APPLICATION AS NOTIFIED

R & I MACRAE & ARDMORE TRUSTEE MALAGHANS 2023 LIMITED

(RM240352)

FORM 12

File Number RM240352

QUEENSTOWN LAKES DISTRICT COUNCIL

PUBLIC NOTIFICATION

Notification of an application for a Resource Consent under Section 95A of the Resource Management Act 1991.

The Queenstown Lakes District Council has received an application for a resource consent from:

R & I Macrae & Ardmore Trustee Malaghans 2023 Limited

What is proposed:

Application under Section 88 of the Resource Management Act 1991 (RMA) for subdivision consent to undertake a two Lot subdivision, to establish a residential building platform, construct a bridge and carry out earthworks to form an accessway.

Land use consent is also sought to construct a residential unit within a building platform and construct associated accessory buildings outside a building platform, with associated earthworks and landscaping.

The location in respect of which this application relates is situated at:

832 Malaghans Road, Queenstown

The application includes an assessment of environmental effects. This file can also be viewed at our public computers at these Council offices:

- **74 Shotover Street, Queenstown;**
- **Gorge Road, Queenstown;**
- **and 47 Ardmore Street, Wanaka during normal office hours (8.30am to 5.00pm).**

Alternatively, you can view them on our website when the submission period commences:

https://www.qldc.govt.nz/services/resource-consents/notified-resource-consents#public-rc or via our edocs website using RM240352 as the reference https://edocs.qldc.govt.nz/Account/Login

The Council planner processing this application on behalf of the Council is Courtney Briggs, who may be contacted by phone at 03 450 2220 or email at courtney.briggs@qldc.govt.nz

Any person may make a submission on the application, but a person who is a trade competitor of the applicant may do so only if that person is directly affected by an effect of the activity to which the application relates that –

a) adversely affects the environment; and
b) does not relate to trade competition or the effects of trade competition.

If you wish to make a submission on this application, you may do so by sending a written submission to the consent authority no later than:

Thursday 26th September 2024

The submission must be dated, signed by you and must include the following information:

a) Your name and postal address and phone number/fax number.
b) Details of the application in respect of which you are making the submission including location.
c) Whether you support or oppose the application.
d) Your submission, with reasons.
e) The decision you wish the consent authority to make.
f) Whether you wish to be heard in support of your submission.

You may make a submission by sending a written or electronic submission to Council (details below). The submission should be in the format of Form 13. Copies of this form are available Council website:

https://www.qldc.govt.nz/services/resource-consents/application-forms-and-fees#other_forms

You must serve a copy of your submission to the applicant (Annemarie Townsley, annemarie.townsley@jea.co.nz) as soon as reasonably practicable after serving your submission to Council:

Annemarie Townsley
annemarie.townsley@jea.co.nz
John Edmonds & Associates Ltd
36 Shotover Street, Queenstown, 9197

QUEENSTOWN LAKES DISTRICT COUNCIL

(signed by Neil Harkin pursuant to a delegation given under Section 34A of the Resource Management Act 1991)

Date of Notification: Thursday 29th August 2024

Address for Service for Consent Authority:

Queenstown Lakes District Council	**Phone**	**03 441 0499**
Private Bag 50072, Queenstown 9348	**Email**	**rcsubmission@qldc.govt.nz**
Gorge Road, Queenstown 9300	**Website**	**www.qldc.govt.nz**

TechnologyOne ECM Document Summary
Printed On 27-Aug-2024

Class	Description	Doc Set Id / Note Id	Version	Date
PUB_ACC	Form 9	8029156	1	14-May-2024
PUB_ACC	AEE	8029155	1	14-May-2024
PUB_ACC	Appendix 1 - Record of Title	8029154	1	14-May-2024
PUB_ACC	Appendix 2 - Consent Notice 11169054.6	8029153	1	14-May-2024
PUB_ACC	Appendix 3 - Easement 11169054.6	8029152	1	14-May-2024
PUB_ACC	Appendix 4 - Proposed Conditions of Consent	8029151	1	14-May-2024

APPLICATION FOR RESOURCE CONSENT OR
FAST TRACK RESOURCE CONSENT

FORM 9: GENERAL APPLICATION

QUEENSTOWN LAKES DISTRICT COUNCIL

Under Section 87AAC, 88 & 145 of the Resource Management Act 1991 (Form 9)

PLEASE COMPLETE ALL MANDATORY FIELDS* OF THIS FORM.

This form provides contact information and details of your application. If your form does not provide the required information it will be returned to you to complete. Until we receive a completed form and payment of the initial fee, your application may not be accepted for processing.

