

Our ref: 7324-R1
3 August 2023

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Kosciuszko Thredbo Pty Ltd / EVT
1 Friday Drive
Thredbo NSW 2625

Attention: Chloe Chalk

Dear Chloe,

Geotechnical Assessment for Bobsled Removal and Mountain Bike Trail Construction, Thredbo NSW

1. Introduction

This report presents the results of a geotechnical assessment for proposed removal of an existing bobsled and construction of a mountain bike trail in Thredbo NSW. The assessment was commissioned by Chloe Chalk of Kosciuszko Thredbo Pty Ltd / EVT, email dated 18 July 2023.

Documents supplied to us for this assessment comprised:

- Project description in email from Kosciuszko Thredbo Pty Ltd dated 18 July 2023.
- Site Plan titled “Bobsled Removal”, by Kosciuszko Thredbo Pty Ltd; revision 2; dated: 1 June 2023.
- Site Plan titled “Proposed Bobsled MTB Trail”, by Kosciuszko Thredbo Pty Ltd; revision 1; dated: 22 June 2023.
- Site photos supplied by Kosciuszko Thredbo Pty Ltd; email dated 2 August 2023.

Based on the above-mentioned documents, we understand the proposed development comprises:

- Demolition of the existing bobsled located adjacent to the Valley Terminal (VT) precinct, along the footpath linking VT to Woodridge subdivision and Friday Flat. Demolition involves the removal of existing bobsled infrastructure including the track, bottom station, top station, and associated infrastructure.
- Construction of a mountain bike trail and associated infrastructure within the existing bobsled corridor. A short section of the trail will be constructed as a wall ride to prevent walkers from inadvertently entering the mountain bike trail. The wall ride will be constructed of 6 to 8 timber or steel posts concreted into the ground with an excavation footprint for each footing approximately 600mm to 800mm deep x 400mm x 400mm wide.
- Site stabilisation and rehabilitation works appropriate for the anticipated minimal ground disturbance.

This report must be read in conjunction with the attached “Important Information about your Geotechnical Report”.

2. Assessment Procedure

The assessment comprised the following scope of work:

- A review of existing regional maps and reports relevant to the site held within our files.
- Review of supplied photographs of the project site.
- Engineering assessment and reporting.

3. Regional Topography

The regional topography comprises moderately to steeply sloping terrain flanking the north-easterly flowing Thredbo River, with ground slopes over the land flanking the river generally ranging from 10° to 30° and some locally steeper sections, and more gentle slopes over the river shoulders. Numerous drainage depressions and watercourses flow towards the river, with some of the persistent watercourses to the north of the river carved several metres into the underlying granite bedrock. Side slopes to creeks and watercourses are typically steeper at 20° to 35°, and typically include numerous granite boulders and cobbles.

The site lies within an area designated as “G” as defined in the maps accompanying DIPNR’s “Geotechnical Policy – Kosciuszko Alpine Resorts”, November 2003, and therefore a geotechnical report is required to accompany the development application as per the requirements of the Geotechnical Policy, unless the project involves minor construction works which present minimal or no geotechnical impact on the site or related land as determined and certified (Form 4) by a geotechnical engineer or engineering geologist as defined by this policy.

4. Site Observations

The site is located on the moderate slopes immediately north of the Thredbo River as shown in Plate 1.



Plate 1 – Site Locality (source: Six Maps)

Site plans for the existing bobsled and the proposed mountain bike trail are attached. Photos of the existing bobsled focused on the loading/unloading area and exits/approaches are attached.

Overall ground slopes across the development area are variable and range from about 5° to 20°.

Vegetation comprises medium to thick vegetation except for the immediate vicinity of the bobsled track and associated infrastructure.

Development of the bobsled track has involved relatively minor surficial reshaping and disturbance, typically relatively shallow (less than about 1m depth). No granite exposures are expected across the slope and the site vicinity. Variable subsurface conditions are expected to be encountered including fill, clay slopewash soils, completely decomposed granite (sands), with granite cobbles and boulders interspersed throughout the profile, and occasional granite bedrock.

