposed works cannot meet the criteria listed in the riparian corridor matrix.

Alternatively, non-riparian uses in the outer 50% of the VRZ are permitted if they can achieve the averaging rule, indicated in Figure 4-3.

In accordance with the averaging rule, non-riparian corridor works and activities (such as recreational areas and infrastructure) can be authorised within the outer riparian corridor, provided the average width of the VRZ can be achieved over the length of the watercourse within the development site. The mountain bike trail would be within the pre-disturbed bobsled infrastructure corridor. Additional areas would not be disturbed. The proposed demolition and trail construction would be within the outer 50% of the VRZ but would not extend to the more sensitive inner 50% area. However, in accordance with the Guideline, an equivalent area connected to the riparian corridor must be offset on the site (Figure 4-3) and the inner 50% of the vegetated riparian zone must be fully protected and vegetated with native endemic riparian plant species.

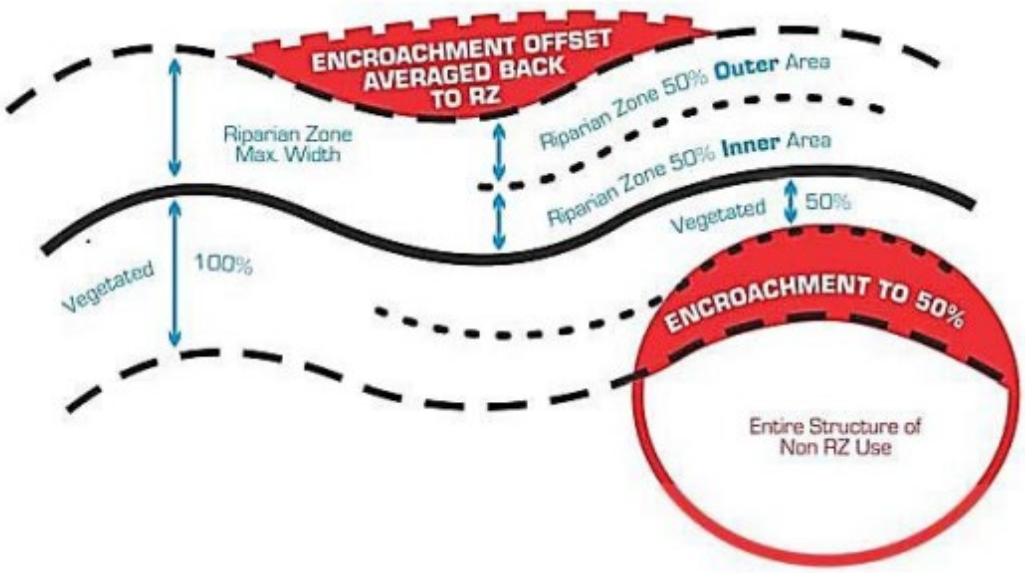


Figure 4-3 Averaging rule (Figure 3 of the DPE Waterfront land Guidelines)

No adverse impacts to the Thredbo River are anticipated given the following:

- Removal of riparian vegetation has been avoided.
- The works on waterfront land comprise of demolition of existing historic structures and would return the site to a state that is more compatible with riparian functions. All disturbed areas would be stabilised and rehabilitated following the works.
- The existing Village Loop mountain bike trail is located between the proposed development footprint and Thredbo River. This trail was constructed in accordance with sustainable trail design principles including permanent erosion controls which act as an additional buffer between the subject site and Thredbo River.
- A controlled activity approval (CAA) would be sought prior to commencement of works. Any imposed conditions in any CAA would be implemented during the works.
- The proposed development would be carried out in accordance with the development consent, CAA conditions and mitigation measures outlined in the SEMP and ESCP.

On balance, the proposed development would have a beneficial impact on riparian land and the Thredbo River. It would return the waterfront land to a more compatible function of recreation, by removal of the bobsled infrastructure and carrying out of rehabilitation works. It is considered that the carrying out of the proposed development would result in no more than temporary, minimal harm to waterfront land. Safeguards and mitigation measures in the SEMP and ESCP would protect the ecological functions of the river and riparian area.

4.2.4. National Parks and Wildlife Act 1974

The Section 81A of the National Parks and Wildlife Act 1974 identifies that lease areas are subject to relevant plans of management. For the subject land the Kosciuszko National Park Plan of Management applies.

81A Leases, licences and easements subject to plan of management

Without limiting the generality of this Part, this Part has effect in respect of any part of a national park, historic site, nature reserve, karst conservation reserve, state conservation area, regional park or Aboriginal area that is the subject of a lease, licence or easement granted under Part 12.

Table 4-2 Consideration of relevant POM provisions

Relevant POM provisions	Comment
5.6 Visitor Services Zone	*5.6.1 Management Objective* *The Visitor Services Zone will be managed as a set of discrete development nodes within which appropriate recreational infrastructure, visitor accommodation and park depots are concentrated.* *These facilities will:* *• Provide interlinked opportunities for visitors to experience, enjoy and understand the values of the park. Within the alpine resorts these will primarily be directed at snow-based recreation; and* *• Principally cater for the needs and interests of visitors seeking short-duration experiences in natural or natural-appearing settings in which they are likely to encounter relatively large numbers of other people.* The works would be consistent with the zoning provisions for the Thredbo resort, as the works allow for the re-use of the bobsled area for outdoor recreation (a mountain bike trail) and would suitably maintain the natural setting. Variations in trail design cater for a wider range of visitors seeking short-duration experiences in natural or natural-appearing setting within the resort area.
6.5 Soils	*6.5.1 Management Objective* *Soil features and processes are protected, and where necessary, managed within the bounds of acceptable limits of disturbance.* The works would be consistent with this objective, minimal soil disturbance is proposed. Included in the supporting documents is an Erosion and Sediment Control Plan to avoid and minimise soil disturbance (refer to Appendix E).
6.6 Rivers and Lakes	*6.6.1 Management Objective* *The environmental condition of all watercourses and waterbodies is maintained or improved.* The works would include removing structures and buildings from the riparian zone and construction of the mountain bike trail. A controlled activity approval would be applied for. Included in the supporting documents is an Erosion and Sediment Control Plan to avoid and minimise impacts to the Thredbo River. Any required rehabilitation within the riparian zone would be carried in accordance with the *Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park.*
6.7 Native Plants	*6.7.1 Management Objective* *Native plant species and communities are maintained and/or rehabilitated and include a representative range of successional stages and age classes.* A Biodiversity Assessment has been completed for the works. The works processes have been designed to avoid and minimise vegetation removal within the works area. Works would be carried out in disturbed areas to avoid vegetation removal as much as possible. Any required rehabilitation within the

	works area would be carried in accordance with the *Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park.*
6.8 Native Animals	*6.8.1 Management Objective* *Viable populations of all native animal species that currently occur in the park are maintained or restored.* A Biodiversity Assessment has been completed for the works. The works processes have been designed to avoid and minimise impacts to native fauna within the works area. Tests of significance have been prepared as part of the Biodiversity Assessment.
7 People and the Landscape	*7.1.1 Management Objective* *The cultural heritage values of the park are protected and managed in a strategic, comprehensive and integrated way.* This SEE is supported by an Aboriginal Cultural Heritage Due Diligence Assessment, refer to Appendix D.
8 Recreation	*8.1.1 Management Objective* *Opportunities are provided for visitors to undertake a wide range of recreational activities at places and in ways that optimise the quality of the experiences available, while minimising adverse impacts upon the values of the park and conflicts with other users.* *8.8.1 Management Objective* *Resort-based recreation is based upon enjoyment and appreciation of the natural and cultural values of the park and is managed in accordance with all relevant planning instruments.* The bobsled demolition allows for re-use of the area for recreational purposes, consistent with the values for the park. The trail has been designed to minimise any potential conflict with other users, specifically inclusion of appropriate separation by distance or structures.
Part B Management Strategies (Chapter 10)	Thredbo alpine resort is identified in the POM as an area of exceptional recreational significance. Detailed provisions concerning the management of Thredbo is provided in Chapter 10 of Part B of the POM. *10.2 Alpine Resorts Management Units* *10.2.1 Management Objective* *The alpine resorts provide for a range of principally snow-based recreational opportunities that promote enjoyment, understanding and appreciation of the natural and cultural values of the park.* *10.2.2 Management Objective* *All activities, facilities and services provided in the alpine resort management units meet environmental health and safety obligations.* *10.4 Thredbo Management Unit* *10.4.1 Management Objective*

	The Thredbo Management Unit is managed so as to provide opportunities for visitors to enjoy, understand and appreciate the values of the park in ways that minimise adverse impacts. The works are consistent with the relevant management unit provisions as the works area would be upgraded for re-use as a recreational area (mountain bike trail). The existing bobsled facilities would be removed consistent with environmental health and safety obligations.

4.2.5. State Environmental Planning Policy (Precincts—Regional) 2021

The subject land is within the Kosciuszko National Park. The provisions of Chapter 4 Kosciuszko Alpine Region under the State Environmental Planning Policy (Precincts—Regional) 2021 apply.

Relevant provisions	Response
4.4 Consent authority	The Minister is the consent authority for the proposed development.
4.6 Relationship with other environmental planning instruments ***(2) The following environmental planning instruments do not apply to land to which this Chapter applies—*** ***(a) Snowy River Local Environmental Plan 2013.***	The SEPP applies to the subject land and the LEP does not.
4.7 Land Use Table (Permissibility of the development)	The proposed demolition is addressed under section 4.9 of the SEPP below. The proposed mountain bike trail is defined as recreation facilities (outdoor), which are permitted with consent in the Land Use Table for Thredbo. Definition in Schedule 4A – Chapter 4 of the Precincts – Regional SEPP includes: *recreation infrastructure means infrastructure provided for the purposes of active or passive recreation for tourists and visitors, including walking trails, mountain bike trails, directional signage, cross-country ski trails and oversnow routes, but does not include ski slopes.*
4.9 Demolition ***The demolition of a building or work on land in the Alpine Region may be carried out only with development consent.***	The accompanying application seeks development consent for the proposed demolition of the bobsled infrastructure.
4.17 Classified roads ***(1) The objectives of this section are as follows—***	The site does not directly front a classified public road.

(a) to ensure that development does not compromise the effective and ongoing operation and function of classified roads, ***(b) to prevent or reduce the potential impact of traffic noise and vehicle emissions on development adjacent to classified roads.***	
4.18 Bushfire hazard reduction ***Bushfire hazard reduction work authorised by the Rural Fires Act 1997 is permitted without development consent in the Alpine Region.*** ***Note—*** ***The Rural Fires Act 1997 also makes provision relating to the carrying out of development on bushfire prone land.***	There is no bushfire hazard reduction works proposed. This SEE has considered the undertaking of the works on bushfire prone land, refer to section 3.5.
4.19 Public utility infrastructure ***(1) Development consent must not be granted for development in the Alpine Region unless the consent authority is satisfied that—*** ***(a) the public utility infrastructure that is essential for the proposed development is available, or*** ***(b) adequate arrangements have been made to make that infrastructure available when required.***	The bobsled demolition includes the making safe of any connections and disconnections as required. Appropriate services are available for any future development. No service connections are proposed for the mountain bike trail.
4.21 Heritage conservation ***(1) The objective of this section is to conserve—*** ***(a) the environmental heritage of the Alpine Region, and*** ***(b) the heritage significance of heritage items, including associated fabric, settings and views, and*** ***(c) Aboriginal heritage items and Aboriginal places.***	This SEE includes a supporting Aboriginal cultural heritage due diligence assessment, refer to section 3.8 for the summary of findings and full report at **Error! Reference source not found.**. The proposed works are consistent with the objective of this clause because there are no expected impacts to Aboriginal heritage items and proper processes have been followed with recommendations made to avoid impacts.
4.25 Earthworks ***(1) The objective of this section is to ensure that earthworks for which development consent is required will not have a detrimental impact on environmental functions and processes, neighbouring uses, cultural or heritage items or features of the surrounding land.*** ***(2) Development consent is required for earthworks in the Alpine Region unless—***	Minimal earthworks are included to make good the ground and fill holes where footings are removed, and where the bobsled track has been positioned partly in the ground within a shallow trench, works also include landscaping structures for the mountain bike trail construction to create a safe riding environment. The rehabilitation as per the Rehabilitation Guidelines for the Resorts Areas of Kosciuszko National Park (2007) (https://www.environment.nsw.gov.au/research-and-publications/publications-search/rehabilitation-

(a) the earthworks are exempt development under this Chapter or another environmental planning instrument, or ***(b) the earthworks are ancillary to—*** ***(i) development permitted without consent under this Chapter, or*** ***(ii) development for which development consent has been given.*** ***(3) In deciding whether to grant development consent for earthworks, or for development involving ancillary earthworks, the consent authority must consider the following matters—*** ***(a) the likely disruption of, or adverse impact on, drainage patterns and soil stability in the locality of the development,*** ***(b) the effect of the development on the likely future use or redevelopment of the land,*** ***(c) the quality of the fill or the soil to be excavated, or both,*** ***(d) the effect of the development on the existing and likely amenity of adjoining properties,*** ***(e) the source of any fill material and the destination of any excavated material,*** ***(f) the likelihood of disturbing relics,*** ***(g) the proximity to, and potential for adverse impacts on, a waterway, drinking water catchment or environmentally sensitive area,*** ***(h) appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.***	guidelines-for-the-resort-areas-of-kosciuszko-national-park) Any soil stockpiling within the designated collection areas, as mapped in Figure 2 1 or the Friday Flat laydown area shown in Figure 2 2 would be managed in accordance with the Soil Stockpile Guidelines for the Resort Areas of Kosciuszko National Park (2017).
4.26 Master plans ***(1) The Minister must prepare and approve a master plan that applies to the Alpine Region.*** ***(2) The master plan must contain the following information—*** ***(a) the strategic vision and general objectives for the Alpine Region,*** ***(b) a map showing existing and proposed types of development,*** ***(c) the performance criteria for development,*** ***(d) information about heritage items or places of heritage significance,***	Refer to section 4.2.5 which addresses the adopted Master Plan for the Alpine Region.

(e) limitations on development on certain land, including environmentally sensitive areas, land prone to flooding and cultural heritage.	
4.27 Consultation with National Parks and Wildlife Service ***(1) Development consent must not be granted to development in the Alpine Region unless the consent authority has—*** ***(a) consulted with the National Parks and Wildlife Service, and*** ***(b) considered submissions received from the National Parks and Wildlife Service within the relevant period.*** ***(2) In this section—*** ***relevant period means—*** ***(a) 28 days after notice of the development application is given to the National Parks and Wildlife Service, or*** ***(b) another period determined by the Planning Secretary.***	It is understood DPE staff would consult with NPWS about the proposed works. The KNP POM has been addressed in the following section of the SEE.
4.28 Consideration of master plans and other documents ***(1) In deciding whether to grant development consent to development in the Alpine Region, the consent authority must consider the following—*** ***(a) the aim and objectives of this Chapter set out in section 4.1,*** ***(b) a draft development control plan that is intended to apply to the land and has been published on the NSW planning portal,*** ***(c) a conservation agreement under the Environment Protection and Biodiversity Conservation Act 1999 of the Commonwealth that applies to the land,*** ***(d) the Geotechnical Policy —Kosciuszko Alpine Resorts published by the Department in November 2003,*** ***(2) In deciding whether to grant development consent to development in the Alpine Region, the consent authority must consider—*** ***(a) a master plan approved by the Minister under section 4.26 that applies to the land, or*** ***(b) if a master plan has not been approved—a draft master plan prepared under section 4.26***	The works are consistent with the aims of Section 4.1 the SEPP to protect and enhance the Alpine Region by proposing appropriately managed works specifically relating to biodiversity and the natural environment setting. The works are consistent with the objectives as the refreshed site would be available to support sustainable tourism in the Alpine Region all year round. This SEE has considered the environmental, social, or economic impacts on the natural or cultural environment of the Alpine Region, including cumulative impacts on the environment and there are no likely adverse impacts and works would be appropriately managed. The supporting Form 4 has addressed the Geotechnical Policy-Kosciuszko Alpine Resorts. The EPBC Act provisions have been addressed in the biodiversity assessment for the works. No referral to the Commonwealth Minister is considered necessary in this instance. The Master Plan has been addressed in the following section.

that is intended to apply to the land and has been published on the NSW planning portal.	
4.29 Consideration of environmental, geotechnical and other matters ***(1) In deciding whether to grant development consent to development in the Alpine Region, the consent authority must consider the following—*** ***(a) measures proposed to address geotechnical issues relating to the development,*** ***(b) the extent to which the development will achieve an appropriate balance between—*** ***(i) the conservation of the natural environment, and*** ***(ii) taking measures to mitigate environmental hazards, including geotechnical hazards, bushfires and flooding,*** ***(c) the visual impact of the proposed development, particularly when viewed from the land identified as the Main Range Management Unit in the Kosciuszko National Park Plan of Management,*** ***(d) the cumulative impacts of development and resource use on the environment of the Alpine Subregion in which the development is carried out,*** ***(e) the capacity of existing infrastructure and services for transport to and within the Alpine Region to deal with additional usage generated by the development, including in peak periods,*** ***(f) the capacity of existing waste or resource management facilities to deal with additional waste generated by the development, including in peak periods.*** ***(2) For development involving earthworks or stormwater draining works, the consent authority must also consider measures to mitigate adverse impacts associated with the works.*** ***(3) For development the consent authority considers will significantly alter the character of an Alpine Subregion, the consent authority must also consider—*** ***(a) the existing character of the site and immediate surroundings, and*** ***(b) how the development will relate to the Alpine Subregion.***	The supporting documents include the Geotechnical Investigation & Slope Stability Risk Assessment prepared by suitably qualified engineers addressing the development risk. The SEMP, Demolition Work Plan, Geotechnical Investigation & Slope Stability Risk Assessment and ESCP show how the works would be managed. The SEMP would include measures for the protection of biodiversity and appropriate fire management for the risks associated with demolition. The proposed demolition would improve visual impacts on the natural setting with the removal of the dilapidated building and structures. Minimal resources would be needed to complete the works and where possible materials would be recycled. Any disturbed areas would be rehabilitated as necessary to minimise erosion. No change of use is proposed, and cumulative impacts (for example vegetation removal, additional construction traffic, use of accommodation by workers) are expected to be minimal.

4.30 Kosciuszko National Park Plan of Management ***(1) Development consent may be granted to development in the Alpine Region even if the application has not established that the development is consistent with the Kosciuszko National Park Plan of Management.*** ***(2) This section does not prevent the consent authority from refusing to grant consent to development on the basis that the development is not consistent with the Kosciuszko National Park Plan of Management.*** ***Note—*** ***Under the National Parks and Wildlife Act 1974, section 81(4), operations on land to which a plan of management under that Act applies may be undertaken only if they are undertaken in accordance with the plan of management, despite another Act or an instrument made under an Act.***	The proposal is consistent with the KPOM, as addressed in the following section of the SEE.

Snowy Mountains Special Activation Precinct Master Plan

The Snowy Mountains Special Activation Precinct Master Plan (Master Plan) applies to Thredbo. The criteria and controls from the Master Plan relevant to the proposal have been considered and are addressed in Table 4-3.

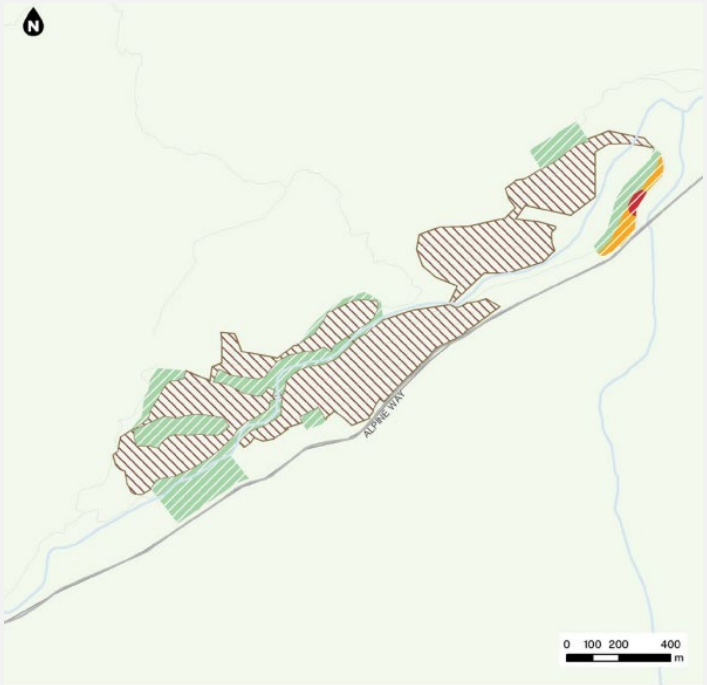
Table 4-3 Consideration of relevant Master Plan criteria and controls

Relevant Master Plan provisions	Comment
Section 9 Structure Plans	The proposed demolition of the bobsled is not inconsistent with the structure plans for Thredbo. The proposed bike trail is a use (recreation) that is considered consistent with the Master Plan.
Section 10 Alpine Precinct provisions	**10.1 Land Use** **Performance Criteria** ***A.*** *Development is to be permissible and consistent with the Master Plan, Precincts—Regional SEPP, Alpine Development Control Plan, Kosciuszko National Park Plan of Management, and the National Parks and Wildlife Act.* ***B.*** *In considering the suitability of the development, the consent authority must be satisfied that the development meets the performance criteria and development controls in this Master Plan and in the Alpine Development Control Plan.* The proposed demolition and trail construction are permissible and consistent with relevant documents as described in this SEE. The development addresses the Master Plan, there is currently no Alpine Development Control Plan available to be addressed.

	10.2 Alpine Resorts **Performance Criteria** ***D.*** *Development should be designed to reduce on-site power consumption and improve environmental performance.* ***E.*** *Development should be designed to contribute to the alpine character of the Alpine Resorts and reflect the alpine landscape and natural environment.* The proposed demolition would reduce on-site power consumption with the ceasing of operation of the bobsled. The works would be carried out in a manner that appropriately responds to the unique sensitive natural environment and landscape. **10.3 Alpine Accommodation** **Performance Criteria** ***C.*** *Development should be designed and staged to support and enable the ultimate growth of accommodation and attractions in the Alpine Region.* ***G****. Visitor attractions should be designed and staged to support and enable the ultimate growth of attractions in the Alpine Region.* KT have proposed the bobsled demolition to support and enable the ultimate growth of attractions in the Thredbo resort area and provide variation in mountain bike trail design to cater for a greater range of visitors.
Section 11 Environment and sustainability	**11.1 Biodiversity** **Performance Criteria** ***A.*** *All development is to apply the avoid, minimise and offset methodology.* ***B.*** *Development is to avoid threatened ecological communities and threatened species habitat; such vegetation should not be removed. Development may occur in these areas if it is for essential infrastructure.* ***D.*** *Development should be concentrated in and around already disturbed areas. Where possible, development should provide a buffer between areas of high ecological value and buildings and structures.* ***E.*** *Development should consider the biodiversity impacts of bushfire asset protection zones (APZ) and associated vegetation management.* ***F.*** *Development must offset any impacts to biodiversity through direct management measures within Kosciuszko National Park and should be related to the biodiversity impacted.* ***G.*** *Riparian corridors must be preserved while ensuring consistency with the proposed Flooding and Drainage Strategy for the Precinct.* ***H.*** *Any revegetation or planting within Kosciuszko National Park should follow the Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park.* The bobsled is not within the surveyed areas mapped in the Master Plan. Additional surveys have been completed for the works to avoid and minimise impacts to biodiversity. Vegetation removal would be to the minimum necessary to remove the bobsled track and associated

	structures. Works would be contained to cleared areas as much as or completely where possible and avoid additional clearing. The potential for bushfire has been considered and no clearing for this purpose is proposed. No need for offsets has been identified. Minimal demolition and construction works are proposed within the Thredbo River riparian area a CAA would be applied for prior to construction. Any rehabilitation necessary would be carried out in accordance with the *Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park.* **11.2 Geotechnical** **Performance Criteria** ***A.*** *Development must address the requirements of the Geotechnical Policy – Kosciuszko National Park (DPNIR, 2003). This includes:* *i. development on land covered by the geotechnical maps, under the above policy must ensure the requirements of the policy are met.* *ii. development on land not covered by the geotechnical maps under the above policy must ensure the requirements of the policy are met and should also use the risk susceptibility mapping to inform the requirements and design of development.* ***B.*** *Development must include an assessment of geotechnical risks.* ***C.*** *Buildings and structures must be designed to accommodate the specific geotechnical risks identified for the site.* The *Geotechnical Policy Kosciuszko Alpine Resorts* has been considered. The proposal includes minor earthworks and minor demolition works presenting minimal or no geotechnical impact on the site or related land – see form 4 included in the documents set submitted with this SEE. ***11.4 Water Quality*** ***Performance Criteria*** ***A.*** *Maintain or improve the ecological condition of waterbodies and their riparian zones in catchments over the long term.* ***B.*** *Development in the Alpine Precinct should implement on-site water management and water quality systems through: i. the capture and re-use of water on-site. ii. the treatment of water on-site with any water discharged back into catchments having a neutral or beneficial effect on water quality. iii. incorporating water sensitive urban design principles into the development's-built form and landscaping, where possible.* ***C.*** *The quality of stormwater discharged into receiving catchments must be pre-development quality or better in relation to pH, total suspended solids, total phosphorus, total nitrogen and gross pollutants. The quality of water should aim to meet the following targets: i. Total Suspended Solids: 85% reduction. ii. Total Phosphorus: 60% reduction. iii. Total Nitrogen: 45% reduction.* ***D.*** *The quality of water discharged into receiving catchments should maintain electrical conductivity levels. Water quality should aim to maintain an electrical conductivity below the 30 µS/cm ANZG 2018 Guideline value for upland rivers of South-East Australia.*

	E. *Monitor macroinvertebrates to ensure they are consistently within Band A of the NSW AUSRIVAS model.* ***F.*** *Erosion and sediment control should be managed during construction to ensure impacts to waterways are minimised in accordance with Managing Urban Stormwater Soils and Construction, also known as the Blue Book (current edition).* ***G.*** *Discharge of wastewater and/or contaminated stormwater to watercourses or waterways is not permitted unless other specified in an environmental protection licence issued under the Protection of the Environment Operations Act 1997. Development must obtain the appropriate water licenses in accordance with the Water Act 1912 and the Water Management Act 2000 and consider the relevant Water Sharing Plan.* The proposal includes removal of bobsled structures and buildings, and trail construction works within the riparian area of the Thredbo River. An Erosion and Sediment Control Plan (ESCP) complying with the Performance Criteria has been prepared for the proposed works and is included in the documents set submitted with this SEE. **11.5 Bushfire** **Performance Criteria** ***A.*** *Development is to:* *i. minimise perimeters exposed to the bushfire hazard.* *ii. minimise vegetated corridors that permit the passage of bushfire towards development.* *iii. provide for the siting of future development away from ridge-tops and steep slopes, within saddles and narrow ridge crests. iv. ensure capacity of existing infrastructure (such as roads and utilities) can accommodate the increase in demand during emergencies as a result of the development.* ***B.*** *Asset Protection Zones are to be provided and maintained between a bushfire hazard and future development and are designed to address the relevant bushfire attack mechanisms.* ***C.*** *Adequate access is to be provided from all properties to the wider road network for park users emergency services and to provide access to hazard vegetation to facilitate bushfire mitigation works and fire suppression.* The works comply with the NSW Rural Fire Service' Planning for Bushfire Protection 2019, refer to Table 3-1 for the relevant proposed measures. **11.6 Sustainability and climate change** **Performance Criteria** **B.** *Development should preserve the Precincts landscape, cultural, heritage and biodiversity values by avoiding and minimising impact.* This SEE and supporting documents have considered the works impacts and included measures to minimise and avoid impacts to landscape, cultural, heritage and biodiversity values.

Section 12 Place and landscape	**12.1 Aboriginal Cultural Heritage** **Performance Criteria** ***A.*** *Areas of Aboriginal cultural heritage (included as part of the environmentally sensitive areas map) should not be developed. Development may occur in these areas if it is for essential infrastructure and where further Aboriginal cultural heritage assessment will be undertaken to appropriately mitigate and manage any impacts to Aboriginal cultural heritage items, places or areas.* ***C.*** *Development in areas where surveys have not been undertaken require further Aboriginal cultural heritage assessment. These assessments must be carried out in accordance with Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (as modified from time to time) prior to any development on this land. These assessments must include a visual survey of the land. Once suitably assessed, any land identified as having Aboriginal cultural heritage significance should be included on the Environmentally Sensitive Areas (ESA) map.* *i. development within areas identified as 'disturbed land' do not require any further investigation beyond considering the potential for subsurface archaeological deposits. If current disturbances are considered to cover intact archaeological deposits, further investigation should take place that may include test excavation. Should development encounter any unexpected finds during construction, the procedures under the relevant unexpected finds protocol should be followed.*  **Figure 58:** Aboriginal Cultural Heritage (ACH) potential - Thredbo Road Waterway ACH high potential ACH moderate potential ACH low potential Disturbed land

	The lower portion of the bobsled may be within areas identified as low potential, however, works are proposed in unmapped areas as such an assessment of Aboriginal cultural heritage has been undertaken for the entire bobsled area in the form of a desktop due diligence assessment, refer to Appendix D. **12.2 Historic heritage** The lower portion of the bobsled may be within areas identified as low risk. **12.3 Landscape, character and open space** **Performance Criteria** ***B.*** *Development should protect, conserve and enhance the Alpine Precinct's natural environment and create a green infrastructure network, where possible.* ***D.*** *Revegetation and new plantings should follow the Rehabilitation guidelines for the Resort Areas of Kosciuszko National Park.* The SEMP includes measures to protect and conserve the natural environment. All relevant disturbed areas would be rehabilitated in accordance with the Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park (NGH 2007).

4.2.6. State Environmental Planning Policies

Other State Environmental Planning Policies (SEPPs) relevant to the proposal have been considered and are addressed in Table 4-4.

Table 4-4 Consideration of relevant SEPPs

Relevant SEPP and provisions	Comment
State Environmental Planning Policy (Transport and Infrastructure) 2021	*2.48 Determination of development applications—other development* *(1) This section applies to a development application (or an application for modification of a consent) for development comprising or involving any of the following—* *(a) the penetration of ground within 2m of an underground electricity power line or an electricity distribution pole or within 10m of any part of an electricity tower,* *(b) development carried out—* *(i) within or immediately adjacent to an easement for electricity purposes (whether or not the electricity infrastructure exists), or* *(ii) immediately adjacent to an electricity substation, or* *(iii) within 5m of an exposed overhead electricity power line,* *(2) Before determining a development application (or an application for modification of a consent) for development to which this section applies, the consent authority must—*

	(a) give written notice to the electricity supply authority for the area in which the development is to be carried out, inviting comments about potential safety risks, and *(b) take into consideration any response to the notice that is received within 21 days after the notice is given.* The development would involve the removal of existing infrastructure which may be located within 2m of a High Voltage underground electricity line. The contractor would follow the safety requirements of the electricity authority.

4.3. Local Planning controls

4.3.1. Snowy River Local Environmental Plan 2013

The State Environmental Planning Policy (Precincts—Regional) 2021 confirms that the Snowy River Local Environmental Plan 2013 (LEP) no longer applies to the subject land.

4.3.2. Development Control Plans

The Snowy Mountains Special Activation Precinct Master Plan (DPE, 2022) identifies that an Alpine Development Control Plan would be developed. As this document is not yet complete, there is no DCP relevant to the works. It is noted that the State Environmental Planning Policy (Precincts—Regional) 2021 prevails over any Development Control Plan, refer to Table 4-4 for relevant SEPP provisions.

5. Environmental assessment summary

The recommended mitigation measures that can be incorporated in the Site Environmental Management Plan are summarised in Table 5-1.

Table 5-1 Summary of potential environmental effects and mitigation measures proposed

Primary Matters	Comment	Safeguards and Mitigation Measures
Context and setting	The inclusion of a site compound and parking area for workers at Friday Flat would minimise impacts to the environment surrounding the bobsled and to near accommodation sites.	The SEMP details the construction corridor and dedicated stockpile sites and material storage areas.
Visual effect	The works would remove buildings and structures associated with the bobsled, improving the natural state of the area. The site would be stabilised and left in a suitable state that would minimise adverse visual effects.	Demolition would be carried out in accordance with the relevant standards. No specific visual mitigation measures are proposed. All disturbed areas would be rehabilitated in accordance with the Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park (NGH 2007).
Access and Traffic	Traffic access at the site would be from restricted vehicle areas, not from public roads. Limited additional vehicles would be expected in the context of the resort and National Park.	Relevant management measures are included in the SEMP. Safe management of traffic with respect of existing road users would be the responsibility of the approved contractor.
Heritage (Aboriginal Cultural heritage and historic built heritage)	The proposed activity is unlikely to harm Aboriginal objects and further archaeological assessment is not required. There is no historic heritage mapped within the works area.	The recommendations of the Aboriginal heritage due diligence assessment are included in SEMP.
Biodiversity	There is a potential impact on threatened species, however none of them would be significantly impacted if mitigation measures are implemented. The biodiversity assessment concluded that the BOS is not triggered.	The recommended mitigation measures identified in the biodiversity assessment are included in the SEMP.
Noise and Vibration	There are no expected noise or vibration impacts from the works.	Noise from the works would be limited by the proposed construction hours. • Monday to Friday: 7am-6pm • Saturday: 8am-1pm

		• Sundays or public holidays: No work Appropriate construction noise mitigations are to be implemented in accordance with *Australian Standard AS 2436-2010 Guide to noise and vibration control on construction, demolition and maintenance sites*.
Social and Economic impacts	The works are consistent with the Precincts Regional SEPP and activation of areas to suit a variety of users. Provision of outdoor recreation activities support accommodation and commercial uses in the area.	No measures are proposed.
Infrastructure	Services would be safely disconnected.	Works would be completed by appropriately licenced contractors. Any utility comments or conditions would be included in the SEMP as needed.
Construction	General construction impacts are expected as outlined in this SEE.	The SEMP outlines how construction activities would be managed.
Soil and Water	Works would be within 40m of the Thredbo River. Earthworks are also proposed that could result in erosion and sedimentation.	No works within waterfront land are to be carried out without a Controlled Activity Approval. An ESCP has been prepared for the works.
Air quality	There are no expected air quality impacts.	Dust mitigation and management measures for demolition and construction works are included in the SEMP.
Hazards	There are no known hazards or contamination present.	No measures are proposed.
Waste	Waste generation from demolition and construction is proposed to be minimal with the majority of materials proposed to be reused or recycled.	The proponent would comply with relevant waste management and disposal standards. Waste storage and disposal requirements are outlined in the SEMP.
Hazardous goods and materials	No asbestos is known to be present in the bobsled buildings or structures.	An unexpected finds protocol for potential contamination is included in the SEMP.
Landscaping	Areas would be disturbed as part of completing the works. Areas to be disturbed are generally limited to existing cleared areas.	All rehabilitation would be in accordance with the Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park (NGH 2007).

6. Conclusion

The proposed bobsled demolition and redevelopment as a mountain bike trail meets the relevant requirements of Section 4.15 of the Environmental Planning and Assessment Act 1979 and provisions of the State Environmental Planning Policy (Precincts—Regional) 2021. The proposed development has taken into consideration environmental and amenity factors relevant for to the Thredbo Alpine Resort and National Park setting.

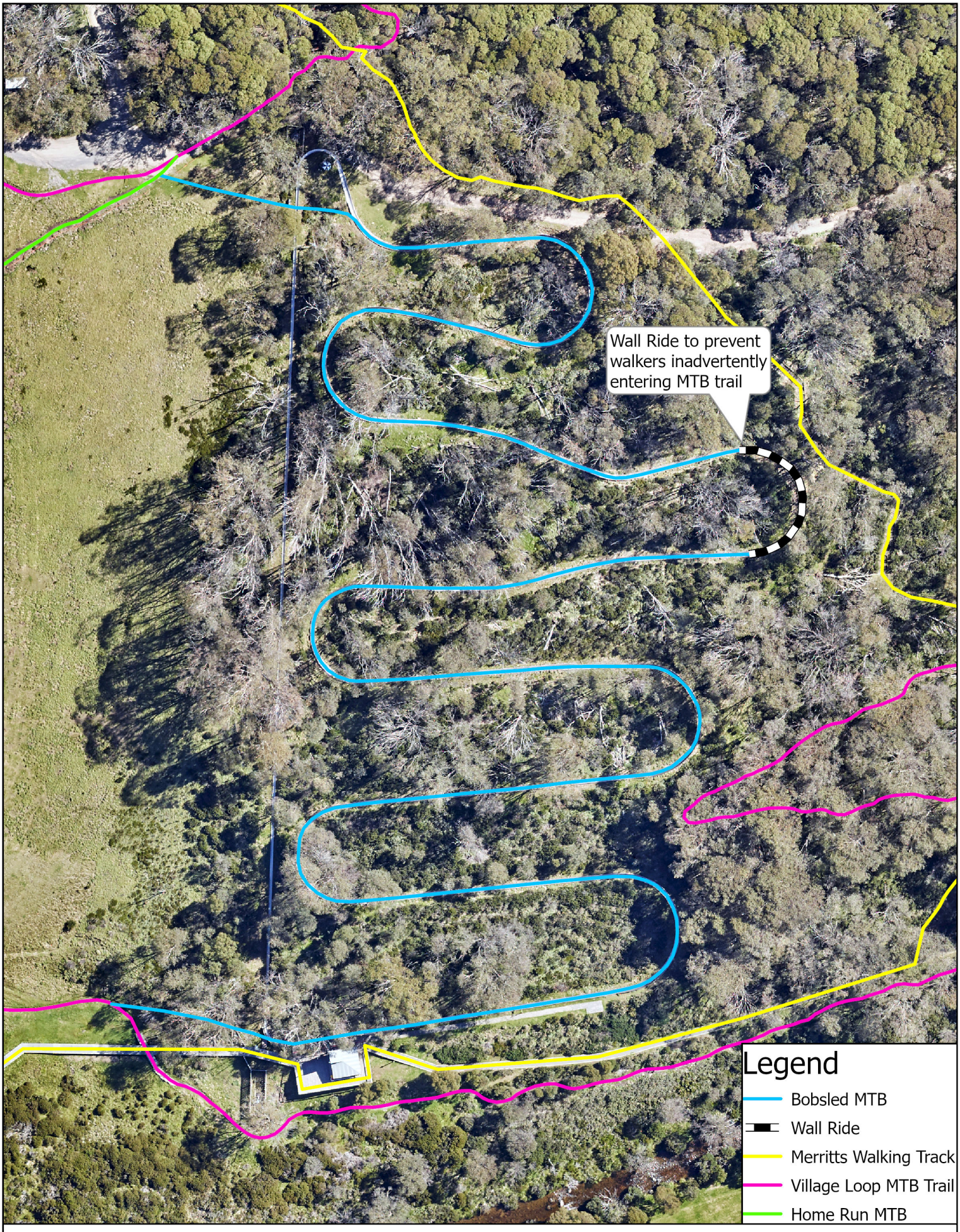
The development is considered consistent with the Kosciusko National Park Plan of Management and is expected to have minimal environmental and amenity impacts. The proposed development specifically would:

- Not have any significant impacts on threatened species.
- Be suitable for the bushfire risk of the area.
- Not have any expected impact to Aboriginal heritage.
- Implement the conditions of any controlled activity approval for works proposed within 40m of the Thredbo River.

