



**PRELIMINARY GEOTECHNICAL
ASSESSMENT FOR CORIO SKI LODGE,
6 DELATITE LANE, MT BULLER**

DCS Design

23 Happy Hollow Drive, Plenty Victoria 3090

PSA0277-01_Corio Ski Lodge Prelim Geotech
11 July 2023

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

**ADVERTISED
PLAN**



ADVERTISED PLAN

11 July 2023

Darren Cole-Sinclair

DCS Design
23 Happy Hollow Drive, Plenty Victoria 3090

Dear Sir,

**RE: PRELIMINARY GEOTECHNICAL ASSESSMENT FOR CORIO SKI LODGE, 6
DELATITE LANE, MT BULLER**

We have the pleasure of submitting herein our report detailing the results of the preliminary stability assessment conducted for the above site.

Should you require clarification of any aspect of the report, please contact the undersigned.

For and on behalf of Phil Styles & Associates Pty Ltd

Philip Styles

Principal Engineering Geologist

RPGeo 10,087

Distribution:	Original held by	Phil Styles & Associates Pty Ltd
	1 electronic copy	DCS Design

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

CONTENTS

1.	INTRODUCTION	1
2.	AVAILABLE INFORMATION	1
3.	REGIONAL GEOLOGY	1
4.	SITE CONDITIONS	1
5.	PROPOSED RENOVATIONS	2
6.	LANDSLIDE RISK ASSESSMENT	2
6.1	Risk Assessment Procedure	2
6.2	Principles of Risk Assessment	2
6.3	Potential Slope Hazards	3
6.4	Risk to Property	3
6.5	Risk of Loss of Life	4
7.	SCHEDULE 1 MANAGEMENT OF GEOTECHNICAL HAZARD	4
8.	APPLICABILITY	4
9.	REFERENCES	5

Important Information About Your PSA Report

Figures

Figure 1: Locality Plan

Figure 2: Site Plan

Figure 3: Proposed Works Areas

**ADVERTISED
PLAN**

Appendices

Appendix A: Record Photographs 18/2/2023

Appendix B: Risk Assessment Procedure

Appendix C: Examples of Good and Bad Hillside Practice

CONTENTS

Appendix D: Erosion Management Overlay – Schedule 1 Management of Geotechnical Hazard Form 1

**ADVERTISED
PLAN**

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

ADVERTISED PLAN

PRELIMINARY GEOTECHNICAL ASSESSMENT FOR CORIO SKI LODGE, 6 DELATITE LANE, MT BULLER

1. INTRODUCTION

At the request of Mr Darren Cole-Sinclair, DCS Design (DCS), a limited scope geotechnical assessment has been conducted for the proposed repair and extension of the balconies at 6 Delatite Lane, Mt Buller. (Refer to Figures 1 to 3).

The aim of the preliminary geotechnical assessment is to provide a geotechnical site assessment to complete the Alpine Resorts Planning Scheme Erosion Management Overlay – Schedule 1 Management of Geotechnical Hazard for planning application purposes and to assess the allowable bearing capacity for the balcony foundations.

2. AVAILABLE INFORMATION

The site assessment has been based on the following sources of information:

- DC Design Drawing No. SK 01.1.4, dated 16 February 2023.
- SMEC Assessment of Slope Instability Report AR 215 dated 12 August 1999.
- SMEC Alpine Resorts Stability Review Site Description MB 215, dated 9 March 1999.
- SMEC Landslide Frequency Analyses MB 215 and MB 215F, dated 7 April 1999 and 4 May 1999 respectively.
- SMEC Assessment of Slope Instability Report AR 114 dated 7 July 1999.
- SMEC Alpine Resorts Stability Review Site Description MB 114, dated 9 March 1999.
- SMEC Landslide Frequency Analyses MB 114 and MB 114F, dated 7 April 1999 and 8 April 1999 respectively.
- Department of Natural Resources and Environment 1:250,000 series Warburton Geological Map SJ55-6, Second Edition, published May 1997.
- Personal knowledge of the site by Mr Philip Styles (Principal Engineering Geologist, Phil Styles & Associates Pty Ltd) gained from a site visit conducted on 18 February 2023.

3. REGIONAL GEOLOGY

The Geological Survey Map of Victoria, 1:250,000 Warburton Sheet, shows the site to be located on Devonian age granite. This is in general accordance with the results from the site visit.

4. SITE CONDITIONS

The site is located on the northern side of Delatite Lane, Mt Buller. The site has been levelled for construction of the lodge resulting in a fill batter of approximately 1.5m to 2m high along the road edge of the property. There is also a cut batter to about 1m high along the southern side of the structure.

ADVERTISED PLAN

PRELIMINARY GEOTECHNICAL ASSESSMENT FOR CORIO SKI LODGE, 6 DELATITE LANE, MT BULLER

Rock appears to be present at about 0.2m deep below the natural surface over most of the property and is less than this in the area of the cut building platform.

There is no evidence of instability associated with the lodge or footings. As can be seen from the record photographs (Appendix A) there is no evidence of movement in the brick work or rock facing either at the Corio Lodge or the adjacent CSIR Lodge. There are no signs of hummocky ground or slip scarps and the only leaning trees are associated with the fill. This is associated with 'creep' of the unconsolidated fill.

5. PROPOSED RENOVATIONS

Based on the information provided, the proposed renovations will comprise the replacement of two balconies along the northern and eastern side of the lodge, extension of a balcony on the eastern side and the provision of load support to these balconies by connection to load bearing posts founded on pad footings. These pad footings could be constructed using 25MPa concrete to produce a level platform and founded on moderately weathered or better-quality granite material with a minimum allowable bearing capacity of 5000kPa.

6. LANDSLIDE RISK ASSESSMENT

6.1 Risk Assessment Procedure

In accordance with Section 5 of Erosion Management Overlay Schedule 1, Management of Geotechnical Hazard (EMO1) in the Alpine Planning Information Kit, the slope risks associated with the development of the site have been considered in the context of "Landslide Risk Assessment and Management", published in Australian Geomechanics Society publication Vol 42, March 2007 (AGS Guidelines). The system is based on the identification of likelihood of occurrence, its consequences to the structure and human life for the identified hazards. These assessments are then combined using a risk assessment matrix to obtain a risk assessment for the specific site for each hazard.

6.2 Principles of Risk Assessment

Risk assessment and management principles applied to slopes can be interpreted as answering the following questions:

- What are the issues? (SCOPE DEFINITION).
- What might happen? (HAZARD IDENTIFICATION).
- How likely is it? (LIKELIHOOD).
- What damage or injury might result? (CONSEQUENCE).
- How important is it? (RISK EVALUATION).
- What can be done? (RISK TREATMENT).