No obvious signs of slope instability or signs of surface seepage within the loading / unloading area and the bobsled track were observed from a previous site visit by the undersigned, nor evidenced in supplied photos.

5. Discussions & Recommendations

The proposed works involve removal of the existing bobsled track, some minor regrading, and construction of between six and eight footings supporting posts for a short section of the track (wall ride). The proposed footings are of relatively small dimensions (600 to 800 mm deep by 400 mm square).

Based on the supplied project description including relatively shallow depth of excavation required for a limited number of footings and minor regrading, lack of obvious signs of hillside instability observed are expected, and anticipated subsurface conditions expected in the area, it is assessed that the proposed works will have 'minimal or no geotechnical impact' on the site. We therefore consider that a geotechnical report prepared in accordance with the Geotechnical Policy for Kosciuszko Alpine Resorts (2003) is not required. A completed Form 4 – Minimal Impact Certification is attached to this report.

The following recommendations are provided for the development:

- Based on our site observations and previous test pitting in the general area, we expect that due to previous site disturbance and observed slopes, the site is Class 'P', in accordance with AS2870-2011 'Residential slabs and footings'.
- Excavation for footings and regrading is anticipated to be predominantly within soils of variable nature including completely weathered granite and cobbles and boulders. Excavation could be achieved by suitably sized excavator.
- Footings should be taken down to suitable strata in view of the potential for slope instability. Suitable strata could include stiff or better natural clay, medium dense or better natural sandy soils, or weathered rock.

6. Limitations

In addition to the limitations inherent in site investigations (refer to the attached Information Sheets), it must be pointed out that the recommendations in this report are based on assessed subsurface conditions from limited observations.

This report and details for the proposed development should be submitted to relevant regulatory authorities that have an interest in the property (e.g., Department of Planning) or are responsible for services that may be within or adjacent to the site for their review.

Asset accepts no liability where our recommendations are not followed or are only partially followed. The document “Important Information about your Geotechnical Report” in Appendix A provides additional information about the uses and limitations of this report.



Thank you for this opportunity to submit a proposal. If you have any questions, please do not hesitate to contact the undersigned. If you wish us to proceed, please complete and sign the attached Authorisation Form and return.

For and on behalf of

Asset Geotechnical Engineering Pty Ltd

Mark Bartel

Mark Bartel

BE, MEngSc, GMQ, CPEng, RPEQ/NER(Civil), DEP/PRE (NSW)
Managing Director | Senior Principal Geotechnical Engineer

Encl: Site Plan – Bobsled Removal
Site Plan – Proposed Bobsled MTB Trail
Important Information about your Geotechnical Report
Form 4

Distribution Register

Copy	Media	Recipient	Location
1	Secure PDF	Chloe Chalk	Kosciuszko Thredbo Pty Ltd
2	Secure PDF	Mark Bartel	Asset Geotechnical Engineering

Document Status

Rev	Revision Details	Author	Reviewer		Approved for Issue		
			Name	Initials	Name	Initials	Date
0	Initial issue	M. Bartel			M. Bartel	<i>MAB</i>	3 August 2023