The proposed development would have a positive impact on the community and local economy through redevelopment of assets, that is more aligned with the vision and provisions of the Snowy Mountains Special Activation Precinct Master Plan.

This SEE and all supporting documents have shown that there are reasonable grounds for the Minister to grant consent for the development. The safeguards and mitigation measures committed to by the applicant in this SEE would provide for development that is in the public interest.

Appendix A Proposal Plans



Scale: 1:907

6.5 3.250 6.5 13 19.5 26

Meters

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

N

THREDBO

SITE PLAN

Project: Proposed Bobsled MTB Trail

Revision: 1

Date: 22/06/2023

Produced By: BB

Scale: 1:1,034

10 5 0 10 20 30 40

Meters

Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 2020 MGA Zone 55

N

THREDBO

LOWER OVERFLOW CARPARK STOCKPILE SITE

Project: DA 22-11272 Alpine Coaster

Revision: A

Date: 20/03/2023

Produced By: BB

Appendix B Trail Design and Construction Techniques

Trail Design Elements and Construction Techniques	
Berm	
Decision point sign	

Partial and full bench	 **Hillside before trail:** Vegetation keeps water sheeting slowly downhill **Incomplete Full Bench:** Left with unfinished vertical cut, soil will slough off, making tread narrower. Obtrusive back cut also forces rider to outside of tread. **Full Bench Cut:** Entire tread width is cut into firm mineral soil. Tread compacts uniformly and is sustainable. 5% outslope ensures water sheets across tread. Back cut is blended into back slope. Proper back slope, out slope and full bench cut minimize maintenance. Source: IMBA 2001
Outslope	
Rock armour	

Natural feature	
Half rule	

Grade reversals	
Drainage	

Appendix C Biodiversity report

Department of Planning
Housing and Infrastructure

Issued under the Environmental Planning and Assessment Act 1979

Approved Application No DA 24/1485

Granted on the 26 July 2024

Signed V Di Bono

Sheet No 7 of 11

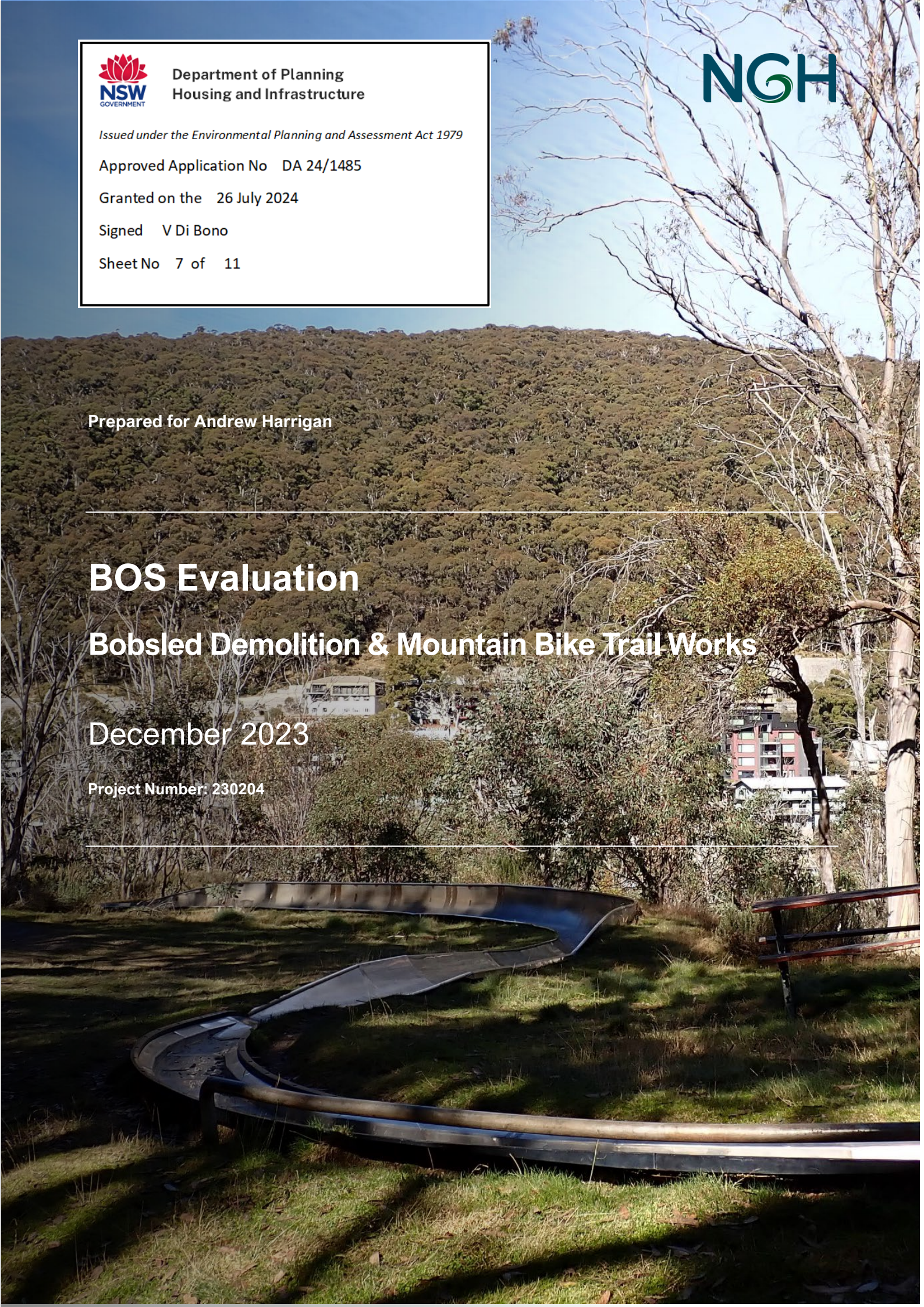
Prepared for Andrew Harrigan

BOS Evaluation

Bobsled Demolition & Mountain Bike Trail Works

December 2023

Project Number: 230204



Document verification

Project Title:	Bobsled Demolition & Mountain Bike Trail Works
Project Number:	230204
Project File Name:	

Revision	Date	Prepared by	Reviewed by	Approved by
Draft V2	12/12/2023	Bianca Heinze	Gillian Young (BAAS 17086)	Gillian Young (BAAS 17086)
Draft V1.0	18/07/2023	Dylan Robertson	Beth Noel (BASS19015)	Beth Noel (BASS19015)
	[Enter the date]			

NGH Pty Ltd is committed to environmentally sustainable practices, including fostering a digital culture and minimising printing. Where printing is unavoidable, NGH prints on 100% recycled paper.

Table of Contents

Figures

Tables

Acronyms and abbreviations

ASL	Above sea level
BC Act	*Biodiversity Conservation Act 2016* (NSW)
BOS	Biodiversity Offset Scheme
BV Mapping	Biodiversity Values Mapping
CE	Critically endangered
Cwth	Commonwealth
DAWE	Department of Agriculture, Water and the Environment (Cwth) (formerly DoEE)
DBH	Diameter at breast height
DCCEEW	Department of Climate Change, Energy, the Environment and Water (formerly DAWE)
DPE	Department of Planning and Environment (NSW)
E	Endangered
EEC	Endangered ecological community – as defined under relevant law applying to the proposal
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cwth)
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
GDA	Geographic Datum of Australia
GIS	Geographic information system
ha	hectares
km	kilometres
LEP	Local Environment Plan
LGA	Local government area
m	metres
MNES	Matters of national environmental significance
OEH	(Former) Office of Environment and Heritage (NSW) (now EES)

PMST	Protected matters search tool
Sp/spp	Species/multiple species
TEC	Threatened ecological community
V	Vulnerable

Terminology

When conducting a biodiversity assessment, the terminology varies for direct and indirect impact areas depending on the legal pathway used. For this report, the terminology used is shown below.

Description of impact	**Terminology used in this report (under BAM 20)**
Direct	Development footprint
Indirect	Subject Land
Local – 10km radius	Study area

1. Introduction

1.1. Proposal background

This Biodiversity Offset Scheme (BOS) Evaluation has been prepared to support the Development Application for the Bobsled demolition and mountain bike trail works ('the proposal') proposed at Thredbo Alpine Resort, Thredbo NSW. This assessment is based on a provisional concept design provided to NGH on the 27/06/2023 by Kosciuszko Thredbo.

The subject land is located within Lot 876/DP1243112, known as the Thredbo Head Lease, within Kosciuszko National Park. The project is to be assessed under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) including the assessment of triggers for the Biodiversity Offset Scheme (BOS) under the *Biodiversity Conservation Act 2016*.

1.2. Proposal description

The subject land is located 120 metres (m) north from the Thredbo Information Centre in the town centre. The gently south sloping land is occupied by native forest bounded by Merritts Nature Track on the north, east and south, with the western boundary grassland. The site comprises the existing bobsled track and associated infrastructure, surrounded by native vegetation, Thredbo River, recreational infrastructure, access tracks and ski runs. The proposal will involve:

a) Removal of the existing bobsled track and station.
b) Construction of a Mountain Bike Trail.
c) Revegetation of development footprint where outside of activity areas.

Removal of the bobsled track

The bobsled track is 900m in length and 0.59 ha in area. There are four footings along the bobsled track as it ascends uphill from the south. Beyond that the bobsled track sits directly on the soil. The footings will be left in-situ to avoid disturbance to vegetation. A small excavator will be used to lift track sections from the ground. Once the track segments are lifted, sections will either be walked or transported using a side-by-side rubber track machine depending on the distance to collection site and weight of section.

Demolition of existing infrastructure will involve the removal of the operator's hut at the southern end of the track. The total disturbance footprint for the bobsled demolition is 0.59 hectares (ha) (refer Figure 1-1).

Mountain Bike Trail (MBT) construction

The majority of the MBT trail will be constructed next to the winding parts of the bobsled footprint where impacts will be limited to trimming of low hanging branches and removal of ground cover to allow for the construction of the trail tread. At the MBT entry and exit points (each 30m in length), the removal of two dead Eucalypt trees ('stags'), shrubs and ground cover will be required (Figure 1-1), resulting in 0.02 ha of disturbance, in addition to the bobsled disturbance footprint.

The total impact area, for bobsled removal and MBT rail construction combined, is 0.61 ha. It should be noted that 0.17 ha of the pre-disturbed bobsled corridor will be utilised for the mountain bike trail (740m long trail x 2.5m average width of trail = 1,850m^2 or 0.19 ha – 0.02 ha of additional disturbance for entry/exit points), therefore limiting the amount of new disturbance required for the mountain bike trail.

Figure 1-1 Subject land and development footprints

1.3. Scope of the report

This BOS evaluation is required to determine if the impacts from the proposal will trigger the Biodiversity Offset Scheme (BOS). This report addresses the NSW *Biodiversity Conservation Act 2016* (BC Act) and entities listed under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The scope of this report is to:

- Assess the clearing of native vegetation against the BOS thresholds.
- Identify biodiversity values present and likely to be present within the study area (e.g., flora and fauna species; ecological communities, habitat).

1.4. Legislative context

The development proposed would be assessed under Part 4 of the NSW *Environmental Planning and Assessment Act* 1979 (EP&A Act). The impacts of clearing native vegetation must be considered under the Biodiversity Offsetting Strategy and is subject to the thresholds of the Biodiversity Offset Scheme (BOS) as specified by the NSW *Biodiversity Conservation Act 2016* (BC Act) and the *Biodiversity Conservation Regulation 2017* (BC Reg).

Provided that the vegetation being cleared is native, then the BC Reg sets out threshold levels for when the BOS will be triggered. Triggering the BOS requires the preparation of Biodiversity Development Assessment Report (BDAR). The threshold has two criteria:

- Clearing of native vegetation exceeds an area threshold (Table 2-1 Native vegetation area clearing thresholds (bold indicates the threshold that applies to the subject site). The area threshold varies depending on the minimum lot size (as determined by the relevant Local Environmental Plan (LEP)), or actual lot size (where there is no minimum lot size provided for the relevant land under the LEP).
- Whether the impacts occur within areas mapped on the Biodiversity Values Map (BV Map) published by the Environment Agency Head.

If the area of native vegetation clearing falls under the below thresholds:

- The impacts to threatened flora, fauna, populations and communities must be assessed against a Test of Significance (ToS) as per Section 7.3 of the BC Act. If a significant impact is considered likely, then the BOS applies to the proposed development.

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) protects nationally and internationally important flora, fauna, ecological communities and heritage places, which are defined in the EPBC Act as matters of national environmental significance (MNES). The EPBC Act requires an evaluation of the potential for impact upon MNES due to the proposal. The significance of MNES impacts must then be assessed in accordance with the *Significance impact guidelines 1.1 – matters of national environmental significance* (DoE, 2013) via an Assessment of Significance (AoS). Where a proposal is likely to have a significant impact on a matter of national environmental significance, the proposal is referred to the Federal Environment Minister.

2. Clearing thresholds

2.1. Methodology

To determine whether the proposal exceeds the native vegetation clearing thresholds (Table 2-1), the minimum lot size permissible (as specified under relevant LEP) must be determined along with the area of native vegetation to be cleared. This was undertaken by desktop assessment to determine minimum lot size using the BV Map and Threshold Tool. A field assessment was also undertaken to determine native vegetation extent and GIS analysis undertaken to determine area of native vegetation proposed to be cleared.

When calculating native vegetation inside clearing areas, disturbed areas such as the where the bobsled is on the ground were included in the calculations. This was because of the presence of native groundcovers under the narrow width of the bobsled run (around one metre). The bobsled runs for a length of 900m and at 1m wide makes a total area of 0.09ha.

2.2. Results

2.2.1. Desktop assessment

There is no minimum lot size specified for Lot 876/DP1243112 according to the BV Map and Threshold Tool accessed 4 December 2023 (NSW Government, 2023). Therefore, the actual lot size must be used to determine the minimum lot size threshold. Lot 876/DP1243112 is 936 ha in size and falls within the minimum lot size of 40ha to less than 1000ha. As shown in Table 2-1, the native vegetation clearing threshold for the subject land is one ha or more. Therefore, clearing of one ha or more of native vegetation total will trigger the BOS.

Table 2-1 Native vegetation area clearing thresholds (bold indicates the threshold that applies to the subject site)

Minimum lot size permissible (Local LEP)	Threshold for clearing, above which the BAM and offsets scheme apply
Less than 1 ha	0.25 ha or more
1 ha to less than 40 ha	0.5 ha or more
40 ha to less than 1000 ha	**1 ha or more**
1000 ha or more	2 ha or more

2.2.2. Field assessment

The development footprint consists of native forest dominated by Snow Gum *(Eucalyptus pauciflora)* and Black Sally (*Eucalyptus stellulata*) and native grassland derived from forest clearing (dominated by *Poa sieberiana* and *Poa labillardierei* species), along with discrete disturbed areas as shown in Figure 2-1 to Figure 2-4. Plant Community Types (PCTs) are described in Section 4.1.2. The extent of native vegetation across the subject land is shown in Figure 2-5.

Figure 2-1 Portion of bobsled run with clearway through trees and shrubs; only native grasses would be disturbed

Figure 2-2 Portion of bobsled run where native shrubs and grasses would be disturbed.

Figure 2-3 Open area with native grasses

Figure 2-4 Station to be removed in already disturbed area

Figure 2-5 Extent of native vegetation in subject land and development footprints

2.2.3. GIS impact calculations

As shown in Table 2-2, 0.61 ha of native vegetation is expected to require clearing. This falls under the one ha BOS threshold; the proposal will not trigger the BOS based on native vegetation clearing quantity.

Table 2-2 Native and exotic vegetation extent in subject land and development footprint

Location	Subject land	Development footprint
Native vegetation	3.3 ha	0.61 ha

3. Biodiversity Values Mapping

3.1. Methodology

The Biodiversity Values Map (BV Map) identifies land with high biodiversity value that is particularly sensitive to impacts from development and clearing and was accessed through the online portal (Department of Planning and Environment, 2018). The BV Map is one of the triggers for determining whether the BOS applies to a clearing or development proposal.

3.2. Results

BV Mapping occurs immediately south of the subject land along the Thredbo River corridor as shown in Figure 3-1. Provided the proposal is undertaken strictly within the nominated development footprint, it will not involve clearing or disturbing BV mapped land. On this basis, the proposal will not trigger the BOS. However, precautions must be taken to avoid indirect or accidental direct impact upon BV mapped land; mitigation measures are recommended in Section 5.

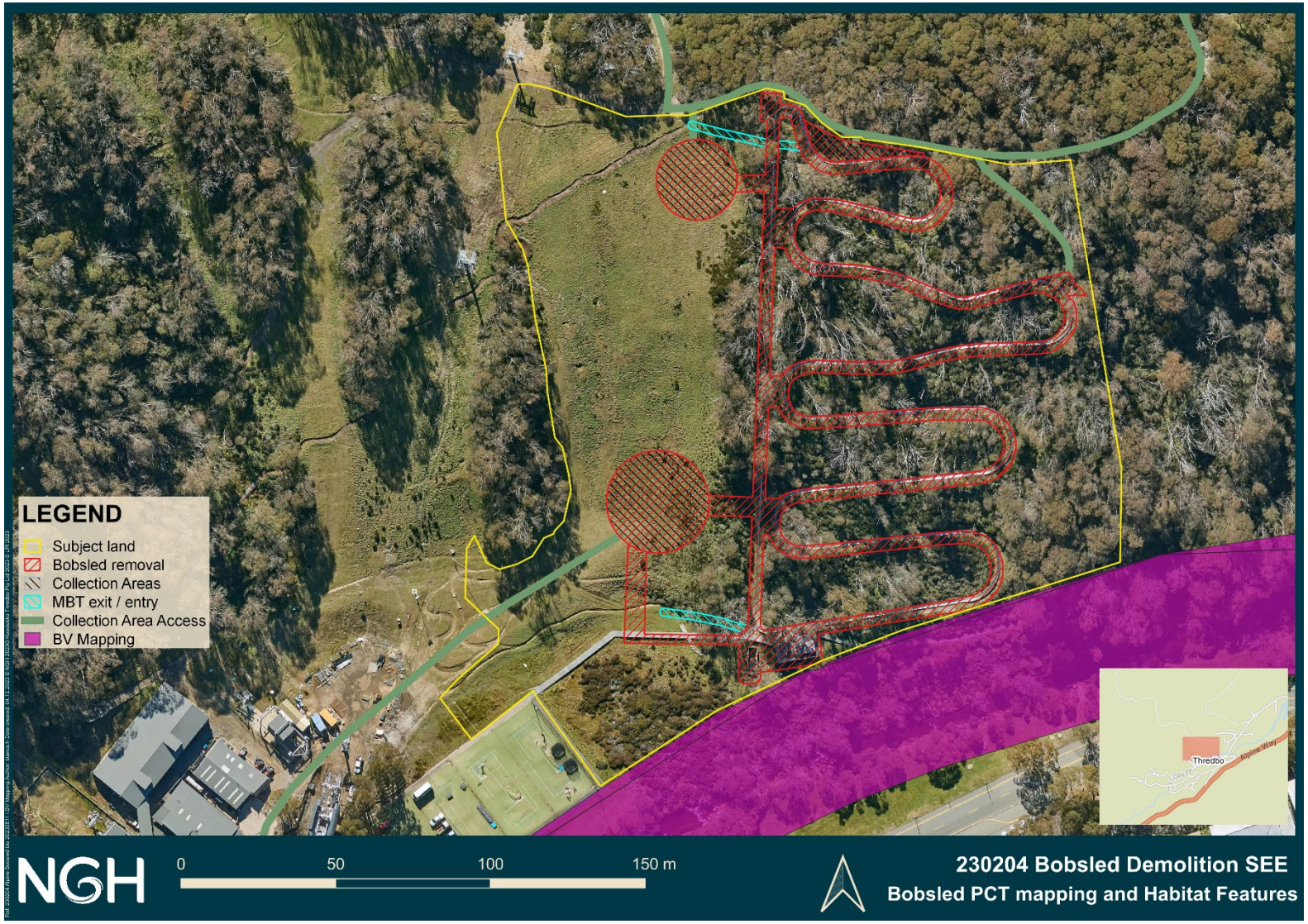


Figure 3-1 BV Mapping adjacent to subject land

4. Test of Significance

4.1. Methodology

Methods to undertake Tests of Significance involved desktop assessment and field inspection.

4.1.1. Desktop assessment

Database searches were completed for records of Commonwealth and NSW listed threatened species, populations, and ecological communities. Searches were conducted on in May 2023 and refreshed in November 2023. A full list of database searches is given in Table 4-1; the search results are given in Appendix A and Appendix B.

Table 4-1 Database searches undertaken and search areas

Database / date	Target	Search Area
NSW BioNet Atlas search 11/05/23	Threatened flora and fauna species, populations and ecological communities listed under the BC Act.	Study area
EPBC Act Protected Matters Search Tool 11/05/23	Threatened flora and fauna, endangered populations and ecological communities and migratory species.	Study area
DPI Weedwise 15/05/23	Priority weeds	Snowy Mountains region
NSW BioNet Vegetation Information System (Bionet VIS)	Plant Community Type (PCT) Classification	Study area
NSW SEED Mapping	State Vegetation Type Mapping	Study Area

4.1.2. Field work

Field work was undertaken by Principal and Graduate Ecologists on 12 May 2023. Field work aimed to:

- Record habitat features i.e., hollow-bearing trees, woody debris, watercourses etc.
- Determine Plant Community Types (PCTs) according to the Department of Planning and Environment (DPE) BioNet Vegetation Classification (DPE, 2022).
- Identify any areas of suitable habitat for threated flora or fauna.
- Record opportunistic observations of significant flora or fauna species.
- Record any High Threat Exotic (HTE) species.

Field work focussed on stratifying the existing vegetation within the study area. The entire route was traversed. The small size of the site allowed for two ecologists to survey the entire site using 13 rapid assessment points. Biodiversity Assessment Method (BAM) plots were not undertaken during the site visit.

The rapid assessment recorded the dominant upper storey, midstorey and lower storey species observed. PCTs were mapped across the subject land. Additionally, High Threat Exotics and other weeds were marked, and 43 photo points were taken.

PCT identification

The following describes the steps used to determine the PCT:

1. Sub IBRA region "Monaro" was used to filter the list to 54 potential PCTs.
2. *Eucalyptus stellulata* was used as a dominant Tree Growth Form, to filter the list to 20 potential PCTs.
3. Hakea lissosperma was used as a dominant Shrub Growth Form, to filter the list to 3 potential PCTs, PCT 3296, 3297 and 3306. All of these PCTs are Wet Sclerophyll Forests (Grassy sub-formation).
4. *Oreomyrrhis ciliata* was used as a Forb Growth Form, to filter the list to 2 potential PCTs, PCT 3297 and 3306
5. The location and description of PCT 3306 matched best as PCT 3297 can occur more widely in the Southern Tablelands and South East Corner Bioregions in areas of lower altitude and higher temperatures. PCT 3306 is described as tall to extremely tall wet shrub-grass sclerophyll open forest on gullies and slopes. This is consistent with the shrub diversity and the limited grasses present where the PCT structure was intact, where trees had not been removed as per PCT 3306.

4.2. Results

Threatened species and communities

Forty-three threatened entities were returned from NSW BioNet database search. These entities included 13 TECs, five (5) mammals, nine (9) flora species, nine (9) non-migratory birds, two (2) amphibians and two (2) reptile and three (3) migratory birds (Appendix A). The Commonwealth Protected Matters Search returned three (3) threatened ecological communities (TECs), 50 threatened species (15 flora species, 13 non-migratory birds, six (6) fish, three (3) amphibians, eight (8) mammals and five (5) reptiles) and 11 migratory species with potential to occur within the subject land (Appendix B).

There are records for 29 of these threatened flora and fauna species in the study area, as shown in Figure 4-1[1]. Threatened species and communities were evaluated for their potential to occur in the subject land and be impacted by the proposal. This evaluation is presented in Appendix C and has been informed by results of field work and vegetation associations listed in species profiles. Further discussion on the potential for threatened species to occur is given in the following sections.

Weed wise

Numerous (114) priority weeds were identified for the local council areas of the Snowy Monaro Regional (Appendix E). Blackberry (*Rubus fruticosus species aggregate*) was recorded within the subject land. Sheep's Sorrel (*Rumex acetosella*) and Thistle (*Cirsium sp.*) are non-priority weeds also found within the subject land.

[1] BioNet Sensitive Species Data must not be mapped at scale finer than 1:250 000

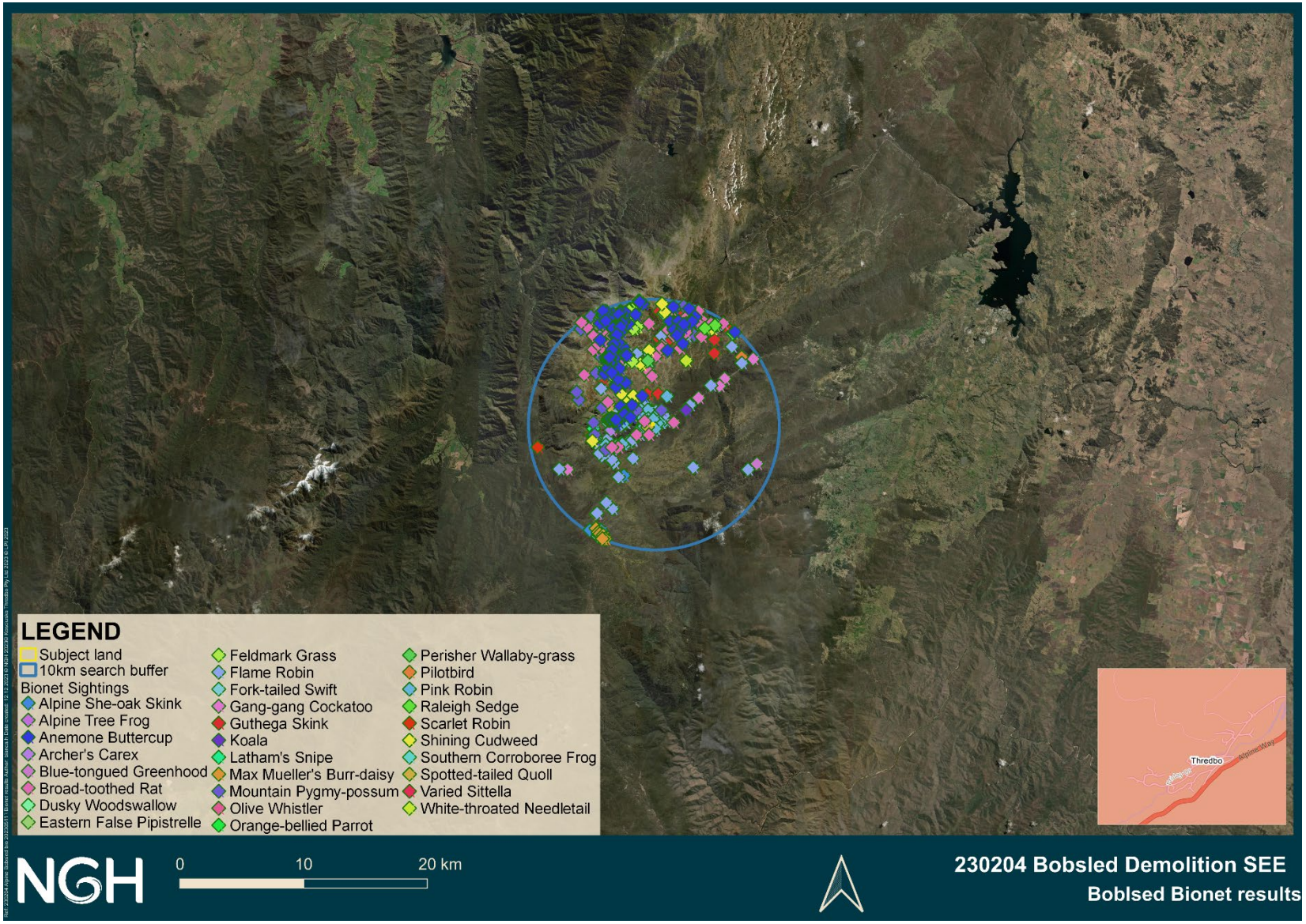


Figure 4-1 BioNet threatened species results (mapped at 1:250000 as per Sensitive Species Data Licence)

4.2.1. Plant Community Type

Prior to field work, State Vegetation Type Mapping (SVTM) was viewed for the subject land. Three PCTs were mapped within the subject land. These included:

- PCT 3296 – Kosciuszko Flanks Moist Gully Forest,
- PCT 3306 – Kosciuszko Alpine Ash High Wet Forest and
- PCT 3307 – Kosciuszko-Namadgi Alpine Ash Moist Grassy Forest.

Based on the plant species identified during field work, one PCT identified: PCT 3306 – Kosciuszko Alpine Ash High Wet Forest. The dominant native canopy species were Snow Gum *(Eucalyptus pauciflora)* and Black Sally (*Eucalyptus stellulata*). The dominant mid story species were *Cassinia aculeata, Bossiaea foliosa Bossaiea distioclada, Epacris gunnii, Hakea lissosperma, Micromytus sp., Senecio sp.* and *Tasmannia xerophila*. The understorey is dominated by *Poa sieberiana* and *Poa labillardierei* species. The understorey also contains *Agrostis parviflora, Acaena novae-zelandiae, Acetosella vulgaris, Carex sp.*, *Coronidium scorpioides, Craspedia sp*., *Dactylis glomerata, Rubus parviflora* and *Senecio spp.*

PCT 3306 was present right across the subject land in two forms:

- Forested – these areas were in moderate to high condition (2.09 ha)
- Derived (grassy) – these areas were in low to moderate condition as the percentage of native cover was still high but the diversity was low and the structure had been altered (1.23 ha)

PCT mapping is given in Figure 4-7. There were minimal exotic species within the subject land, although Blackberry (*Rubus fruticosus* agg.) and Sheep Sorrel (*Acetosella vulgaris*), both high threat weeds, were recorded (Figure 4-2 and Figure 4-3). The following Table 4-2 shows the species identified that support the choice of PCT 3306.

Table 4-2 Species consistent with PCT 3306 within the subject land

Growth form	Dominant species
Trees	*Eucalyptus pauciflora and Eucalyptus stellulata*
Shrubs	*Bossiaea foliosa, Bossaiea distioclada, Cassinia aculeata, Hakea lissosperma, , Ozothamnus sp. Tasmannia xerophila.*
Grass and grass-like	*Poa sieberiana, Poa labillardierei, Poa helmsii, Rytidosperma sp.*
Forb	*Lomandra longifolia, Acaena novae-zealandiae, Oreomyrrhis ciliata, Senecio sp., Coronidium scrpiodes*

Figure 4-2 Blackberry in subject land

Figure 4-3 Sheep sorrel in subject land

4.2.2. Threatened Ecological Communities

PCT 3306 – Kosciuszko Alpine Ash High Wet Forest – is not associated with any Threatened Ecological Community (TEC).

4.2.3. Terrestrial habitat

The subject land contains multiple habitats features that support and show signs of biodiversity in the area. The habitat features within the subject land consist of Wombat *(Vombatus ursinus)* burrows (Figure 4-4), fauna pellets and scats (Figure 4-5), mistletoe, fallen trees (Figure 4-6), and food sources for fauna. The food sources in the area are directly correlated with PCT 3306 (e.g. eucalypt seeds) and the species evaluated within the Habitat Evaluation Table are assessed against these food sources and the before mentioned habitat features. It is noted that five wombat burrows were recorded in the subject land – these may be multiple burrow entrances belonging to one individual or there may be several individuals occupying the subject land. Although these are common species, wombats are protected under the BC Act. Burrows must not be filled in unless they have been confirmed inactive over several days. Thus, measures should be taken to minimise the likelihood of harm for wombats during works. This is discussed further in Section 5.

Figure 4-4 Wombat burrow entrance

Figure 4-5 Scats found in grassy area

Figure 4-6 Fallen timber provides habitat

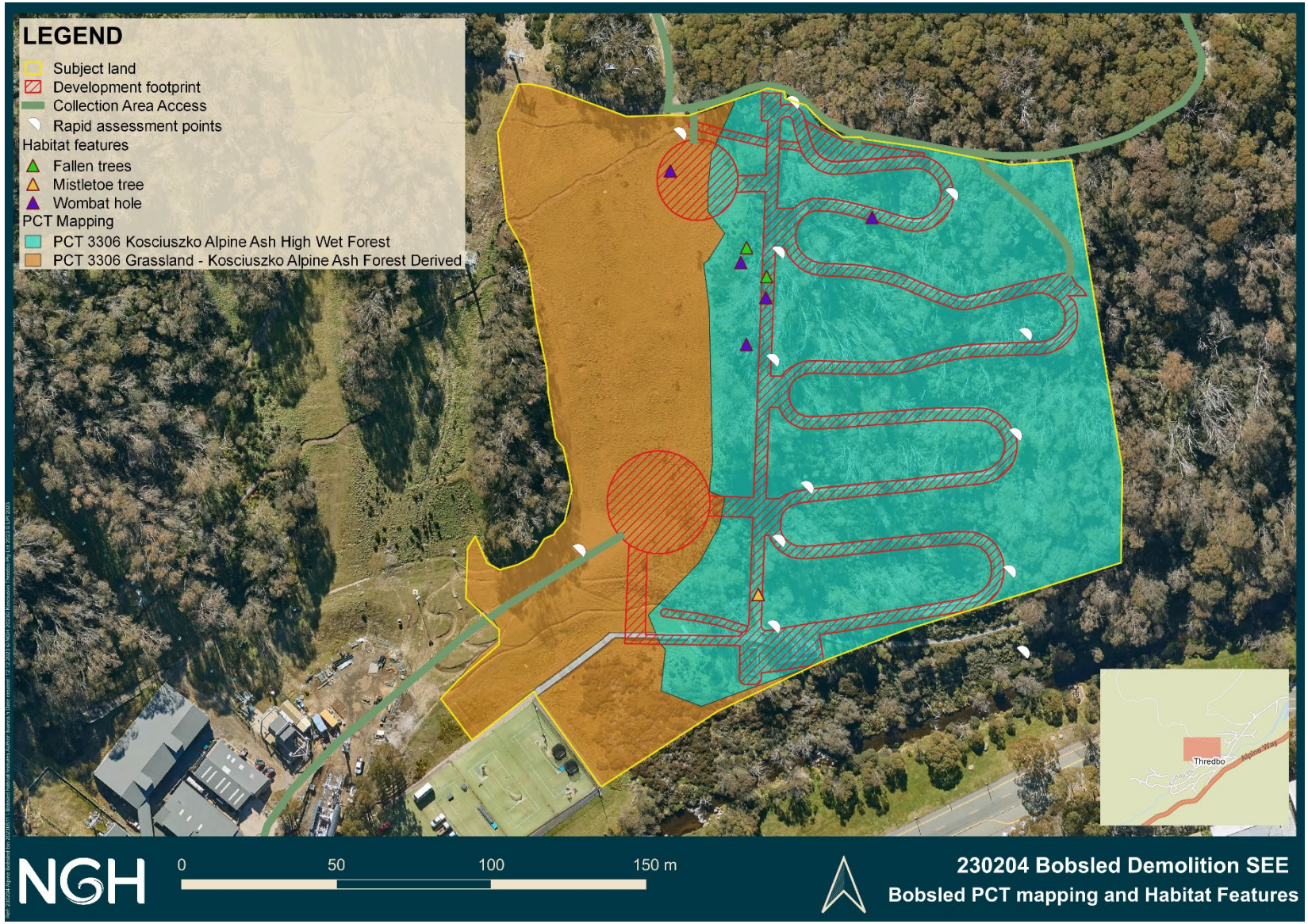


Figure 4-7: PCT Mapping and Habitat Features

4.2.4. Threatened flora

Based on the habitat in the subject land, there were no threatened flora species considered to have a 'possible' occurrence (refer to Appendix C for details).