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

ADVERTISED PLAN

PRELIMINARY GEOTECHNICAL ASSESSMENT FOR CORIO SKI LODGE, 6 DELATITE LANE, MT BULLER

The risk is the combination of the likelihood, the consequences and the exposure to the identified hazard. All these factors are considered when evaluating a risk and deciding whether treatment is required. In the following sections of the report, we have assessed the risks to property and life using a qualitative approach as per the recommendations of the AGS Guidelines (2007).

The qualitative likelihood, consequence and risk terms used in this report for risk to property are explained in Appendix B. A matrix that brings together different combinations of likelihood and consequence defines the risk terms. Risk matrices help communicate the results of risk assessment, rank risks, set priorities and develop transparent approaches to decision making. The risk assessment of the site regarding the proposed building is presented in Table 6.1.

6.3 Potential Slope Hazards

Based on the results of our previous field observations, site photographs and known details of the proposed development, the following potential slope hazards have been identified at the development site:

- Failure under the pad footings for the reconstructed balconies.

6.4 Risk to Property

The following matrix has been used to rate each of the risks identified based on the likelihood and consequence determined. The risk matrix is based on the AGS Guidelines for Landslide Risk Assessment, 2007.

LIKELIHOOD	CONSEQUENCES TO PROPERTY				
	Catastrophic	Major	Moderate	Minor	Insignificant
Almost Certain	VH	VH	VH	H	M or L
Likely	VH	VH	H	M	L
Possible	VH	H	M	M	VL
Unlikely	H	M	L	L	VL
Rare	M	L	L	VL	VL
Not Credible	L	VL	VL	VL	VL

In Table 6.1 a list of our judgements of the likelihood, consequences and risk to property associated with the potential slope hazards at the site are presented. The assessments in Table 6.1 are judgements based on our understanding of the landslide hazard in the study area and knowledge and experience from elsewhere. As the rock is at a very shallow level, it is indicated that the pads will be founded on/in moderately weathered or better-quality granite which has a minimum allowable bearing capacity well more than the required 150kPa. The assessment

ADVERTISED PLAN

PRELIMINARY GEOTECHNICAL ASSESSMENT FOR CORIO SKI LODGE, 6 DELATITE LANE, MT BULLER

applies to the proposed development as advised but would not be expected to change if minor modifications to the proposed development are implemented.

Table 6.1 Summary of Slope Instability and Landslide Risk Assessment (Risk to Property)

Scenario No.	Potential Hazard	Possible Initiating Circumstances	Likelihood	Consequence	Risk
1	Failure under the pad footings.	Foundation materials unable to carry loads.	Rare	Minor	Very Low

The results of the risk assessment indicate that there is a **‘Very Low’** risk classification of the development site if the geotechnical recommendations provided in this report are adopted during the design and construction of the proposed structure.

6.5 Risk of Loss of Life

The AGS Guidelines recommends that the risk to life should be considered when assessing landslide risk. The landslide record from Australia and elsewhere indicates that most deaths and injuries are associated with fast moving landslides and associated high-speed moving objects when there is insufficient warning for people present to take evasive action. People are most vulnerable if buried in open space, trapped in vehicles that are buried and crushed or in a building that collapses or is inundated with debris.

The landslide hazard scenarios described in Table 6.1 represent small landslides or instability. Provided the recommendations on Good Hillside Practices as presented in Appendix B are incorporated into the design and construction of the development, it is reasonable to assume that there is a **‘Very Low’** risk to life.

7. SCHEDULE 1 MANAGEMENT OF GEOTECHNICAL HAZARD

The completed Form 1 as required by the Alpine Resorts Planning Scheme is included in Appendix D.

8. APPLICABILITY

Recommendations and opinions contained in this report are based on the interpretation of field observations at point locations and information from published geological maps. The nature and continuity of the subsoil away from the test locations are inferred, but it must be appreciated that actual conditions could vary from the assumed geotechnical model. If conditions other than those described are encountered, PSA should be engaged to assess whether the recommendations should be revised. The attached “Limitations of Report” provides additional information in the uses and limitations of this report.

9. REFERENCES

1. Australian Geomechanics Society Volume 42 No 1, March 2007 - Landslide Risk Management

**ADVERTISED
PLAN**

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

Important information about your **PSA** Report

PSA considers that as our client you should know that site subsurface conditions cause more construction problems than any other factor. These notes have been prepared to help you interpret and understand the limitations of your report.

Your report is based on project specific criteria

Your report has been developed on the basis of your unique project specific requirements as understood by PSA and applies only to the site investigated. Project criteria typically include the general nature of the project; its size and configuration; the location of any structures on the site; other site improvements; the presence of underground utilities; and the additional risk imposed by scope-of-service limitations imposed by the client. Your report should not be used if there are any changes to the project without first asking PSA to assess how factors that changed subsequent to the date of the report affect the report's recommendations. PSA cannot accept responsibility for problems that may occur due to changed factors if they are not consulted.

Subsurface conditions can change

Subsurface conditions are created by natural processes and the activity of man. For example, water levels can vary with time, fill may be placed on a site and pollutants may migrate with time. Because a report is based on conditions which existed at the time of subsurface exploration, decisions should not be based on a report whose adequacy may have been affected by time. Consult PSA to be advised how time may have impacted on the project.

Interpretation of factual data

Site assessment identifies actual subsurface conditions only at those points where samples are taken and when they are taken. Data derived from literature and external data source review, sampling and subsequent laboratory testing are interpreted by geologists, engineers or scientists to provide an opinion about overall site conditions, their likely impact on the proposed development and recommended actions. Actual conditions may differ from those inferred to exist, because no professional, no matter how qualified, can reveal what is hidden by

earth, rock and time. The actual interface between materials may be far more gradual or abrupt than assumed based on the facts obtained. Nothing can be done to change the actual site conditions which exist, but steps can be taken to reduce the impact of unexpected conditions. For this reason, owners should retain the services of PSA through the development stage, to identify variances, conduct additional tests if required, and recommend solutions to problems encountered on site.

Your report will only give preliminary recommendations

Your report is based on the assumption that the site conditions as revealed through selective point sampling are indicative of actual conditions throughout an area. This assumption cannot be substantiated until project implementation has commenced and therefore your report recommendations can only be regarded as preliminary. Only PSA, who prepared the report, is fully familiar with the background information needed to assess whether or not the report's recommendations are valid and whether or not changes should be considered as the project develops. If another party undertakes the implementation of the recommendations of this report there is a risk that the report will be misinterpreted and PSA cannot be held responsible for such misinterpretation.