ISO 9001:2015
ISO 14001:2015
ISO 45001:2018 AS/NZS 4801:2001

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SITE PHOTOS

Source: Kosciuszko Thredbo Pty Ltd



Photo 1 – Entry to load/unload area



Photo 2 – unload area



Photo 3 – uphill cable run



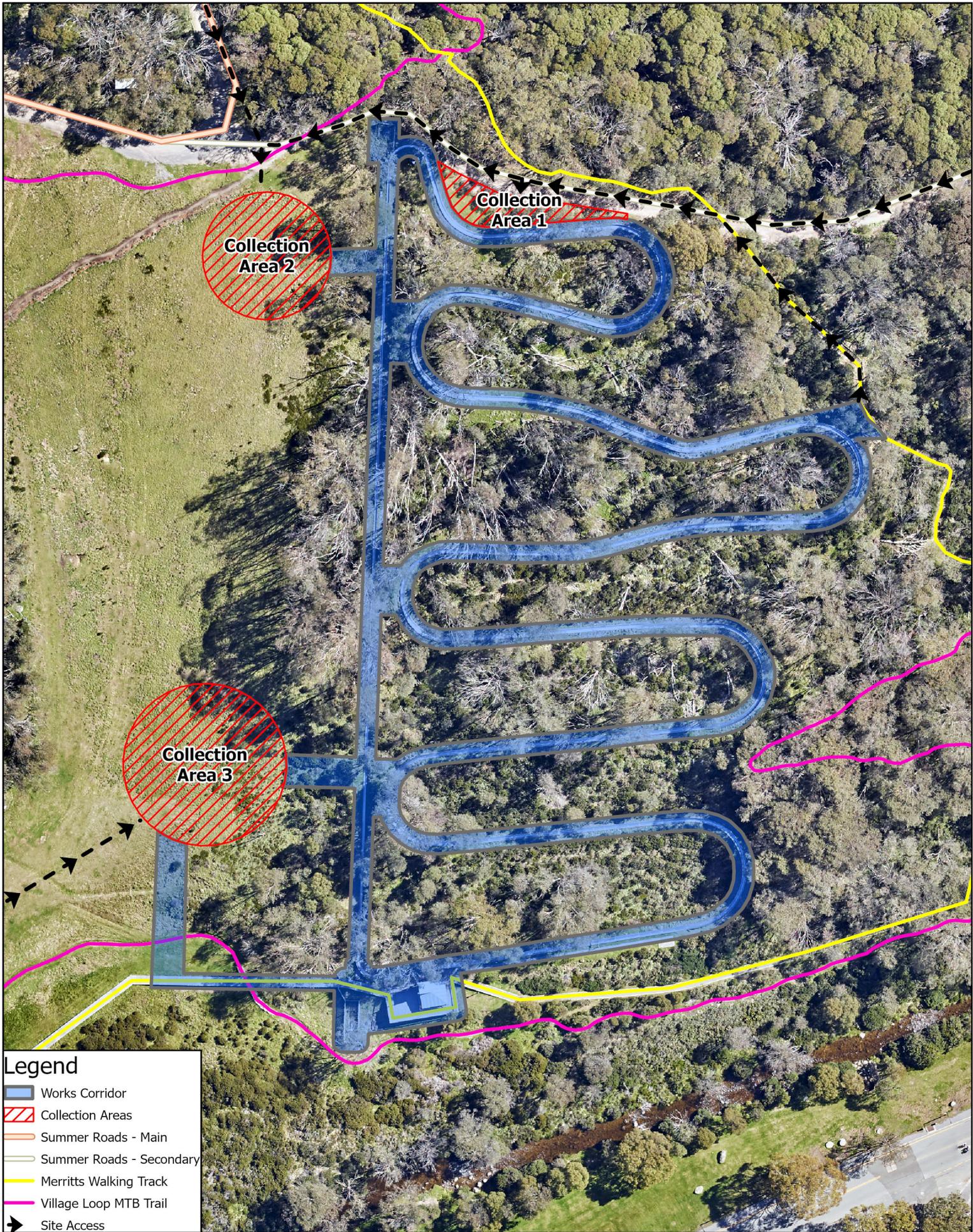
Photo 4 – supports for first curve before cable run, not shallow concrete footings



Photo 5 – approach to unload area



Photo 6 – final bend before approach to unload area



Legend

- Works Corridor
- Collection Areas
- Summer Roads - Main
- Summer Roads - Secondary
- Merritts Walking Track
- Village Loop MTB Trail
- Site Access