4.2.5. Threatened fauna

Seven threatened fauna species are considered to have a 'high' likelihood of occurrence based on the habitat in the subject land (refer to Appendix C for details). Table 4-3 lists fauna species along with suitable habitat type in the subject land.

Table 4-3 Threatened fauna species with a possible occurrence

Species / Status	Habitat and records in subject land
Gang-gang Cockatoo *Callocephalon fimbriatum*	Tall mountain forests, 60 records in study area; recorded during surveys.
Olive Whistler *Pachycephala olivacea*	Wet forest, rainforest and dense vegetation along gullies; 86 records in study area including within 500m of subject land.
Flame Robin *Petroica phoenicea*	Tall moist eucalypt forest and woodland; 176 records in study area including near subject land (~500m)
Pink Robin *Petroica rodinogaster*	Rainforest and open eucalypt forest in densely vegetated gullies; 36 local records including within subject land. May frequent Thredbo River.
Pilotbird *Pycnoptilus floccosus*	Wet and dry sclerophyll forest with dense undergrowth and dense gullies; 8 records in study area including several within 1km of subject land.
Spotted-tailed Quoll *Dasyurus maculatus*	Range of habitat types including forest; 2 local records including one within 500m of development footprint. No suitable denning sites but may forage in subject land.
Broad-toothed Rat *Mastacomys fuscus mordicus*	Dense grassland with logs; 83 local records including a large number within 1km of development footprint.

4.3. Assessment of Impacts

4.3.1. Threatened Species

Total native vegetation clearing of PCT 3306 is 0.61ha. This consists of:

- 0.46 ha of Kosciuszko Alpine Ash High Wet Forest.
- 0.15 ha of derived native grassland (derived from Kosciuszko Alpine Ash High Wet Forest).

The potential for impact as a result of the proposal per species is laid out in Table 4-4. Potential for impact also considers the number and date of records in the study area (see Appendix C for details). In summary, Gang-gang Cockatoo and Broad-toothed Rat have a high potential for impact. Tests of Significance were carried out for these species.

Table 4-4 Magnitude of clearing by species

Threatened species	Habitat clearing (ha)	Potential for impact
Gang-gang Cockatoo *Callocephalon fimbriatum*	0.46 (forest habitat)	High – species listed as endangered, habitat listed as critical to survival. ToS undertaken.
Olive Whistler *Pachycephala olivacea*	0.46 (forest habitat)	Moderate – despite many nearby records, this magnitude of clearing is unlikely to affect breeding, foraging or dispersal ability of this species in a well-connected and heavily forested landscape.
Flame Robin *Petroica phoenicea*	0.46 (forest habitat)	Moderate – despite many nearby records, this magnitude of clearing is unlikely to affect breeding, foraging or dispersal ability of this species in a well-connected and heavily forested landscape.
Pink Robin *Petroica rodinogaster*	0.46 (forest habitat)	Low – subject site likely to provide secondary habitat. Thredbo River riparian area likely to provide primary habitat. This magnitude of clearing is unlikely to affect breeding, foraging or dispersal ability of this species in a well-connected and heavily forested landscape.
Pilotbird *Pycnoptilus floccosus*	0.46 (forest habitat)	Low – while dense undergrowth occurs adjacent to the bobsled run (Figure 4-8), the majority of the run itself is grassed; therefore providing impacts are contained to the development footprint, Pilotbird habitat is unlikely to be impacted.
Spotted-tailed Quoll *Dasyurus maculatus*	0.61 (forest and grassy habitat)	Low – the home range area estimates for a Spotted-tailed Quoll are between 88 ha to 2561 ha. Minor land use change and minor clearing affecting 0.61 ha of a home range would have minimal effect upon this species (Claridge, et al., 2005).
Broad-toothed Rat *Mastacomys fuscus mordicus*	0.15+ (grassy habitat and open forest patches/edges)	High – suitable habitat occurs in development footprint (Figure 4-9), numerous records occur nearby; the species is highly likely to occur. Works would be undertaken in summer/autumn; at this time Broad-toothed Rat is solitary with large home range and high activity (Milner, Starrs, Hayes, & Evans, 2016). ToS undertaken.

Figure 4-8 Dense understorey suitable for Pilotbird adjacent to bobsled run

Figure 4-9 Snow Grass (*Poa* spp.) fields suitable for Broad-toothed Rat

4.3.2. Outcome of ToS and AoS

Broad-toothed Rat – NSW assessment

The proposal is unlikely to impact the dispersal ability of the species as the species have been shown to be "good dispersers". Broad-toothed Rats have small home ranges (0.1 to 0.3ha) and during summer, they are solitary and exclusive (Milner, Starrs, Hayes, & Evans, 2016). With around 1.23 ha of derived grassland in the subject land, one to two Broad-toothed Rat individuals may occupy the site during the warmer months (note: species is colonial in winter). Of this, 0.15 ha of habitat would be cleared; this may affect one individual. Broad-toothed Rat breeds between October and March in nests underground (Milner, Starrs, Hayes, & Evans, 2016). The proposal has the potential to disturb up to one nest, should it occur in the subject land.

The habitat is considered of low to moderate importance given ongoing disturbance from Thredbo township and ski facilities. Removal of large woody debris such as logs may reduce important microhabitat components. Due to the sensitive nature of the receiving environment, there are other threats to Broad-toothed Rat that may arise from the change in land use from bobsled to MBT track including importation and transportation of diseases, pests and weeds via soil lodged in bike tyres and boots. These threats could be managed and are discussed in Section 5.

Broad-toothed Rat – Commonwealth assessment

The Kosciuszko National Park population of the Broad-toothed Rat is an 'important population'. The magnitude of clearing would be insufficient to seriously alter habitat extent or reduce the area of occupancy for this species. Fragmentation is unlikely as the gaps created by the proposal (~10m width) would be

passable by Broad-toothed Rat. Breeding may be affected for one pair during the works period (October to April); this is unlikely to have a population scale impact. Habitat critical to the survival of the species would be impacted (0.15ha). Given small magnitude, the direct impacts of habitat removal would be unlikely to cause a decline in habitat quality or suitability, however as stated above MBT does have the potential to introduce species which would be harmful such as *Phytophthora 24cinnamomi.* This threat is considered manageable. The proposal is not expected to interfere substantially with the recovery of Broad-toothed Rat.

Gang-gang Cockatoo – NSW assessment

The proposal is unlikely to affect habitat availability, species dispersal ability and would not remove breeding habitat (hollow-bearing trees); therefore an adverse effect on the lifecycle of Gang-gang Cockatoo is not anticipated. A small quantity (0.46ha) of suitable foraging habitat would be removed within a well-connected and extensive forest environment that is considered critical to the survival of the species at a national scale (DAWE, 2022). The proposal would make a minor contribution to the 'habitat loss' key threatening process. On balance, the proposal is unlikely to lead to a significance impact for Gang-gang Cockatoo.

Gang-gang Cockatoo – Commonwealth assessment

The Gang-gang Cockatoo is an endangered species. The small scale of disturbance would be unlikely to lead to a long-term decrease in population size or reduce the area of occupancy for Gang-gang Cockatoo. The species is not edge adverse and is known to cross large gaps in vegetation during dispersal. Thus, the small clearing would not lead to population fragmentation. Breeding habitat is not present in development footprint and therefore the proposal would not directly affect the breeding cycle through loss of hollow-bearing trees. The removal of 0.46 ha of foraging habitat within a 3.3ha area is unlikely to affect breeding success based on forage availability. The proposal would not result in invasive species or diseases known to affect Gang-gang Cockatoo.

Habitat critical to the survival of Gang-gang Cockatoo includes all foraging habitat (DAWE, 2022). The proposal would adversely affect habitat critical to survival through the removal of 0.46ha. It seems unlikely that this magnitude of impact could cause the species to decline in a location with ample available habitat. On this basis, the proposal is unlikely to interfere with recovery of Gang-gang Cockatoo.

Conclusion

The proposal is **unlikely** to significantly impact any NSW or Commonwealth threatened species, community or population. A referral to DCCEEW is not required.

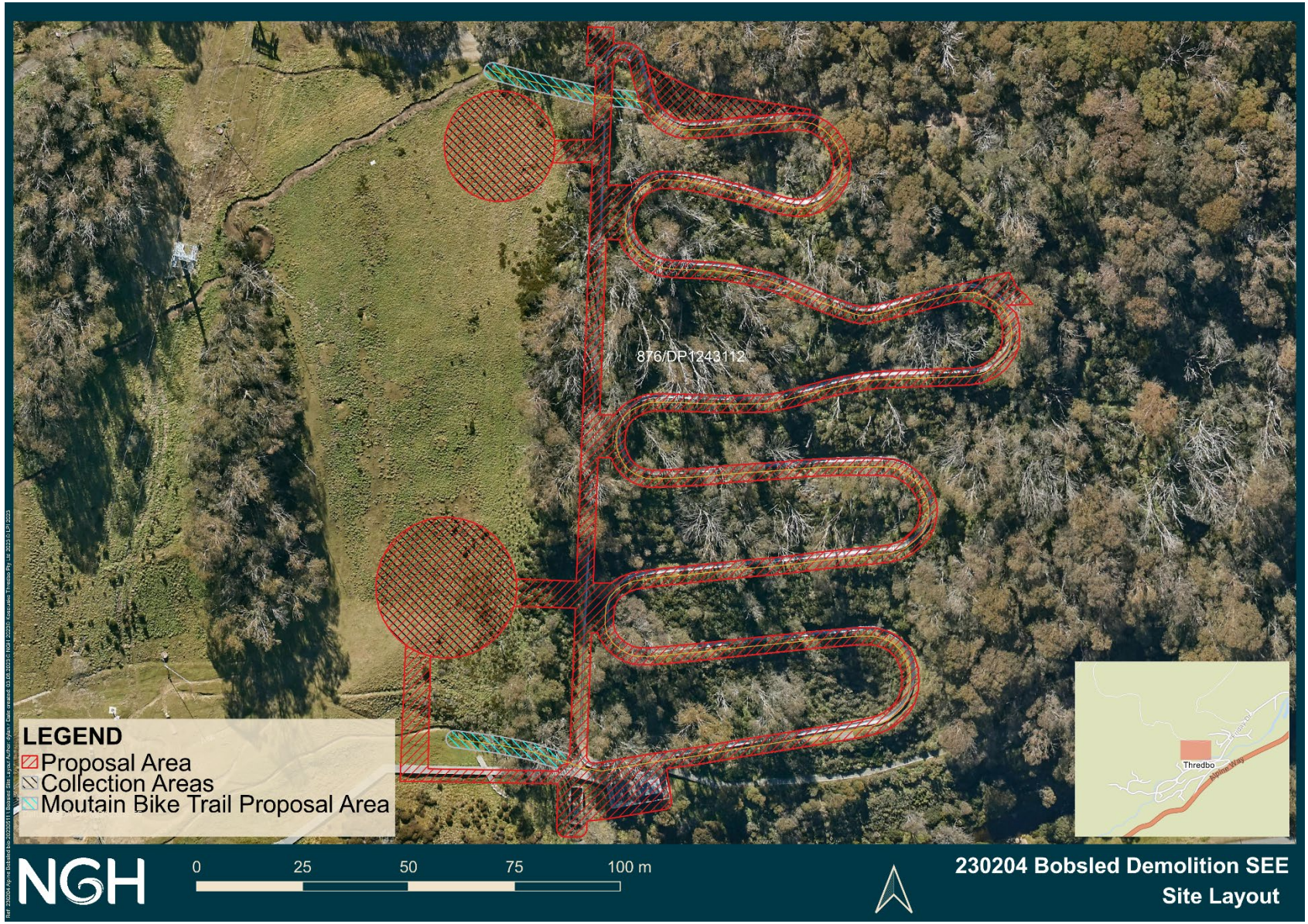


Figure 4-10: Site Layout

4.4. BOS Assessment summary

The proposal was evaluated against the BOS triggers set out in the NSW Biodiversity Conservation Regulation 2017 and in accordance with the Commonwealth *Significance impact guidelines 1.1 – matters of national environmental significance* for threatened entities. Methods included desktop assessment, field survey, habitat evaluation and GIS calculations.

As there is no mapped minimum lot size for, the entire lot size is used. For the 936ha lot, the threshold for native vegetation clearing is 1.0ha. The proposal clearing of native vegetation is approximately 0.61ha. Therefore the BOS is not triggered based on this criterion. There is no BV Mapped land in the subject land; therefore the proposal will not trigger the BOS based on this criterion. Following a habitat evaluation for species and communities returned from BioNet and PMST database searches, NSW Tests of Significance and Cwth Assessments of Significance were undertaken for Broad-toothed Rat and Gang-gang Cockatoo. A significant impact is not considered likely to population of these species, and the proposal does not trigger the BOS based on this criterion.

However it was noted that there is potential to introduce threats to Broad-toothed Rat (e.g. *Phytophthora cinnamomic)*. This threat is considered manageable as discussed in the subsequent section. A summary of the evaluation outcome is provided in Table 4-5.

Table 4-5 Summary of BOS evaluation outcome

	Question	Answer	Result
1	Does the clearing area exceed the offset scheme threshold?	Clearing threshold 1.0ha, proposed native vegetation clearing 0.61ha. Native vegetation clearing will not exceed clearing threshold.	BOS not triggered.
2	Is there any Biodiversity Values Mapping (BVM) over the subject land?	No BVM is found within the subject land. Management measures required to avoid adjacent BVM.	BOS not triggered.
3	Are threatened entities likely to be significantly impacted by the proposed works	Significant impact to threatened entities considered unlikely.	BOS not triggered.

5. Mitigation measures

The following mitigation measures (Table 5-1) are proposed to ensure that works have minimal impact on threatened and common species which (may) occur in the subject land. This includes measures to minimise threats to Broad-toothed Rat identified through ToS, protection for wombats and measures to protect adjacent BV Mapped land.

Table 5-1 Mitigation measures recommended for bobsled demolition and MBT construction at Thredbo

Purpose	Mitigation measure	Timing
Minimise unintentional impact to adjacent native vegetation	Clearly **delineate** approved clearing area (or conversely, areas for protection) with	Prior to clearing

Purpose	Mitigation measure	Timing
	temporary fencing or flagging or similar. On-ground delineation is more effective than digital maps in machinery. Ensure stockpile areas are within the development footprint.	During construction
Foster regeneration of native species in temporary disturbance areas	Consider using woodchip mulch from cleared vegetation for site remediation rather than grass seeding. This would support natural regeneration of local species. However, if grass must be sown, it is recommended that a **native grass seed mi**x be used.	During clearing (stockpile mulch) and after construction
Avoid importing weeds to subject land	Any imported topsoil should be **certified weed free**. Utilise weed quarantine measures such as **cleaning down loose soil** from machinery and vehicles entering and exiting site. A **weed brush-down area** should be identified for this purpose.	During construction During construction Prior to construction
Avoid introducing or spreading *Phytophthora* species.	**Basic level hygiene** measures should be in place consistent with *Hygiene guidelines* (DPIE, 2020), including: • Undertaking works in dry weather • Restricting movement of soil and plant material to and from site • Cleaning down soil and material from shoes, machinery and vehicles.	During construction
Avoid harm to wombats occupying subject land.	**Do not disturb** wombat burrows. If wombat burrows must be disturbed, seek advice from NPWS. Adhere to the ***Code of Practice*** *for injured, sick and orphaned wombats* (DPE, 2022) if such wombats are encountered during works.	During construction
Maintain habitat value for fauna species	Relocate dead wood (e.g. logs, felled trees) on ground within nearby vegetation to retain this resource in subject land.	During construction
Avoid harm to Broad-toothed Rat	In the event a Broad-toothed Rat (or other unexpected ground-dwelling species) is found breeding on site during works, works would cease. Consultation with NPWS would be undertaken to relocate or otherwise protect the nest so that works may continue.	During construction

6. Conclusion

This BOS assessment evaluated the proposed activities based on the BOS triggers. The proposal does not trigger the Biodiversity Offset Scheme. Mitigation measures have been recommended to minimise threats to common and threatened species and protected areas that may arise due to the proposal. Provided these measures are effectively implemented, significant impacts to threatened species and BV mapped land are unlikely.

7. References

Claridge, A. W., Paull, D., Dawson, J., Mifsud, G., Murray, A., Poore, R., & Saxon, M. (2005). Home range of the spotted-tailed quoll (Dasyurus maculatus), a marsupial carnivore, in a rainshadow woodland. *Wildlife Research*, 32:1:7-14.

DAWE. (2022). *Conservation Advice for Callocephalon fimbriatum (Gang-gang Cockatoo).*

DAWE. (2022). *Conservation Advice for Callocephalon fimbriatum (Gang-gang Cockatoo).*

DCCEEW. (2023). *Conservation Advice for Mastacomys fuscus mordicus (Broad-toothed Rat - mainland).* Canberra: Department of Climate Change, Energy, the Environment and Water.

Department of Planning and Environment. (2018). *Biodiversity Values Map*. Retrieved from https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BOSETMap

DoE. (2013). *Matters of National Environmental Significance, Significant Impact Guidelines 1.1 EPBC Act 1999.* Canberra: Australian Government, Department of the Environment.

DPE. (2022). *Bionet Vegetation Classification*. Retrieved from https://www.environment.nsw.gov.au/NSWVCA20PRapp/LoginPR.aspx

DPE. (2022). *Code of Practice for injured, sick and orphaned wombats.* Sydney: NSW Department of Planning and Environment.

DPE. (2022). *Gang-gang Cockatoo - profile.*

DPE. (2022). *Gang-Gang Cockatoo Species Profile*. Retrieved from OEH.

DPIE. (2020). *Hygiene guidelines: protocols to protect priority biodiversity areas in NSW from Phytophthora cinnamomi, myrtle rust, amphibian chytrid fungus and invasive plants.* Sydney: NSW Department of Industry and Environment.

McDougall et al. (2003). Phytophthora cinnamomicausing disease in subalpine vegetation in New South Wales.

Milner, R., Starrs, D., Hayes, G., & Evans, M. (2016). *Distribution and ecology of Broad-toothed Rat in the ACT.* Canberra: Environment and Planning Directorate, ACT Government.

NSW Government. (2023). *Biodiversity Values Map and Threshold Tool*. Retrieved from NSW Government: https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BOSETMap

NSW Scientific Committee. (2008). *Gang-gang Cockatoo Callocephalon fimbriatum.*

NSW Scientific Committee. (2008). *Gang-gang Cockatoo Callocephalon fimbriatum Review of Current Information in NSW.*

O'brien et al. (2008). Metapopulation dynamics and threatened species management: Why does the broad-toothed rat (Mastacomys fuscus) persist?

O'Brien et al. (2008). Metapopulation dynamics and threatened species management: Why does the broad-toothed rat (Mastacomys fuscus) persist? *Biological Conservation*.

Sarker et al. (2020). *Beak and feather disease virus: biology and resultant disease.*

Threatened Species Scientific Committee . (2016). *Conservation Advice for Mastocomys fuscus mordicus broad-toothed rat (mainland).*

Threatened Species Scientific Committee. (2001). *Broad-toothed Rate population, Barrington Tops - endangered population listing*. Retrieved from NSW DPE: https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/nsw-threatened-species-scientific-committee/determinations/final-determinations/2000-2003/broad-toothed-rat-mastacomys-fuscus-endangered-population-listing

Threatened Species Scientific Committee. (2016). *Conservation Advice for Mastocomys fuscus mordicus broad-toothed rat (mainland).*

Appendix A Bionet Data Table

V = Vulnerable, E = Endangered, CE = Critically Endangered as listed under the Biodiversity Conservation Act 2016 and Environmental Protection and Biodiversity Conservation Act 1999.

Scientific Name	Common Name	NSW Status	Commonwealth Status	Number of records (10km)
Argyrotegium nitidulum	Shining Cudweed	V	V	26
Calotis pubescens	Max Mueller's Burr-daisy	E	Not listed	7
Carex archeri	Archer's Carex	E	Not listed	3
Carex raleighii	Raleigh Sedge	E	Not listed	3
Pimelea bracteate	Pimelea bracteate	CE	Not listed	1
Pterostylis oreophila	Blue-tongued Greenhood	CE	CE	1
Ranunculus anemoneus	Anemone Buttercup	V	V	869
Rytidosperma pumilum	Feldmark Grass	V	V	69
Rytidosperma vickeryae	Perisher Wallaby-grass	E	Not listed	4
Bangalay Sand Forest of the Sydney Basin and South East Corner bioregions	Bangalay Sand Forest of the Sydney Basin and South East Corner bioregions	E	Not listed	N/A
Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E	Not listed	N/A
Lowland Grassy Woodland in the South East Corner Bioregion	Lowland Grassy Woodland in the South East Corner Bioregion	E	Not listed	N/A
Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern	Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern	CE	Not listed	N/A
Highlands Bioregion *Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions*	Highlands Bioregion Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions	E	Not listed	N/A

Scientific Name	Common Name	NSW Status	Commonwealth Status	Number of records (10km)
Natural Temperate Grassland of the South Eastern Highlands	Natural Temperate Grassland of the South Eastern Highlands	Not listed	CE	N/A
Snowpatch Feldmark in the Australian Alps Bioregion	Snowpatch Feldmark in the Australian Alps Bioregion	CE	Not listed	N/A
Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E	Not listed	N/A
Tableland Basalt Forest in the Sydney Basin and South Eastern Highlands Bioregions	Tableland Basalt Forest in the Sydney Basin and South Eastern Highlands Bioregions	E	Not listed	N/A
Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions	Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions	CE	Not listed	N/A
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	CE	CE	N/A
Windswept Feldmark in the Australian Alps Bioregion	Windswept Feldmark in the Australian Alps Bioregion	CE	Not listed	N/A
Litoria verreauxii alpina	Alpine Tree Frog	E	V	4
Pseudophryne corroboree	Southern Corroboree Frog	CE	CE	1
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V	Not listed	2
Callocephalon fimbriatum	Gang-gang Cockatoo	V	E	60
Daphoenositta chrysoptera	Varied Sittella	V	Not listed	1
Neophema chrysogaster	Orange-bellied Parrot	CE	CE	1
Pachycephala olivacea	Olive Whistler	V	Not listed	86
Petroica boodang	Scarlet Robin	V	Not listed	8
Petroica phoenicea	Flame Robin	V	Not listed	176
Petroica rodinogaster	Pink Robin	V	Not listed	36

Scientific Name	Common Name	NSW Status	Commonwealth Status	Number of records (10km)
Pycnoptilus floccosus	Pilotbird	Not listed	V	8
Apus pacificus	Fork-tailed Swift	Not listed	M	1
Gallinago hardwickii	Latham's Snipe, Japanese Snipe	Not listed	M	12
Hirundapus caudacutus	White-throated Needletail	Not listed	V M	8
Burramys parvus	Mountain Pygmy-possum	E	E	148
Dasyurus maculatus	Spotted-tailed Quoll	V	E	2
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V	Not listed	3
Mastacomys fuscus mordicus	Broad-toothed Rat (mainland), Tooarrana	V	V	83
Phascolarctos cinereus	Koala	E	E	1
Cyclodomorphus praealtus	Alpine She-oak Skink	E	E	57
Liopholis guthega	Guthega Skink	Not listed	E	403
Total records within 10km				**2084**

Appendix B Protected Matters Search Results

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: 11-May-2023

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	8
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	52
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 environment anywhere.

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 https://www.dcceew.gov.au/parks-heritage/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:	17
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:	1
EPBC Act Referrals:	6
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
Banrock station wetland complex	700 - 800km upstream from Ramsar site	In buffer area only
Barmah forest	200 - 300km upstream from Ramsar site	In buffer area only
Blue lake	Within Ramsar site	In feature area
Gunbower forest	300 - 400km upstream from Ramsar site	In buffer area only
Hattah-kulkyne lakes	500 - 600km upstream from Ramsar site	In buffer area only
Nsw central murray state forests	200 - 300km upstream from Ramsar site	In buffer area only
Riverland	700 - 800km upstream from Ramsar site	In buffer area only
The coorong, and lakes alexandrina and albert wetland	700 - 800km upstream from Ramsar site	In buffer area only

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

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
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community may occur within area	In buffer area only

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			
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour may occur within area	In buffer area only
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat may occur within area	In buffer area only
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
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat may occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat may occur within area	In buffer area only
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	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
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
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat known to occur within area	In feature area
FISH			
Galaxias supremus Kosciuszko Galaxias [87878]	Critically Endangered	Species or species habitat known to occur within area	In buffer area only
Galaxias terenasus Roundsnout Galaxias [87175]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Maccullochella macquariensis Trout Cod [26171]	Endangered	Species or species habitat may occur within area	In buffer area only
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macquaria australasica Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area	In buffer area only
Prototroctes maraena Australian Grayling [26179]	Vulnerable	Species or species habitat likely to occur within area	In feature area
FROG			
Litoria spenceri Spotted Tree Frog [25959]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Litoria verreauxii alpina Alpine Tree Frog, Verreaux's Alpine Tree Frog [66669]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Pseudophryne corroboree Southern Corroboree Frog [1915]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
MAMMAL			
Burramys parvus Mountain Pygmy-possum [267]	Endangered	Species or species habitat known 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 known 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 (southern and central) [254]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Petaurus australis australis Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In feature area
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 buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Pseudomys fumeus](#) Smoky Mouse, Konoom [88]	Endangered	Species or species habitat known to occur within area	In feature area
[Pteropus poliocephalus](#) Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In buffer area only
PLANT			
[Argyrotegium nitidulum](#) Shining Cudweed [82043]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
[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 likely to occur within area	In feature area
[Glycine latrobeana](#) Clover Glycine, Purple Clover [13910]	Vulnerable	Species or species habitat may occur within area	In feature area
[Haloragis exalata subsp. exalata](#) Wingless Raspwort, Square Raspwort [24636]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
[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
[Pomaderris pallida](#) Pale Pomaderris [13684]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Prasophyllum bagoense](#) Bago Leek-orchid [84276]	Critically Endangered	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
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 known to occur within area	In feature area
Ranunculus anemoneus Anemone Buttercup [14889]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
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 likely to occur within area	In feature area
REPTILE			
Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Cyclodomorphus praealtus Alpine She-oak Skink [64721]	Endangered	Species or species habitat known 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
Liopholis montana Mountain Skink [87162]	Endangered	Species or species habitat likely to occur within area	In feature area
Pseudemoia cryodroma Alpine Bog Skink, Alpine Bog-skink [84408]	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
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 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

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
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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to 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
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In buffer area only
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
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	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

Scientific Name	Threatened Category	Presence Text	Buffer Status
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

Nationally Important Wetlands [Resource Information]

Wetland Name	State	Buffer Status
Blue Lake (Kosciuszko)	NSW	In buffer area only

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
Snowies Iconic Walk	2019/8558	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				
Aerial baiting for wild dog control	2006/2713	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Aerial dog baiting	2006/2791	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (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.

Department of Climate Change, Energy, the Environment and Water
GPO Box 3090
Canberra ACT 2601 Australia
+61 2 6274 1111

Appendix C Habitat Evaluation Table

Habitat Evaluation Table

The tables in this appendix present the habitat evaluation for threatened species, ecological communities, and endangered populations listed within 10 km of the subject land in the Atlas of NSW Wildlife[2] and those identified as potentially occurring in the area according to the Commonwealth EPBC Protected Matters Search Tool (PMST).[3] If entities are determined to have a moderate or high likelihood of impact then a test of significance (BC Act) and/or assessment of significance (EPBC Act) is required to be undertaken to determine the likely significance. These are provided in Appendix D.

The likelihood of occurrence is based on presence of habitat, proximity of nearest records, and mobility of the species (where relevant). The assessment of potential impact is based on the nature of the proposal, the ecology of the species, and its likelihood of occurrence. The following classifications are used:

Presence of Habitat

Present:	Potential or known foraging, roosting, nesting, refuge, movement corridor (including movement of genetic material) or other habitat is present within the study area.
Marginal:	Limited habitat with some features that may be used by species within the study area.
Absent:	No potential foraging, roosting, nesting, or other habitat is present within the study area.

Likelihood of Occurrence

Low	It is unlikely that the species inhabits the study area and has not been recorded recently in the locality (10 km). It may be an occasional visitor, but habitat similar to the study area is widely distributed in the local area, meaning that the species is not dependent (i.e. for breeding or important life cycle periods such as winter flowering resources) on available habitat. Specific habitat is not present in the study area or the species are a non-cryptic perennial flora species that were specifically targeted by surveys and not recorded.
Moderate	Potential habitat is present in the study area. Species unlikely to maintain sedentary populations, however, may seasonally use resources within the study area opportunistically or during migration. The species is unlikely to be dependent (i.e. for breeding or important life cycle periods such as winter flowering resources) on habitat within the study area, or habitat is in a modified or degraded state. Includes cryptic flowering flora species that were not seasonally targeted by surveys and that have not been recorded.
High	It is highly likely that a species inhabits the study area and is dependent on identified suitable habitat (i.e. for breeding or important life cycle periods such as winter flowering resources), has been recorded recently in the locality (10 km) and is known or likely to maintain resident populations in the study area. Also includes species known or likely to visit the study area during regular seasonal movements or migration.
Recorded	Species was recorded during the field investigations or has recorded previously.

---

[2] The NSW Bionet Atlas is administered by the Department of Planning and Environment (DPE) and is an online database of fauna and flora records that contains over four million recorded sightings.

[3] This online tool is designed for the public to search for matters protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). It is managed by the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW).

Potential to be Impacted

Low	The proposal would be unlikely to impact this species or its habitats. No Test of Significance (ToS) or Assessment of Significance (AoS) is necessary for this species.
Moderate	The proposal could impact this species or its habitats however the impacts are considered manageable such that no direct or indirect impacts are likely. Test of Significance (ToS) or Assessment of Significance (AoS) may be required for this species.
High	The proposal is likely to impact this species or its habitats. A ToS or AoS will be prepared for these entities.

Key: V = Vulnerable, E = Endangered, CE = Critically Endangered, M = Migratory

C.1 Flora and Threatened Ecological Communities

Species	Listing		Habitat	No. of Records within 10 km	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
Flora (18)								
Argyrotegium nitidulum **Shining Cudweed**	V	V	The shining cudweed appears to be dependent on damp bare ground for recruitment and persistence. Usually found in herbfield or open heathland, above or close to the treeline. Flowers appear from December to March.	26 (1949-2022)	Absent	Low	Low	No suitable habitat will be impacted.
Calotis pubescens **Max Mueller's Burr-daisy**	E	-	Grows in subalpine treeless plains in herb-rich grassland (often dominated by *Poa hookeri*); not subject to periodic inundation. Its response to disturbance is largely unknown.	7 (2013-2022)	Absent	Low	Low	No suitable habitat will be impacted. Closest record 9.5 km away
Carex archeri **Archer's Carex**	E	-	*Carex archeri* occurs in the headwaters of streams within the alpine zone of the Kosciuszko area of the southern tablelands of NSW, and in Victoria and Tasmania. Additionally occurs in damp alpine herbfields.	3 (1951-1980)	Absent	Low	Low	No suitable habitat will be impacted. Closest record 3.5 km away
Carex raleighii **Raleigh Sedge**	E	-	Grows in sphagnum bogs and high mountain wetlands, as well as damp grasslands and stream-edges of sub-alpine plains.	3 (1997)	Absent	Low	Low	No suitable habitat will be impacted. Closest record 7.5 km away

Species	Listing		Habitat	No. of Records within 10 km	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
Colobanthus curtisiae **Curtis' Colobanth**	-	V	In Tasmania (the stronghold), this species found in lowland grasslands, grassy and shrubby woodland/forests and rockplates. In Victoria, it is a rare component of perennial herbaceous vegetation on sandy screen slopes between steep mudstone cliffs in the alpine region. In NSW there is limited information on distribution and ecology, but it is thought to be associated chiefly with the southern mountainous regions.	PMST	Marginal – alpine woodland	Low	Low	No suitable habitat will be impacted. Not associated with PCT.
Glycine latrobeana **Clover Glycine, Purple Clover**	CE	V	The Clover Glycine occurs mainly in grassland and grassy woodland habitats, less often in dry forests, and only rarely in heathland. Populations occur from sea level to c. 1,200 m altitude. Soils are usually sandy or loamy sand but may also have high clay content.	PMST	Marginal	Low – only known NSW populations occur at Delegate.	Low	No suitable habitat will be impacted. Not associated with PCT.
Haloragis exalata subsp. Exalata **Wingless Raspwort, Square Raspwort**	V	V	Square Raspwort appears to require protected and shaded damp situations in riparian habitats. *Haloragis exalata* subsp. *Exalata* is presently known from a range of vegetation types, all of which appear to have a history of recurrent disturbance. It appears to be a post-disturbance coloniser, based on observations of large numbers of plants on disturbed roadsides, cleared power-line easements, and recently burnt or flooded areas. Habitat critical for survival	PMST	Absent	Low	Low	No suitable habitat will be impacted. Not a riparian zone.

Species	Listing		Habitat	No. of Records within 10 km	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
			has not been accurately defined for this species. Flowering specimens in NSW are recorded from November to January.					
Leucochrysum albicans subsp. Tricolor **Hoary Sunray, Grassland Paper-daisy**	E	E	Occurs in a wide variety of grassland, woodland and forest habitats, generally on relatively heavy soils. Can occur in modified habitats such as semi-urban areas and roadsides. Highly dependent on the presence of bare ground for germination. In some areas, disturbance is required for successful establishment.	PMST	Absent – little bare ground present, soils loamy rather than heavy	Low	Low	No suitable habitat will be impacted. Although the site is disturbed, no evidence of the species was found during site visit. The site also contains large amounts of intact groundcover with limited bare ground.
Pimelea bracteate	CE	-	*Pimelea C-VuthegaC-Ve* occurs in wetlands and along waterways and stream edges in high altitude treeless subalpine valleys. It can also occur in wet heathland and closed heath.	1 (2022)	Absent	Low	Low	No suitable habitat will be impacted. Not a wetland area.
Pale Pomaderris **Pomaderris pallida**	V	V	This species usually grows in shrub communities surrounded by Brittle Gum (*Eucalyptus mannifera*) and Red Stringybark (*E. macrorhyncha*) or *Callitris* spp. Woodland.	PMST	Absent	Low	Low	No suitable habitat will be impacted.
Prasophyllum bagoense	CE	CE	Bago Leek Orchid is a tuberous ground orchid with leaves that normally regenerate	PMST	Marginal – although	Low – one known NSW	Low	No suitable habitat will be impacted.