Your report is prepared for specific purposes and persons

To avoid misuse of the information contained in your report it is recommended that you confer with PSA before passing your report on to another party who may not be familiar with the background and the purpose of the report. Your report should not be applied to any project other than that originally specified at the time the report was issued.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may infringe any copyright.

Important information about your PSA Report

Interpretation by other design professionals

Costly problems can occur when other design professionals develop their plans based on misinterpretations of a report. To help avoid misinterpretations, retain PSA to work with other project design professionals who are affected by the report. Have PSA explain the report implications to design professionals affected by them and then review plans and specifications produced to see how they incorporate the report findings.

Data should not be separated from the report*

The report as a whole presents the findings of the site assessment and the report should not be copied in part or altered in any way.

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

Geoenvironmental concerns are not at issue

Your report is not likely to relate any findings, conclusions, or recommendations about the potential for hazardous materials existing at the site unless specifically required to do so by the client. Specialist equipment, techniques, and personnel are used to perform a geoenvironmental assessment.

Contamination can create major health, safety and environmental risks. If you have no information about the potential for your site to be contaminated or create an environmental hazard, you are advised to contact PSA for information relating to geoenvironmental issues.

Rely on PSA for additional assistance

PSA is familiar with a variety of techniques and approaches that can be used to help reduce risks for all parties to a project, from design to construction. It is common that not all approaches will be necessarily dealt with in your site assessment report due to concepts proposed at that time. As the project progresses through design towards construction, speak with PSA to develop alternative approaches to problems that may be of genuine benefit both in time and cost.

Responsibility

Reporting relies on interpretation of factual information based on judgement and opinion and has a level of uncertainty attached to it, which is far less exact than the design disciplines. This has often resulted in claims being lodged against consultants, which are unfounded. To help prevent this problem, a number of clauses have been developed for use in contracts, reports and other documents. Responsibility clauses do not transfer appropriate liabilities from PSA to other parties but are included to identify where PSA's responsibilities begin and end. Their use is intended to help all parties involved to recognise their individual responsibilities. Read all documents from PSA closely and do not hesitate to ask any questions you may have.

* For further information on this aspect reference should be made to "Guidelines for the Provision of Geotechnical Information in Construction Contracts" published by the Institution of Engineers Australia, National Headquarters, Canberra, 1987.

**ADVERTISED
PLAN**

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

Figures

**ADVERTISED
PLAN**

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

Legend

Coal Post Rd

PSA0277-01 Figure 1 Locality Plan



80 m

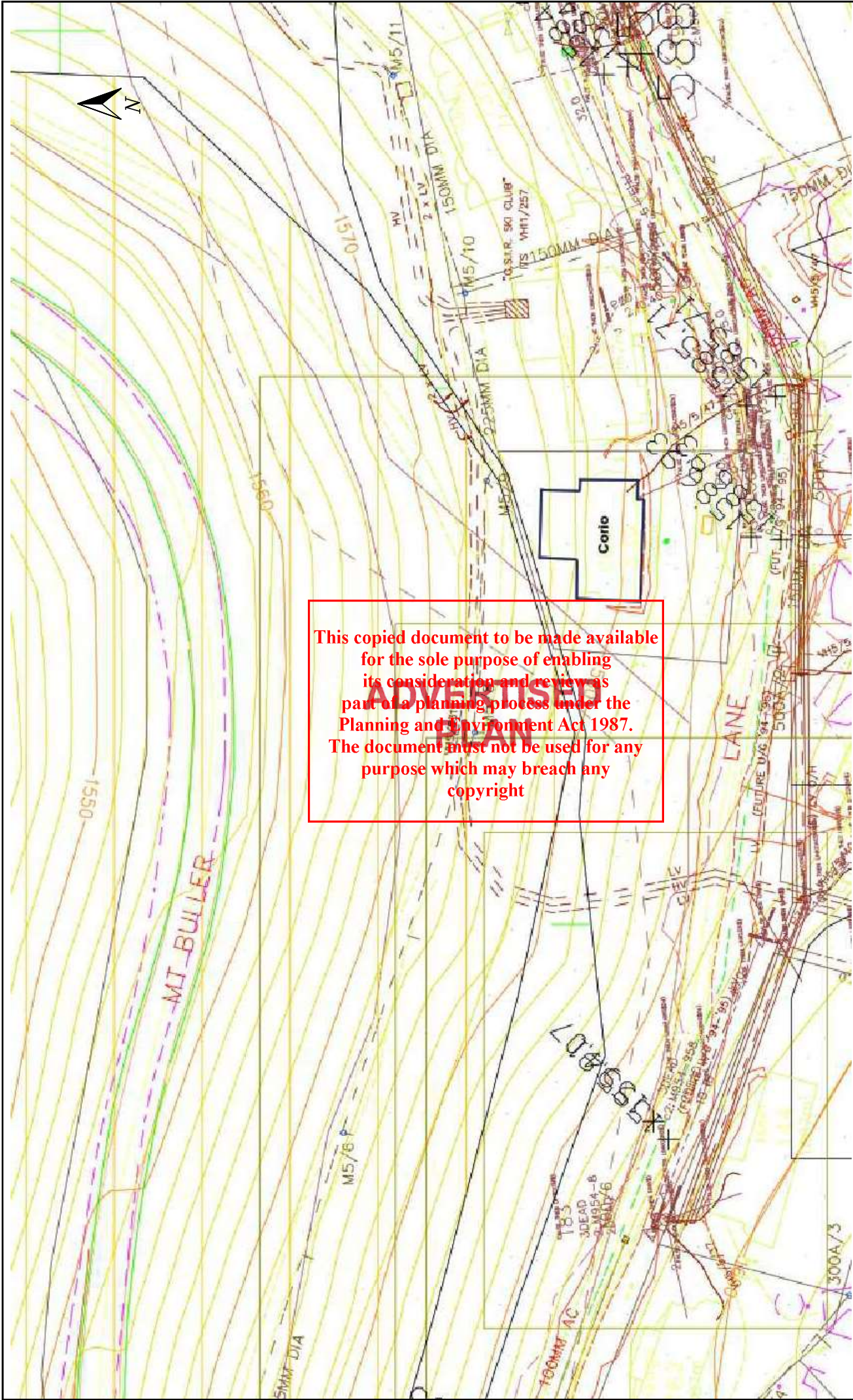
This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright



C320

Debbie Ln

Google Earth

Image © 2023 Airbus



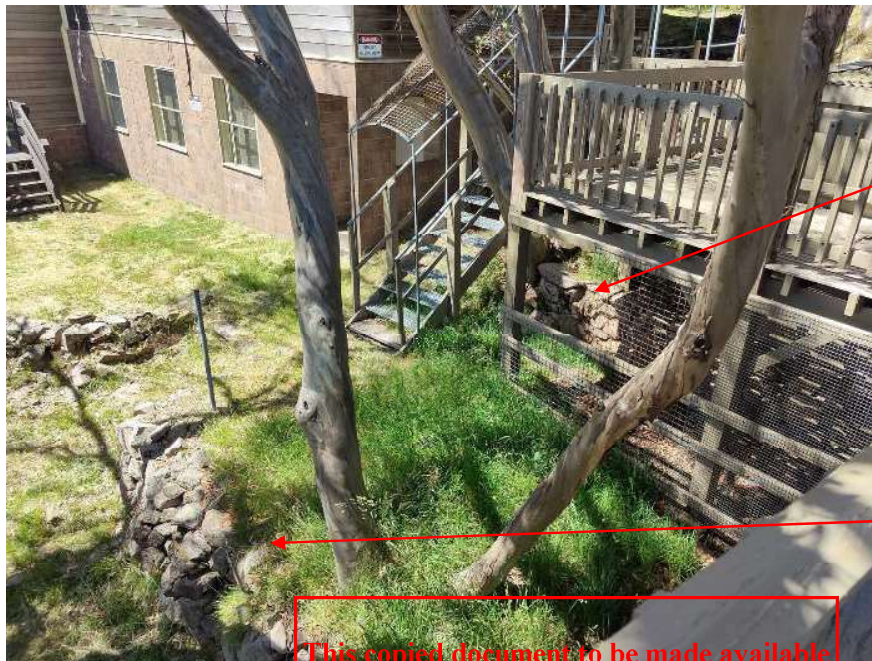
revision		description		drawn	approved	date	<div><div>Scale (metres)</div></div>			drawn	PCS	<div></div>		client:	
							approved					project:		DCS DESIGN	
							date	29/06/2023				project:		PRELIMINARY GEOTECHNICAL ASSESSMENT CORIO SKI LODGE BALCONY EXTENSION	
							scale	1:500				title:		SITE PLAN	
							original size	A3				project no:		PSA0277-01	FIGURE 2

**ADVERTISED
PLAN**

Appendix A

Record Photographs 18 February 2023

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**



Cut batter approx. 0.75m high, rock reinforced.

Fill batter approx. 0.75m high, rock reinforced.

Plate 1. Northern side of property looking southeast.



Fill batter approx. 1.55m high, rock reinforced.

Plate 2. Northern side of property looking east. Note leaning trees.

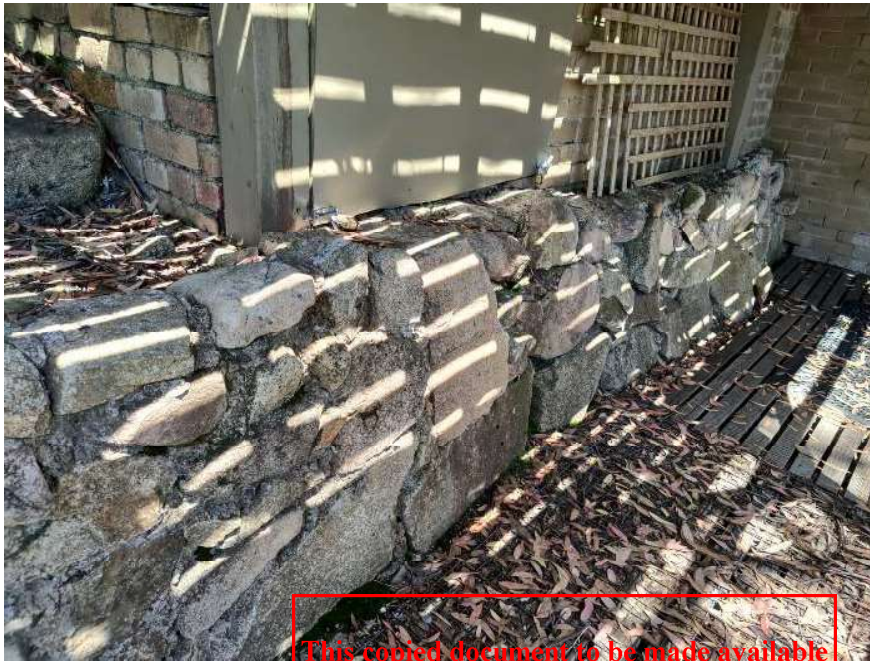


Plate 3. Eastern side at front of property looking west. Rock wall showing no evidence of distress.



Rock facing under house and cut face. Facing showing no signs of distress.

Plate 4. Northern side of property, eastern end looking south.