Scale: 1:984

7 3.5 0 7 14 21 28

Meters

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

N

THREDBO

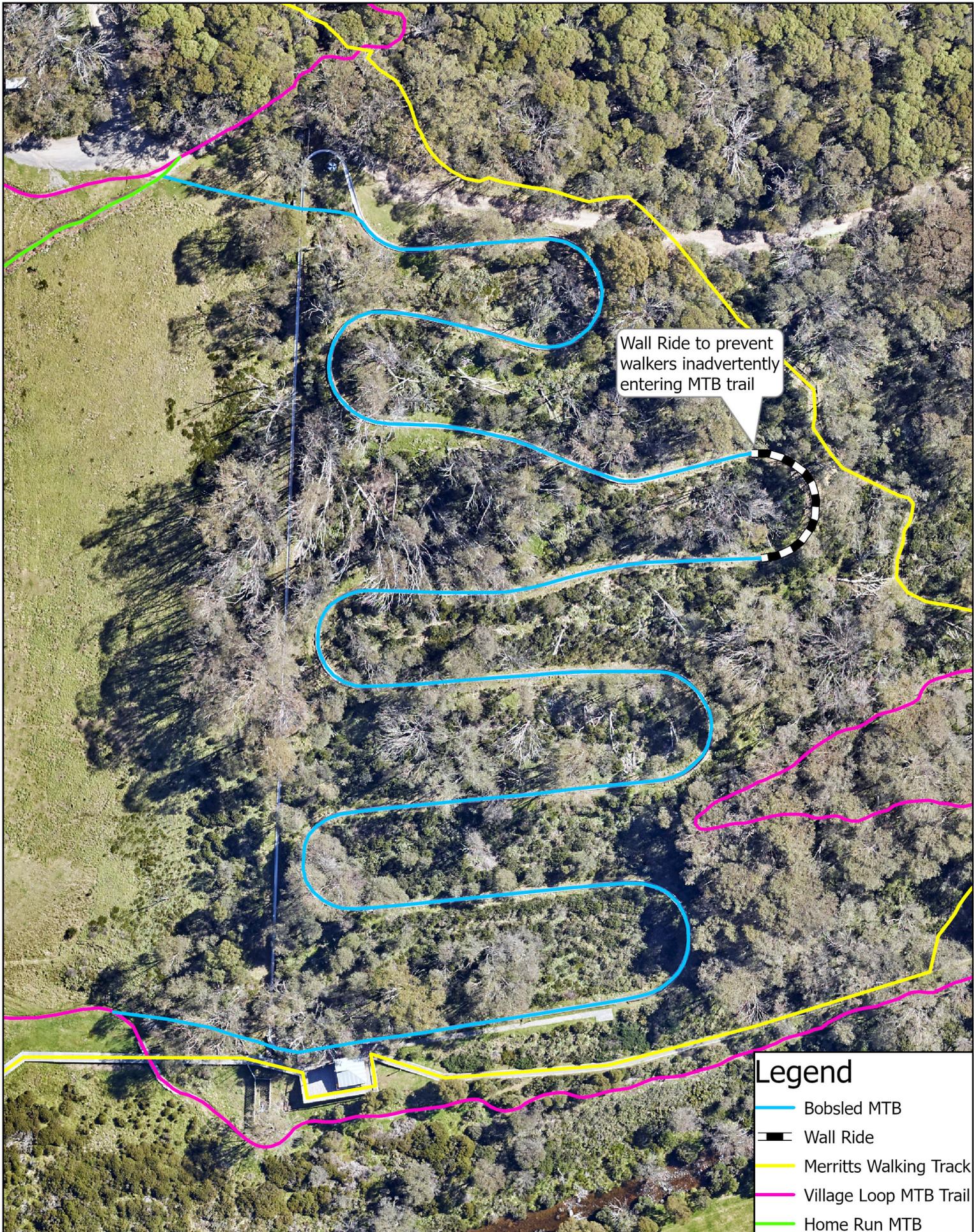
SITE PLAN

Project: Bobsled Removal

Revision: 2

Date: 01/06/2023

Produced By: BB



Wall Ride to prevent walkers inadvertently entering MTB trail

Legend	
	Bobsled MTB
	Wall Ride
	Merritts Walking Track
	Village Loop MTB Trail
	Home Run MTB