Species	Listing		Habitat	No. of Records within 10 km	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
Bago Leek-orchid			from underground tubers each year in spring. In NSW found in sub-alpine grassy plains and low heathland (wetland) dominated by *Poa clivicola, Epacris gunnii* and *E. celata* (~1100m elevation) bordered by Snow Gum and Mountain Gum.		associated species present, landscape position differs	population near Tumbarumba		
Prasophyllum petilum **Tarengo Leek Orchid**	E	E	Grows in open sites within Natural Temperate Grassland at the Boorowa and Delegate sites. Also grows in grassy woodland in association with River Tussock *Poa labillardieri*, Black Gum *Eucalyptus C-VluthegaC-Vle* and tea-trees *Leptospermum* spp. Near Queanbeyan and within the grassy groundlayer dominated by Kanagroo Grass under Box-Gum Woodland at Ilford	PMST	Absent	Low	Low	No suitable habitat will be impacted.
Pterostylis oreophila **Blue-tongued Greenhood**	CE	CE	Grows along sub-alpine watercourses under more open thickets of Mountain Tea-tree in muddy ground very close to water. Less commonly grows in peaty soils and sphagnum mounds. While more frequently found in low-light conditions it appears to also be able to tolerate full sun.	1 (2013)	Absent	Low	Low	No suitable habitat will be impacted.
Ranunculus anemoneus	V	V	The Anemone Buttercup generally occurs in environments with late melting snow; on south to east facing, steep grassy slopes,	869 (1890-	Absent	Low	Low	Despite the high number of records in the area no suitable

Species	Listing		Habitat	No. of Records within 10 km	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
Anemone Buttercup			or rocky crevices, or short alpine herbfields. The species has also been collected along watercourses, in grassland, heathland (below snowpatches) and on roadside batters. Soils at Anemone Buttercup sites include loams (alpine humus soils), peats and decomposing granite.	2021)				habitat will be impacted. The closest record is 1.8km away from site.
Rytidosperma pumilum **Feldmark Grass**	V	V	Felmark Grass is limited to a tiny area – about 3ha – of the Main Range of Kosciuszko National Park between Mt Northcote and Mt Lee. Feldmark Grass is found only in the feldmark – the sparse low vegetation of the bare rocky alpine slopes and ridges, one of the harshest environments in Australia	69 (1949-2021)	Absent	Low	Low	Despite the high number of records in the area no suitable habitat will be impacted. The closest record is 5.2 km away from site.
Rytidosperma vickeryae **Perisher Wallaby-grass**	E	-	*Rytidosperma vickeryae* occurs in subalpine treeless vegetation, and is mainly recorded from stream-sides, the edges of tarns, and in and around bogs; within bogs, it is often found growing in mounds of *Sphagnum cristatum*. The species appears to be naturally rare and of restricted range and habitat, and is inconspicuous. Commonly grows in Sphagnum moss in montane peatland communities or along stream edges.	4 (2019-2022)	Absent	Low	Low	No suitable habitat will be impacted. The closest record is 5.2 km away from site.
Thesium	V	V	Occurs in grassland on coastal headlands or grassland and grassy woodland away	PMST	Absent	Low	Low	No suitable habitat will be impacted. No

Species	Listing		Habitat	No. of Records within 10 km	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
C-VIIluthega **Austral Toadflax**			from the coast. Often found in association with Kangaroo Grass (*Themeda australis*).					kangaroo grass present on site.
Xerochrysum palustre **Swamp Everlasting, Swamp Paper Daisy**	-	V	Grows in swamps and bogs which are often dominated by heaths. Also grows at the edges of bog margins on peaty soils with a cover of shrubs or grasses. Re-sprouts after fires. Sometimes grows in bogs with *Sphagnum*	PMST	Absent	Low	Low	No suitable habitat will be impacted. No records in the locality.
Threatened Ecological Communities (13)								
Alpine Sphagnum Bogs and Associated Fens	-	E	A common definition of a 'Sphagnum bog' ecological community is one where Sphagnum spp. Cover more than thirty per cent of the ground (Kirkpatrick, 1997). However, there are some sites in the Alpine Sphagnum Bogs and Associated Fens ecological community that are dominated by shrubs or Restionaceae spp., a peat substratum is evident. The key to bog formation is a good supply of groundwater and an impeded drainage system that keeps the water table at or near the surface. The ecological community is known to exist at 1200 m asl in Victoria and as low as 1000 m asl in parts of the Australian Capital Territory (ACT) and New South Wales (NSW).	PMST	Absent	Low	Low	No associated PCTs

Species	Listing		Habitat	No. of Records within 10 km	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
Bangalay Sand Forest of the Sydney Basin and South East Corner bioregions	E	-	The most common tree species include Bangalay (*Eucalyptus botryoides*) and Coast Banksia (*Banksia integrifolia* subsp. *Integrifolia*), while Blackbutt (*Eucalyptus pilularis*) and Lilly Pilly (*Acmena smithii*) may occur in more sheltered situations, and Swamp Oak (*Casuarina glauca*) may occur on dunes exposed to salt-bearing sea breezes or where Bangalay Sand Forest adjoins Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner bioregions	Bionet	Absent	Low	Low	No associated PCTs
Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E	-	Species composition varies with elevation and latitude, with Saltmarsh in southern NSW being generally more species-rich than further north. The sediment surface may support a diversity of seaweed species. Species restricted to coastal saltmarshes include *Distichlis distichophylla* (Endangered), *Halosarcia pergranulata* subsp. *Pergranulata*, *Wilsonia backhousei* (Vulnerable) and *Wilsonia rotundifolia* (Endangered).	Bionet	Absent	Low	Low	No associated PCTs
Lowland Grassy Woodland in the South East Corner Bioregion	E	-	Lowland Grassy Woodland communities in the South East Corner bioregion are located in rainshadow areas receiving less rainfall than more elevated terrain that partially surrounds them, with mean annual	Bionet	Absent	Low	Low	No associated PCTs

Species	Listing		Habitat	No. of Records within 10 km	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
			rainfall typically in the range of 700-1100 mm. The community typically occurs in undulating terrain up to 500 m in elevation on granitic substrates (e.g. adamellites, granites, granodiorites, gabbros, etc.) but may also occur on locally steep sites and on acid volcanic, alluvial and fine-grained sedimentary substrates. Contemporary tree-dominated stands of the community are largely relics or regrowth of originally taller forests and woodlands, which are likely to have had scattered shrubs and a largely continuous grassy groundcover. At some sites, mature trees may exceed 40 m, although regrowth stands may be shorter than 10					
Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion	CE	-	The trees may occur as pure stands dominated by Snow Gum, or with other characteristic trees as co-dominant to sub-dominant. Non-characteristic trees may occur as subdominant. The understorey in intact sites is characterised by native grasses and a high diversity of herbs; the most commonly encountered include kangaroo grass (*Themeda australis*) and common snow-grass (*Poa sieberiana*), with others including river tussock (*Poa labillardierei*), weeping grass (*Microlaena stipoides*), tall wheatgrass (*Anthosachne scabra*) and a variety of forbs. Shrubs are generally sparse or absent, though they	Bionet	Absent	Low	Low	Although similar to species to PCT on site, this EEC occupies broad valley floors, slopes and low rises of undulating tablelands. Site is in Thredbo valley. The western limit of this EEC occurs between Adaminaby and Ingebirah. The site is in mountainous country to the west. The PCTs on site is

Species	Listing		Habitat	No. of Records within 10 km	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
			may be locally common. Sub-shrubs (woody species <0.5 m tall) may be common. The most common shrubs and sub-shrubs include silver wattle (*Acacia dealbata*), red-stemmed wattle (*Acacia rubida*) and poison rice-flower (*Pimelea pauciflora*).					not listed as an associated PCT for this EEC.
Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions	E	-	The Montane Peatlands community is associated with accumulated peaty or organic-mineral sediments on poorly drained flats in the headwaters of streams. It occurs on undulating tablelands and plateaux, above 400-500 m elevation, generally in catchments with basic volcanic or fine-grained sedimentary substrates or, occasionally, granite.	PMST / Bionet	Absent	Low	Low	No associated PCTs
Natural Temperate Grassland of the South Eastern Highlands	-	CE	Five forms around in Monaro region, upper Shoalhaven River, around Canberra sampled range is relatively restricted and found on steep, exposed sites in the mid-Murrumbidgee catchment and in the upper Shoalhaven and Goulburn districts.	Bionet	Absent	Low	Low	No associated PCTs
Snowpatch Feldmark in the Australian Alps	CE	-	Snowpatch Feldmark is restricted to steep, sheltered slopes at high elevation that receive abundant snow in winter. The snow in this situation is the last to melt, resulting	Bionet	Absent	Low	Low	No associated PCTs

Species	Listing		Habitat	No. of Records within 10 km	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
Bioregion			in a very short growing season for the few species that characterize this community.					
Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E	-	Associated with humic clay loams and sandy loams, on waterlogged or periodically inundated alluvial flats and drainage lines associated with coastal floodplains. Generally occurs below 20 m (though sometimes up to 50 m) elevation.The composition of the community is primarily determined by the frequency and duration of waterlogging and the texture, salinity nutrient and moisture content of the soil, and latitude. The composition and structure of the understorey is influenced by grazing and fire history, changes to hydrology and soil salinity and other disturbance, and may have a substantial component of exotic grasses, vines and forbs.	Bionet	Absent	Low	Low	The site altitude it too high.
Tableland Basalt Forest in the Sydney Basin and South Eastern Highlands Bioregions	E	-	Tableland Basalt Forest typically occurs on loam or clay soils associated with basalt or, less commonly, alluvium, fine-grained sedimentary rocks, granites and similar substrates that produce relatively fertile soils. The species composition of Tableland Basalt Forest varies with average annual rainfall. On basalt or plutonic substrates east of Mittagong and Moss Vale, at the eastern edge of its distribution where average rainfall exceeds 1000-1100 mm	Bionet	Absent	Low	Low	No associated PCTs

Species	Listing		Habitat	No. of Records within 10 km	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
			per year, the community is replaced by Robertson Basalt Tall Open-forest and Mount Gibraltar Forest. Its distribution spans altitudes from approximately 600 m to 900 m above sea level, usually on undulating or hilly terrain. Mean annual rainfall varies from approximately 750 mm up to 1100 mm across the distribution of the community.					
Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions	CE	-	The trees may occur as pure stands dominated by snow Gum, or with candlebark as co-dominant to sub-dominant. Non-characteristic trees may occur as subdominant. The understorey in intact sites is characterised by native grasses and a high diversity of herbs; the most commonly encountered include kangaroo grass (*Themeda australis*) and common snow-grass (*Poa sieberiana*) with others including weeping grass (*Microlaena stipoides*), purple wiregrass (*Aristida C-XIIIutheg*), tall speargrass (*Austrostipa bigeniculata*), tall wheatgrass (*Anthosachne scabra*) and a variety of forbs. Shrubs are generally sparse or absent, though they may be locally common. Sub-shrubs (woody species <0.5 m tall) may be common. The most common shrubs and sub-shrubs include *Pimelia curviflora*, native cranberry (*Astroloma humifusum*) and hoary guinea-flower (*Hibbertia*	Bionet	Absent	Low	Low	No associated PCTs

Species	Listing		Habitat	No. of Records within 10 km	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
			obtusifolia).					
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland ***/*** ***White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner***	CE	CE	Characterised by the presence or prior occurrence of White Box, Yellow Box and/or Blakely's Red Gum and a generally grassy understorey. The trees may occur as pure stands, mixtures of the three species or in mixtures with other trees, including wattles. Commonly co-occurring eucalypts include Apple Box (*E. bridgesiana*), Red Box (*E. polyanthemos*), E. macrorhyncha), Coastal Grey Box (*E. moluccana*), Candlebark (*E. rubida*), Bundy (*E. goniocalyx*), Broad-leaved Stringybark (*E. goniocalyx*), Youman's Stringybark (*E. youmanii*) and others. The understorey in intact sites is characterised by native grasses and a high diversity of herbs; the most commonly encountered include Kangaroo Grass (*Themeda australis*), Poa Tussock (*Poa sieberiana*), wallaby grasses (*Rytidosperma* spp.), spear-grasses (*Austrostipa* spp.), Common Everlasting (*Chrysocephalum apiculatum*), Scrambled Eggs (*Goodenia pinnatifida*), Small St John's Wort (*Hypericum gramineum*), Narrow-leafed New Holland Daisy (*Vittadinia muelleri*) and blue-bells (*Wahlenbergia* spp.)	PMST / Bionet	Absent	Low	Low	No associated PCTs
Windswept Feldmark in the	CE	-	Windswept Feldmark occurs on high ridges of the Kosciuszko Main Range from 2010–	Bionet	Absent	Low	Low	No associated PCTs

Species	Listing		Habitat	No. of Records within 10 km	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
Australian Alps Bioregion			2150 m a.s.l. The shallow soils and strong winds in this environment result in vegetation cover in Windswept Feldmark being relatively sparse with low plant diversity. The dominant shrub (*Epacris microphylla*) grows in discrete 'halo-like' patches typically less than 1 m^2 in area and accounts for 25–50% cover of this community. It is thought to be important in facilitating regeneration and growth of several species restricted to this community, which include *Euphrasia collina* subsp. *Lapidosa*, *Kelleria dieffenbachia, Luzula australasica* subsp. *Dura, Ranunculus acrophilus, Rytidosperma pumilum* and *Veronica densifolia.*					

C.2 Fauna

Species	Listing		Habitat	No. of Records Within 10 km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
Amphibians (3)								

Species	Listing		Habitat	No. of Records Within 10 km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
Litoria spenceri **Spotted Tree Frog**	CE	E	Occur among boulders or debris along naturally vegetated, rocky fast flowing upland streams and rivers. In summer, during the breeding season, adults bask on large in-stream boulders while juveniles occupy shingle banks. In winter animals are thought to hibernate in vegetation outside of the main stream environment. The species is highly sedentary and does not venture away from the stream or riparian zone.	PMST	Absent	Low	Low	Although the proposed works are within 100 of Thredbo River, riparian vegetation would not be impacted.
Litoria verreauxii alpina **Alpine Tree Frog**	E	V	Found in stream side pools, fens and bogs within a wide variety of subalpne and alpine habitats including woodland, heath, grassland and herb fields. Breed in natural and artificial wetlands including ponds, bogs, fens, streamside pools, stock dams and drainage channels that are still or slow flowing. Overwinter beneath litter, logs rocks within or near streams.	4 (1982-1994)	Absent	Low	Low	No suitable habitat will be impacted. No current records of species in the area. Outdated records 6 km away from site.
Pseudophryne corroboree **Southern Corroboree Frog**	CE	CE	Summer breeding habitat is pools and seepages in sphagnum bogs, wet tussock grasslands and wet heath. Outside the breeding season adults move away from the bogs into adjacent heath and snowgum woodland to overwinter under litter, logs and dense groundcover. It is now restricted to the northern part of Kosciuszko NP, no further south than Smiggins Holes.	1 (1900)	Absent	Low	Low	No suitable habitat will be impacted. Extant population occurs north of Thredbo site.

Species	Listing		Habitat	No. of Records Within 10 km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
Aves (24)								
Anthochaera phrygia **Regent Honeyeater**	CE	CE	The Regent Honeyeater is a flagship threatened woodland bird whose conservation will benefit a large suite of other threatened and declining woodland fauna. The species inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak. Regent Honeyeaters inhabit woodlands that support a significantly high abundance and species richness of bird species. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes	PMST	Absent	Low	Low	No suitable habitat will be impacted.
Aphelocephala leucopsis **Southern Whiteface**	-	V	Southern whitefaces live in a wide range of open woodlands and shrublands where there is an understorey of grasses or shrubs, or both. These areas are usually in habitats dominated by acacias or eucalypts on ranges, foothills and lowlands, and plains.	PMST	Absent	Low	Low	No suitable habitat will be impacted.
Artamus cyanopterus cyanopterus **Dusky Woodswallow**	V	-	Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest	2 (1972-2014)	Marginal	Moderate	Moderate	The species has been recorded in 2014 within 300 metres of the proposed works. The habitat impacted has a moderately dense understorey

Species	Listing		Habitat	No. of Records Within 10 km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
			or rainforest. Also found in farmland, usually at the edges of forest or woodland.					and dense groundcover. The species may pass through but would be unlikely to depend upon the habitat for breeding or foraging.
Callocephalon fimbriatum **Gang-gang Cockatoo**	V	E	In spring and summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas. May also occur in sub-alpine Snow Gum (*Eucalyptus pauciflora*) woodland and occasionally in temperate rainforests.	60 (1980-2018)	Present	High	High	A small quantity of Suitable foraging habitat will be impacted. A large number of records in the area. ToS and AoS required.
Climacteris picumnus victoriae **Brown Treecreeper (eastern subspecies)**	V	V	Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and River Red Gum (*Eucalyptus camaldulensis*) Forest bordering wetlands with an open understorey of	PMST / Bionet	Absent	Low	Low	No suitable habitat will be impacted.

Species	Listing		Habitat	No. of Records Within 10 km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
			acacias, saltbush, lignum, cumbungi and grasses; usually not found in woodlands with a dense shrub layer; fallen timber is an important habitat component for foraging; also recorded, though less commonly, in similar woodland habitats on the coastal ranges and plains.					
Daphoenositta chrysoptera **Varied Sittella**	V	-	Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and *Acacia* woodland.	1 (1972)	Absent	Low	Low	No suitable habitat will be impacted. No current records in the area.
Falco hypoleucos **Grey Falcon**	V	V	Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near wetlands where surface water attracts prey.	PMST	Absent	Low	Low	No suitable habitat will be impacted.
Falco subniger **Black Falcon**	V		The Black Falcon inhabits woodland, shrubland and grassland in the arid and semi-arid zones, especially wooded watercourses and agricultural land with scattered remnant trees.	Bionet	Absent	Low	Low	No suitable habitat will be impacted. No recent records of species in the area.
Grantiella picta **Painted Honeyeater**	V	V	Inhabits Boree/ Weeping Myall (*Acacia pendula*), Brigalow (*A. harpophylla*) and Box-Gum Woodlands and Box-Ironbark Forests. A specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus *Amyema*.	PMST	Absent	Low	Low	No suitable habitat will be impacted. No recent records of species in the area.

Species	Listing		Habitat	No. of Records Within 10 km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
Lathamus discolor **Swift Parrot**	E	CE	Migrates to the Australian south-east mainland between February and October. On the mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany *Eucalyptus robusta*, Spotted Gum *Corymbia maculata*, Red Bloodwood *C. gummifera*, Forest Red Gum *E. tereticornis*, Mugga Ironbark *E. sideroxylon*, and White Box *E. albens*	PMST	Marginal	Low	Low	No suitable habitat will be impacted. No records of species in the area. No flowering trees during the time the species is within Australia.
Melanodryas cucullata **Hooded Robin (south-eastern form)**	V	E	Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses.	PMST	Absent	Low	Low	No suitable habitat will be impacted.
Neophema chrysogaster **Orange-bellied Parrot**	CE	CE	On the mainland, the Orange-bellied Parrot spends winter mostly within 3 km of the coast in sheltered coastal habitats including bays, lagoons, estuaries, coastal dunes and saltmarshes. The species also inhabits small islands and peninsulas and occasionally saltworks and golf courses. Birds forage in low samphire herbland or taller coastal shrubland.	1 (1917)	Absent	Low	Low	No suitable habitat will be impacted. No current records within the locality.

Species	Listing		Habitat	No. of Records Within 10 km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
Neophema chrysostoma **Blue-winged Parrot**	-	V	Foraging and staging habitats found from coastal, sub-coastal and inland areas, right through to semi-arid zones including grasslands, grassy woodlands, and semi-arid chenopod shrubland with native and introduced grasses, herbs and shrubs. Wetlands both near the coast and in semi-arid zones used for foraging and staging. Eucalypt forests and woodlands within the eastern South Australia and southern Victoria.	PMST	Absent	Low	Low	No suitable habitat will be impacted.
Pachycephala olivacea **Olive Whistler**	V	-	Mostly inhabit wet forests above about 500m. During the winter months they may move to lower altitudes. Forage in trees and shrubs and on the ground, feeding on berries and insects. Dense vegetation in the understorey of wet eucalypt forest and rainforest, and densely vegetated gullies.	86 (1982-2018)	Present	High	moderate	A large number of records within the locality, recorded within 500 metres of the subject land. Suitable habitat present within the subject land. ToS required if works are conducted during between November-January.
Petroica boodang **Scarlet Robin**	V	-	The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. This species lives in both mature and regrowth	8 (1972-2018)	Absent	Low	Low	No suitable habitat will be impacted. Understory may be too dense for the

Species	Listing		Habitat	No. of Records Within 10 km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
			vegetation. It occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps. Scarlet Robin habitat usually contains abundant logs and fallen timber: these are important components of its habitat.					species. Closest record is 2.3 km away from the subject land.
Petroica phoenicea **Flame Robin**	V	-	Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. Prefers clearings or areas with open understoreys. The groundlayer of the breeding habitat is dominated by native grasses and the shrub layer may be either sparse or dense. Occasionally occurs in temperate rainforest, and also in herbfields, heathlands, shrublands and sedgelands at high altitudes.	176 (1942-2020)	Present	High	Moderate	Despite many nearby records, this magnitude of clearing is unlikely to affect breeding, foraging or dispersal ability of this species in a well-connected and heavily forested landscape. No ToS required.
Petroica rodinogaster **Pink Robin**	V	-	Inhabits rainforest and tall, open eucalypt forest, particularly in densely vegetated gullies.	36 (1972-2017)	Present	High	Low	Alot of records within the locality, recorded within the subject land. Suitable habitat present within the subject land. ToS required if works are conducted during between November-January.
Pycnoptilus floccosus	-	V	Pilotbirds are strictly terrestrial, living on the ground in dense forests with heavy	8 (1972-	Present	High	Low	While dense undergrowth occurs

Species	Listing		Habitat	No. of Records Within 10 km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
Pilotbird			undergrowth. Habitat critical to the survival is wet sclerophyll forests (in temperate zones in moist gullies with dense undergrowth), dry sclerophyll forests and woodlands occupying dry slopes and ridges	2017)				adjacent to the bobsled run, the majority of the run itself is grassed; therefore providing impacts are contained to the development footprint, Pilotbird habitat is unlikely to be impacted.
Rostratula australis **Australian Painted Snipe**	E	E	Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber.	PMST	Absent	Low	Low	The impact area does not contain any waterbodies or wetland areas. Hence, no suitable habitat will be impacted.
Stagonopleura guttata **Diamond Firetail**	V	-	Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum *Eucalyptus pauciflora* Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. Often found in riparian areas (rivers and creeks), and sometimes in lightly wooded farmland. Areas critical to survival are those with low tree density, few large logs, and little litter cover but	PMST	Marginal	Low	Low	Suitable habitat is marginal in the subject land. No records of this sedentary species within the locality.

Species	Listing		Habitat	No. of Records Within 10 km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
			high grass cover for foraging, roosting and breeding.					
Fish (6)								
Galaxias supremus **Kosciuszko Galaxias**	-	CE	Galaxias supremus have been collected from permanent, cold and clear water in small flowing creeks (0.6–1.1 m average width, 0.1–0.2 m average depth, 0.5–0.6 m max depth) and from Blue Lake (a 16 hectare, 28 m deep cirque lake.Tthe substrate is cobble, pebble, gravel and silt, with fish collected from amongst small cobbles and from within 2 m of the shoreline; fish location and habitat in deeper water is unknown. All sites lack emergent or submerged aquatic vegetation or overhead shading	PMST	Absent	Low	Low	No waterways will be impacted by the proposed works.
Galaxias terenasus **Roundsnout Galaxias**	--	E	The roundsnout galaxias is found in clear and slow-moderate flowing freshwater creeks and rivers (0.1–0.6 m in depth and 10–12 m in width) at elevations between 250–785 m above sea level (ASL). Habitat includes pools, glides, riffles, and areas of still backwaters with varying degrees of riparian shading. Adults are solitary, preferring deeper pools, while juveniles are found in shoals, congregating in shallower water near waterway banks. During periods of no or low flow, fish can be found in remnant pools or in the areas between rocks and cobbles which	PMST	Absent	Low	Low	No waterways will be impacted by the proposed works.

Species	Listing		Habitat	No. of Records Within 10 km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
			retain water. Species in the mountain galaxias complex are highly susceptible to changes in water quality, with an upper thermal tolerance of approximately 33 °C, which lowers as dissolved oxygen levels fall. During periods of declining water level and surface water loss, it is suspected that these galaxias species seek refuge by burrowing into the substrate. Instream habitat cover is provided by rock, timber debris, and/or vegetation overhang.					
Maccullochella macquariensis **Trout Cod**	-	E	In the Murray River below Yarrawonga Weir, Trout Cod inhabit a large (60—100 m wide), deep (>3 m) flowing river section with a sand, silt and clay substrate that contains abundant snags and woody debris. Trout Cod are often angled from within, under or adjacent to snags, branch piles, and steep clay banks, usually in areas of relatively fast current .Trout Cod were only found in snag piles that were typically opposite sandy beaches or on outside bends. There is a degree of overlap with the habitat requirements of Murray Cod and therefore competition between these two species is likely As a large proportion of the streams that the Trout Cod originally inhabited are now degraded, it is difficult to accurately determine the habitat requirements of the species.	PMST	Absent	Low	Low	No waterways will be impacted by the proposed works.

Species	Listing		Habitat	No. of Records Within 10 km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
Maccullochella peelii **Murray Cod**	-	V	Murray Cod are frequently found in the main channels of rivers and larger tributaries. The species is, therefore, considered a main-channel specialist. Murray Cod tend to occur in floodplain channels and anabranches when they are inundated but the species' use of these floodplain habitats appears limited. Juveniles less than one year old have been found in main river channels where it appears they settle at a late larval (newly born) stage.	PMST	Absent	Low	Low	No waterways will be impacted by the proposed works.
Macquaria australasica **Macquarie Perch**	FM listed	E	In the Murray-Darling Basin, the species was once typically found in the cool, upper reaches of drainage systems located in southern New South Wales, the Australian Capital Territory and northern Victoria. In east coast drainage systems, the species has been recorded naturally occurring in the Hawkesbury/Nepean, Georges and Shoalhaven rivers in New South Wales.	PMST	Absent	Low	Low	No waterways will be impacted by the proposed works.
Prototroctes maraena **Australian Grayling**	FM listed	V	The Australian Grayling is endemic to south-eastern Australia, including Victoria, Tasmania and New South Wales. Larvae migrate out to sea for the first 4 – 6 months before migrating back to freshwater. In their freshwater phase they are found in moderate to fast flowing waters, such as glides or runs, during the day and slow-flowing waters at night.	PMST	Absent	Low	Low	No waterways will be impacted by the proposed works.

Species	Listing		Habitat	No. of Records Within 10 km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
Migratory (9)								
Actitis hypoleucos **Common Sandpiper**	-	M	The species utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflat	PMST	Absent	Low	Low	The impact area does not contain any waterbodies or wetland areas. Hence, no suitable habitat will be impacted.
Apus pacificus **Fork-tailed Swift**	-	M	In Australia, they mostly occur over inland plains but sometimes above foothills or in coastal areas. They often occur over cliffs and beaches and also over islands and sometimes well out to sea. They also occur over settled areas, including towns, urban areas and cities. They mostly occur over dry or open habitats, including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh. They are also found at treeless grassland and sandplains covered with spinifex, open farmland and inland and coastal sand-dunes. The sometimes occur above rainforests, wet sclerophyll forest or open forest or plantations of pine	1 (2002)	Absent	Low	Low	No suitable habitat will be impacted.
Calidris acuminata **Sharp-tailed**	-	M	In Australasia, the Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low	PMST	Absent	Low	Low	The impact area does not contain any waterbodies or wetland areas. Hence,

Species	Listing		Habitat	No. of Records Within 10 km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
Sandpiper			vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline saltlakes inland. They also occur in saltworks and sewage farms. They use flooded paddocks, sedgelands and other ephemeral wetlands, but leave when they dry.					no suitable habitat will be impacted.
Calidris ferruginea **Curlew Sandpiper**	E	CE M	It generally occupies littoral and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats of sheltered coasts. It also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes inland. It forages in or at the edge of shallow water, occasionally on exposed algal mats or waterweed, or on banks of beach-cast seagrass or seaweed.	PMST	Absent	Low	Low	The proposal site area does not contain any waterbodies or wetland areas. Hence, no suitable habitat will be impacted.
Calidris melanotos **Pectoral Sandpiper**	-	M	In Australasia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands.	PMST	Absent	Low	Low	The proposal site area does not contain any waterbodies or wetland areas. Hence, no suitable habitat will be impacted.
Gallinago hardwickii	-	M	In Australia, Latham's Snipe occurs in permanent and ephemeral wetlands up to 2000 m above sea-level. They usually inhabit open,	12 (1946-	Absent	Low	Low	The impact area does not contain any waterbodies or

Species	Listing		Habitat	No. of Records Within 10 km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
Latham's Snipe, Japanese Snipe			freshwater wetlands with low, dense vegetation (e.g. swamps, flooded grasslands or heathlands, around bogs and other water bodies)	2001)				wetland areas. Hence, no suitable habitat will be impacted. May fly over but unlikely to be dependent on habitat in the subject land.
Hirundapus caudacutus **White-throated Needletail**	-	V M	In Australia, they mostly occur above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland. They also commonly occur over heathland, but less often over treeless areas, such as grassland or swamp. When flying above farmland, they are more often recorded above partly cleared pasture, plantations or remnant vegetation at the edge of paddocks. Non-breeding roosting habitat includes within dense foliage or hollows in forests and woodlands.	8 (1970-1998)	Present	Moderate	Low	May fly over or even occasionally roost in study area but unlikely to be dependent on habitat in the proposal site.
Motacilla flava **Yellow Wagtail**	-	M	Various landscapes such as lowlands, where forests are located or forest-steppe belts, and it is also attracted by swampy meadows or river valleys. Marshland with grass and rare shrubs is also suitable for it as a habitat.	PMST	Absent	Low	Low	No suitable habitat will be impacted.
Myiagra cyanoleuca	-	E M	Satin Flycatchers are mainly recorded in eucalypt forests, especially wet sclerophyll forest, often dominated by eucalypts such as	PMST	Absent	Low	Low	No suitable habitat will be impacted.

Species	Listing		Habitat	No. of Records Within 10 km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
Satin Flycatcher			Brown Barrel, *Eucalypt fastigata*, Mountain Gum, *E. dalrympleana*, Mountain Grey Gum, Narrow-leaved Peppermint, Messmate or Manna Gum, or occasionally Mountain Ash, *E. regnans*.					
Numenius madagascariensis **Eastern Curlew, Far Eastern Curlew**	-	CE M	It generally occupies coastal lakes, inlets, bays and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats and sometimes saltmarsh of sheltered coasts.	PMST	Absent	Low	Low	No suitable habitat will be impacted.
Rhipidura rufifrons **Rufous Fantail**	-	M	In east and south-east Australia, the Rufous Fantail mainly inhabits wet sclerophyll forests, subtropical and temperate rainforests, and drier sclerophyll forests and woodlands.	PMST	Absent	Low	Low	No suitable habitat will be impacted.
Mammals (10)								
Burramys parvus **Mountain Pygmy-possum**	E	E	The species is largely confined to naturally-occurring boulderfields and rock screes in alpine and subalpine areas at altitudes above 1400 m. Individuals have occasionally been observed at sites of 1200 m above sea level. Lives on the ground in rocky areas where boulders have accumulated below mountain peaks; frequently associated with alpine heathland shrubs dominated by the Mountain Plum-pine (*Podocarpus lawencei*).	148 (1997-2017)	Absent	Low	Low	A large number of records in the area with the closest within 1.5 km of the subject land. Shrub dominated landscape will be impacted. Landscape is not Rocky enough to house this species. Species is unlikely to be present in the area

Species	Listing		Habitat	No. of Records Within 10 km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
								and impacted by the proposed works.
Dasyurus maculatus **Spotted-tailed Quoll**	V	E	Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline	2 (1998-2020)	Present	Moderate	Low	the home range area estimates for a Spotted-tailed Quoll are between 88 ha to 2561 ha. Minor land use change and minor clearing affecting 0.61 ha of a home range would have minimal effect upon this species (Claridge, et al., 2005).
Falsistrellus tasmaniensis **Eastern False Pipistrelle**	V	-	Prefers moist habitats, with trees taller than 20 m. Generally, roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings.	3 (1970-1997)	Marginal	Low	Low	There are no hollows or fissures in the native trees to be removed and hence no roosting habitat. Limited bat habitat present in the area. No current records in the locality. Closest record is 5.6 km away.
Mastacomys fuscus mordicus **Broad-toothed**	V	V	The Broad-toothed Rat lives in a complex of runways through the dense vegetation of its wet grass, sedge or heath environment, and under	83 (1969-	Present	High	High	A large number of records nearby, suitable habitat in

Species	Listing		Habitat	No. of Records Within 10 km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
Rat (mainland), Tooarrana			the snow in winter. This relatively warm under-snow space enables it to be active throughout winter. Sheltering nests of grass are built in the understorey or under logs, where two or three young are born in summer. In winter the rats huddle together in nests, for warmth. In NSW the Broad-toothed Rat occurs in two widely separated areas: the wet alpine and subalpine heaths and woodlands in Kosciuszko National Park	2021)				development footprint, species highly likely to occur. ToS and AoS required.
Petauroides Volans **Southern Greater Glider**	E	E	Feeds exclusively on eucalypt leaves, buds, flowers and mistletoe. Shelter during the day in tree hollows and will use up to 18 hollows in their home range.	Bionet	Marginal	Low	Low	No hollow bearing trees present in the area. No records within the locality.
Petaurus australis **Yellow-bellied Glider**	V	V	Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Forest type preferences vary with latitude and elevation; mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south.	Bionet	Marginal	Moderate	low	Vegetation type not suitable habitat as such unlikely to impact this species. No hollow bearing trees present in the area. No records within the locality.
Phascolarctos cinereus **Koala**	E	E	Inhabit eucalypt woodlands and forests. Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species.	1 (1900)	Marginal	Low	Low	Marginally suitable habitat present in the area. Documented irregular use of Snowgums within the

Species	Listing		Habitat	No. of Records Within 10 km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
								central and southern tablelands. No recent records in the area. Species unlikely to rely on the subject land as suitable habitat.
Pseudomys fumeus **Smoky Mouse, Konoom**	CE	E	The Smoky Mouse appears to prefer heath habitat on ridge tops and slopes in sclerophyll forest, heathland and open-forest from the coast (in Victoria) to sub-alpine regions of up to 1800 metres, but sometimes occurs in ferny gullies. In NSW there are 3 records from Kosciuszko National Park and 2 records adjacent to the park in Bondo and Ingbyra State Forests; the remainder are centred around Mt Poole, Nullica State Forest and the adjoining South East Forests National Park.	PMST	Absent	Low	Low	No suitable habitat Habitat present is shrub dominated. All records of Smokey mouse are located around mt Selwyn at the northern part of the park.
Pteropus poliocephalus **Grey-headed Flying-fox**	V	V	Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops.	PMST	Marginal	Moderate	Low	Limited bat habitat present in the area. No roosting habitat present. No records in the locality.
Reptiles (5)								

Species	Listing		Habitat	No. of Records Within 10 km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
Aprasia parapulchella **Pink-tailed Worm-lizard, Pink-tailed Legless Lizard**	V	V	Inhabits sloping, open woodland areas with predominantly native grassy groundlayers, particularly those dominated by Kangaroo Grass (*Themeda australis*). Sites are typically well-drained, with rocky outcrops or scattered, partially buried rocks.	PMST	Absent	Low	Low	The habitat is highly treed with limited rocks. The stockpile areas may impact minimal suitable habitat. The species does not occur within subalpine area.
Cyclodomorphus praealtus **Alpine She-oak Skink**	E	E	The Alpine She-oak Skink has specific habitat requirements, preferring tree-less or very lightly treed areas that contain tussock grasses, low heath or a combination of both. Within this habitat the species shelters beneath litter, rocks, logs and other ground debris, and has been observed basking on grass tussocks. In NSW, Alpine She-oak Skinks have been observed in alpine to sub-alpine grasslands in flat to gently sloping areas.	57 (1981-2022)	Marginal	Low	Low	Despite a large number records within the area, the habitat is highly treed with limited rocks. The closest record is 4 km away from the subject land. The stockpile areas may impact minimal suitable habitat.
Liopholis guthega **Guthega Skink**	-	E	The preferred habitats for the Guthega Skink are usually rocky or have sub-surface boulders hidden beneath soil or thick vegetation. The species utilizes burrows often opening from under boulders or shrubs. The skink is also known to use fallen timber and surface rocks for shelter. Sites are generally covered with snow from approximately June to October and have mild temperatures in summer. During the colder	403 (2006-2023)	Marginal	Low	Low	Suitable habitat will be impacted. A large number of recent records within the locality. The closest record is 2.3 km away from the subject land. The species in habitats a large range

Species	Listing		Habitat	No. of Records Within 10 km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
			periods, the species is insulated by living in soil burrows combined with deep snow cover. Individuals have been recorded in a range of vegetation types, including open Snow Gum (Eucalyptus pauciflora) woodland with grassy or shrubby understoreys, dry tussock grassland, and tall and short heath (Donnellan et al. 2002). The Guthega Skink usually occurs in areas where the topography ranges from flat plains to rolling alpine hills. The geology in known areas of occurrence is often granitic.					of variety of habitats. Although the nearest known population is above 1600m altitude, making It unlikely to to be present within the subject land.
Liopholis montana **Mountain Skink**	-	E	The mountain skink occupies habitats with granite and basalt boulders, rocks, slabs, rock screes or tors and large logs in tall open-forest, woodland, and heathland vegetation in montane and subalpine areas of south-east Australia from 600–1700m above sea level. In the north of its range, the mountain skink occupies montane and subalpine conditions above 1400 m; however, in more southern locations it occupies taller eucalypt forest down to 900 m and down to 630 m in the west of its range.	PMST	Absent	Low	Low	Rocky habitat within woodland is not present.
Pseudemoia cryodroma **Alpine Bog Skink, Alpine Bog-skink**	-	E	The alpine bog skink occurs primarily in alpine bog, riparian and wet heath areas above 1100 m elevation, and less commonly in alpine and subalpine grassland and dry treeless heath, drainage lines in subalpine meadows, and in snow gum woodland. These areas provide the	PMST	Marginal	Low	Low	No bog habitat nearby, no local records.