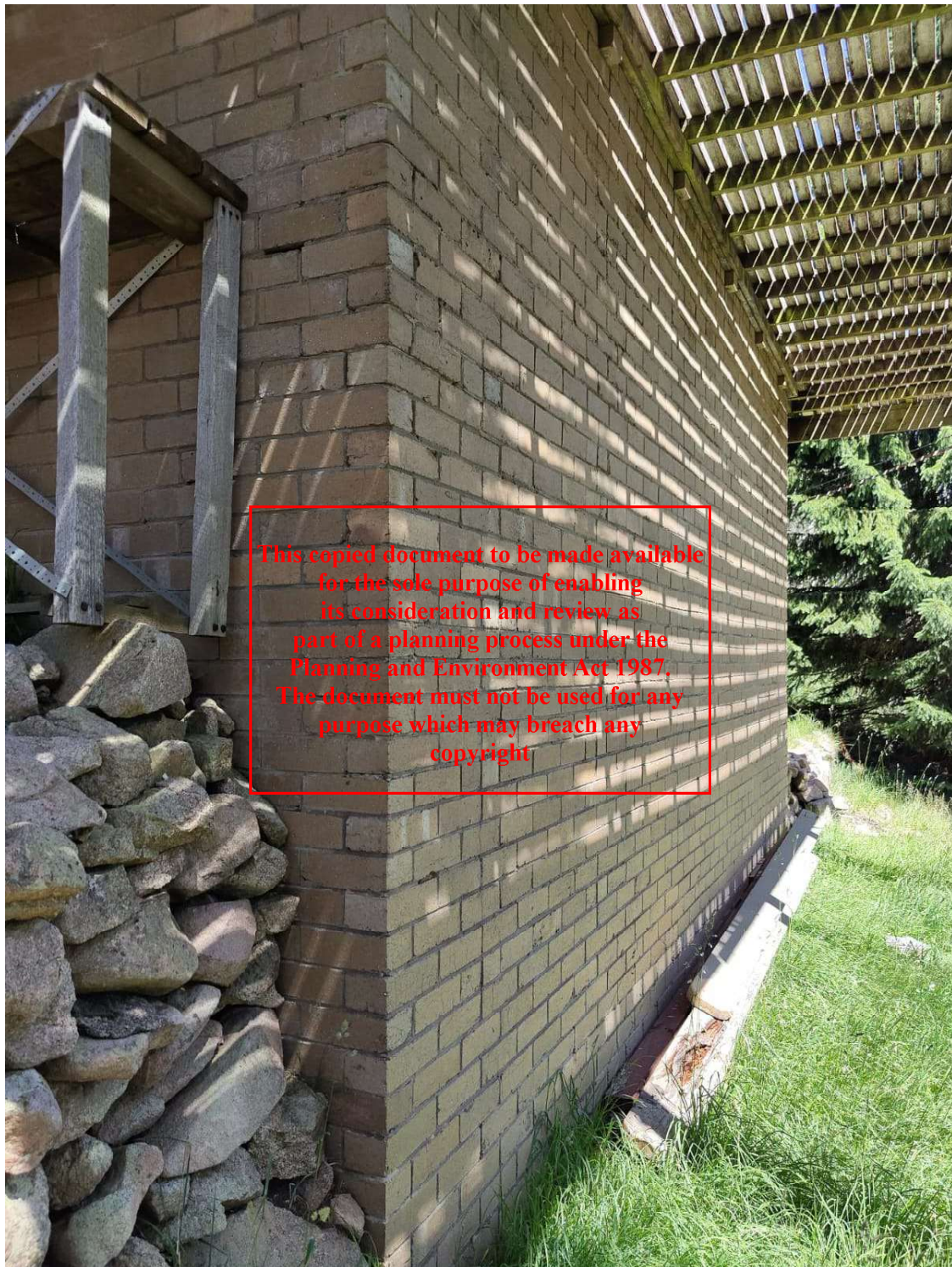


Plate 5. Northern side of property central area, looking southeast. Brick facing showing no signs of distress.

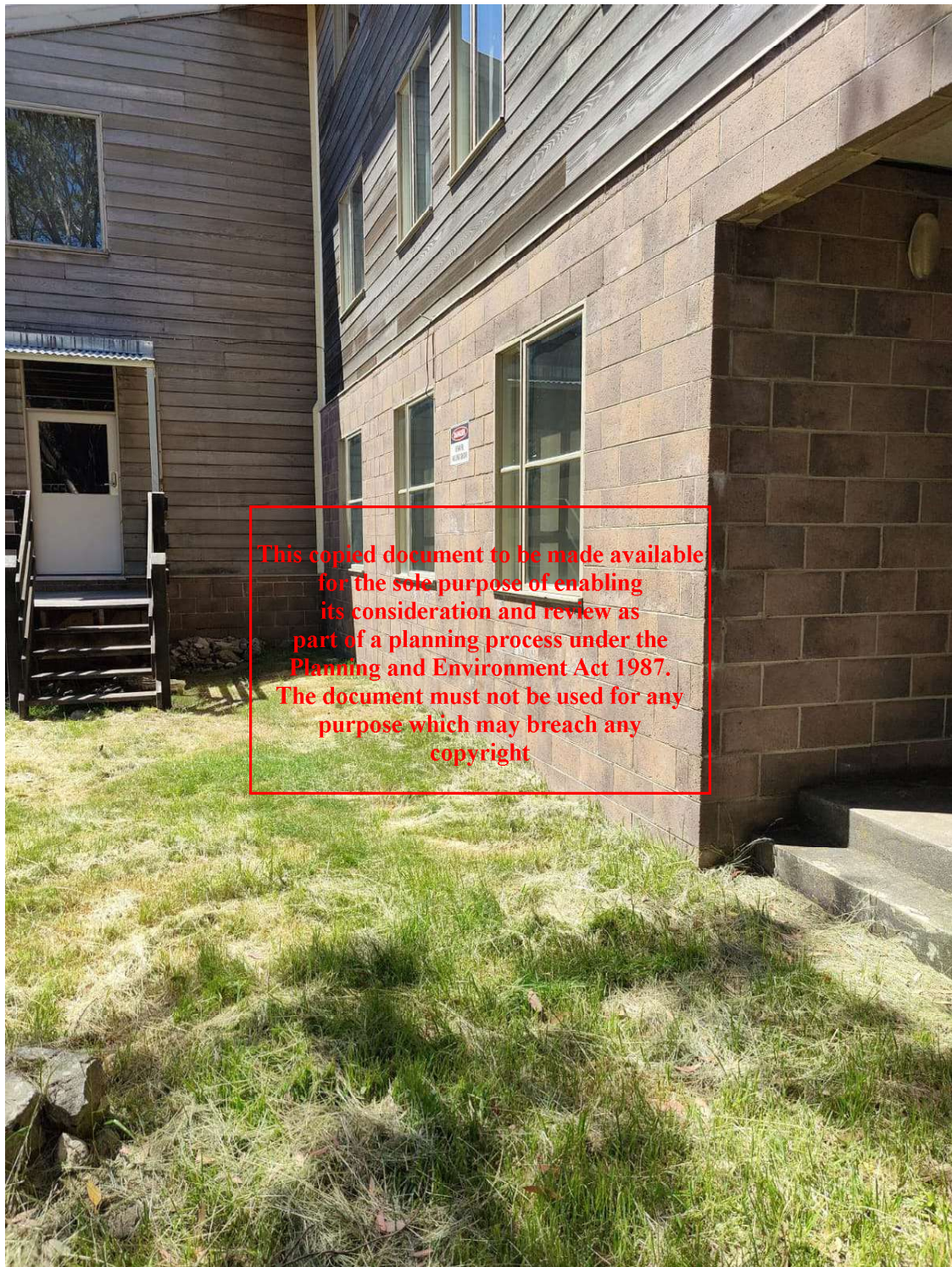


Plate 6. Western side of CSIR Lodge immediately east of Corio Lodge looking east. No evidence of distress in brick walls.



Plate 7. Northern side of property looking east with rock'/fill interface shown.



Plate 8. Balcony support on adjacent CSIR Lodge bolted into rock.