APPLICANT //

- Must be a person or legal entity (limited liability company or trust).
- Full names of all trustees required.
- The applicant name(s) will be the consent holder(s) responsible for the consent and any associated costs.

*Applicant's Full Name / Company / Trust: (Name Decision is to be issued in) Ronald Bernard Macrae, Irene Patricia Macrae & Ardmore Tru

All trustee names (if applicable): Ronald Macrae, Irene Macrae, Janice Hughes

*Contact name for company or trust: Ron Macrae

*Postal Address: PO Box 90895 Victoria St West, Auckland

*Post code: 1142

*Contact details supplied must be for the applicant and not for an agent acting on their behalf and must include a valid postal address

*Email Address: macraes@xtra.co.nz

*Phone Numbers: Day 021933316

Mobile:

*The Applicant is:

- [x] Owner
- [ ] Prospective Purchaser (of the site to which the application relates)
- [ ] Occupier
- [ ] Lessee
- Other - Please Specify:

[x] Our preferred methods of corresponding with you are by email and phone.
The decision will be sent to the Correspondence Details by email unless requested otherwise.

CORRESPONDENCE DETAILS // If you are acting on behalf of the applicant e.g. agent, consultant or architect please fill in your details in this section.

*Name & Company: Annemarie Townsley - John Edmonds & Associates Ltd

*Phone Numbers: Day 021 1876575

Mobile:

*Email Address: annemarie.townsley@jea.co.nz

*Postal Address: PO Box 95, Queenstown

*Postcode: 9348

INVOICING DETAILS //

Invoices will be made out to the applicant but can be sent to another party if paying on the applicant's behalf.
For more information regarding payment please refer to the Fees Information section of this form.

*Please select a preference for who should receive any invoices and how they would like to receive them.

- Applicant: [x]
- Agent: [ ]
- Other - Please specify:
- Email: [x]
- Post: [ ]

*Attention: Ron Macrae

*Postal Address: PO Box 90895 Victoria St West, Auckland

*Post code: 1142

*Please provide an email AND full postal address.

*Email: macraes@xtra.co.nz

OWNER DETAILS // Please supply owner details for the subject site/property if not already indicated above

Owner Name:

Owner Address:

Owner Email:

If the property has recently changed ownership please indicate on what date (approximately) AND the names of the previous owners:

Date:

Names:

DEVELOPMENT CONTRIBUTIONS INVOICING DETAILS //

If it is assessed that your consent requires development contributions any invoices and correspondence relating to these will be sent via email. Invoices will be sent to the email address provided above unless an alternative address is provided below. Invoices will be made out to the applicant/owner but can be sent to another party if paying on the applicant's behalf.

*Please select a preference for who should receive any invoices.

Details are the same as for invoicing ☑

Applicant: ☑ Landowner: ☐ Other, please specify:

*Attention: Ron Macrae

*Email: macraes@xtra.co.nz

Click here for further information and our estimate request form

DETAILS OF SITE // Legal description field must list legal descriptions for all sites pertaining to the application. Any fields stating 'refer AEE' will result in return of the form to be fully completed.

*Address / Location to which this application relates:

832 Malaghans Road, Wakatipu Basin

*Legal Description: Can be found on the Computer Freehold Register or Rates Notice – e.g Lot x DPxxx (or valuation number)

Lot 5 DP 521688

District Plan Zone(s): Wakatipu Basin Rural Amenity Zone

SITE VISIT REQUIREMENTS // Should a Council officer need to undertake a site visit please answer the questions below

Is there a gate or security system restricting access by council?	YES ☐	NO ☑
Is there a dog on the property?	YES ☐	NO ☑
Are there any other hazards or entry restrictions that council staff need to be aware of? If 'yes' please provide information below	YES ☐	NO ☑

PRE-APPLICATION MEETING OR URBAN DESIGN PANEL

Have you had a pre-application meeting with QLDC or attended the urban design panel regarding this proposal?

☐ Yes ☑ No ☐ Copy of minutes attached

If 'yes', provide the reference number and/or name of staff member involved:

CONSENT(S) APPLIED FOR // * Identify all consents sought // ALSO FILL IN OTHER CONSENTS SECTION BELOW

☑ Land use consent

☑ Change/cancellation of consent or consent notice conditions

☐ Extension of lapse period of consent (time extension) s125

☑ Land use consent includes Earthworks

☑ Subdivision consent

☐ Certificate of compliance

☐ Existing use certificate

QUALIFIED FAST-TRACK APPLICATION UNDER SECTION 87AAC

☐ Controlled Activity

☐ Deemed Permitted Boundary Activity

If your consent qualifies as a fast-track application under section 87AAC, tick here to opt out of the fast track process ☐

BRIEF DESCRIPTION OF THE PROPOSAL //

*Please complete this section, any form stating 'refer AEE' will be returned to be completed with a description of the proposal

*Consent is sought to:

undertake a two lot subdivision, establish a residential building platform, undertake earthworks, and construct a residential dwelling with associated accessory buildings.