Species	Listing		Habitat	No. of Records Within 10 km Locality	Presence of Habitat	Likelihood of Occurrence	Possible Impact	Justification
	BC Act	EPBC						
			alpine bog skink with all the resources it requires for its life cycle (i.e. food, water, shelter, and breeding sites). The alpine bog skink usually occurs in wetter areas than the tussock skink and more open areas than the southern grass skink					

Appendix D Threatened Species Test of Significance

D.1 BC Act Test of Significant Impact (TOS)

D1.1 Broad-toothed Rat

The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats
a) In the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction?
Habitat Availability and Dispersal The Broad-toothed Rat is a species with a highly fragmented population, found within the alpine and subalpine regions across the great dividing range (Threatened Species Scientific Committee, 2016). Habitat for the species includes alpine and subalpine heathlands, grassland adjacent to boulder outcrops, swamps, sedgelands, coastal grassy or shrubby dunes, and sometimes forests with grassy understories (Threatened Species Scientific Committee, 2016). Habitat for the species is largely discontinuous, resulting in micro populations and habitat fragmentation (Threatened Species Scientific Committee, 2016). However, many areas of apparently suitable habitat are unoccupied due limited connectivity and the species inability to disperse significant gaps between vegetation. (Threatened Species Scientific Committee, 2016). Despite this, the species are considered “good dispersers” (Milner, Starrs, Hayes, & Evans, 2016). Potential habitat in the subject land is the derived grassland areas (0.15ha). However, slightly more than this area would be suitable habitat as forest patches with grassy understorey occur in parts of the site but have not been quantified. The subject land habitat consists of a previously disturbed corridor of PCT 3306, which has three-metre cleared buffer separating it from the adjacent landscape. Although the species has a limited home range and is susceptible to fragmentation at the population level, the proposal is unlikely to impact the dispersal ability of the species. **Reproduction** Broad-toothed Rat have low fecundity (Threatened Species Scientific Committee, 2001) with one or two litters (of one to four young each) per season, between October and March (Threatened Species Scientific Committee, 2016).The species constructs nests in burrows underground, suggesting that it spends most of its breeding period beneath the surface (Threatened Species Scientific Committee, 2016). If the bobsled removal is undertaken between October and March, the species may experience both indirect and direct disruptions to their activities due to the proximity of machinery, and the removal of the metal bobsled, potentially uncovering underground nesting areas. **Home range** The limited movement of the species is directly seen in its’ limited home range. The species has a

home range of about 0.1ha-0.3ha (Threatened Species Scientific Committee, 2016). The Proposal will impact 0.15ha of suitable habitat spread throughout 3.3ha. Hence, due to the limited home range of the species there is potential for several individuals to be impacted by the proposed works. This impact is not deemed to place the species at risk of extinction as there due to suitable contiguous vegetation surrounding the subject land.
b) In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: i. is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or ii. is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction
N/A
c) In relation to the habitat of a threatened species or ecological community: i. the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and ii. whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and iii. the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,
The proposed works will remove suitable breeding and foraging habitat for the Broad-toothed Rat (BTR). A total of 0.15 ha of derived grassland PCT 3306 will be directly impacted by the proposed works. In addition to this, fallen logs, which act as dens for the species during the winter, will be impacted removed as a part of the proposed works. The species distribution is already fragmented, with sparse subpopulations scattered across different geographic areas (Threatened Species Scientific Committee, 2016). The area being impacted is highly vegetated and surrounded by contiguous vegetation. Extensive vegetation can be seen to the west of the subject land, with a cleared gap to the subject land of approximately 10 metres. Additionally, further east there is a slightly disturbed pathway towards Biodiversity Value mapped land. O'Brien (2008) found that habitat patches within 500m could be considered connected for BTR (O'Brien et al., 2008). On this basis, the 10 m cleared gap would not be a barrier for BTR and the habitat in the proposal can be considered part of the surrounding larger habitat patch The habitat affected by the proposed works is considered to be of low to moderate importance for the species, as it has been previously altered. However, certain areas within the impacted habitat hold high importance, such as densely vegetated undergrowth and fallen logs. These areas serve as favourable nesting habitats for the species, particularly during the winter season.
d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),
No Areas of Outstanding Biodiversity will be impacted either directly or indirectly by the proposed

works.

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

Type of Threat	Key threatening Processes	impact	Significance
Habitat Loss/Change	Removal of dead wood and dead trees	Multiple dead tree logs would be removed from the area within the 0.15ha of suitable habitat.	The removal of logs from the area will remove suitable habitat for the Broad-toothed rat. If all dead wood is returned to nearby vegetation, the proposed works will not significantly impact the species.
Pest Animal	Predation by feral cats	The proposed clearing may increase the presence of feral pest species.	The clearing may increase the prevalence of pest species. This increase is not likely to be enough to significantly impact the Broad-toothed Rat.
Pest Animal	Predation by the European Red Fox	The proposed clearing may increase the presence of feral pest species.	The clearing may increase the prevalence of pest species. This increase is not likely to be enough to significantly impact the Broad-toothed Rat.
Disease	Infection of native plants by Phytophthora cinnamomic	Plant species in the area are susceptible to *P.cinnamomi* infection	Mitigation measures must be followed surrounding biosecurity of equipment as if the native plants become infected by *P.cinnamomi* it is likely to have a significant impact on the suitable habitat available for the species in the area.
Habitat Loss/Change	Clearing of native vegetation	0.15 ha of native vegetation will be removed from the subject land.	As there is a large amount of similar contiguous vegetation surrounding the subject land, it is unlikely that the removal of less than 1ha will significantly impact the Broad-toothed Rat.

Invasion and establishment of exotic vines and scramblers	Weed	Invasive vines in the form of Blackberry were present within the subject land.	Invasive vines may be spread throughout the subject land if inappropriate biosecurity protocols are implemented. This will impact the quality of habitat present for the Broad-toothed Rat.

Recommended mitigation measures and safeguards for threatened entities:

Mitigation Measure and Safeguards for threatened entities include:

- Protocol for unexpected find of Broad-toothed Rat during works.
- Relocate dead wood to nearby vegetation.
- Implement basic hygiene measures to avoid introducing or spreading *Phytophthora cinnamomi*.
- Minimise unintentional impact to adjacent vegetation by clearly delineate approved clearing area.

Conclusion

Providing mitigation measures are followed, the proposal is unlikely to lead to a significant impact to the Kosciuszko National Park Broad-toothed Rat population.

A.1.1 GANG-GANG COCKATOO

The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats

a) In the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction?

Habitat Availability and Dispersal

The Gang-gang Cockatoo is found in tall mountain forests, woodlands, lower altitude open eucalypt forests, and woodlands (DPE, 2022; NSW Scientific Committee, 2008). While the species is highly mobile, habitat fragmentation may impede its dispersal and foraging efficiency (DPE, 2022; NSW Scientific Committee, 2008). The proposed works will affect 0.61ha of suitable foraging habitat in the subject land, where sightings of the species have occurred. The subject land is located within Kosciuszko National Park (KNP), which offers ample suitable habitat for the species in the vicinity.

Reproduction and life stages

The Gang-Gang Cockatoo nests in hollows of tall living trees, particularly eucalypts, often near water (DPE, 2022; NSW Scientific Committee, 2008). They lay a clutch of typically two eggs during spring to summer (NSW Scientific Committee, 2008). Incubation takes about four weeks, nestling period lasts seven to eight weeks, and post-fledging dependence extends for at least four to six weeks (NSW Scientific Committee,

2008). The Gang-Gang Cockatoo has a potentially long lifespan (NSW Scientific Committee, 2008).As the subject land lacks hollow-bearing trees, the breeding and life stages of the species are unlikely to be significantly affected by the proposed works.

Home range

The Gang-gang Cockatoo apparently breeds semi-colonially where densities are high (NSW Scientific Committee, 2008). It is thought to show high fidelity to a selected nest hollow (NSW Scientific Committee, 2008). The Gang-gang Cockatoo is highly mobile and can disperse or migrate tens of kilometres, so population fragmentation is unlikely except where populations are isolated by extensive suburbia (NSW Scientific Committee, 2008). Due to the minimal clearing of less than 1ha of native vegetation the species is not likely to be placed at risk of extinction.

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

i. is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

ii. is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

N/A

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

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

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

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

The proposed works will remove suitable foraging habitat for the Gang-gang Cockatoo. A total of 0.46ha of forest PCT 3306 will be directly impacted by the proposed works. There will be no hollow bearing trees impacted by the proposed works.

Due to its location within Kosciuszko National Park, the vegetation in the area maintains a strong continuity. The proposed works, which involve removing less than 1ha of suitable foraging habitat, are unlikely to fragment the highly mobile species. Moreover, the remaining habitat is in excellent condition, ensuring that no gaps will be formed in the habitat for the species.

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat. Despite this, in Summer months the habitat is considered critical to the survival of the species (DAWE, 2022). During winter the species altitudinally migrates to lower areas not using the habitat present on site. However, considering the abundance of similar vegetation in the surrounding area, it is unlikely that the habitat being removed is vital for the survival of the species.

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

No Areas of Outstanding Biodiversity will be impacted either directly or indirectly by the proposed works.

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

Type of Threat	Key threatening Processes	Impact	Significance
Disease	Infection of native plants by Phytophthora cinnamomic	Plant species in the area are susceptible to *P.Cinnamomic* infection	If mitigation measure are followed surrounding biosecurity of equipment, it will be unlikely that this will significantly impact the species ability to forage in the area post works.
Habitat Loss/Change	Clearing of native vegetation	0.46 ha of forest habitat will be removed from the subject land.	As there is a large amount of similar contiguous vegetation surrounding the subject land, it is unlikely that the removal of 1ha will significantly impact the Gang-gang Cockatoo.

Recommended mitigation measures and safeguards for threatened entities:

Mitigation Measure and Safeguards for threatened entities include:

- Exclusion zones at the extent of the works corridor to limit works encroaching outside the corridor should be used.

Conclusion

The proposed works will remove 0.46ha of suitable forest foraging habitat for the Gang-Gang Cockatoo. This impact is unlikely to have a significant impact for the species as the subject land is surrounded by similar contiguous vegetation.

D.2 EPBC Act Assessment of Significant Impact (AoS)

Two (2) EPBC Act Assessment of Significant Impact (AoS) have been undertaken in accordance with the Significant Impact Guidelines 1.1 - MNES for two listed species – the Broad-toothed Rat and Gang-gang Cockatoo. The assessments concluded the project is unlikely to have a significant impact on MNES. Therefore, a referral to the Commonwealth Environment Minister is not recommended.

D2.1 Broad-toothed Rat

a) Will the action lead to a long-term decrease in the size of an important population of a species?
The Kosciuszko National Park population of the Broad-toothed Rat is an important population as the species is known to only be found in two geographical locations within NSW (Threatened Species Scientific Committee , 2016). These locations occur in two separate areas, Kosciuszko National Park and Barrington Tops National Park. Within Kosciuszko National Park the species is inhabits wet alpine and subalpine heaths and woodlands (Threatened Species Scientific Committee , 2016). The species has a moderate risk of mortality due to the proposed clearings, which is further heightened by the limited ability to detect the species within dense vegetation. However, by implementing a fauna spotter catcher that can identify runways, scats, and other signs of species presence in the area, this risk can be alleviated. Direct mortality is at its lowest when works are conducted during the summer as the species nests in the soil (Threatened Species Scientific Committee , 2016). Whereas during the winter, it dens communally during the day in nests of shredded grass situated in dense undergrowth or under logs beneath the snow, while remaining active in the vegetation layer under snow cover (Threatened Species Scientific Committee , 2016). The home range size and social dispersion vary seasonally, from about 0.1 ha to 0.3 ha (Threatened Species Scientific Committee , 2016). The Proposal will impact 0.15 ha of suitable habitat for the species, although this impact is spread throughout 3.3ha, retaining 3.15ha. Hence, even though the species has a small home range, the proposed works are unlikely to reduce the habitat extent in a significant way. Continued disturbance will not increase due to the proposed works and little impact will be made to the populations carrying capacity and breeding success. The proposal may reduce the size of the important population through direct mortality, although the proposed works are unlikely to lead to a long decrease in the size the important population.
b) Will the action reduce the area of occupancy of an important population?
It has been identified that the mainland subspecies Area of Occupancy (AOO) for Broad-tooth Rat is 44,400 ha (Threatened Species Scientific Committee , 2016). The Alpine Ash High Wet Forest habitat within the subject land is likely to be used by the species, falling into its known distribution. A total of 0.15 ha of grassy habitat for the species will be temporarily impacted due to the proposed works, which is less than 0.001% of the species AOO. Given this and the extent of suitable surrounding vegetation, the proposal is unlikely to reduce the AOO of the Broad-toothed Rat.
c) Will the action fragment an existing important population into two or more populations
The proposed area contains habitat that is encompassed by densely vegetated suitable habitat in Kosciuszko National Park. The species distribution is already fragmented, with sparse subpopulations scattered across different geographic areas. The subject land has already experienced some level of disturbance as it is an existing constructed bobsled. O'Brien (2008) found that habitat patches within 500m could be considered connected for BTR (O'brien et al, 2008). On this basis, a gap <500m cleared by the proposed works would not be a barrier for BTR and the habitat in the proposal can be considered part of the surrounding larger habitat patch (O'brien et al, 2008). Although the species has a limited home range and is susceptible to fragmentation at the population level, the proposed activities are unlikely to cause significant fragmentation of the important population. This is mainly because of the substantial amount of surrounding vegetation and the minimal impact expected from the proposed works.
d) Will the action adversely affect habitat critical to the survival of a species

There is currently no national recovery plan for the species. Commonwealth Conservation Advice for the species identifies all habitat where Broad-toothed Rat occurs, or could occur, as critical to its' survival (DCCEEW, 2023). Thus, 0.15 ha of habitat critical the survival of the species would be adversely affected.

e) Will the action disrupt the breeding cycle of an important population?

The Broad-toothed Rat breeds during the spring and summer months, specifically between October and March (Threatened Species Scientific Committee , 2016). It constructs nests in burrows underground during this time, suggesting that it spends most of its breeding period beneath the surface (Threatened Species Scientific Committee , 2016). Broad-toothed Rats have small home ranges (0.1 to 0.3ha) and during summer, they are solitary and exclusive (Milner, Starrs, Hayes, & Evans, 2016). Based on home range size and solitary existence during summer, up to one pair could inhabit the subject land. The breeding cycle of up to one pair could be disrupted; this is unlikely to have a population scale effect.

f) Will the action modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?

Habitat loss is a significant threat the Broad-toothed Rat, particularly habitat destruction associated with ski resort development (Threatened Species Scientific Committee , 2016). The proposed works will impact 0.15 ha of suitable breeding and foraging habitat for the species. This will be a minor decrease in the availability of quality habitat for the species around Thredbo. The habitat is still likely to support the population following the proposed works. There are other threats to Broad-toothed Rat that may arise from the change in land use from bobsled to MBT track including importation and transportation of diseases, pests and weeds via soil lodged in bike tyres and boots. Unmitigated these threats could reduce habitat quality; but threats are managed.

g) Will the action result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat?

The Broad-Toothed Rat faces many threats from invasive species such as, European foxes (Threatened Species Scientific Committee , 2016). Additionally, there is habitat degradation due to feral horses, rabbits, deer, hares, and pigs (Threatened Species Scientific Committee , 2016). These invasive species are already noted extensively throughout Kosciuszko National Park. As the proposal involves removal of an existing bobsled run (rather than creation of a new disturbance area), it is unlikely that the proposed works will result in further establishment of harmful invasive species.

h) Will the action introduce disease that may cause the species to decline?

Phytophthora cinnamomi is a fungal pathogen that causes plant and tree diseases. In *Eucalyptus pauciflora* woodland, *O. arborescens* forms a dense understorey (McDougall et al., 2003). *P. cinnamomi* has been found in *O. arborescens* plants, *Lycopodium deuterodensum* (Lycopodiaceae) and *Tasmannia purpurascens* (Winteraceae) plants (McDougall et al., 2003). The disease caused by this fungus completely eradicates *O. arborescens* from the affected areas, resulting in the dominance of the grass species *Poa sieberiana* (McDougall et al., 2003). Diseased areas will provide poorer habitat for threatened fauna such as the Broad-toothed Rat (*Mastacomys fuscus)* (McDougall et al., 2003). Machinery can increase the presence of *P. cinnamomic* in an area although the most common transmission is root to root transmission (McDougall et al., 2003). With the implementation of appropriate hygiene protocols outlined in the SEMP;

the proposed works are unlikely to introduce disease that could cause the species to decline.
i) Will the interfere substantially with the recovery of the species?
Despite the clearing of habitat critical to survival, the small magnitude of clearing (0.15 ha of grassy habitat) means the proposal is unlikely to interfere with recovery of Broad-toothed Rat.
Conclusion
The proposal is unlikely to significantly impact Broad-toothed Rat.

D.3 Gang-gang Cockatoo

a) Will the action lead to a long-term decrease in the size of a population?
The Gang-Gang Cockatoo population is estimated at 25,300 mature individuals and is declining. This number includes various sub-populations (DAWE, 2022). The population at KNP is part of the larger NSW-ACT-Victorian population (DAWE, 2022). Population size is maintained by breeding, survival and dispersal. The proposal will impact 0.46 ha of suitable forest feeding habitat. No HBT would be affected. Connectivity would be maintained. There is a low chance of an individual or small family group having reduced foraging availability, but the magnitude would be small. Thus, a population scale effect is not considered likely, and the proposed action would not lead to the long-term decrease in the size of the population.
b) Will the action reduce the area of occupancy of the species?
It has been identified that the NSW extent of occurrence for the species is estimated at 15 million ha with an area of occupancy estimated to be 1.8 million ha (NSW Scientific Committee, 2008). The habitat within the subject land is likely to be utilised by the species (NSW Scientific Committee, 2008). A total of 0.46 ha of suitable foraging habitat for the species may be impacted due to the proposed works, however this would not render the area unsuitable for the species. Sixty records of the Gang-gang Cockatoo exist in and around, ranging from 1980-2018. Given the long period of occupation and the extent of suitable surrounding vegetation, the proposal is unlikely to reduce the area of occupancy of the Gang-gang Cockatoo.
c) Will the action fragment an existing population into two or more populations?
The Gang-gang Cockatoo occurs in pairs, family groups and small flocks (NSW Scientific Committee, 2008). The proposed works will reduce the availability of foraging habitat within the subject land. This reduction is minimal. The Gang-gang Cockatoo is highly mobile, dispersing tens of kilometres, meaning that population fragmentation only occurs when isolated by extensive suburbia (NSW Scientific Committee, 2008). In consideration of the above mentioned it is unlikely the action will fragment any Gang-gang Cockatoo populations.
d) Will the action adversely affect habitat critical to the survival of a species?

Habitat critical to the survival of the Gang-gang Cockatoo includes all foraging habitat during both the breeding and non-breeding season (DAWE, 2022). The proposed works will impact 0.46ha of foraging habitat critical to the survival of the species.

e) Will the action disrupt the breeding cycle of a population?

The Gang-gang cockatoo nests in hollows in trunks, limbs, or dead spouts in tall living trees. Nests are 20 cm in floor diameter, around 50.5 cm deep and occur approximately 7.5 m off the ground, particularly favouring eucalyptus trees and are loyal to specific hollows, which if removed would disrupt the breeding cycle of the species (DAWE, 2022). No breeding habitat will be impacted by the proposed works. Therefore, the proposed works will not disrupt the breeding cycle of a population.

f) Will the action modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?

Recovery plans for the Gang-gang Cockatoo aim to conserve critical habitat for survival, particularly tall wet forest and dry sclerophyll forest vegetation (DPE, 2022). The proposed works will impact 0.46 ha of habitat critical to the survival of the species. However, this impact would not be to the extent that it would cause species decline.

g) Will the action result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat?

The Gang-gang Cockatoo is a hollow specific species which faces threat from species competition. Species that compete with the Gang-gang Cockatoo for nesting sites include the introduced European honeybees *Apis mellifera* and many native species such as Possums, Lorikeets, Rosellas and Mynas (DAWE, 2022). Aggressive interactions due to the territorial nature of the Gang-gang Cockatoo can have serve impacts on the likelihood of survival (DAWE, 2022). The proposed works will not increase the likelihood of competition for hollows by invasive species impacting as no HBTs are being removed.

h) Will the action introduce disease that may cause the species to decline?

Gang-gang Cockatoos are susceptible to Psittacine beak and feather disease (Sarker et al., 2020). Beak and feather disease virus is highly prevalent in a range of abundant Australian psittacine (Sarker et al., 2020). It is transmitted through feather dander, faeces, and saliva (DAWE, 2022; Sarker et al., 2020). The proposal is considered unlikely to result in any increase to the likelihood of PBFD occurrence within the subject land as the hollow availability will not be decreased. Mitigations can be implemented by following hygiene protocols for arborists and ecologist present as a part of the development.

i) Will the action interfere with the recovery of the species?

There is no adopted or made Recovery Plan for this species.

The proposal will remove potential foraging habitat for the species. It will remove approximately 0.46 ha of suitable foraging habitat within the subject land. The subject land is not listed as priority management site for the Gang-gang Cockatoo (DPE, 2022). Hence, it is declared unlikely that the development would significantly impact the long-term survival of Gang-Gang Cockatoo within the subject land.

Conclusion
It is not considered likely that the proposed works will significantly impact the Gang-gang Cockatoo.

Appendix E NSW Weedwise Search Results

Priority weeds for the South East

Note: this region includes the local council areas of Bega Valley, Eurobodalla, Goulburn Mulwaree, Hilltops (eastern), Kiama, Queanbeyan-Palerang Regional, Shellharbour, Shoalhaven, Snowy Monaro Regional, Upper Lachlan, Wingecarribee, Wollongong and Yass Valley.

Select another region

Weed	Duty
All plants	**General Biosecurity Duty** *All pest plants are regulated with a **general biosecurity duty** to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.*
Aaron's beard prickly pear *Opuntia leucotricha*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
African boxthorn *Lycium ferocissimum*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Alligator weed *Alternanthera philoxeroides*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Alligator weed *Alternanthera philoxeroides*	**Biosecurity Zone** The Alligator Weed Biosecurity Zone is established for all land within the state except land in the following regions: Greater Sydney; Hunter (but only in the local government areas of City of Lake Macquarie, City of Maitland, City of Newcastle or Port Stephens). *Within the Biosecurity Zone this weed must be eradicated where practicable, or as much of the weed destroyed as practicable, and any remaining weed suppressed. The local control authority must be notified of any new infestations of this weed within the Biosecurity Zone*

Anchored water hyacinth *Eichhornia azurea*	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries*
Athel pine *Tamarix aphylla*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Bellyache bush *Jatropha gossypiifolia*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Bitou bush *Chrysanthemoides monilifera* subsp. *rotundata*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Bitou bush *Chrysanthemoides monilifera* subsp. *rotundata*	**Biosecurity Zone** The Bitou Bush Biosecurity Zone is established for all land within the State except land within 10 kilometres of the mean high water mark of the Pacific Ocean between Cape Byron in the north and Point Perpendicular in the south. *Within the Biosecurity Zone this weed must be eradicated where practicable, or as much of the weed destroyed as practicable, and any remaining weed suppressed. The local control authority must be notified of any new infestations of this weed within the Biosecurity Zone*
Black knapweed *Centaurea* x *moncktonii*	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries*
Black willow *Salix nigra*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*

Blackberry *Rubus fruticosus* species aggregate	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.* **All species in the Rubus fruticosus species aggregate have this requirement, except for the varietals Black Satin, Chehalem, Chester Thornless, Dirksen Thornless, Loch Ness, Murrindindi, Silvan, Smooth Stem, and Thornfree**
Blind cactus *Opuntia rufida*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Boneseed *Chrysanthemoides monilifera* subsp. *monilifera*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Boneseed *Chrysanthemoides monilifera* subsp. *monilifera*	**Control Order** Boneseed Control Zone: Whole of NSW *Boneseed Control Zone (Whole of NSW): Owners and occupiers of land on which there is boneseed must notify the local control authority of new infestations; immediately destroy the plants; ensure subsequent generations are destroyed; and ensure the land is kept free of the plant. A person who deals with a carrier of boneseed must ensure the plant (and any seed and propagules) is not moved from the land; and immediately notify the local control authority of the presence of the plant.*
Boxing glove cactus *Cylindropuntia fulgida* var. *mamillata*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Bridal creeper *Asparagus asparagoides*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.* ***this requirement also applies to the Western Cape form of bridal creeper**
Bridal veil creeper *Asparagus declinatus*	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries*

Broomrapes *Orobanche* species	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries* **All species of Orobanche are Prohibited Matter in NSW, except Clover broomrape, Orobanche minor and Australian broomrape, Orobanche cernua var. australiana.**
Bunny ears cactus *Opuntia microdasys*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Cabomba *Cabomba caroliniana*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Cane cactus *Austrocylindropuntia cylindrica*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.* **All species in the Austrocylindropuntia genus have this requirement**
Cape broom *Genista monspessulana*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Cat's claw creeper *Dolichandra unguis-cati*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Cat's claw creeper *Dolichandra unguis-cati*	**Regional Recommended Measure** *Land managers should mitigate the risk of the plant being introduced to their land. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Notify local control authority if found.*
Chicken dance cactus *Opuntia schickendantzii*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*

Chilean needle grass *Nassella neesiana*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Chinese violet *Asystasia gangetica* subsp. *micrantha*	**Control Order** *Owners and occupiers of land on which there is Chinese violet must notify the local control authority for the area if the Chinese violet is part of a new infestation on the land, destroy all Chinese violet on the land ensuring that subsequent generations of Chinese violet are destroyed; and keep the land free of Chinese violet. A person who deals with a carrier of Chinese violet must ensure the plant (and any seed and propagules) is not moved from the land; and immediately notify the local control authority of the presence of the plant on the land, or on or in a carrier.*
Climbing asparagus *Asparagus africanus*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Climbing asparagus fern *Asparagus plumosus*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Common pear *Opuntia stricta*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Coolatai grass *Hyparrhenia hirta*	**Regional Recommended Measure** Containment zone: Goulburn Mulwaree, Shoalhaven, Snowy Monaro, Wingecarribee, Upper Lachlan, Wollongong and Shellharbour Local Government Areas. Exclusion zone: Whole of region except containment zone. *Whole of region: Land managers mitigate the risk of new weeds being introduced to their land. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Within exclusion zone: Land managers should eradicate the plant from the land and keep the land free of the plant. Notify local control authority if found. Within containment zone: Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value. Land managers should mitigate spread of the plant from their land.*

Coral creeper *Barleria repens*	**Regional Recommended Measure** *Land managers should mitigate the risk of the plant being introduced to their land. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Notify local control authority if found.*
Eurasian water milfoil *Myriophyllum spicatum*	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries*
Eve's needle cactus *Austrocylindropuntia subulata*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.* **All species in the Austrocylindropuntia genus have this requirement**
Fireweed *Senecio madagascariensis*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Flax-leaf broom *Genista linifolia*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Foxtail fern *Asparagus densiflorus*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Frogbit *Limnobium laevigatum*	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries* **All species of Limnobium are Prohibited Matter**

Gamba grass *Andropogon gayanus*	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries*
Giant devil's fig *Solanum chrysotrichum*	**Regional Recommended Measure** *Land managers should mitigate the risk of the plant being introduced to their land. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Notify local control authority if found.*
Gorse *Ulex europaeus*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Gorse *Ulex europaeus*	**Regional Recommended Measure** Containment zone: Goulburn Mulwaree, Queanbeyan-Palerang, Snowy Monaro, Wingecarribee and Yass Valley Local Government Areas. Exclusion zone: Whole of region except containment zone. *Whole of region: Land managers mitigate the risk of new weeds being introduced to their land. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Within exclusion zone: Land managers should eradicate the plant from the land and keep the land free of the plant. Notify local control authority if found. Within containment zone: Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value. Land managers should mitigate spread of the plant from their land.*
Grey sallow *Salix cinerea*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Ground asparagus *Asparagus aethiopicus*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*

Groundsel bush *Baccharis halimifolia*	**Regional Recommended Measure** *Land managers should mitigate the risk of the plant being introduced to their land. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Notify local control authority if found.*
Hawkweeds *Pilosella* species	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries* **All species in the genera *Pilosella* and *Hieracium* are Prohibited Matter except for *Hieracium murorum*.**
Holly leaved senecio *Senecio glastifolius*	**Regional Recommended Measure** *Land managers should mitigate the risk of the plant being introduced to their land. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Notify local control authority if found.*
Horsetails *Equisetum* species	**Regional Recommended Measure** *Land managers should mitigate the risk of the plant being introduced to their land. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Notify local control authority if found.*
Hudson pear *Cylindropuntia pallida*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*

Hydrocotyl *Hydrocotyle ranunculoides*	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries*
Hymenachne *Hymenachne amplexicaulis* and hybrids	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Karoo acacia *Vachellia karroo*	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries*
Kei apple *Dovyalis caffra*	**Regional Recommended Measure** *Land managers should mitigate the risk of the plant being introduced to their land. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Notify local control authority if found.*
Kidney-leaf mud plantain *Heteranthera reniformis*	**Regional Recommended Measure** *Land managers should mitigate the risk of the plant being introduced to their land. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Notify local control authority if found.*
Kochia *Bassia scoparia*	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries* **Excluding the subspecies *trichophylla***

Koster's curse *Clidemia hirta*	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries*
Kudzu *Pueraria lobata*	**Regional Recommended Measure** *Land managers should mitigate the risk of the plant being introduced to their land. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Notify local control authority if found.*
Lagarosiphon *Lagarosiphon major*	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries*
Lantana *Lantana camara*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Lantana *Lantana camara*	**Regional Recommended Measure** Containment zone: Eurobodalla, Shoalhaven, Wollongong, Shellharbour and Kiama Local Government Areas. Exclusion zone: Whole of region except containment zone. *Whole of region: Land managers mitigate the risk of new weeds being introduced to their land. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Within exclusion zone: Land managers should eradicate the plant from the land and keep the land free of the plant. Notify local control authority if found. Within containment zone: Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value. Land managers should mitigate spread of the plant from their land.*

Long-leaf willow primrose *Ludwigia longifolia*	**Regional Recommended Measure** *Land managers should mitigate the risk of the plant being introduced to their land. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Notify local control authority if found.*
Ludwigia *Ludwigia peruviana*	**Regional Recommended Measure** *Land managers should mitigate the risk of the plant being introduced to their land. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Notify local control authority if found.*
Madeira vine *Anredera cordifolia*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Mesquite *Prosopis* species	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.* **All species in the genus *Prosopis* have this requirement**
Mexican feather grass *Nassella tenuissima*	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries*
Miconia *Miconia* species	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries* **All species of *Miconia* are Prohibited Matter in NSW**

Mikania vine *Mikania micrantha*	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries* ***all species in the genus *Mikania* are Prohibited Matter in NSW**
Mimosa *Mimosa pigra*	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries*
Ming asparagus fern *Asparagus macowanii*	**Regional Recommended Measure** *Land managers should mitigate the risk of the plant being introduced to their land. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Notify local control authority if found.*
Mysore thorn *Caesalpinia decapetala*	**Regional Recommended Measure** Containment zone: Wollongong Local Government Area. Exclusion zone: Whole of region except containment zone. *Whole of region: Land managers mitigate the risk of new weeds being introduced to their land. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Within exclusion zone: Land managers should eradicate the plant from the land and keep the land free of the plant. Notify local control authority if found. Within containment zone: Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value. Land managers should mitigate spread of the plant from their land.*
Parkinsonia *Parkinsonia aculeata*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*

Parkinsonia *Parkinsonia aculeata*	**Control Order** Parkinsonia Control Zone: Whole of NSW *Parkinsonia Control Zone (Whole of NSW): Owners and occupiers of land on which there is parkinsonia must notify the local control authority of new infestations; immediately destroy the plants; ensure subsequent generations are destroyed; and ensure the land is kept free of the plant. A person who deals with a carrier of parkinsonia must ensure the plant (and any seed and propagules) is not moved from the land; and immediately notify the local control authority of the presence of the plant.*
Parthenium weed *Parthenium hysterophorus*	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries*
Parthenium weed *Parthenium hysterophorus*	**Prohibition on certain dealings** *The following equipment must not be imported into NSW from Queensland: grain harvesters (including the comb or front), comb trailers (including the comb or front), bins used for holding grain during harvest operations, augers or similar for moving grain, vehicles used to transport grain harvesters, support vehicles driven in paddocks during harvest operations, mineral exploration drilling rigs and vehicles used to transport those rigs, unless set out as an exception in Division 5, Part 2 of the Biosecurity Order (Permitted Activities) 2017*
Pond apple *Annona glabra*	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries*
Prickly acacia *Vachellia nilotica*	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries*

Prickly pears - Austrocylindropuntias *Austrocylindropuntia* species	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.* **All species in the Austrocylindropuntia genus have this requirement**
Prickly pears - Cylindropuntias *Cylindropuntia* species	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.* **All species in the Cylindropuntia genus have this requirement**
Prickly pears - Opuntias *Opuntia* species	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.* **For all Opuntia species except for *Opuntia ficus-indica* (Indian fig).**
Riverina pear *Opuntia elata*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Rope pear *Cylindropuntia imbricata*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.* **All species in the Cylindropuntia genus have this requirement**
Rubber vine *Cryptostegia grandiflora*	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries*
Sagittaria *Sagittaria platyphylla*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Salvinia *Salvinia molesta*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*

Salvinia *Salvinia molesta*	**Regional Recommended Measure** *Land managers should mitigate the risk of the plant being introduced to their land. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Notify local control authority if found.*
Scotch broom *Cytisus scoparius* subsp. *scoparius*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Sea spurge *Euphorbia paralias*	**Regional Recommended Measure** Exclusion zone: Wollongong, Shellharbour and Kiama Local Government Areas. Containment zone: Whole of region except Exclusion zone. *Whole of region: Land managers mitigate the risk of new weeds being introduced to their land. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Within exclusion zone: Land managers should eradicate the plant from the land and keep the land free of the plant. Notify local control authority if found. Within containment zone: Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value. Land managers should mitigate spread of the plant from their land.*
Senegal tea plant *Gymnocoronis spilanthoides*	**Regional Recommended Measure** *Land managers should mitigate the risk of the plant being introduced to their land. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Notify local control authority if found.*
Serrated tussock *Nassella trichotoma*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*

Siam weed *Chromolaena odorata*	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries*
Sicklethorn *Asparagus falcatus*	**Regional Recommended Measure** *Land managers should mitigate the risk of the plant being introduced to their land. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Notify local control authority if found.*
Silverleaf nightshade *Solanum elaeagnifolium*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Silverleaf nightshade *Solanum elaeagnifolium*	**Regional Recommended Measure** *Land managers should mitigate the risk of the plant being introduced to their land. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Notify local control authority if found.*
Smooth tree pear *Opuntia monacantha*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Snakefeather *Asparagus scandens*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*

Spanish heath *Erica lusitanica*	**Regional Recommended Measure** Containment zone: Queanbeyan-Palerang, Snowy Monaro and Wingecarribee Local Government Areas. Exclusion zone: Whole of region except containment zone. *Whole of region: Land managers mitigate the risk of new weeds being introduced to their land. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Within exclusion zone: Land managers should eradicate the plant from the land and keep the land free of the plant. Notify local control authority if found. Within containment zone: Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value. Land managers should mitigate spread of the plant from their land.*
Spongeplant *Limnobium spongia*	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries* **All species of *Limnobium* are Prohibited Matter**
Spotted knapweed *Centaurea stoebe* subsp. *micranthos*	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries*
Sticky nightshade *Solanum sisymbriifolium* *Regional recommended measure for Central Tablelands from February 2020*	**Regional Recommended Measure** *Land managers should mitigate the risk of the plant being introduced to their land. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Notify local control authority if found.*
Tiger pear *Opuntia aurantiaca*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*

Tropical soda apple *Solanum viarum*	**Control Order** Tropical Soda Apple Control Zone: Whole of NSW *Tropical Soda Apple Control Zone (Whole of NSW): Owners and occupiers of land on which there is tropical soda apple must notify the local control authority of new infestations; destroy the plants including the fruit; ensure subsequent generations are destroyed; and ensure the land is kept free of the plant. A person who deals with a carrier of tropical soda apple must ensure the plant (and any seed and propagules) is not moved from the land; and immediately notify the local control authority of the presence of the plant on the land, or on or in a carrier.*
Velvety tree pear *Opuntia tomentosa*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Water caltrop *Trapa* species	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries* **All species in the *Trapa* genus are Prohibited Matter in NSW**
Water hyacinth *Eichhornia crassipes*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Water hyacinth *Eichhornia crassipes*	**Biosecurity Zone** The Water Hyacinth Biosecurity Zone applies to all land within the State, except for the following regions: Greater Sydney or North Coast, North West (but only the local government area of Moree Plains), Hunter (but only in the local government areas of City of Cessnock, City of Lake Macquarie, MidCoast, City of Maitland, City of Newcastle or Port Stephens), South East (but only in the local government areas of Eurobodalla, Kiama, City of Shellharbour, City of Shoalhaven or City of Wollongong). *Within the Biosecurity Zone this weed must be eradicated where practicable, or as much of the weed destroyed as practicable, and any remaining weed suppressed. The local control authority must be notified of any new infestations of this weed within the Biosecurity Zone*

Water lettuce *Pistia stratiotes*	**Regional Recommended Measure** *Land managers should mitigate the risk of the plant being introduced to their land. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Notify local control authority if found.*
Water poppy *Hydrocleys nymphoides*	**Regional Recommended Measure** *Land managers should mitigate the risk of the plant being introduced to their land. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Notify local control authority if found.*
Water soldier *Stratiotes aloides*	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries*
Water star grass *Heteranthera zosterifolia*	**Regional Recommended Measure** *Land managers should mitigate the risk of the plant being introduced to their land. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Notify local control authority if found.*
Wheel cactus *Opuntia robusta*	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.*
Willows *Salix* species	**Prohibition on certain dealings** *Must not be imported into the state, sold, bartered, exchanged or offered for sale.* **All species in the *Salix* genus have this requirement, except *Salix babylonica* (weeping willows), *Salix x calodendron* (pussy willow) and *Salix x reichardtii* (sterile pussy willow)**

Witchweeds *Striga* species	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries* **All species in the *Striga* genus are Prohibited Matter in NSW, except the native *Striga parviflora***
Yellow burrhead *Limnocharis flava*	**Prohibited Matter** *A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries*

The content provided here is for information purposes only and is taken from the *Biosecurity Act 2015* and its subordinate legislation, and the Regional Strategic Weed Management Plans (published by each Local Land Services region in NSW). It describes the state and regional priorities for weeds in New South Wales, Australia.