**ADVERTISED
PLAN**

Appendix B

Risk Assessment Procedure

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

QUALITATIVE LIKELIHOOD, CONSEQUENCE AND RISK TERMS

The following risk assessment procedure has been sourced from Australian Geomechanics Society publication "Landslide risk management concepts and guidelines", May 2007.

QUALITATIVE LIKELIHOOD TERMS

TERM	LIKELIHOOD OF LANDSLIDE DURING DESIGN LIFE OF SLOPE OR STRUCTURE
Almost Certain	The event is expected to occur early in the design life.
Likely	The event will probably occur under adverse conditions.
Possible	The event may occur under adverse conditions.
Unlikely	The event may occur under very adverse circumstances.
Rare	The event is conceivable but only under exceptional circumstances.
Not Credible	The event is inconceivable or judged to be extremely unlikely.

QUALITATIVE CONSEQUENCE TERMS

TERM	EXAMPLES OF CONSEQUENCES
Catastrophic	Structure completely destroyed or large-scale damage requiring major engineering works for stabilisation.
Major	Extensive damage to most of structure requiring significant stabilisation works.
Moderate	Moderate damage to some of the structure or part of site requiring large stabilisation works.
Minor	Limited damage to part of structure or site requiring some stabilisation works.
Insignificant	Little or no damage.

**ADVERTISED
PLAN**

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

QUALITATIVE RISK ANALYSIS MATRIX

LIKELIHOOD	CONSEQUENCES TO PROPERTY				
	Catastrophic	Major	Moderate	Minor	Insignificant
Almost Certain	VH	VH	VH	H	M or L
Likely	VH	VH	H	M	L
Possible	VH	H	M	M	VL
Unlikely	H	M	L	L	VL
Rare	M	L	L	VL	VL
Not Credible	L	VL	VL	VL	VL

RESPONSE TO RISK

In general, it is the responsibility of the client and/or owner and/or regulatory and/or others who may be affected to decide whether to accept or treat the risk. The risk assessor and/or other advisers may assist by making risk comparisons, discussing treatment options, explaining the risk management process and advising how others have reacted to risk in similar situations. Attitudes to risk vary widely and risk evaluation often involves considering more than just property damage (e.g., environmental effects, public reaction, business confidence etc).

In some situations, development control decisions (e.g., by local government authorities) are related to qualitative risk (or hazard) ranking terms. For example, some regulatory authorities will not allow new development where the risk (or hazard) has been described as "high" (according to definitions included in the development controls).

The following is a guide to typical responses to assessed risk based on our experience.

ASSESSED RISK		TYPICAL RESPONSE OF CLIENT/ OWNER/ REGULATOR/ PERSON AFFECTED
VH	Very high	Unacceptable without treatment. Extensive detailed investigation and research, planning and implementation of treatment options to reduce risk to acceptable level. May avoid development of new site.
H	High	Unacceptable without treatment. Detailed investigation, planning and implementation of treatment options to reduce risk to acceptable level.
M	Medium	May be tolerated in certain circumstances. May require investigation and planning of treatment options to reduce risk if reasonably achievable.
L	Low	Usually, acceptable. Treatment requirements may be defined to reduce risk.
VL	Very low	Acceptable. Manage by normal slope maintenance procedures.

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

Appendix C

Examples of Good and Bad Hillside Practice

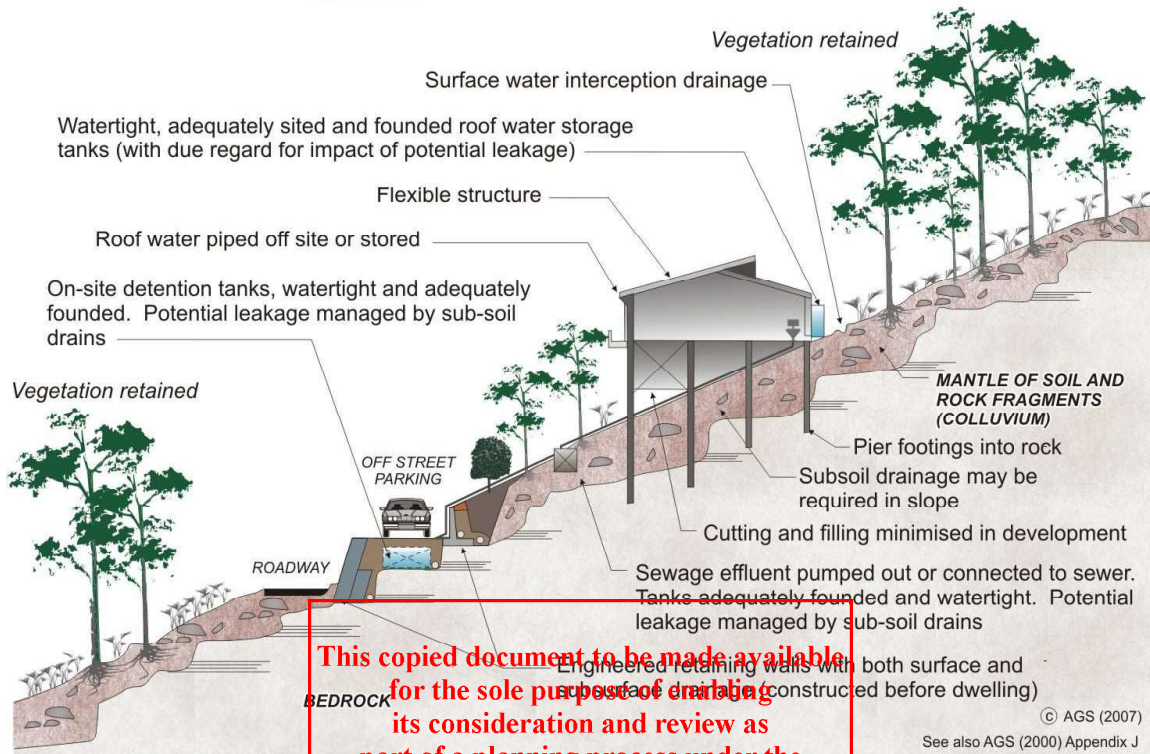
**ADVERTISED
PLAN**

AUSTRALIAN GEOGUIDE LR8 (CONSTRUCTION PRACTICE)

HILLSIDE CONSTRUCTION PRACTICE

Sensible development practices are required when building on hillsides, particularly if the hillside has more than a low risk of instability (GeoGuide LR7). Only building techniques intended to maintain, or reduce, the overall level of landslide risk should be considered. Examples of good hillside construction practice are illustrated below.