Scale: 1:907
 6.5 13 19.5 26
 Meters
 Map Projection: Universal Transverse Mercator
 Horizontal Datum: GDA 2020
 Grid: GDA 2020 MGA Zone 55



SITE PLAN
 Project: Proposed Bobsled MTB Trail

Revision: 1
 Date: 22/06/2023
 Produced By: BB

Scope of Services

The geotechnical report ("the report") has been prepared in accordance with the scope of services as set out in the contract, or as otherwise agreed, between the Client and Asset Geotechnical Engineering Pty Ltd ("Asset"), for the specific site investigated. The scope of work may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints.

The report should not be used if there have been changes to the project, without first consulting with Asset to assess if the report's recommendations are still valid. Asset does not accept responsibility for problems that occur due to project changes if they are not consulted.

Reliance on Data

Asset has relied on data provided by the Client and other individuals and organizations, to prepare the report. Such data may include surveys, analyses, designs, maps, and plans. Asset has not verified the accuracy or completeness of the data except as stated in the report. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations ("conclusions") are based in whole or part on the data, Asset will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented, or otherwise not fully disclosed to Asset.

Geotechnical Engineering

Geotechnical engineering is based extensively on judgment and opinion. It is far less exact than other engineering disciplines. Geotechnical engineering reports are prepared for a specific client, for a specific project and to meet specific needs, and may not be adequate for other clients or other purposes (e.g., a report prepared for a consulting civil engineer may not be adequate for a construction contractor). The report should not be used for other than its intended purpose without seeking additional geotechnical advice. Also, unless further geotechnical advice is obtained, the report cannot be used where the nature and/or details of the proposed development are changed.

Limitations of Site Investigation

The investigation program undertaken is a professional estimate of the scope of investigation required to provide a general profile of subsurface conditions. The data derived from the site investigation program and subsequent laboratory testing are extrapolated across the site to form an inferred geological model, and an engineering opinion is rendered about overall subsurface conditions and their likely behavior regarding the proposed development. Despite investigation, the actual conditions at the site might differ from those inferred to exist, since no subsurface exploration program, no matter how comprehensive, can reveal all subsurface details and anomalies.

The engineering logs are the subjective interpretation of subsurface conditions at a particular location and time, made by trained personnel. The actual interface between materials may be more gradual or abrupt than a report indicates.

Therefore, the recommendations in the report can only be regarded as preliminary. Asset should be retained during the project implementation to assess if the report's recommendations are valid and whether changes should be considered as the project proceeds.

Subsurface Conditions are Time Dependent

Subsurface conditions can be modified by changing natural forces or man-made influences. The report is based on conditions that existed at the time of subsurface exploration. Construction operations adjacent to the site, and natural events such as floods, or ground water fluctuations, may also affect subsurface conditions, and thus the continuing adequacy of a geotechnical report. Asset should be kept apprised of any such events and should be consulted to determine if any additional tests are necessary.

Verification of Site Conditions

Where ground conditions encountered at the site differ significantly from those anticipated in the report, either due to natural variability of subsurface conditions or construction activities, it is a condition of the report that Asset be notified of any variations and be provided with an opportunity to review the recommendations of this report. Recognition of change of soil and rock conditions requires experience, and it is recommended that a suitably experienced geotechnical engineer be engaged to visit the site with sufficient frequency to detect if conditions have changed significantly.

Reproduction of Reports

This report is the subject of copyright and shall not be reproduced either totally or in part without the express permission of this Company. Where information from the accompanying report is to be included in contract documents or engineering specification for the project, the entire report should be included to minimize the likelihood of misinterpretation from logs.