Appendix F Bobsled Property Report

NGH Pty Ltd

NSW • ACT • QLD • VIC

ABN 31 124 444 622 ACN 124 444 622

E: ngh@nghconsulting.com.au

GOLD COAST

2B 34 Tallebudgera Creek Road
Burleigh Heads QLD 4220
(PO Box 424 West Burleigh QLD 4219)

T. (07) 3129 7633

SYDNEY REGION

Unit 17, 21 Mary Street
Surry Hills NSW 2010

T. (02) 8202 8333

BEGA

Suite 11, 89-91 Auckland Street
(PO Box 470)
Bega NSW 2550

T. (02) 6492 8333

MELBOURNE

Level 14, 10-16 Queen Street
Melbourne VIC 3000

T: (03) 7031 9123

TOWNSVILLE

Level 4, 67-75 Denham Street
Townsville QLD 4810

T. (07) 4410 9000

BRISBANE

T3, Level 7, 348 Edward Street
Brisbane QLD 4000

T. (07) 3129 7633

NEWCASTLE - HUNTER & NORTH COAST

Level 1, 31-33 Beaumont Street
Hamilton NSW 2303

T. (02) 4929 2301

WAGGA WAGGA - RIVERINA & WESTERN NSW

35 Kincaid Street (PO Box 5464)
Wagga Wagga NSW 2650

T. (02) 6971 9696

CANBERRA

Unit 8, 27 Yallourn Street
(PO Box 62)
Fyshwick ACT 2609

T. (02) 6280 5053

SUNSHINE COAST

Suite 101, Level 2/30 Main Drive
Birtinya QLD 4575

(07) 4410 9000

WODONGA

Unit 2, 83 Hume Street
(PO Box 506)
Wodonga VIC 3690

T. (02) 6067 2533

Appendix D Aboriginal Heritage report

Prepared for Kosciuszko Thredbo Pty Ltd

Aboriginal Heritage Due Diligence Assessment

Thredbo Alpine Resort: Bobsled Demolition and Mountain Bike Trail Works

August 2023

Project Number: 230204

Document verification

Project Title:	Thredbo Alpine Resort: Bobsled Demolition and Mountain Bike Trail Works
Project Number:	230204
Project File Name:	230205 Alpine Bobsled Demolition Aboriginal DD Report Draft v1.0

Revision	Date	Prepared by	Reviewed by	Approved by
Draft v1.0	24/07/2023	Petra Balanzategui	Ingrid Cook	Matthew Barber
Final v1.0	4/08/2023	Petra Balanzategui	Ingrid Cook	Ingrid Cook
	[Enter the date]			
	[Enter the date]			

NGH Pty Ltd is committed to environmentally sustainable practices, including fostering a digital culture and minimising printing. Where printing is unavoidable, NGH prints on 100% recycled paper.

Table of contents

Figures

Plates

Tables

Acronyms and abbreviations

ACHA	Aboriginal Cultural Heritage Assessment
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
BP	Before Present
DA	Development Application
DECCW	(Former) Department of Environment, Climate Change and Water (formerly responsible for heritage, now superseded by Heritage NSW)
DPE	Department of Planning and and Environment (NSW)
Due Diligence Code	*Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW*
ha	hectares
Heritage Act	*Heritage Act 1977* (NSW)
Heritage NSW	Heritage NSW, within the Department of Premier and Cabinet (formerly part of OEH)
IBRA	Interim Biogeographic Regionalisation for Australia
Km	Kilometre/s
LALC	Local Aboriginal Land Council
LGA	Local Government Area
M	Metre/s
MGA	Map Grid of Australia
MTB	Mountain Bike
NGH	NGH Pty Ltd
NPW Act	*National Parks and Wildlife Act 1974* (NSW)
NPW Regulation	National Parks and Wildlife Regulation 2019 (NSW)
NSW	New South Wales
OEH	(Former) Office of Environment and Heritage (NSW) (now Heritage NSW)
PAD	Potential Archaeological Deposit
SEE	Statement of Environmental Effects
VT	Valley Terminal

Executive summary

NGH Pty Ltd (NGH) was commissioned by Kosciuszko Thredbo Pty Ltd (the Proponent) to undertake an Aboriginal Heritage Due Diligence Assessment (Due Diligence assessment) in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (DECCW, 2010) (Due Diligence Code) for the proposed demolition of a bobsled and addition of a mountain bike (MTB) trail within Lot 876 DP1243112, at Thredbo Alpine Resort (the Proposal).

The Proposal is for the demolition of the existing bobsled infrastructure, including the track and operator's hut. The bobsled will be replaced by a MTB trail, and the trail will depart the existing bobsled corridor and link onto the existing Village Loop MTB Trail. The purpose of the Proposal is to provide an alternate route for riders to access the Valley Terminal (VT) base station.

The Due Diligence assessment is undertaken to evaluate whether Aboriginal objects are present, or likely to be present, within the proposed impact area of the development activity, and if those objects would be harmed by the activity. The Due Diligence assessment will be incorporated into a Statement of Environmental Effects (SEE), to support a Development Application (DA) to be lodged with the Department of Planning and Environment (DPE).

Background and desktop assessment

An extensive AHIMS search of the Aboriginal Heritage Information Management System (AHIMS) database revealed 22 Aboriginal objects and no declared Aboriginal Places recorded within the search area measuring approximately 7km in length and 3km in width, centred on the Proposal Area. The most common site type previously recorded in the local area was artefact (isolated artefact and artefact scatter), and the nearest site #61-6-0082 is an artefact scatter located 35m east.

Based upon the initial desktop assessment, using satellite imagery and topographic data, it was determined that there was low potential for Aboriginal objects to occur within the Proposal Area given previous impacts associated with extensive vegetation clearing in the 1960s, additional vegetation clearing and ongoing maintenance for the bobsled track, the addition of the bobsled track and construction of the operator's hut. Prior to disturbance, the Proposal Area would have encompassed a forested steep slope, which would have been an unfavourable position for permanent Aboriginal activity or occupation. The low-density artefact scatters located in the vicinity, suggest that this the area was likely used on a transient basis. The Proposal Area may have once retained artefact sites, however impacts since the 1960s has significantly reduced the likelihood for such sites to remain.

The desktop assessment therefore indicated that there were no unmodified landscapes present within the Proposal Area that had the potential to contain Aboriginal objects. The nature of the works being undertaken at the Proposal Area will involve a moderate level of ground disturbance and it was considered unlikely that it would impact on Aboriginal heritage objects.

The desktop assessment concluded that a visual inspection was not warranted as it was unlikely that Aboriginal objects would be impacted by the proposed works.

Impact assessment conclusion

This Due Diligence assessment concluded that due to the levels of disturbance to the Proposal Area and lack of potential for the existence of Aboriginal heritage objects or areas of archaeological potential to be present, the proposed works, as assessed in this report, will not require any further heritage investigation and works can proceed with caution.

Recommendations

The recommendations are based on a number of considerations including:

- Background Aboriginal heritage research into the area;
- Assessment of the landscape;
- Land use and disturbance assessment;
- Consideration of the impact of the proposed works; and
- Legislative context for the development proposal.

The recommendations are as follows:

1. The proposed work can proceed with caution without further archaeological assessment.
2. Any activity proposed outside of the current Proposal Area should also be subject to an Aboriginal heritage assessment.
3. If any items suspected of being Aboriginal in origin are discovered during the work, all work in the immediate vicinity must stop and the NSW Environment Line (1300 361 967) notified. The find will need to be assessed and, if found to be an Aboriginal object, further detailed assessment and an application for an Aboriginal Heritage Impact Permit (AHIP) may be required.
4. In the unlikely event that human remains are identified during development works, all work must cease in the immediate vicinity and the area must be cordoned off. The Proponent must contact the local NSW Police who will make an initial assessment as to whether the remains are part of crime scene or possible Aboriginal remains. If the remains are thought to be Aboriginal, Heritage NSW must be notified by ringing the Enviroline (131 555).

The Proponent is reminded that it is an offence under the *National Parks and Wildlife Act 1974* to disturb, damage or destroy an Aboriginal object without a valid AHIP.

1. Introduction

NGH Pty Ltd (NGH) was commissioned by Kosciuszko Thredbo Pty Ltd (Kosciuszko Thredbo) (the Proponent) to undertake an Aboriginal Heritage Due Diligence Assessment (Due Diligence assessment) in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (DECCW, 2010) (Due Diligence Code) for the proposed demolition of a bobsled and the addition of a mountain bike (MTB) trail (the Proposal).

The Proposal is for the demolition of the existing bobsled infrastructure, including the track and operator's hut. The bobsled will be replaced by a MTB trail, and the trail will depart the existing bobsled corridor and link onto the existing Village Loop MTB Trail in the north-west and south-west corner (see Figure 1-2). A wall ride is proposed on a section of the new MTB trail, to restrict pedestrian access from the Merritts Walking Track (Figure 1-2). The purpose of the Proposal is to provide an alternate route for riders to access the Valley Terminal (VT) base station. This will aid in the distribution of rider traffic entering the VT base station and provide direct access to the Snowgums Chairlift bottom station from the eastern side, as opposed to having to navigate through the highly trafficked western side.

The Due Diligence assessment is undertaken to evaluate whether Aboriginal objects are present, or likely to be present, within the proposed impact area of the development activity, and if those objects would be harmed by the activity. The Due Diligence assessment will be incorporated into a Statement of Environmental Effects (SEE), to support a Development Application (DA) to be lodged with the Department of Planning and Environment (DPE).

1.1 Subject site

The subject site is located within Lot 876 DP1243112, at Thredbo Alpine Resort and comprises a 770m bobsled track and operator's hut (the Proposal Area) (Figure 1-1, Figure 1-2). It is adjacent to the VT precinct, along the footpath linking VT to Woodridge subdivision and Friday Flat. The Proposal Area is located 25m north of the Thredbo River and is within the Snowy Monaro Regional Council Local Government Area (LGA). Merritts Nature Track shown on Figure 1-2, is located on the eastern boundary of the Proposal Area and the Village Loop MTB trail connects to the currently proposed MTB trail in the south-west and north-west corner (Figure 1-2).

1.2 Project personnel

The Due Diligence assessment was carried out by Senior Heritage Consultant Petra Balanzategui of NGH including background research and the completion of this report. Regional Manager of Heritage Ingrid Cook and General Manager of Heritage Matthew Barber reviewed the report for quality assurance purposes.

1.3 Aboriginal consultation

The Proposal Area is within the boundaries of the Eden Local Aboriginal Land Council (LALC). The Due Diligence process does not formally require consultation with Aboriginal community groups. No Aboriginal groups were contacted for this Due Diligence level assessment.

1.4 Approach and format of this report

This report has been drafted in keeping with the sequence of steps identified in the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (Due Diligence Code) (DECCW, 2010). The Due Diligence Code outlines a five-step approach to determine if an activity is likely to cause harm to an Aboriginal object, as defined by the NSW *National Parks and Wildlife Act 1974* (NPW Act). The steps follow a

logical sequence of questions, and the answer to each question determines the need for the next step in the process in order to:

- Identify whether Aboriginal objects are, or are likely to be, present in the study area/proposal site etc;
- Determine whether or not the proposed activities are likely to harm Aboriginal objects (if present) in the study area; and
- Determine whether an Aboriginal Heritage Impact Permit (AHIP) application is required.

Table 1-1 Due Diligence steps

	Due Diligence steps
Step 1.	Will the activity disturb the ground surface?
Step 2a.	Search the AHIMS database and use any other sources of information of which you are already aware.
Step 2b.	Are activities proposed in areas where landscape features indicate the presence of Aboriginal objects?
Step 3.	Can you avoid harm to the object or disturbance of the landscape feature?
Step 4.	Undertake a desktop assessment and visual inspection. Is it likely that Aboriginal objects will be impacted by the proposed works?
Step 5.	Further investigations and impact assessment.

If the proposed activities are not 'low impact activities' (a defence for which is provided under the NPW Regulation), the considerations result in a determination of whether or not:

- Further approval under the NPW Act is required, in the form of an AHIP; or
- Due Diligence obligations for the protection of Aboriginal objects are discharged by the process under the Code.

For the purposes of the Due Diligence assessment, disturbed land is defined in the Due Diligence Code. Land is disturbed if it has been the subject of a human activity that has changed the land's surface, with the changes remaining clear and observable.

The defence against prosecution offered by following the Due Diligence Code process does not apply to situations where it is known there is an Aboriginal object present. The defence does not authorise harm to Aboriginal objects.

Each section within this report follows the relevant step outlined in the Due Diligence Code (DECCW, 2010). Reference is also made, where relevant, to the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH, 2011) and the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW, 2010).

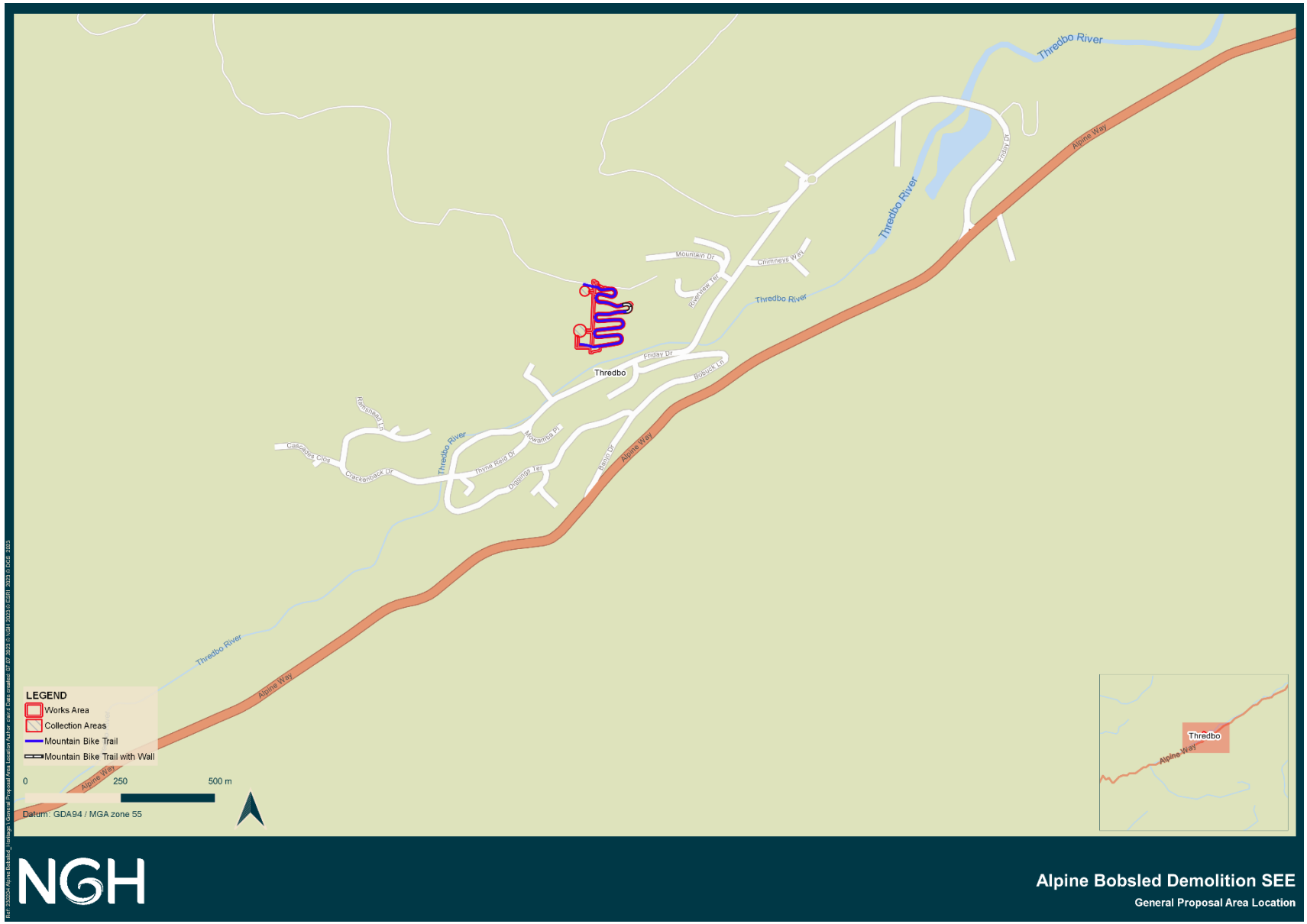


Figure 1-1 General Proposal location

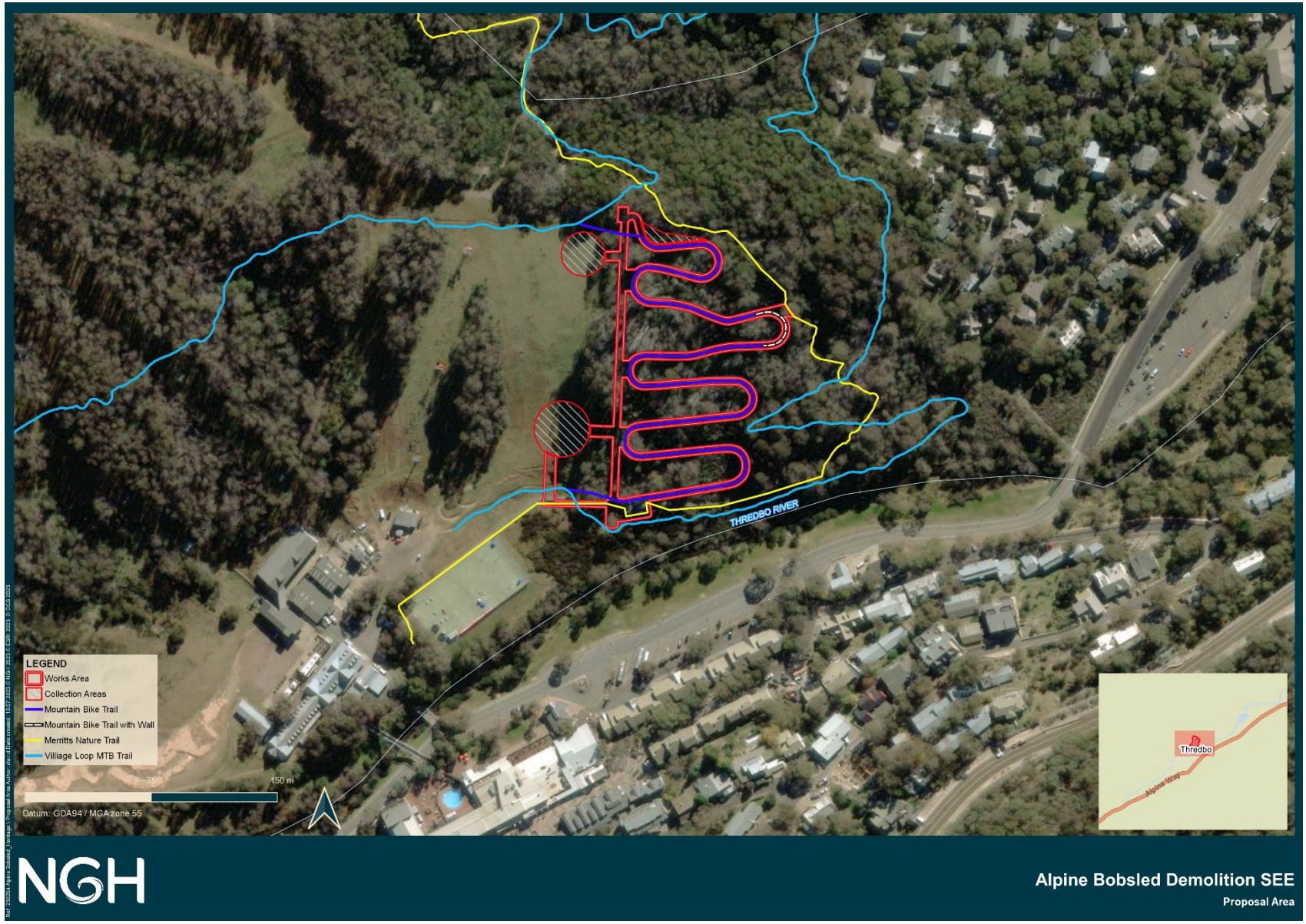


Figure 1-2 The Proposal Area

2. Legislation

In NSW, Aboriginal heritage is principally protected by two legislative acts:

- *National Parks and Wildlife Act 1974* (NSW) (NPW Act) and its subordinate legislation, the *National Parks and Wildlife Regulation 2019*; and
- *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act).

2.1 National Parks and Wildlife Act 1974

Part 6 of the NPW Act concerns Aboriginal objects and places and various sections describe the offences, defences and requirements to harm an Aboriginal object or place. All Aboriginal material receives blanket protection under the NPW Act. The main offences under section 86 of the NPW Act are:

- A person must not harm or desecrate an object that the person knows is an Aboriginal object.
- A person must not harm an Aboriginal object.
- For the purposes of this section, "circumstances of aggravation" are:
    - that the offence was committed in the course of carrying out a commercial activity; or
    - that the offence was the second or subsequent occasion on which the offender was convicted of an offence under this section.
- A person must not harm or desecrate an Aboriginal place.

An Aboriginal object is defined as:

- Any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with the occupation of that area by persons on non-Aboriginal extraction and includes Aboriginal remains.

Section 87 sets out defences that are available to a person who is prosecuted for a particular harm offence under section 86. For example, it will be a defence in certain circumstances if the person who is being prosecuted can show that:

- the harm or desecration was authorised through an Aboriginal Heritage Impact Permit (AHIP) and conditions of the AHIP were not contravened;
- the person exercised due diligence to determine whether the act/omission constituted the offence would harm an Aboriginal object and reasonably determined no harm would occur;
- the person complied with requirements or a code of practice, as prescribed in in the National Parks and Wildlife Regulation (2019); or
- was a low impact act or omission.

Section 89A of the NPW Act also requires that a person who is aware of an Aboriginal object, must notify the Director-General in a prescribed manner. In effect, this section requires the completion of AHIMS site cards for all sites located during heritage surveys.

2.2 Environmental Planning and Assessment Act 1979

The EP&A Act regulates development in NSW. It sets up a planning structure that requires developers (individuals or companies) to consider impact of the project on the environment and to promote the sustainable manage of built and cultural heritage (which includes Aboriginal cultural heritage). The EP&A Act requires that Aboriginal cultural heritage, and the possible impacts that development may have to Aboriginal heritage be considered, as part of the environmental impact assessment process under the EP&A Act. For

most projects requiring assessment under Part 4 and 5 of the EP&A Act, the NPW Act will apply and an AHIP may be required.

The Proposal Area is subject to Chapter 4 of the *State Environmental Planning Policy (Precincts – Regional) 2021* under the EP&A Act 1979 and Section 4.21 Heritage conservation specifies that the objective is to conserve:

a) the environmental heritage of the Alpine Region;
b) the heritage significance of heritage items, including associated fabric, settings and views; and
c) Aboriginal heritage items and Aboriginal places.

Schedule 4 Heritage Items – Chapter 4 details the included environmental heritage items covered by the policy. No Aboriginal sites or places are located within the Proposal Area.

3. Ground disturbance

Step 1. Will the activity disturb the ground surface or any culturally modified trees?

The Proposal is for the demolition of the existing bobsled infrastructure, including the track and operator's hut. The bobsled will be replaced by a MTB trail, and the trail will depart the existing bobsled corridor and link onto the existing Village Loop trail from the north-west and south-west. The proposed work to be undertaken by Kosciuszko Thredbo will result in a moderate level of ground disturbance and will incorporate the following:

Bobsled works

- **Demolition of track:** Demolition of the bobsled (Plate 3-2) will be undertaken with a small excavator to lift the track sections from the ground, then walk them or use a side-by-side vehicle to the collection areas. There are no footings for the track, each section has feet which simply sit on the soil. There are about four or so small footings along the uphill track, these may be left *in-situ* to avoid disturbance to vegetation.
- **Demolition of station:** The operator's hut (station) at the base of the bobsled will be demolished (Plate 3-1). The concrete footings of the station would be removed by excavator and disposed of by transporting to Jindabyne Landfill, or they may be left *in-situ* with the bolts ground flush. The walking track will be improved by constructing an additional 25m of elevated footpath.
- **Machinery and equipment:** Machinery and equipment requirements include a small excavator, utility and side-by-side vehicles, telescopic handler and angle grinders.
- **Material storage:** Two collection areas and access paths will be used to store material (these areas are shown as collection areas on Figure 1-2). These materials will be regrouped at Friday Flat carpark, located off Friday drive, to aid loading onto road transport to a new owner.
- **Site stabilisation and rehabilitation:** The ground may be graded back by a small excavator to remove the small trough left where the track has been sitting, and then this may be revegetated. There will be no requirement for imported fill.
- **Waste:** All bobsled equipment will be sold-on or gifted for re-purpose at another site. The operator's hut and deck materials will be scrapped or taken away for re-construction by a third party.

MTB Trail works

- **Trail entry:** The trail head commences at the junction with the existing Village Loop and Home Run MTB trails. The trail crosses a pre-cleared section before it intersects with the top of the bobsled uphill track. The start of the trail will traverse across the existing uphill line of the bobsled (Plate 3-3- Plate 3-4). Disturbance will be limited to trimming of low hanging branches, and removal of shrubs and groundcover.
- **Trail exit:** The trail will depart the existing bobsled corridor and link onto the existing Village Loop Trail (Plate 3-5). Disturbance will be limited to trimming of low hanging branches, and removal of shrubs and ground cover. There are two dead Eucalypt trees that may require removal (see Plate 3-6).
- **Wall ride:** The wall ride will be constructed of timber or steel posts concreted into the ground. Between six to eight footings will be required and the excavation footprint for each footing will be 600-800mm depth x 400mm length x 400mm width. This wall will ensure that the MTB trail will not be accessible from Merritts Nature Track.

These activities require a moderate level of ground disturbance and as such, any Aboriginal sites within the disturbance footprint could therefore be subject to harm. As the Proposal will include ground disturbance, the next step in the due diligence process will be completed.

Plate 3-1 Operators hut and bobsled track to be demolished with the approximate location of the Proposal Area outlined in red (Source: Kosciuszko Thredbo). View to west.

Plate 3-2 Part of the bobsled track to be demolished and removed, with the approximate location of the Proposal Area outlined in red (Source: Kosciuszko Thredbo). View to east.

Plate 3-3 Red line indicating where the MTB trail will extend from the northern part of the bobsled track (Source: Kosciuszko Thredbo). View to north-west.

Plate 3-4 Red line indicating where the MTB trail will extend from the northern part of the bobsled track (Source: Kosciuszko Thredbo). View to west.

Plate 3-5 The southern part of the bobsled track where the proposed MTB trail will extend, indicated by the red line (Source: Kosciuszko Thredbo). View to west.

Plate 3-6 Young regrowth trees that may require removal indicated by red arrows and proposed MTB trail extending from bobsled track indicated by red line (Source: Kosciuszko Thredbo). View to north-west.

4. Register search and landscape assessment

Step 2a. Search the AHIMS Database and other information sources

A search of relevant heritage registers for Aboriginal sites and places provides an indication of the presence of previously recorded sites. A register search is not conclusive, however, as it requires that an area has been subject to archaeological survey, and information about any sites identified has been submitted for registration. However, as a starting point, the search will indicate whether any sites are known within or adjacent to the investigation area and provide oversight regarding the site types most commonly recorded within the locality. The Aboriginal Heritage Information Management System (AHIMS) provides a database of previously recorded Aboriginal heritage sites. A search provides basic information about any sites previously identified within a search area. The results of the search are valid for 12 months for the purposes of a due diligence level assessment.

On 08 June 2023 a search of the AHIMS database was undertaken over an area measuring approximately 7km in length and 3km in width, centred on the Proposal Area, as follows:

- Client Service ID: 789811
- MGA Zone: 55
- Lat/Long From: -36.5196, 148.2785
- Lat/Long To: -36.4851, 148.3403.
- Aboriginal objects:
    - 22
- Aboriginal Places:
    - nil

There were 22 Aboriginal sites recorded within this search area and zero declared Aboriginal Places. Table 4-1 below shows the breakdown of site types and Figure 4-1 and Figure 4-2 show the location of the AHIMS sites in relation to the Proposal Area.

Table 4-1 Breakdown of previously recorded Aboriginal sites in the region

Site type	Number	Percentage
Artefact	21	95.45
Artefact; Potential Archaeological Deposit (PAD)	1	4.55
Total	**22**	**100**

None of the archaeological sites currently recorded on AHIMS are located within or directly adjacent to the Proposal Area, however, five sites occur within 600m. These sites are summarised in Table 4-2 below and shown in Figure 4-1 and Figure 4-2.

Table 4-2 Sites within 600m of the Proposal Area

Site number	Site name	Site type	Distance to Proposal (m)	Site status on AHIMS
61-6-0082	Merritts Park Nature Trail;Site 1;	Artefact	35m east	Valid

61-6-0121	Merrits Creek 1	Artefact	45m north	Valid
61-6-0103	EDI 1	Artefact	130m north	Valid
61-6-0083	Merritts Park, Site 1;	Artefact	290m north-east	Valid
61-6-0100	Ramshead Creek 2;	Artefact	510m west	Valid

There are five AHIMS sites located within 600m of the Proposal Area and these are described below:

- AHIMS site #61-6-0082 is an artefact scatter recorded by Nicole Fuller in 1988, during an assessment for an extension to a golf course. The site comprises one broken hammerstone made from a river pebble, one silcrete geometric microlith, four silcrete flaked pieces, one silcrete flake, and one tiny chert flake. These artefacts were identified 30m along the Merritts Park Nature Trail, on a gentle hillslope, back from Thredbo River. The site had been disturbed by the clearing of land and the site was exposed by bulldozer tracks.
- AHIMS site #61-6-0121 is a low density artefact scatter recorded by Alistair Grinbergs in 1997 during a site inspection for the proposed development of additional ski slope facilities. The site is located on a level to gently sloping saddle on a spur adjacent to Merritts Creek. No further information about the site is provided on the site card.
- AHIMS site #61-6-0103 is an artefact scatter recorded by C.D Dearling in 1997 during an archaeological survey of the proposed extension of the 'Easy Does It' ski run. The site consisted of four quartz flakes and one quartz core fragment, located on a spur above Merritts Creek. The site's location had been impacted by wombat digging.
- AHIMS site #61-6-0083 is an artefact scatter recorded by Nicole Fuller in 1988, during an assessment for an extension to a golf course. The site comprises one silcrete flake, one volcanic flake, one silcrete blade, one silcrete fragment, and eight possible quartz chips and flakes. The site was recorded on a patch of exposed ground measuring 10m by 10m, between a small gravel parking bay and a barbecue. The site is also located on a slight slope, approximately 30m from a creek. Vegetation surrounding the site consists of grasses with the occasional small bush. The site had been impacted by the use of the barbecue area.
- AHIMS site #61-6-0100 is an artefact scatter recorded by Navin Officer in 1994 during an archaeological survey for the Crackenback Ridge at Thredbo Village. The site comprises four quartz artefacts (two quartz cores, one quartz flake and one quartz broken flake) located in an area measuring 75m by 15m. The artefacts were located on a low gradient slope adjacent to a small drainage line, sloping to Ramshead Creek. A Consent to Destroy (now AHIP) was issued for the site on 10 November 1994, "for consent to destroy those relics in the course of construction of accommodation buildings and associated infrastructure".

The sites described below are those located in the wider area:

- AHIMS site #61-6-0081 and AHIMS site #61-6-0083 were recorded by Nicole Fuller in 1988, during an assessment for an extension to a golf course:
    - AHIMS site #61-6-0081 is a low density artefact scatter comprising one retouched silcrete scraper and one quartz flaked piece, located on a narrow track running parallel to the Thredbo River. The site was surrounded by woodland with dense undergrowth.
    - AHIMS site #61-6-0083 is an artefact scatter comprising one silcrete flake, one volcanic flake, one silcrete blade, one silcrete fragment, and eight possible quartz chips and flakes. The site was recorded on a patch of exposed ground measuring 10m by 10m, between a small gravel parking bay and a barbecue. The site is also located on a slight slope, approximately 30m from a creek. Vegetation surrounding the site consists of grasses with the occasional small bush. The site had been impacted by the use of the barbecue area.

- AHIMS site #61-3-0062 and AHIMS site #61-3-0063 were recorded by Navin Officer in 1992 during an archaeological survey for roads works on Alpine Way:
    - AHIMS site #61-3-0062 is an artefact scatter identified in two exposures, with the first exposure containing 84 artefacts in an area measuring 40m x 2.5m-3m and the second exposure containing 14 artefacts in an area measuring 7m x 1m. The artefacts included quartz cores, blades, flaked pieces, flakes and chips, and one silcrete flake. The site was recorded as being partially disturbed due to its location in a works depot.
    - AHIMS site #61-3-0063 is an artefact scatter that was identified on a well-drained spur adjacent to a transmission line service track. The site contained 16 artefacts of silcrete blades, and quartz flaked pieces, flakes and chips. The site was described as being partially disturbed at the time of the recording.
- AHIMS site #61-6-0099 was recorded by Navin Officer in 1994 during an archaeological survey for the Crackenback Ridge at Thredbo Village. It comprises 16 artefacts, five of which are silcrete and the remainder are quartz. Forty three percent were flakes, 31% were flakes with secondary flaking, 12% were cores, and 12% were flaked pieces. The artefacts were located on a broad and low spurline adjacent to Ramshead Creek. It was considered likely that the site extended beyond the known extent, particularly upslope and adjacent to Ramshead Creek.
- AHIMS site #61-6-0104 is an artefact scatter recorded by Navin Officer in 1996 during an archaeological survey for an underground electricity cable easement. The site consisted of seven artefacts (one grey silcrete flaked piece, one grey silcrete flake, two quartz flaked pieces, one quartz core fragment and two quartz flakes) in three exposures. The site was recorded on an upper slope along a small spurline and spurline shoulder adjacent to the Thredbo River flats to the northwest and Friday Flat Creek to the southeast. The site's condition was described as good, with minor impacts being from rabbit and wombat activity.
- AHIMS site #61-6-0121 is a low density artefact scatter recorded by Alistair Grinbergs in 1997 during a site inspection for the proposed development of additional ski slope facilities. The site is located on a level to gently sloping saddle on a spur adjacent to Merritts Creek. No further information about the site is provided on the site card.
- AHIMS site #61-6-0103 is an artefact scatter recorded by C.D Dearling in 1997 during an archaeological survey of the proposed extension of the 'Easy Does It' ski run. The site consisted of four quartz flakes and one quartz core fragment, located on a spur above Merritts Creek. The site's location had been impacted by wombat digging.
- AHIMS site #61-3-0065 is an isolated artefact recorded by P. Saunders (Archaeological Heritage Surveys) in 1998 during an archaeological survey for a proposed carpark extension at the Thredbo Alpine Village. The site was identified on a former gravel pit, immediately west of the northern bank of Thredbo River. The site contained one quartz flake measuring 18mm (length), 12mm (width) and 1mm (thickness). The site's location had been highly disturbed by numerous impacts including gravel extraction in the 1950s-1960s.
- AHIMS site #61-3-0137 and AHIMS site #61-3-0138 were recorded by Grinbergs Heritage Solutions in 2008, during a preliminary ACHA for the proposed Thredbo to Bullocks Flat multi use track:
    - AHIMS site #61-3-0137 was described as a sparse scatter of four quartz artefacts (two flakes and two chips) located on a level to very gently sloping bench/termination above the eastern banks of the Thredbo River. The artefacts were identified over an area of approximately 40m by 40m. The artefacts were found in a disturbed context; however, it was concluded that there may be additional artefacts in the immediate area.
    - AHIMS site #61-3-0138 was described as a single quartz flake identified on a gentle slope above the Thredbo River. The artefact was found in an exposure made by extensive wombat diggings over an area of approximately 5m by 5m.

- AHIMS site #61-6-0139 is an artefact scatter recorded by Past Traces in 2022, during an Aboriginal heritage due diligence assessment for the Thredbo golf course development. The site comprises nine quartz flakes and two quartz cores, found within three surface exposures.

Figure 4-1 AHIMS sites surrounding the Proposal Area

Figure 4-2 AHIMS sites near the Proposal Area

4.1 Archaeological context

4.1.1 Regional context

Aboriginal people have occupied what we now know as the Australian continent for at least 40,000 years and perhaps 60,000 years and beyond (Bowler et al. 2003; Mulvaney and Kamminga 1999; Hiscock 2007). All major environmental zones in Australia are known to have been occupied for the last 35,000 years (Mulvaney and Kamminga 1999:114). The earliest archaeological dates for occupation in the Australian Alps bioregion dates back to 21,000 years ago from a rock shelter at Birrigai, near Canberra. However, there is physical evidence of Aboriginal use across the region in the form of surface artefacts, scarred trees, stone quarries, ceremonial grounds, stone arrangements, rock art, and rock shelters with cultural deposits (Flood 1980; Grinbergs 1992; Freslov et al. 2004).

In the south-eastern Australian highlands, there has been limited evidence of Pleistocene occupation with most sites dating to approximately 4,000 before present (BP), which is well within the Holocene (Flood et al. 1987). Only three Pleistocene sites have been recorded and excavated in the region. The oldest of these sites, Birrigai rock shelter near Canberra, has been dated to 21,000 BP and was thought to have been above the tree line during this period (Flood et al. 1987). Another regional site is New Guinea II on the Snowy River, which was recorded by Ossa et al. (1995) with a similar basal date of approximately 21,000 BP. The third site, Cloggs Cave, located in the lead up to the Victorian highlands was dated to approximately 18,000 BP (Flood 1973). The archaeological evidence from these sites – mostly faunal remains and lithics – suggests limited non-intensive use of the sites during the Pleistocene before a more intensive Holocene occupation. This model of occupation contrasts strongly with previously recorded sites in Southwest Tasmania – which is climatically and temporally similar – where it appears that Pleistocene highland occupation was intensive, and evidence of subsistence specialisation is recorded (Ossa et al. 1995; Cosgrove 1999).