EXAMPLES OF GOOD HILLSIDE CONSTRUCTION PRACTICE



WHY ARE THESE PRACTICES GOOD?

Roadways and parking areas - are paved and incorporate kerbs which prevent water discharging straight into the hillside (GeoGuide LR5).

Cuttings - are supported by retaining walls (GeoGuide LR6).

Retaining walls - are engineer designed to withstand the lateral earth pressures and surcharges expected, and include drains to prevent water pressures developing in the backfill. Where the ground slopes steeply down towards the high side of a retaining wall, the disturbing force (see GeoGuide LR6) can be two or more times that in level ground. Retaining walls must be designed taking these forces into account.

Sewage - whether treated or not is either taken away in pipes or contained in properly founded tanks so it cannot soak into the ground.

Surface water - from roofs and other hard surfaces is piped away to a suitable discharge point rather than being allowed to infiltrate into the ground. Preferably, the discharge point will be in a natural creek where ground water exits, rather than enters, the ground. Shallow, lined, drains on the surface can fulfil the same purpose (GeoGuide LR5).

Surface loads - are minimised. No fill embankments have been built. The house is a lightweight structure. Foundation loads have been taken down below the level at which a landslide is likely to occur and, preferably, to rock. This sort of construction is probably not applicable to soil slopes (GeoGuide LR3). If you are uncertain whether your site has rock near the surface, or is essentially a soil slope, you should engage a geotechnical practitioner to find out.

Flexible structures - have been used because they can tolerate a certain amount of movement with minimal signs of distress and maintain their functionality.

Vegetation clearance - on soil slopes has been kept to a reasonable minimum. Trees, and to a lesser extent smaller vegetation, take large quantities of water out of the ground every day. This lowers the ground water table, which in turn helps to maintain the stability of the slope. Large scale clearing can result in a rise in water table with a consequent increase in the likelihood of a landslide (GeoGuide LR5). An exception may have to be made to this rule on steep rock slopes where trees have little effect on the water table, but their roots pose a landslide hazard by dislodging boulders.

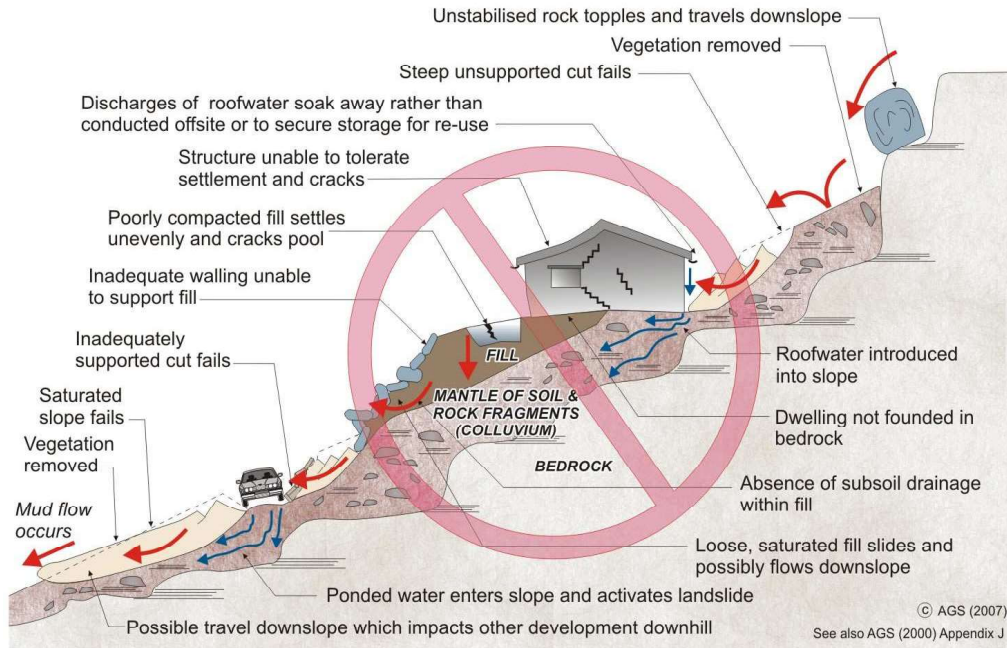
Possible effects of ignoring good construction practices are illustrated on page 2. Unfortunately, these poor construction practices are not as unusual as you might think and are often chosen because, on the face of it, they will save the developer, or owner, money. You should not lose sight of the fact that the cost and anguish associated with any one of the disasters illustrated, is likely to more than wipe out any apparent savings at the outset.

ADOPT GOOD PRACTICE ON HILLSIDE SITES

**ADVERTISED
PLAN**

AUSTRALIAN GEOGUIDE LR8 (CONSTRUCTION PRACTICE)

EXAMPLES OF **POOR** HILLSIDE CONSTRUCTION PRACTICE



WHY ARE THESE PRACTICES POOR?

Roadways and parking areas - are unsurfaced and lack proper table drains (gutters) causing surface water to pond and soak into the ground.

Cut and fill - has been used to balance earthworks quantities and level the site leaving unstable cut faces and added large surface loads to the ground. Failure to compact the fill properly has led to settlement, which will probably continue for several years after completion. The house and pool have been built on the fill and have settled with it and cracked. Leakage from the cracked pool and the applied surface loads from the fill have combined to cause landslides.

Retaining walls - have been avoided, to minimise cost, and hand placed rock walls used instead. Without applying engineering design principles, the walls have failed to provide the required support to the ground and have failed, creating a very dangerous situation.

A heavy, rigid, house - has been built on shallow, conventional, footings. Not only has the brickwork cracked because of the resulting ground movements, but it has also become involved in a man-made landslide.

Soak-away drainage - has been used for sewage and surface water run-off from roofs and pavements. This water soaks into the ground and raises the water table (GeoGuide LR5). Subsoil drains that run along the contours should be avoided for the same reason. If felt necessary, subsoil drains should run steeply downhill in a chevron, or herring bone, pattern. This may conflict with the requirements for effluent and surface water disposal (GeoGuide LR9) and if so, you will need to seek professional advice.

Rock debris - from landslides higher up on the slope seems likely to pass through the site. Such locations are often referred to by geotechnical practitioners as "debris flow paths". Rock is normally even denser than ordinary fill, so even quite modest boulders are likely to weigh many tonnes and do a lot of damage once they start to roll. Boulders have been known to travel hundreds of metres downhill leaving behind a trail of destruction.

Vegetation - has been completely cleared, leading to a possible rise in the water table and increased landslide risk (GeoGuide LR5).