Report for Benefit of Client

The report has been prepared for the benefit of the Client and no other party. Asset assumes no responsibility and will not be liable to any other person or organisation for or in relation to any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report (including without limitation matters arising from any negligent act or omission of Asset or for any loss or damage suffered by any other party relying upon the matters dealt with or conclusions expressed in the report). Other parties should not rely upon the report or the accuracy or completeness of any conclusions and should make their own inquiries and obtain independent advice in relation to such matters.

Data Must Not Be Separated from The Report

The report presents the site assessment and must not be copied in part or altered in any way.

Logs, figures, drawings, test results etc. included in our reports are developed by professionals based on their interpretation of field logs (assembled by field personnel) and laboratory evaluation of field samples. These data should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

Report Recommendations not Followed

Where the recommendations of the report are not followed or are only partially followed, there may be significant implications for the project (e.g., commercial loss, property loss or damage, personal injury, or loss of life). Consult Asset if you are not intending to follow all the report recommendations, to assess what the implications could be. Asset does not accept responsibility where the report recommendations have not been followed or have only been partially followed.

Other Limitations

Asset will not be liable to update or revise the report to consider any events or emergent circumstances or fact occurring or becoming apparent after the date of the report.

Form 4 – Minimal Impact Certification

DA Number: _____

This form may be used where minor construction works which present minimal or no geotechnical impact on the site or related land are proposed to be erected within the “G” line area of the geotechnical maps.

A geotechnical engineer or engineering geologist must inspect the site and/or review the proposed development documentation to determine if the proposed development requires a geotechnical report to be prepared to accompany the development application. Where the geotechnical engineer determines that such a report is not required then they must complete this form and attach design recommendations where required. A copy of Form 4 with design recommendation, if required, must be submitted with the development application.

Please contact the Alpine Resorts Team in Jindabyne for further information - phone 02 6456 1733.

To complete this form, please place a cross in the appropriate boxes and complete all sections.

1. Declaration made by geotechnical engineer or engineering geologist in relation to a nil or minimal geotechnical impact assessment and site classification

I,
Mr Ms Mrs Dr Other

First Name	Family Name
Mark	Bartel

OF
Company/organisation

certify that I am a geotechnical engineer /engineering geologist as defined by the “Policy” and I have inspected the site and reviewed the proposed development known as

As a result of my site inspection and review of the following documentation
(List of documentation reviewed)

Site Plan titled “Bobsled Removal”, by Kosciuszko Thredbo Pty Ltd; rev 2; dated: 1 June 2023.
Site Plan titled “Proposed Bobsled MTB Trail”, by Kosciuszko Thredbo Pty Ltd; rev 1; dated: 22 June 2023.
Supplied photos by Kosciuszko Thredbo Pty Ltd, email dated 2 August 2023.

I have determined that;

- the current load-bearing capacity of the existing building will not be exceeded or adversely impacted by the proposed development, and
- the proposed works are of such a minor nature that the requirement for geotechnical advice in the form of a geotechnical report, prepared in accordance with the "Policy", is considered unnecessary for the adequate and safe design of the structural elements to be incorporated into the new works, and
- in accordance with AS 2870.1 Residential Slabs and Footings, the site is to be classified as a type

(insert classification type)

Class P

- I have attached design recommendations to be incorporated in the structural design in accordance with this site classification.

I am aware that this declaration shall be used by the Department as an essential component in granting development consent for a structure to be erected within the "G" line area (as identified on the geotechnical maps) of Kosciuszko Alpine Resorts without requiring the submission of a geotechnical report in support of the development application.

2. Signatures

Signature

Mark Bartel

Chartered professional status

CPEng 35641 NER (Civil)

Name

Mark Bartel

Date

3 August 2023

3. Contact details

Alpine Resorts Team

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