While there are not enough sites currently identified in this region to clearly inform upon patterns of Pleistocene highland usage it is suggested by Ossa et al. (1995) that the drivers of highland occupation in south-eastern Australia were very different between the Pleistocene and Holocene. Holocene occupation of these areas has been strongly associated with ethnographic evidence of Bogong moth hunting as part of feasts and ceremonies (Flood 1973:1980). It is important to note however, that bogong moths could not have been a highland resource prior to the present climatic conditions of the Holocene. Consequently, present models of site identification proposed by Flood (1980) are only appropriate for Holocene Aboriginal cultural sites.

Through her work, Flood (1973, 1980) proposed that five archaeological site types typify the Southern Uplands:

- Large lowland base camps – open artefact scatters containing over 1,500 artefacts that may extend over several kilometres;
- Medium sized lowland camps;
- Valley camps at altitudes between 745m– 1,160m;
- High summer camps at elevations of 1,160m – 1,525m; and
- Camp sites above 1,525m (the snow line).

This model revolved around both seasonal resource availability (e.g. Bogong moths) and seasonal movement through the landscape, with lowland areas occupied during the winter months and the alpine areas occupied during summer (Flood 1980). Flood recognised that three main resource zones were exploited by Aboriginal communities. These resource areas were:

1. The riverine plains on the tablelands, where the great variety of riverine foods would have been easily exploited.

2. The mountain slopes and wet sclerophyll forests where mammals and vegetable foods were obtained.
3. Sub-alpine and alpine areas with the Bogong moths and daisy yams (Flood 1980:159).

Flood (1980) also suggested that camp sites would be located:

- Within access to water (all sites within one kilometre of a water source and most sites within 100m);
- Not directly along water courses, with Flood (1980) suggesting that poor drainage, risk of flash flooding and mosquitoes would have deterred long term camps immediately adjacent to rivers and creeks;
- With an aspect that allows people to sight game and/or the approach of strangers;
- In close proximity to shelter or materials from which to construct shelters; and
- In close proximity to food and other resources.

Flood concluded that "no traces of Aboriginal presence have yet been found in the dense bush of the Thredbo Valley, which would have been a much more difficult route to the moth peaks than the open Perisher Valley" (Flood 1980:192-3). However, archaeological investigations undertaken since, have challenged Flood's theory, providing an archaeological record of Aboriginal occupation and movement through the valley. Feary and Niemoeller (2015:30) have suggested that large numbers of sites along the Thredbo River, "may be associated with seasonal activities such as ceremonial gatherings prior to movement to the mountains, or they may have nothing at all to do with moth feasts, being more a reflection of a riverine based economy, relying on the resources of the river rather than on the resource poor treeless plains". Navin Officer (1987:4) noted that "at the time of Flood's investigations, no archaeological sites had been found in the Thredbo River Valley" and that "archaeological investigations undertaken in the region since the 1970s has led to the discovery of a number of campsites in and around the Thredbo River Valley".

Kamminga (1993) determined that the Thredbo River Valley is a "continuous archaeological site, comprising many activity areas" and that the "flaking of quartz pebbles at locations along the valley floor and lower slopes over millennia has produced a high background count of flaking debitage" (Kamminga cited in Feary and Niemoeller 2015:39). Feary and Niemoeller (2015:39) propose that Kamminga's findings may contribute to a "refining of the model, by suggesting that rather than an even distribution of archaeological material along the valley, traditional use was concentrated at the lower end of the valley around Bullocks Flat and the Little Thredbo River, where people gathered and/or lived". Further indicating Little Thredbo River as an area of Aboriginal occupation, R.F Payten (1949) described three Aboriginal burials as "mounds of earth covered in stones, about 3 feet high", "on the Thredbo River, a few miles above the confluence of the Little Thredbo and Thredbo Rivers" (Payten cited in Young 2005:79). Paton (1984) undertook archaeological investigations at Bullocks Flat and determined that "the comparatively large number of isolated finds and scatters of stone artefacts now known from the Thredbo Valley would seem to indicate a relatively intensive occupation of areas below 1,200m (Paton 1984:8).

Consistent with geology of the Main Range Montane soil landscape, quartz has been recorded as the predominant material for artefact manufacture in the region. Kamminga (1992) undertook archaeological test excavation at the now Lake Crackenback Resort, which recovered a total of 661 artefacts with quartz flakes representing the majority of the assemblage (95%). Radiocarbon dating of charcoal samples obtained from stratified deposits indicated an Aboriginal occupation date of 4,000 years BP, thus "providing the first dated cultural sequence within the NSW section of the Australian Alps" (Kamminga 1992, Feary and Niemoeller 2015:38). The Lake Crackenback Resort was revisited by Barber (2003) who identified seven artefact scatters. AHIMS site #61-3-0062 recorded by Navin Officer (1992) and further described below (Section 4.1.2), identified over 90 quartz stone artefacts at the Friday Flats Work Depot, 1km south of the current Project Area.

In 1988 Paton and Macfarlane (1988a, 1988b) conducted preliminary salvage excavations for the proposed resort complex at the Little Thredbo Homestead near the Thredbo Skitube terminal, located approximately

14.8 km north-west of the current Proposal Area. During this assessment, Paton and Macfarlane classified the landforms between one of four categories: alluvial flats (low lying, generally shaded, and poorly drained), moderate slopes (3° - 5° slopes, generally well drained), steep slopes (greater than 6° slope, well drained), and elevated flats (less than 3° slope and at least 20m above alluvial flats on well drained shoulders, crests, or knolls); all landforms were noted to contain varying aspects. The results of this salvage work – which included excavation of test pits and controlled bulldozer scrapes – were that a total of 246 subsurface stone artefacts were recorded:

- Within the alluvial flats, 16 test pits were excavated but only two artefacts were recorded.
- Within the moderate slopes, 10 test pits were excavated with 62 artefacts recorded (from only two pits).
- Within the steep slopes, nine test pits were excavated but no artefacts were recorded.
- Within the elevated flats, 15 test pits were excavated with 181 artefacts recorded. Only a single bulldozer scrape contained an artefact.

A total of 224 of the recorded artefacts were quartz, the majority of which were 'small chips' (flaked pieces) at 54.4%, while flakes represented 37%. The remainder of the quartz assemblage comprised of multiplatform and bipolar cores. The remaining 22 artefacts were identified as grey silcrete (n=21, 8.5%) and a volcanic pebble (n=1, 0.4%). Silcrete geometric microliths and broken backed blades were identified while the single volcanic pebble was recorded as a ground-edged axe with pitting on one of its surfaces indicating its potential use as a hammerstone. Paton and Macfarlane argued that the quartz assemblage recorded during the salvage was consistent with the results of other excavations on the Far South Coast (Hiscock 1982 as cited in Paton and Macfarlane 1988) and the Southern Tablelands (Flood 1980). They also noted that Flood (1980:217 as cited in Paton and Macfarlane 1988:5) argued that geometric microliths were more common within assemblages in the region while backed blades were rare. Paton and Macfarlane argued that the presence of these typologies suggested that the site could be dated between 2,000 and 5,000 years BP, however this was solely based on the stone artefacts present as no dateable material was recovered. More generally, the results of the assessment by Paton and Macfarlane conform to the predictive models developed by Flood (1980) for montane valley camps. Elevated flats were clearly the focus of previous human activity in this area while moderate slopes were targeted to a lesser degree (especially when elevated 20m above alluvial flats and with an easterly or north-easterly aspect). The results of these excavations also suggest that steep slopes and alluvial flat landforms were not utilised for activities that left an archaeological record. Despite largely conforming to previous predictive models, Paton and Macfarlane argue that the size of the recorded assemblage suggests that the Aboriginal occupation of the Thredbo valley was more intensive that had been previously understood.

4.1.2 Local context

Anutech (1987) was commissioned by Monaro Electricity Commission to undertake an archaeological survey of a 33kV transmission line, measuring approximately 13km in length from Bullocks Flat to Thredbo Village, approximately 200m south of the current Project Area. The proposed transmission line covered flat to gently sloping ground, in proximity to the Thredbo River and was therefore considered to be suited to Aboriginal occupation and have high archaeological sensitivity. Anutech and Eden LALC undertook an archaeological survey of the proposed transmission line and identified 11 artefact scatters and two isolated artefacts, all were exposed in areas of ground disturbance from land clearing, animal burrowing and erosion. All artefact scatters had low densities and it was determined that they likely formed a general background scatter of artefacts along the Thredbo River. In line with regional trends, the artefacts were mostly manufactured from quartz. Anutch concluded that due to disturbance, "all artefacts had been displaced from their original discard position and the integrity of the sites and their ability to answer questions of occupation and spatial organisation had been further reduced" (Anutech 1987:18). Seven of the 11 sites were to be threatened by the proposed development. For five of these sites, it was recommended that the developer apply for a Consent to Destroy (now AHIP). The remaining two sites were considered to be archaeologically sensitive

due to containing a large number of artefacts and having a "greater potential to answer questions about Aboriginal occupation" (Anutech 1987:18). As such, it was recommended that the proposed development avoid these sites and that temporary fencing be erected to restrict the movement of heavy vehicles through this area.

Navin Officer Heritage Consultants (Navin Officer) (1992) was commissioned by NSW National Parks and Wildlife Services to undertake an archaeological survey of part of the Alpine Way in the Kosciusko National Park, including the Friday Flats Work Depot, which is approximately 1km south-east of the current Proposal Area. Based on background research of the local area, it was determined that the site types most likely to be found in the study area were artefact scatters, scarred trees and isolated artefacts. The study area had been previously disturbed by road construction, modifications and maintenance and as such the potential for Aboriginal sites was considered to be moderate to low. Archaeological survey was undertaken by Navin Officer and the Eden LALC, which identified one possible scarred tree, eight artefact scatters, five isolated artefacts and eight possible historic sites/features. The majority of these sites were located outside of the study area and would therefore not be impacted by the proposed works. One artefact scatter (AHIMS site #61-3-0062, previously described in Section 4) was recorded at the Friday Flat Works Depot, closest to the current Project Area. A total of 98 artefacts were identified, and Navin Officer determined the potential for further sub-surface artefacts to remain in undisturbed portions of the site. It was therefore considered to have moderate to high archaeological potential in a local context. It was recommended that a Consent to Destroy (now AHIP) be applied to for part of the site that had already been disturbed, and which were located in areas affected by the proposed works. It was also recommended that the final design for the depot incorporate a permanent barrier to protect undisturbed portions of the site.

Navin Officer (1997) was commissioned by Kosciusko Thredbo to prepare an Aboriginal heritage study for the extension and improvement of the 'Easy Does It' ski run at Thredbo, approximately 200m north-east of the current Proposal Area. An analysis of land-use history found that a large amount of fill had been introduced to form a slope for a ski trail. This fill had a large amount of introduced stone including fragments of quartz and granite pebbles. Based on other archaeological studies conducted in the Thredbo Valley, Navin Officer determined the site types most likely to be encountered in the study area were artefact scatters and isolated finds and the artefact material was likely to be quartz. Distribution of artefact site locations recorded during surveys in the local area suggested that both the wider river corridors and major ridgelines were used as access routes through the ranges, with the most common site types being low density artefact scatters, ranging in size from 20 to 50 artefacts. These sites would be located on level or low gradient, well drained ground. Archaeological survey undertaken by Navin Officer identified one low density artefact scatter within the study area. The site consisted of five artefacts including one quartz core fragment and four quartz flakes. Navin Officer determined that this site represented a single occupation event or reflected the transitory movement of Aboriginal people through the landscape. It was concluded that "due to its size, contents, and location which is fairly typical for those found in the region, the artefact scatter site is considered to have low scientific or archaeological significance in a local context". It was recommended that the proponent apply for a Consent to Destroy (now AHIP), and that a copy of the report be forwarded to the Eden LALC.

HLA-Envirosciences (HLA) (2005) was commissioned by the Roads and Traffic Authority to undertake archaeological test excavation at Friday Flats Work Depot, approximately 1km south-east of the current Proposal Area. Navin Officer (1992) had previously identified an artefact scatter at the Depot during a survey of part of the Alpine Way. Archaeological test excavation recovered a total of 99 stone artefacts, with the most common tool type being flaked pieces (68%), and the most common material type being quartz (47%). The distribution of artefacts recovered from each test pit reflected a ow density assemblage. Majority of the assemblage (67%) was recovered from fill or mixed fill material, and it was concluded that the area had been heavily impacted by the construction of the work depot. HLA described the overall assemblage as "a series of overlapping knapping events, separated in time but which through post-depositional processes, have become incorporated within similar stratigraphic units" (HLA 2005:34). According to HLA, the excavations revealed that "natural and human environmental change had destroyed or modified *in situ* archaeological deposits within the study area" and as such, the assemblage was considered to be of low to nil

archaeological significance because of their "condition, low density and lack of any stratigraphic integrity". HLA recommended that a Consent to Destroy (now AHIP) be sought prior to the commencement of proposed works.

Alistair Grinbergs Heritage Solutions (2008) was commissioned by the Department of Environment and Climate Change to prepare an ACHA for the proposed Thredbo to Bullocks Flat 16km multi-use track, located approximately 1.6km east of the current Proposal Area, at its nearest point. It was determined that the study area would have provided a range of montane and riparian resources beneficial to Aboriginal people. Based on previous research carried out in the Thredbo Valley, the most common sites to be expected in the study area were artefact scatters and isolated artefacts, and they were likely to be close to permanent water sources, on ridges or spur crests, spur terminations and basal slopes or on level to gently sloping landform elements. Archaeological survey identified a total of 23 Aboriginal sites, including 11 artefact scatters, nine isolated artefacts, one grinding groove and two PADs. The artefact sites were dominated by quartz flakes, and small quantity of chert and silcrete flakes were identified. The PAD sites were recorded in associated with two artefact sites located banks of the Thredbo River. The grinding groove was described as a uniform shallow depression on a large flat outcrop of granite with a pebble bed on the banks of the Thredbo River. This site was considered to be a rare example of this site type, especially being on a granite based rock. Based on the results of the survey, it was recommended that additional archaeological investigation in the form of text excavation be undertaken at all 23 sites.

On Site Cultural Heritage Management (On Site CHM) (2011) were commissioned by NSW National Parks and Wildlife Services to undertake archaeological excavation of bridge footings along the Threbdo to Bullocks Flat shared use track, approximately 1.6km east of the current Proposal Area, at its nearest point. The three bridge locations were located along a 1.1km stretch of the Thredbo River. Previous archaeological investigations of the shared use track undertaken by Alistair Grinbergs Heritage Solutions (2008) had identified 23 Aboriginal sites, and as such the bridge footing locations were determined to have high archaeological potential. A total of three test pits were excavated and five auger holes were hand drilled at the locations of the bridge footings. No Aboriginal objects were identified and due to the close proximity of the river, it was determined that periodic flooding may have washed artefacts away or Aboriginal people may not have used these locations as they were flood prone. Based on the results of the excavations, it was recommended that the proposed works could proceed with due caution.

Ironbark Heritage and Environment (IHE) (2013) was commissioned by Dabyne Planning on behalf of Kosciuszko Thredbo to prepare an Aboriginal Heritage Due Diligence Assessment for Stage 1 of the Thredbo Mountain Bike Trails, located approximately 20m south of the current Proposal Area, at its nearest point. An extensive AHIMS search of an area approximately 4km by 5km centred on the study area identified 23 Aboriginal sites, with four sites within 100m of the mountain bike trails. The most common site type in the local area and the most likely to be found in the study area were artefact scatters and isolated artefacts. An analysis of landscape features of the study area determined the potential for Aboriginal sites to remain, particularly in areas of relatively level and well-drained ground. Site inspection of the mountain bike trails did not identify any Aboriginal stone artefacts, however a number of areas that had the potential to contain artefacts were noted, based on their ideal terrain and limited ground disturbance. It was recommended that the project avoid certain landforms and where it could not, a layer of geo-fabric be installed. It was also recommended that Trail 1 and Trail 3 be placed along areas that had already been disturbed.

NGH (2022) was commissioned by Le Hunte Properties to prepare an Aboriginal Heritage Due Diligence Assessment for the proposed construction of tourist accommodation at 5 Diggings Terrace, Thredbo, approximately 400m south of the current Proposal Area. Desktop assessment of the study area found that due to the proximity of a major waterway and the presence of a spur, there was potential for isolated artefacts to be present. Visual inspection did not identify any Aboriginal objects or areas of PAD within the study area. Shallow soils and steep landforms were encountered, both of which had been shown by previous archaeological investigations in the local area to contain little potential for archaeological deposits. It was

determined to be highly unlikely that Aboriginal objects or archaeological deposits would be impacted by the proposed works, and it was recommended that the proposed works could proceed with due caution.

4.2 Landscape assessment

Step 2b. Are there landscape features present likely to contain Aboriginal objects?

The Due Diligence Code outlines a range of general landscape features that are more likely to contain Aboriginal objects. These include land that is:

- Within 200m of water;
- Located within a sand dune system;
- Located on a ridge top, ridge line or headland;
- Located within 200m below or above a cliff face; or
- Within 20m of a cave, rock shelter or cave mouth.

It is also necessary to consider whether any sensitive landscape features present have been disturbed or modified which would reduce the potential for Aboriginal objects to occur.

4.2.1 Soils

The formation and nature of soils within the Proposal Area can provide insight into the types of sites which may be present, in addition to the likelihood for intact archaeological deposits to be present.

The Proposal Area is located within the Australian Alps Bioregion which is the smallest bioregion in NSW and is NSW's only true alpine environment. The soils of this region reflect the extreme climatic gradient across the ranges (NPWS 2003: 218). The lowlands consist of texture contrast soils, grading to uniform, organic soils and peats at the highest elevations.

The Proposal Area is located within the Main Range Montane (Mam) soil landscape which is characterised by gritty clay loams on granites and pedal red to yellow clay subsoils on eta-sediments. Soils are intermediate in character between low elevation texture contrast profiles and higher elevation organic uniform profiles (Mitchell 2002:8).

As shown in Figure 4-3, the soil type of the Proposal Area is dermosols, which are found on upper slopes with subsoil clay content increasing at down slope (EMM Consulting 2017:21,24). Dermosols are characterised by red podzolic soils containing minimal gravel and high clay content. Dermosols are moderately deep and well drained soils of wetter areas in eastern Australia (EMM Consulting 2017:35). Areas of deep soils contain potential for subsurface archaeological deposits.

4.2.2 Geology

The landscape context of the Proposal Area is based on Mitchell soil landscapes and IBRA data, and the combination of these differing resolutions of landform data provides a comprehensive and multi scaled understanding of the landscape within the Proposal Area and its immediate surroundings. Archaeologically, the geology of any location is important as it informs as to whether there any potential for *in-situ* deposits of stone material traditionally used for the manufacture of stone tools or whether these materials would have to have been sourced from further afield or even traded with other groups of people.

The Australia Alps Bioregion comprises granites that have formed faulted, stepped ranges at the point where the South Eastern Highlands in NSW turn west into Victoria. The upper surface of granite locks contain low relief. Geology of the Main Range Montane soil landscape comprises Silurian-Devonian gneissic granite, granite and granodiorite and Ordovician slate, chert, quartzite and phyllite (Mitchell 2002:8). These raw

materials, particularly quartz was utilised by Aboriginal people for the manufacture of stone tools and evidence of this has been recorded in the local area (Section 4.1.1).

4.2.3 Topography & Hydrology

The general elevation of the Main Range Montane soil landscape is 100m to 1,500m and Thredbo Village is located at 1,365m (Mitchell 2002:8). As demonstrated by the contours in Figure 4-4, the Proposal Area is located on a very steep landform, see also Plate 4-1- Plate 4-2.

Thredbo River is located 25m south and is a perennial river within the Snowy River catchment (Figure 4-3). The Thredbo River is impacted by seasonal climate changes, with high flows during the spring snow melt and snow and ice during the winter season (Envirokey 2015:31). Merritts Creek is a tributary of Thredbo River and is located approximately 95m north of the Proposal Area. Friday Flat Creek is located 870m south-east and Bullock Yard Creek is located 3.077km east. The Thredbo River and its tributaries would have provided freshwater and food resources for Aboriginal people. Aboriginal occupation along the Thredbo River is evidenced by the concentration of artefact scatter and isolated artefact sites.

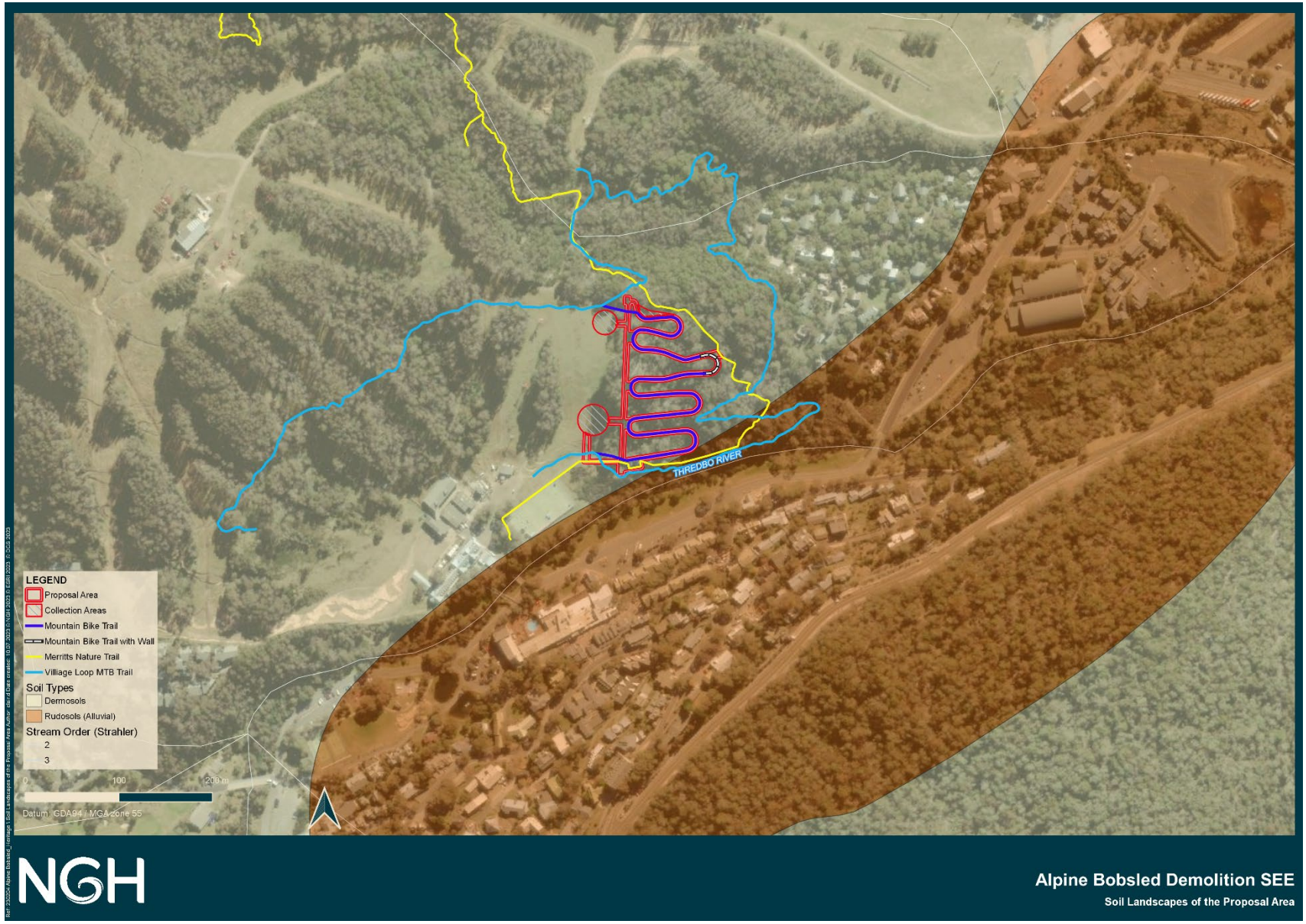


Figure 4-3 Soil landscape of the Proposal Area and near vicinity

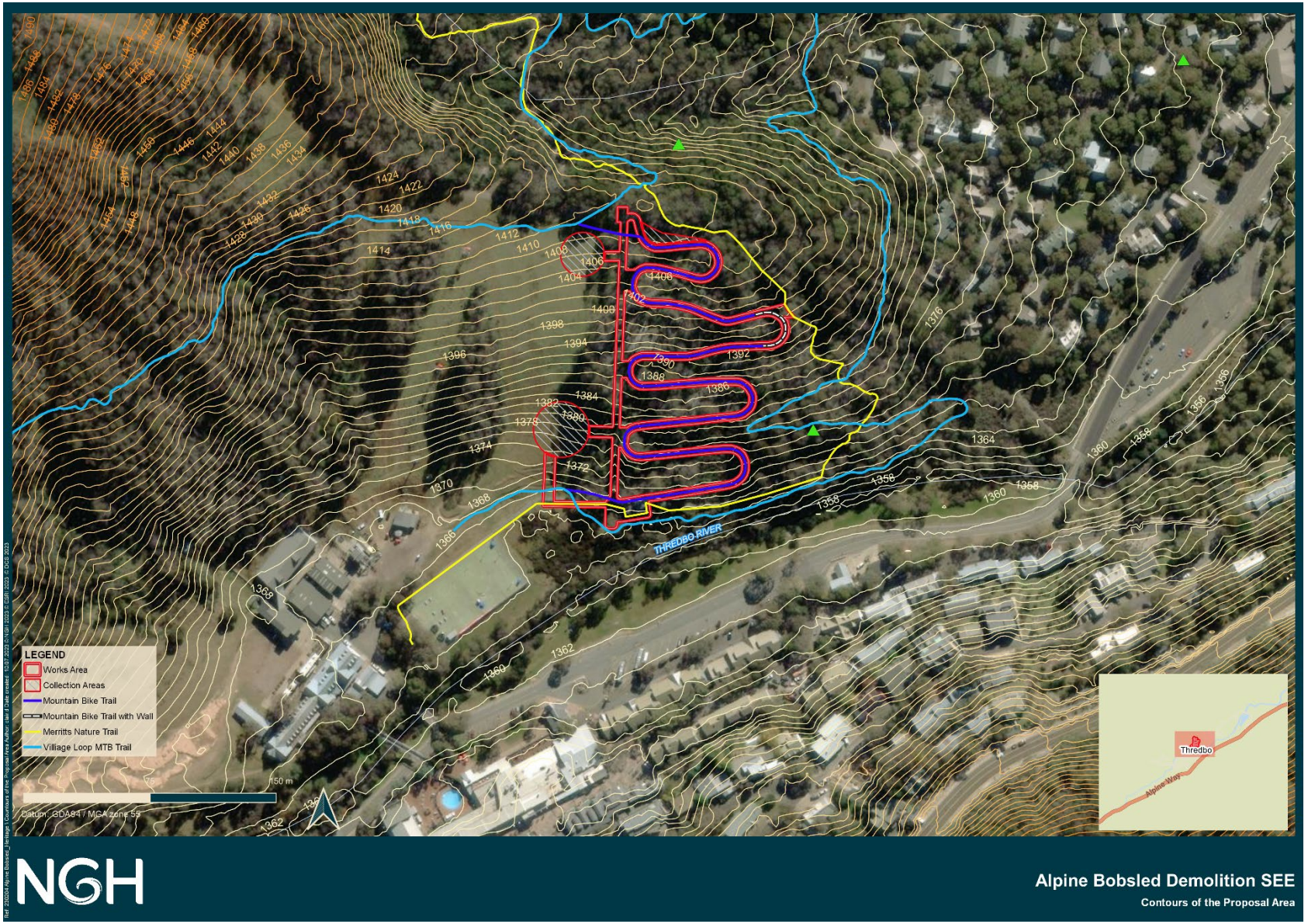


Figure 4-4 Contours (2m) showing steepness of Proposal Area.

4.2.4 Flora and fauna resources

The information provided herein is intended as a generalised summary of the endemic flora and fauna present within the Proposal Area and local area and is not to be used as a substitute for detailed ecological studies and assessments. However, it may be inferred that prior to human disturbance the Proposal Area would have been heavily vegetated and would have supported a wide variety of resources to any people living there.

Plant foods would have been important in the Aboriginal diet, and tubers of the daisy yam (*Microseris scapigera*) would have been a "more reliable staple food with bogong moth harvesting restricted to special and infrequent ceremonial occasions" (Bowdler 1981). Flood noted that "the root of the native orchid and lillies, and the starchy rhizomes of various waterplants, grew in the mountains and are likely to have been eaten in large quantities" (Flood 1980). The Thredbo River would have provided fish, crayfish and waterbirds and game such as kangaroos, wallabies and possums would have also been locally available (Flood 1980).

As shown in Plate 4-1 to Plate 4-2, the Proposal Area has been cleared of vegetation and contains grass. Vegetation outside of the Proposal Area contains thick regrowth vegetation of trees and shrubs. The Proposal Area is void of trees and therefore does not have potential for modified trees (scarred or carved) to exist.

The NGH (2023:13) *Bobsled Demolition BOS Evaluation* has identified the vegetation around the Proposal Area as PCT 3306 - Kosciuszko Alpine Ash High Wet Forest with the dominant native canopy species being the Snow Gum (*Eucalyptus pauciflora)* and Black Sally (*Eucalyptus stellulata*). The dominant mid story species re *Bossiaea foliosa* as well as *Bossaiea distioclada, Cassinia aculeata, Epacris gunnii, Hakea lissosperma, Micromytus sp., Senecio sp.* and *Tasmannia xerophila*. The lower story is dominated by *Poa sieberiana* and *Poa labillardierei* species. The lower story also contains *Agrostis parviflora, Acaena novae-zelandiae, Acetosella vulgaris, Carex curly*, *Coronidium scorpioides, Craspedia sp*., *Dactylis glomerata, Rubus parviflora* and *Senecio sp.* Minimal exotic species were located, with the dominant species being Blackberry (*Rubus fruticosus agg*).

Vegetation of the Main Range Montane soil landscape includes tall forests in moist, high rainfall environments with alpine ash (*Eucalyptus delegatensis*), mountain gum (*Eucalyptus dalrympleana*), narrow-leaved peppermint (*Eucalyptus radiata*), manna gum (*Eucalyptus viminalis*), brown barrel (*Eucalyptus fastigata*), snow gum (*Eucalyptus pauciflora*), mountain hickory wattle (*Acacia obliquinervia*) and silver wattle (*Acacia dealbata ssp. alpina*). Moist gullies support soft tree fern (*Dicksonia antarctica*), with blackwood (*Acacia melanoxylon*), southern sassafras (*Atherosperma moschatum*) and hazel pomaderris (*Pomaderris aspera*). Sphagnum bogs (*Sphagnum cristatum*) with candle heath (*Richea continentis*) and swamp heath (*Epacris paludosa*) occur at the head of most creeks (Mitchell 2002:8).

Plate 4-1 Vegetation and topography of the Proposal Area. Approximate boundary of Proposal Area outlined in red (source: Kosciuszko Thredbo).

Plate 4-2 Mowed grass within the Proposal Area and view of topography. Approximate boundary of Proposal Area outlined in red (source: Kosciuszko Thredbo).

4.2.5 Historic land use

The traditional lifestyle of the Ngarigo people was disrupted from the late 1820s when graziers brought stock into the Thredbo Valley, attracted by the benefits of the grasslands and permanent water supply (Thredbonet Marketing 2015). Grazing leases occurred in the area from the 1820s until the mid-1900s, when they ceased due to increasing environmental concerns. Scientist Richard Helms first raised the alarm in 1893, about the "environmental impacts of regular burning and grazing and consequent soil erosion in the Alpine area" (Pickering and Worboys 2002:8). However, it was during the 1930s that the "first real stirrings of opposition to this land-use gained momentum as erosion had become severe in many areas" (Pickering and Worboys 2002:8). It was the establishment of the Kosciuszko State Park by Act of Parliament on 19 April 1944, which resulted in the removal of grazing from the Alpine area (Pickering and Worboys 2002:9).

In 1949, the Snowy Mountains Hydro Electricity Scheme commenced, bringing with it an influx of workers. One of these workers, Tony Sponar, set up a downhill skiing course at an area known as George Chisholm course, located near the current Thredbo village. The Kosciuszko Chairlift and Thredbo Hotel Syndicate was formed in 1955 and included Sponar, Charles Anton, Eric Nicholls and Geoffrey Hughes and it aimed to establish Thredbo as a major ski resort. In 1957, the syndicate was incorporated as Kosciuszko Thredbo Limited, and the company was granted a lease by the NSW Minister for Lands which gave it various rights to developing Thredbo (Thredbonet Marketing 2015). An article in the Canberra Times from Wednesday 30 January 1957 (Figure 4-5) details:

> *The Premier, Mr Cahill announced today that Cabinet had given approval to the Department of Lands to enter into an agreement with a private syndicate authorising it to occupy 75 acres in the Thredbo Valley in Kosciuszko State Park. Mr Cahill said the Kosciuszko Chairlift and Thredbo Hotel Syndicate had agreed to carry out the following improvements if granted the lease:*
>
> - *Construction of a chairlift*
> - *Construction of an hotel to accommodate not fewer than 40 guests*
> - *Construction of an access road from the Alpine Highway to the hotel site*
> - *Construction of a petrol station*

New Hotel And Ski-lift Possible For Kosciusko

SYDNEY, Tuesday. — An 80-guest hotel with an ultra-modern ski-lift may be built in the Kosciusko area.

The Premier, Mr. Cahill, announced to-day that Cabinet had given approval to the Department of Lands to enter into an agreement with a private syndicate authorising it to occupy 75 acres in the Thredbo Valley in Kosciusko State Park.

Mr. Cahill said the Kosciusko Chairlift Thredbo Hotel Syndicate had agreed to carry out the following improvements if granted a lease:

- Construction of a chairlift at the 4,550ft. altitude to the 6,000ft. mark on Crackenback Peak, with a capacity of 150 passengers an hour.
- Construction of an hotel to accommodate not fewer than 40 guests, with the necessary appointments and accommodation for 40 more guests in the hotel or in Norwegian huts to be purchased from the Snowy Mountains Hydro-Electric Authority.
- Construction of an access road from the Alpine Highway to the hotel site.
- Construction of a petrol service station on the hotel site.

Mr. Cahill said that if the syndicate completed these improvements within five years it would be granted a 99-year lease.

The syndicate would be charged only a rental of £1 a year during the five-year option period of the lease.

Later rentals would be based on the annual receipts of the hotel, with a maximum rental of 1¼ per cent. of gross annual receipts.

Figure 4-5 Article referencing proposed development for Thredbo (Canberra Times, Wednesday 30 January 1957, Page 3).

Historic aerial imagery from 1964 to 1992, shows the disturbance which occurred during these years. By 1964 (Figure 4-6), the Proposal Area had been extensively cleared of vegetation. A concentration of trees remained in the northern half of the Proposal Area, and an access track had been graded on the western boundary of these trees. In 1988 (Figure 4-7), vegetation remains completely cleared in the western extent of the Proposal Area, however has regrown over the remainder of the Proposal Area. A track has been graded following the tree line on the northern boundary of the Proposal Area and another through the centre of the of the vegetation. Buildings and roads have increased greatly south of the Proposal Area and to the north-east. There are no major changes between 1988 and 1992, and the vegetation remains much the same. The bobsled track and operator's hut are not visible in the aerial from 1992 (Figure 4-8), so they would have been installed after this year. The addition of the bobsled track would have resulted in further vegetation clearing and subsequent maintenance. The construction of the operator's hut in the southern part of the Proposal Area would have resulted in a high level of disturbance.

Summary

Prior to modification, the Proposal Area would have comprised a steep landform, vegetated with Kosciuszko Alpine Ash High Wet Forest. Thredbo River is located 25m south would have provided freshwater and food resources for Aboriginal people moving through the valley. Raw materials available in the local area, such as quartz and chert would have been utilised by Aboriginal people for the manufacture of stone tools. Historic aerial imagery shows that the Proposal Area was extensively cleared of vegetation in the past, and tracks were graded in parts of the Proposal Area. Further disturbance would have occurred for vegetation clearing of the bobsled route and ongoing maintenance, for the addition of the bobsled track and for the construction

of the operator's hut. The Proposal Area has experienced a moderate to high level of disturbance, therefore limiting the likelihood for Aboriginal objects to remain.

Figure 4-6 Historic aerial imagery from 1964. Approximate location of Project Area outlined in red

Figure 4-7 Historic aerial imagery from 1988. Approximate location of Project Area outlined in red

Figure 4-8 Historic aerial imagery from 1992. Approximate location of Project Area outlined in red

4.3 Aboriginal site prediction

Based upon the initial desktop assessment, using satellite imagery and topographic data, it appears that there is low potential for Aboriginal objects to occur within the Proposal Area given the steep slope and previous impacts associated with extensive vegetation clearing in the 1960s, additional vegetation clearing and ongoing maintenance for the bobsled track, and construction of the operator's hut.

Two artefact scatters have been previously recorded within 50m of the Proposal Area, however historic aerial imagery shows that at the time of the recordings, these locations had been subject to a lesser degree of disturbance, than that of the Proposal Area. The site descriptions for these also indicate they were found on areas of 'gentle' slope, which is not present within the current Proposal Area. The plotted location of AHIMS site #61-6-0121 is also likely to be in error as it was noted to be found in a "saddle on a spur" and the site card grid coordinates plot it on a steep side slope.