DON'T CUT CORNERS ON HILLSIDE SITES - OBTAIN ADVICE FROM A GEOTECHNICAL PRACTITIONER

More information relevant to your particular situation may be found in other Australian GeoGuides:

- | | |
|-------------------------------------|--|
| • GeoGuide LR1 - Introduction | • GeoGuide LR6 - Retaining Walls |
| • GeoGuide LR2 - Landslides | • GeoGuide LR7 - Landslide Risk |
| • GeoGuide LR3 - Landslides in Soil | • GeoGuide LR9 - Effluent & Surface Water Disposal |
| • GeoGuide LR4 - Landslides in Rock | • GeoGuide LR10 - Coastal Landslides |
| • GeoGuide LR5 - Water & Drainage | • GeoGuide LR11 - Record Keeping |

The Australian GeoGuides (LR series) are a set of publications intended for property owners; local councils; planning authorities; developers; insurers; lawyers and, in fact, anyone who lives with, or has an interest in, a natural or engineered slope, a cutting, or an excavation. They are intended to help you understand why slopes and retaining structures can be a hazard and what can be done with appropriate professional advice and local council approval (if required) to remove, reduce, or minimise the risk they represent. The GeoGuides have been prepared by the Australian Geomechanics Society, a specialist technical society within Engineers Australia, the national peak body for all engineering disciplines in Australia, whose members are professional geotechnical engineers and engineering geologists with a particular interest in ground engineering. The GeoGuides have been funded under the Australian governments' National Disaster Mitigation Program.

ADVERTISED PLAN

**ADVERTISED
PLAN**

Appendix D

Alpine Resorts Planning Scheme – Form 1

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

ALPINE RESORTS PLANNING SCHEME

Erosion Management Overlay – Schedule 1 Management of Geotechnical Hazard

FORM 1

Declaration and/or verification made by geotechnical engineer or engineering geologist as part of a geotechnical report

Name of application: Corio Lodge, Delatite Lane, Mount Buller

Address of subject site: 6 Delatite Lane, Mount Buller

I, Philip Styles (insert name) of Phil Styles & Associates Pty Ltd (trading or company name)

on 11 July 2023 (insert date)

certify that I am a geotechnical engineer or engineering geologist as defined by the Erosion Management Overlay (Schedule 1 – Management of Geotechnical Hazard) and I have: (tick appropriate box):

☒ prepared the Geotechnical Report referenced below in accordance with the Australian Geomechanics Society's Geotechnical Risk Management Guidelines and Clause 3 of the EMO1

or

☐ technically verified that the geotechnical report referenced below has been prepared in accordance with the AGS's Geotechnical Risk Management Guidelines and Clause 3 of the EMO1.

Geotechnical report details:

Report title:	Preliminary Geotechnical Assessment for Corio Ski Lodge, 6 Delatite Lane, Mount Buller
Report date:	11 July 2023
Report reference:	
Author:	Philip Styles
Author's affiliation:	Maig RPGeo 10087

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

Documentation relied upon in report preparation:

Please refer to attached sheet

I am aware that the Geotechnical Report I have either prepared or am technically verifying for the above development is to be submitted in support of a development application for the proposed development Corio Ski Lodge, Mount Buller (name of development) requiring approval from the Minister for Planning.

Further, I hold a current professional indemnity insurance policy of at least \$2 million, evidence of which is attached with this form.

Name Philip Styles Signature Philip Styles
Date 11/07/2023

ADVERTISED
PLAN

Documentation relied upon during report preparation:

- DC Design Drawing No. SK 01.1.4, dated 16 February 2023.
- SMEC Assessment of Slope Instability Report AR 215 dated 12 August 1999.
- SMEC Alpine Resorts Stability Review Site Description MB 215, dated 9 March 1999.
- SMEC Landslide Frequency Analyses MB 215 and MB 215F, dated 7 April 1999 and 4 May 1999 respectively.
- SMEC Assessment of Slope Instability Report AR 114 dated 7 July 1999.
- SMEC Alpine Resorts Stability Review Site Description MB 114, dated 9 March 1999.
- SMEC Landslide Frequency Analyses MB 114 and MB 114F, dated 7 April 1999 and 8 April 1999 respectively.
- Department of Natural Resources and Environment 1:250,000 series Warburton Geological Map SJ55-6, Second Edition, published May 1997.
- Personal knowledge of the site by Mr Philip Styles (Principal Engineering Geologist, Phil Styles & Associates Pty Ltd) gained from a site visit conducted on 18 February 2023.

ADVERTISED PLAN

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

Certificate of Currency

This Certificate is evidence that a contract of insurance has been effected as per the details below. The insurance expires 26/04/2024 and a new Insurance policy is required to continue the insurance past that date.

No insurance is provided past the Expiry Date of 26/04/2024

Policy No : TU/PI/20180296 BRIC Ref: 354500/9

Class of Insurance : PROFESSIONAL INDEMNITY INSURANCE

The Insured : Phil Styles & Associates Pty Ltd

including all Principals, Partners, Directors and Employees of the Insured.

**ADVERTISED
PLAN**

Policy Period: From Wednesday 26 April 2023 to Friday, 26 April 2024

Insurer: Lloyd's of London via Tasman Underwriting

Profession Insured: Consulting Geotechnical Engineers

Retroactive Date: Friday, 6 February 2015

Sum Insured: \$5,000,000

Excess: \$10,000

Policy Wording: Tasman Underwriting Civil Liability policy wording (tasman2018miscPIwdgNovember18) Covers Civil Liability incurred in the conduct of the professional business activities (Does not require a breach of professional duty of care).

Cover Includes: Liability arising from Consultants/Sub Consultants Loss of Documents
Trade Practices and/or Fair Trading Acts Dishonesty of Employees (Innocent Parties cover)
Estates and Legal Representatives Severability & Non Imputation

Aggregation of Limit: The limit is also the aggregate amount to be paid in any one year unless a reinstatement is provided and specified in the Special Conditions below.

Special Conditions: Defence costs provided within the limit (costs inclusive). Excess is costs inclusive. Limit in the aggregate is \$10,000,000 (i.e. one reinstatement). Endorsements as attached.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

Signed By

:



BRIC Bovill Risk &
Insurance Consultants

Dated

: Tuesday 25 April 2023

A.C.N. 072 412 474

IMPORTANT NOTE:

The above information is a summary of the major components of the policy and does not represent the full scope of cover provided by the policy. For more detail regarding how the policy operates we strongly recommend the policy wording is examined. This document does not infer any rights upon the holder and is only current at the date of issue.