Prior to disturbance, the Proposal Area would have encompassed a forested steep slope, which would have been an unfavourable position for Aboriginal activity or occupation. The low-density artefact scatters located in the vicinity, suggest that this the area was likely used on a transient basis. If the Proposal Area ever contained artefacts, impacts since the 1960s has significantly reduced the likelihood for such sites to have remained.

The Proposal Area is void of trees and the surrounding area comprises regrowth Kosciuszko Alpine Ash High Wet Forest, and therefore does not have potential for modified trees (scarred or carved) to exist. Site types such as burials, stone quarries, grinding grooves, and stone arrangements are present in the region but are unlikely to occur due to their rarity and the unsuitable landforms present within the Proposal Area. The most common site type in the local area is artefact scatters and isolated artefacts. The Proposal Area has low potential to contain stone artefact scatters and isolated artefacts due to past disturbance associated with construction of the bobsled and operator's hut, and ongoing vegetation clearing and landscaping around the bobsled. It is unlikely for substantial sub-surface deposits to exist within the Proposal Area due to high clay content typical of Dermosol soils. Archaeological excavations in the local area have suggested that steep slopes and alluvial flat landforms were not utilised for activities that left an archaeological record (Paton and Macfarlane 1988a, 1988b).

The desktop assessment, therefore, indicates that there are no landscapes present within the Proposal Area that have the potential to contain Aboriginal objects. The nature of the works being undertaken at this site will involve a moderate level of ground disturbance and it is unlikely that it would impact on Aboriginal heritage objects.

5. Impact avoidance

Step 3. Can any AHIMS listed objects, or landscape features be avoided?

The Proposal Area does not contain any AHIMS sites and the nearest is a low-density artefact scatter located 35m east. In addition, the Proposal Area is located in an area which is unlikely to contain Aboriginal sites due to past disturbance associated with vegetation clearing, construction of the bobsled and operator's hut, and ongoing landscaping around the bobsled. The desktop assessment therefore, indicates that there are no unmodified landscapes present within the Proposal Area that have the potential to contain Aboriginal objects. The nature of the works being undertaken at this site will involve a moderate level of ground disturbance and it is unlikely that it would impact on Aboriginal heritage objects.

6. Desktop assessment and visual inspection

Step 4. Does the desktop assessment confirm that there are likely to be Aboriginal objects present or below the ground surface?

The assessment process is primarily a desktop exercise, using available information such as the AHIMS search results and relevant archaeological reports to develop or refine a model of Aboriginal site prediction based on the type of activity proposed and the level of disturbance of the area. A visual inspection is also required where landscape features are present that may contain Aboriginal objects that cannot be avoided by the activity.

The desktop assessment has concluded that a visual inspection is not warranted as it is unlikely that Aboriginal objects will be impacted by the proposed works. The desktop assessment alone is therefore sufficient to conclusively define the archaeological potential of the landscape or identify the location of any Aboriginal objects.

7. Further assessment

Step 5. Is further investigation or impact assessment required?

The Due Diligence Code states that if, after the research and desktop assessment is completed, it is evident that harm will occur to Aboriginal objects or heritage places then further and more detailed assessment is required. However, if the research and desktop assessment conclude that the proposed activity is unlikely to harm Aboriginal objects then the activity can proceed with caution. The desktop assessment and research has concluded that the proposed activity is unlikely to harm Aboriginal objects and further archaeological assessment is not required.

8. Recommendations

The recommendations are based on a number of considerations including:

- Background Aboriginal heritage research into the area;
- Assessment of Landscape;
- Land use and disturbance assessment;
- Consideration of the impact of the proposed works; and
- Legislative context for the development proposal.

The recommendations are as follows:

1. The proposed work can proceed with caution without further archaeological assessment.
2. Any activity proposed outside of the current Proposal Area should also be subject to an Aboriginal heritage assessment.
3. If any items suspected of being Aboriginal in origin are discovered during the work, all work in the immediate vicinity must stop and the NSW Environment Line (1300 361 967) notified. The find will need to be assessed and, if found to be an Aboriginal object, further detailed assessment and an application for an Aboriginal Heritage Impact Permit (AHIP) may be required.
4. In the unlikely event that human remains are identified during development works, all work must cease in the immediate vicinity and the area must be cordoned off. The Proponent must contact the local NSW Police who will make an initial assessment as to whether the remains are part of crime scene or possible Aboriginal remains. If the remains are thought to be Aboriginal, Heritage NSW must be notified by ringing the Enviroline (131 555).

The Proponent is reminded that it is an offence under the *National Parks and Wildlife Act 1974* to disturb, damage or destroy an Aboriginal object without a valid AHIP.

9. References

Alistair Grinbergs Heritage Solutions (2008). *Preliminary Aboriginal Cultural Heritage Assessment: Proposed Thredbo to Bullocks Flat Multi-Use Track.* Report prepared for Department of Environment and Climate Change.

Anutech (1987) *An Archaeological Survey of a 33kV Transmission Line (No 2) from Bullocks Flat to Thredbo.* Report prepared for Monaro Electricity Commission.

DECCW. (2010). *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW*. Retrieved from https://www.environment.nsw.gov.au/research-and-publications/publications-search/code-of-practice-for-archaeological-investigation-of-aboriginal-objects-in-nsw

DECCW. (2010). *Due Diligence Guidelines for the Protection of Aboriginal Objects in NSW*. DECCW. Retrieved from https://www.environment.nsw.gov.au/research-and-publications/publications-search/due-diligence-code-of-practice-for-the-protection-of-aboriginal-objects-in-new-south-wales

DPE (2007). *State Environmental Planning Policy (Kosciuszko National Park—Alpine Resorts) 2007.* Retrieved from: https://legislation.nsw.gov.au/view/html/inforce/current/epi-2007-0643

EMM Consulting (2017). *Soils and land assessment: Exploratory Works for Snowy 2.0.* Report prepared for Snowy Hydro Limited.

Feary S. and Niemoeller G. (2015). *Lower Thredbo Valley shared path: Bullocks Flat to Curiosity Rocks, Snowy Mountains, NSW. Aboriginal cultural heritage assessment.* Report prepared for NPWS and SRSC.

Flood, J. (1973). *The Moth-Hunters: Investigations Towards a Prehistory of the South-Eastern Highlands of Australia.* Australian Institute of Aboriginal Studies, Canberra.

Flood, J (1974). 'Pleistocene Man at Cloggs Cave: his Tool Kit and Environment', *Mankind*, vol. 9, no. 3, pp. 175–188.

Flood, J (1980). *The moth hunters: Aboriginal prehistory of the Australian Alps*. Australian Institute of Aboriginal Studies, Canberra.

Flood, J, David, B, Magee, J & English, B (1987). 'Birrigai: a Pleistocene site in the south-eastern highlands', *Archaeology in Oceania*, vol. 22, no. 1, pp. 9–26.

Freslov, J, Clark, I & Marsh, C (2004). Post *Wildfire Aboriginal Heritage Survey*, Unpublished Report to Parks Victoria and the Department of Sustainability and the Environment.

Grinbergs, A (1992). *The Myth Hunters. Investigations Towards a Revised Prehistory of the South Eastern Highlands of Australia.* Unpublished B.A. (Hons) Thesis. Department of Archaeology and Anthropology, Australian National University, Canberra.

Hiscock, P (1982). 'A Technological Analysis of Quartz Assemblages from the South Coast of NSW', in S Bowdler (ed), *Coastal Archaeology in Eastern Australia*, Department of Prehistory, Research School of Pacific Studies, Australian National University.

Hiscock, P (2007). *Archaeology of Ancient Australia,* Routledge.

HLA Enviro-sciences (2005). *Preliminary Research Permits #2071 and #2072: Excavations and Findings at Friday Flat Snow Clearing Depot, Thredbo, NSW.* Report prepared for Roads and Traffic Authority.

Ironbark Heritage and Environment (2013). *A Cultural Heritage Due Dilligence Assessment for Thredbo Bike Trails Stage 1, Kosciuszko National Park, NSW.* Report prepared for Dabyne Planning.

Kamminga, J. (1992). *Aboriginal settlement and prehistory of the Snowy Mountains*. In: B. Scougall, ed. Cultural Heritage of the Australian Alps. Canberra: Austrelaian Alps Liaison Committee, pp. 101-124

Mitchell P. (2002). *Descriptions for NSW (Mitchell) Landscapes*. Department of Environmental and Climate Change NSW. Retrieved from https://www.environment.nsw.gov.au/resources/conservation/landscapesdescriptions.pdf

Mulvaney, DJ & Kamminga, J (1999). *Prehistory of Australia*, Allen & Unwin.

Navin Officer (1992). *Archaeological Survey: Alpine Way, Kosciusko National Park, NSW.* Report prepared for NSW National Parks and Wildlife Services.

Navin Officer (1997). *Cultural Heritage Survey: Proposed 'Easy Does It' Ski Run Improvement Works, Thredbo, NSW.* Report prepared for Kosciusko Thredbo.

NGH (2022). *Aboriginal Heritage Due Diligence Assessment: Thredbo Lot 768 DA.* Report prepared for Le Hunte Properties.

NGH (2023). *Preliminary BOS Evaluation: Bobsled Demolition BOS Evaluation*. Report prepared for Kosciuszko Thredbo.

NPWS (2003). *Bioregions of New South Wales: Australian Alps.* Retrieved from https://www.environment.nsw.gov.au/research-and-publications/publications-search/australian-alps-bioregion

NSW Government. (2019). *National Parks and Wildlife Regulation 2019*. Retrieved from https://legislation.nsw.gov.au/view/html/inforce/current/sl-2019-0408

OEH. (2010, September). *NPWS Act 1974 Fact Sheet 1.*

OEH. (2010, September). *NPWS Act 1974 Fact Sheet 2.*

OEH. (2011). *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales*. Retrieved from https://www.environment.nsw.gov.au/research-and-publications/publications-search/guide-to-investigating-assessing-and-reporting-on-aboriginal-cultural-heritage-in-nsw

On Site CHM (2011) *Subsurface testing of bridge footings Threbo to Bullocks Flat shared use track, Kosciuszko National Park.* Report prepared for NSW National Parks and Wildlife Services.

Ossa, P, Marshall, B & Webb, C (1995). 'New Guinea II Cave: A Pleistocene site on the Snowy River, Victoria', *Archaeology in Oceania*, vol. 30, no. 1, pp. 22–35.

Paton, R & MacFarlane, I (1988a). *An Archaeological Investigation of the Lake Crackenback Village near Thredbo, NSW*. Report prepared for Faraba Pty Ltd.

Paton, R & MacFarlane, I (1988b). *Results of Preliminary Salvage Excavation at Thredbo Valley*. Report prepared for Faraba Pty Ltd.

Pickering, C & Worboys, G. (2002). *Managing the Kosciuszko Alpine Area: Conservation milestone and future challenges.* National Library of Australia Cataloguing-in-Publication Data.

Thredbonet Marketing (2015). *The History of Thredbo.* Retrieved from: https://www.discoverthredbo.com/history-thredbo/

Young, M. (2005). *The Aboriginal people of the Monaro.* 2nd ed. Sydney: NSW Department of Environment and Conservation.

NGH Pty Ltd

NSW • ACT • QLD • VIC

ABN 31 124 444 622 ACN 124 444 622

E: ngh@nghconsulting.com.au

GOLD COAST

2B 34 Tallebudgera Creek Road
Burleigh Heads QLD 4220
(PO Box 424 West Burleigh QLD 4219)

T. (07) 3129 7633

SYDNEY REGION

Unit 17, 21 Mary Street
Surry Hills NSW 2010

T. (02) 8202 8333

BEGA

Suite 11, 89-91 Auckland Street
(PO Box 470)
Bega NSW 2550

T. (02) 6492 8333

MELBOURNE

Level 14, 10-16 Queen Street
Melbourne VIC 3000

T: (03) 7031 9123

TOWNSVILLE

Level 4, 67-75 Denham Street
Townsville QLD 4810

T. (07) 4410 9000

BRISBANE

T3, Level 7, 348 Edward Street
Brisbane QLD 4000

T. (07) 3129 7633

NEWCASTLE - HUNTER & NORTH COAST

Level 1, 31-33 Beaumont Street
Hamilton NSW 2303

T. (02) 4929 2301

WAGGA WAGGA - RIVERINA & WESTERN NSW

35 Kincaid Street (PO Box 5464)
Wagga Wagga NSW 2650

T. (02) 6971 9696

CANBERRA

Unit 8, 27 Yallourn Street
(PO Box 62)
Fyshwick ACT 2609

T. (02) 6280 5053

SUNSHINE COAST

Suite 101, Level 2/30 Main Drive
Birtinya QLD 4575

(07) 4410 9000

WODONGA

Unit 2, 83 Hume Street
(PO Box 506)
Wodonga VIC 3690

T. (02) 6067 2533

Appendix E Erosion and Sediment Control Plan

Erosion and Sediment Control Plan

Alpine Bobsled Demolition

PURPOSE

The purpose of this Erosion and Sediment Control Plan is to outline the intentions and fundamental principles that will be followed in the planning and implementation of erosion and sediment control (ESC) measures for the duration of the project.

OBJECTIVES

To minimise potential impacts from construction works to receiving waters.

To reduce the potential for erosion and sediment moving offsite.

SCOPE OF THIS PLAN

This document identifies appropriate controls specific to project activities to prevent sedimentation and pollution of receiving waters and minimise potential impacts on vegetation communities with and adjacent to the site.

GUIDELINES

- Managing Urban Stormwater: Soils and Construction, Volume 1, 4th Edition (Landcom 2004)
- Best Practice Erosion and Sediment Control Guidelines (IECA, 2008)
- Erosion and Sediment Control: A field Guide for Construction Site Managers (Catchments & Creeks Pty Ltd, 2012)

EROSION AND SEDIMENT CONTROLS

Implementation of appropriate controls and locations will be the responsibility of the construction contractor. Controls to be installed prior to any construction work (where required) and retained in place until exposed areas of soil or vegetation are stabilised/rehabilitated.

SITE ESTABLISHMENT

- Implement sediment control measures prior to any construction work and retain in place until exposed areas of soil or vegetation are stabilised/rehabilitated.

STOCKPILES AND STORAGE OF MATERIALS

- Soil stockpiles to be managed in accordance with the Soil Stockpile Guidelines.
- Refer **Attachment A** for recommended controls, including installation notes and examples.

GENERAL

- Additional erosion and sediment control measures must be implemented and a revised ESCP must be prepared in the event that site conditions or project design change significantly from those considered within this plan.

- In the event that serious or material environmental harm may occur as a result of sediment leaving site, appropriate additional erosion and sediment control measures must be implemented such that all reasonable and practicable measures are being taken to prevent or minimise such harm.
- The construction schedule must aim to minimise the duration that all areas of soil are exposed to the erosive effects of wind, rain and surface water. Where possible, works will be undertaken during periods of no rainfall.
- Land-disturbing activities must not cause unnecessary soil disturbance if an alternative construction process is available that achieves the same or equivalent outcomes at an equivalent cost.
- Refer **Attachment A** for recommended controls, including installation notes and examples.

CLEARING AND GROUNDCOVER REMOVAL

- Any clearing required is to be delayed as long as possible prior to the commencement of works, particularly within proximity to watercourses.
- All reasonable and practicable efforts must be taken to delay the removal of, or disturbance to, existing groundcover (organic or inorganic) prior to the commencement of works.
- Sedimentation controls must be installed prior to the commencement of works.
- Refer **Attachment A** for recommended controls, including installation notes and examples.

EROSION CONTROL

- Prevention of erosion will be prioritised above sediment control wherever practicable during the work.
- Dust suppression will occur when visible dust is sighted. Sediment-laden runoff from dust suppression must not run off site, cause a traffic hazard or environmental issues.
- All temporary earth bunds and flow diversion systems must be machine-compacted and stabilised with polymer or landscaping techniques (seeding, hydromulch etc.).

PROGRESSIVE REHABILITATION AND STABILISATION

- All exposed areas shall be progressively stabilised/rehabilitated as soon as possible.
- Only weed-free or natural thatch/litter should be used in sediment control activities.
- All ESCs will remain in place until all exposed areas of soil are stabilised and/or revegetated.
- All landscaping and rehabilitation should be undertaken in accordance with the *Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park* (NGH 2007).

MONITORING

During construction, all ESCs are to be checked regularly to ensure they remain in good working order at all times (e.g. prior to forecast rain, daily during extended periods of rainfall and after significant rainfall events). Regular monitoring and maintenance will be the responsibility of construction personnel. The Environmental Officer will undertake weekly inspections of controls for the duration of the works.

PERFORMANCE INDICATOR

No 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.

ATTACHMENT A – CONTROL INSTALLATION AND CONSTRUCTION NOTES

Control	Project Activity	Location	Purpose	Timing	Standard Drawing Reference[1]
Rock check	Demolition of bobsled infrastructure	Downslope of the outer curves of the bobsled track	To slow water movement as it runs downslope of the development footprint	Prior to commencement of works. Retain in place until exposed areas of soil are stabilised.	Rock Check Dam (SD 5-4)
Flow control berms (earthen bunds)	Demolition of bobsled infrastructure	Upslope of the development footprint	To divert clean water around the development footprint and into areas of established vegetation	Prior to commencement of works. Retain in place until exposed areas of soil are stabilised.	Flow Control Berms (CB-01)

[1]Landcom 2004; NSW DECC 2008 & IECA Best Practice Erosion and Sediment Control (BPESC) document

Erosion and Sediment Control Plan
Map 1 of 4

Legend

- Project
- Development footprint
- Laydown areas
- Site access tracks
- Contours (AHD, 20 m interval)
- Roads

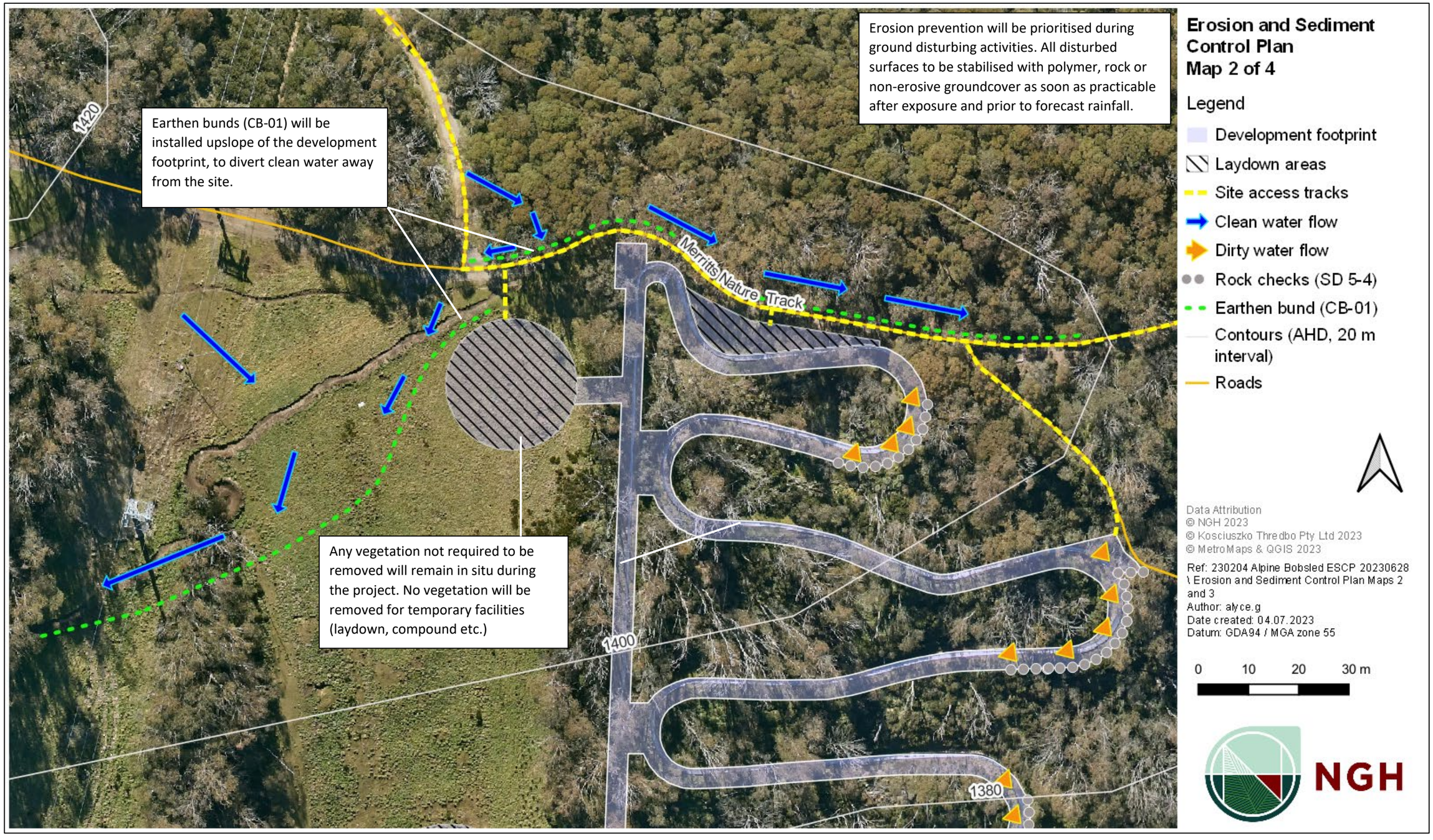
Watercourse

- 2nd order waterway
- Thredbo River

Ref: 230204 Alpine Bobsled ESCP 20230628 \ Erosion and Sediment Control Plan
Author: alyce.g
Date created: 04.07.2023
Datum: GDA94 / MGA zone 55

0 25 50 75 m

NGH


Erosion prevention will be prioritised during ground disturbing activities. All disturbed surfaces to be stabilised with polymer, rock or non-erosive groundcover as soon as practicable after exposure and prior to forecast rainfall.
Earthen bunds (CB-01) will be installed upslope of the development footprint, to divert clean water away from the site.
Any vegetation not required to be removed will remain in situ during the project. No vegetation will be removed for temporary facilities (laydown, compound etc.)
Merritts Nature Track
1420
1400
1380
Erosion and Sediment Control Plan
Map 2 of 4
Legend
Development footprint
Laydown areas
Site access tracks
Clean water flow
Dirty water flow
Rock checks (SD 5-4)
Earthen bund (CB-01)
Contours (AHD, 20 m interval)
Roads
Data Attribution
© NGH 2023
© Kosciuszko Thredbo Pty Ltd 2023
© MetroMaps & QGIS 2023
Ref: 230204 Alpine Bobsled ESCP 20230628 \ Erosion and Sediment Control Plan Maps 2 and 3
Author: alyce.g
Date created: 04.07.2023
Datum: GDA94 / MGA zone 55
0
10
20
30 m
NGH

Erosion and Sediment Control Plan
Map 3 of 4

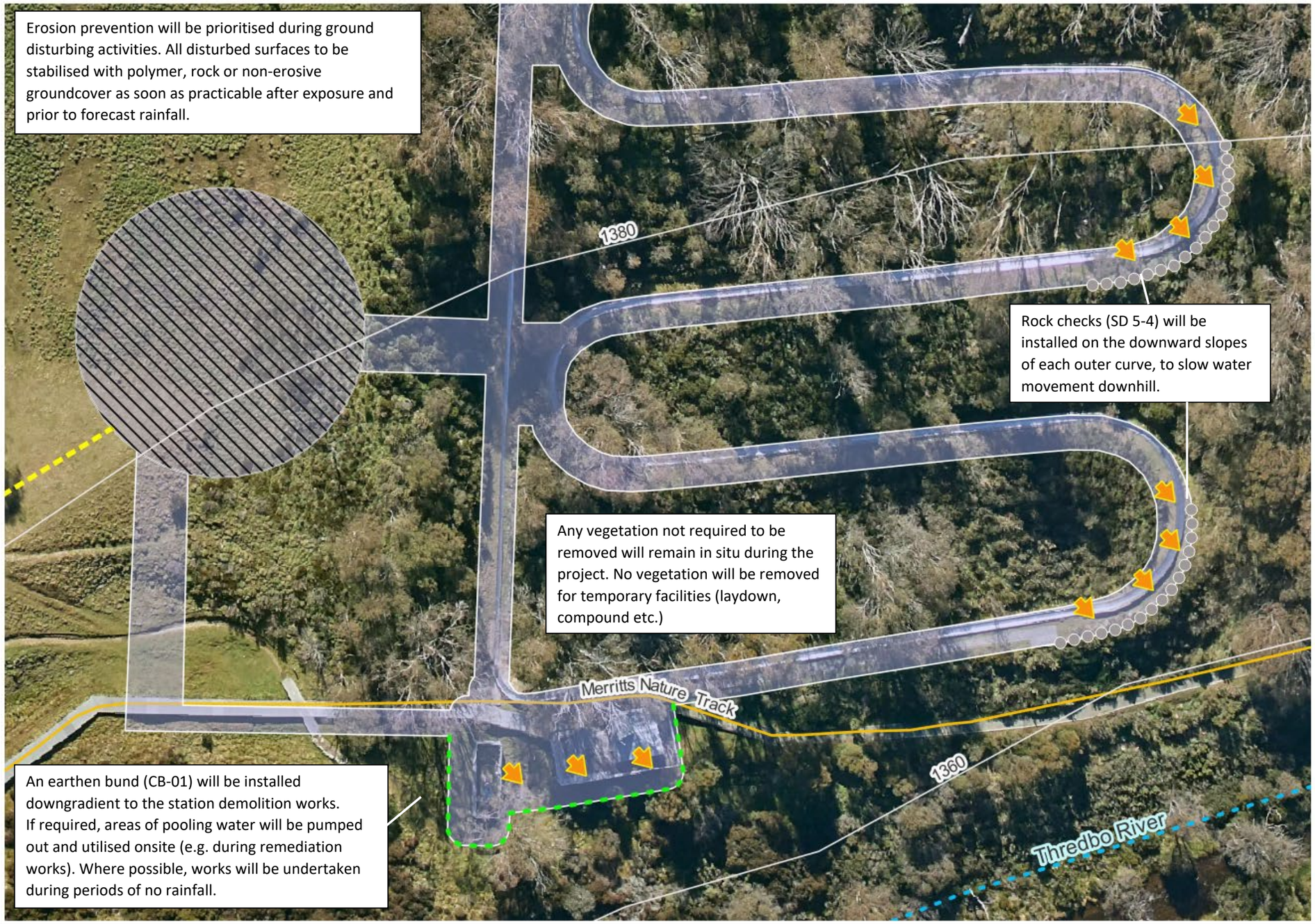
Legend

- Development footprint
- Laydown areas
- Site access tracks
- Clean water flow
- Dirty water flow
- Rock checks (SD 5-4)
- Earthen bund (CB-01)
- Contours (AHD, 20 m interval)
- Roads

Ref: 230204 Alpine Bobsled ESCP 20230628 \ Erosion and Sediment Control Plan Maps 2 and 3
Author: alyce.g
Date created: 04.07.2023
Datum: GDA94 / MGA zone 55

0 5 10 15 m

NGH



Erosion and Sediment Control Plan
Map 4 of 4

Legend

- Development footprint
- Laydown areas
- Site access tracks

Watercourse

- Thredbo River
- Dirty water flow
- Rock checks (SD 5-4)
- Earthen bund (CB-01)
- Contours (AHD, 20 m interval)
- Roads

Ref: 230204 Alpine Bobsled ESCP 20230628 \ Erosion and Sediment Control Plan Maps 2 and 3
Author: alyce.g
Date created: 04.07.2023
Datum: GDA94 / MGA zone 55

0 5 10 15 m

NGH

Rock check dam

Flow diversion bank

Source: Catchments & Creeks Pty Ltd, 2012

CONTROL INSTALLATION NOTES

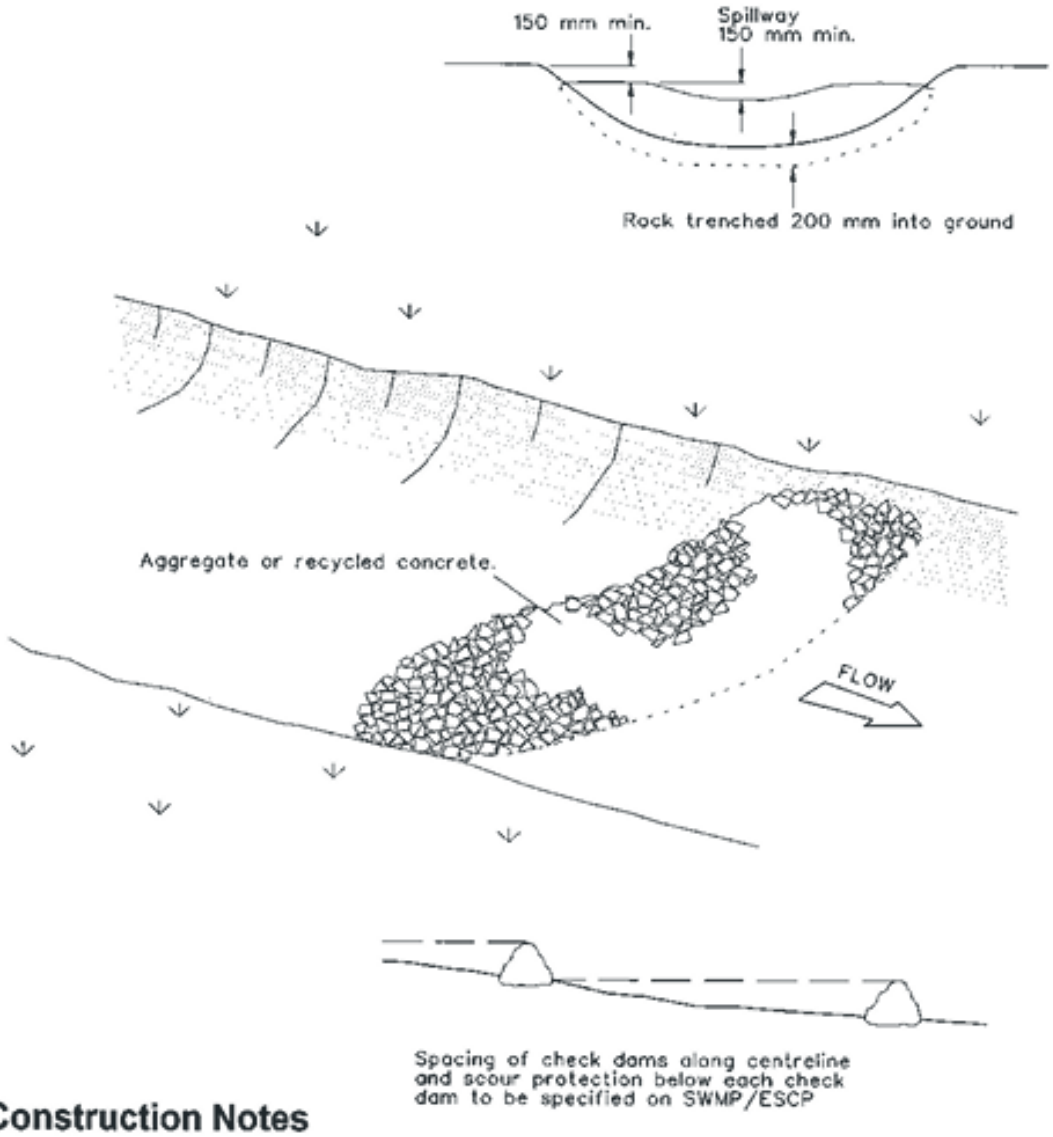
Cross Drainage and Sediment Barriers

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



Construction Notes

1. Check dams can be built with various materials, including rocks, logs, sandbags and straw bales. The maintenance program should ensure their integrity is retained, especially where constructed with straw bales. In the case of bales, this might require their replacement each two to four months.
2. Trench the check dam 200 mm into the ground across its whole width. Where rock is used, fill the trenches to at least 100 mm above the ground surface to reduce the risk of undercutting.
3. Normally, their maximum height should not exceed 600 mm above the gully floor. The centre should act as a spillway, being at least 150 mm lower than the outer edges.
4. Space the dams so the toe of the upstream dam is level with the spillway of the next downstream dam.

ROCK CHECK DAM **SD 5-4**

INSTALLATION

1. REFER TO APPROVED PLANS FOR LOCATION, EXTENT, AND CONSTRUCTION DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, EXTENT, OR METHOD OF INSTALLATION, CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.

2. CLEAR THE LOCATION FOR THE BERM, CLEARING ONLY THE AREA THAT IS NEEDED TO PROVIDE ACCESS FOR PERSONNEL AND EQUIPMENT.

3. REMOVE ROOTS, STUMPS, AND OTHER DEBRIS AND DISPOSE OF THEM PROPERLY.

4. FORM THE BERM FROM THE MATERIAL, AND TO THE DIMENSION SPECIFIED IN THE APPROVED PLANS.

5. IF FORMED FROM SANDBAGS, THEN ENSURE THE BAGS ARE TIGHTLY PACKED SUCH THAT WATER LEAKAGE THROUGH THE BAGS IS MINIMISED.

6. CHECK THE ALIGNMENT OF THE BERM TO ENSURE POSITIVE DRAINAGE IN THE DESIRED DIRECTION.

7. ENSURE THE BERM DISCHARGES TO A STABLE OUTLET.

8. ENSURE THE BERM DOES NOT DISCHARGE TO AN UNSTABLE FILL SLOPE.

MAINTENANCE

1. INSPECT FLOW CONTROL BERMS AT LEAST WEEKLY AND AFTER RUNOFF-PRODUCING RAINFALL.

2. INSPECT THE BERM FOR ANY SLUMPS, WHEEL TRACK DAMAGE OR LOSS OF FREEBOARD. MAKE REPAIRS AS NECESSARY.

3. CHECK THAT FILL MATERIAL OR SEDIMENT HAS NOT PARTIALLY BLOCKED THE DRAINAGE PATH UP-SLOPE OF THE EMBANKMENT. WHERE NECESSARY, REMOVE ANY DEPOSITED MATERIAL TO ALLOW FREE DRAINAGE.

4. DISPOSE OF ANY COLLECTED SEDIMENT OR FILL IN A MANNER THAT WILL NOT CREATE AN EROSION OR POLLUTION HAZARD.

5. REPAIR ANY PLACES IN THE BERM THAT ARE WEAKENED OR IN RISK OF FAILURE.

REMOVAL

1. WHEN THE SOIL DISTURBANCE ABOVE THE BANK IS FINISHED AND THE AREA IS STABILISED, THE FLOW CONTROL BERM SHOULD BE REMOVED, UNLESS IT IS TO REMAIN AS A PERMANENT DRAINAGE FEATURE.

2. DISPOSE OF ANY SEDIMENT OR EARTH IN A MANNER THAT WILL NOT CREATE AN EROSION OR POLLUTION HAZARD.
3. GRADE THE AREA AND SMOOTH IT OUT IN PREPARATION FOR STABILISATION.

4. STABILISE THE AREA BY GRASSING OR AS SPECIFIED IN THE APPROVED PLAN.

Table 1 - Recommended dimensions of flow control berms

Parameter	Earth banks	Vegetated banks	Compost berms	Sandbag berms
Height (min)	500 mm	500 mm	300 mm	N/A
Top width (min)	500 mm	500 mm	100 mm	N/A
Base width (min)	2500 mm	2500 mm	600 mm	N/A
Side slope (max)	2:1 (H:V)	2:1 (H:V)	1:1 (H:V)	N/A
Freeboard	300 mm	150 mm	100 mm	50 mm

Drawn:	Date:		
GMW	Dec-09	Flow Control Berms	CB-01

Appendix F Geotechnical report

NGH Pty Ltd

NSW • ACT • QLD • VIC

ABN 31 124 444 622 ACN 124 444 622

E: ngh@nghconsulting.com.au

GOLD COAST

2B 34 Tallebudgera Creek Road
Burleigh Heads QLD 4220
(PO Box 424 West Burleigh QLD 4219)

T. (07) 3129 7633

SYDNEY REGION

Unit 17, 21 Mary Street
Surry Hills NSW 2010

T. (02) 8202 8333

BEGA

Suite 11, 89-91 Auckland Street
(PO Box 470)
Bega NSW 2550

T. (02) 6492 8333

MELBOURNE

Level 14, 10-16 Queen Street
Melbourne VIC 3000

T: (03) 7031 9123

TOWNSVILLE

Level 4, 67-75 Denham Street
Townsville QLD 4810

T. (07) 4410 9000

BRISBANE

T3, Level 7, 348 Edward Street
Brisbane QLD 4000

T. (07) 3129 7633

NEWCASTLE - HUNTER & NORTH COAST

Level 1, 31-33 Beaumont Street
Hamilton NSW 2303

T. (02) 4929 2301

WAGGA WAGGA - RIVERINA & WESTERN NSW

35 Kincaid Street (PO Box 5464)
Wagga Wagga NSW 2650

T. (02) 6971 9696

CANBERRA

Unit 8, 27 Yallourn Street
(PO Box 62)
Fyshwick ACT 2609

T. (02) 6280 5053

SUNSHINE COAST

Suite 101, Level 2/30 Main Drive
Birtinya QLD 4575

(07) 4410 9000

WODONGA

Unit 2, 83 Hume Street
(PO Box 506)
Wodonga VIC 3690

T. (02) 6067 2533