APPLICATION NOTIFICATION

Are you requesting public notification for the application?

☑ Yes ☐ No

Please note there is an additional fee payable for notification. Please refer to Fees schedule

OTHER CONSENTS

Is consent required under a National Environmental Standard (NES)?

- NES for Assessing and Managing Contaminants in Soil to Protect Human Health 2012

An applicant is required to address the NES in regard to past use of the land which could contaminate soil to a level that poses a risk to human health. Information regarding the NES is available on the website https://environment.govt.nz/publications/national-environmental-standard-for-assessing-and-managing-contaminants-in-soil-to-protect-human-health-information-for-landowners-and-developers/

You can address the NES in your application AEE OR by selecting ONE of the following:

☐ This application does not involve subdivision (excluding production land), change of use or removal of (part of) a fuel storage system. Any earthworks will meet section 8(3) of the NES (including volume not exceeding 25m^3 per 500m^2). Therefore the NES does not apply.

☐ I have undertaken a comprehensive review of District and Regional Council records and I have found no record suggesting an activity on the HAIL has taken place on the piece of land which is subject to this application.
NOTE: depending on the scale and nature of your proposal you may be required to provide details of the records reviewed and the details found.

OTHER CONSENTS // CONTINUED

☐ I have included a Preliminary Site Investigation undertaken by a suitably qualified person.

☐ An activity listed on the HAIL has more likely than not taken place on the piece of land which is subject to this application. I have addressed the NES requirements in the Assessment of Environmental Effects.

Any other National Environmental Standard

☐ Yes ☑ N/A

Do you need any consent(s) from Otago Regional Council?

☑ Yes ☐ N/A

If Yes have you applied for it?

☐ Yes ☑ No

If Yes supply ORC Consent Reference(s)

If ORC Earthworks Consent is required would you like a joint site visit ?

☐ Yes ☑ No

INFORMATION REQUIRED TO BE SUBMITTED //

Attach to this form any information required (see below & appendices 1-2).

To be accepted for processing, your application should include the following:

☑ Computer Freehold Register for the property (no more than 3 months old) and copies of any consent notices and covenants
(Can be obtained from Land Information NZ at https://www.linz.govt.nz/).

☑ A plan or map showing the locality of the site, topographical features, buildings etc.

☑ A site plan at a convenient scale.

☐ Written approval of every person who may be adversely affected by the granting of consent (s95E).

☑ An Assessment of Effects (AEE).
An AEE is a written document outlining how the potential effects of the activity have been considered along with any other relevant matters, for example if a consent notice is proposed to be changed. Address the relevant provisions of the District Plan and affected parties including who has or has not provided written approval. See Appendix 1 for more detail.

☑ We prefer to receive applications electronically – please see Appendix 5 – Naming of Documents Guide for how documents should be named. Please ensure documents are scanned at a minimum resolution of 300 dpi. Each document should be no greater than 10mb

PRIVACY INFORMATION

The information you have provided on this form is required so that your application can be processed under the Resource Management Act 1991 and may also be used in statistics collected and provided to the Ministry for the Environment and Queenstown Lakes District Council. The information will be stored on a public register and may be made available to the public on request or on the company's or the Council's websites.

FEES INFORMATION

Section 36 of the Resource Management Act 1991 deals with administrative charges and allows a local authority to levy charges that relate to, but are not limited to, carrying out its functions in relation to receiving, processing and granting of resource consents (including certificates of compliance and existing use certificates).

Invoiced sums are payable by the 20th of the month after the work was undertaken. If unpaid, the processing of an application, provision of a service, or performance of a function will be suspended until the sum is paid. You may also be required to make an additional payment, or bring the account up to date, prior to milestones such as notification, setting a hearing date or releasing the decision. In particular, all charges related to processing of a resource consent application are payable prior to issuing of the decision. Payment is due on the 20th of the month or prior to the issue date – whichever is earlier.

FEES INFORMATION // CONTINUED

If your application is notified or requires a hearing you will be requested to pay a notification deposit and/or a hearing deposit. An applicant may not offset any invoiced processing charges against such payments.

Section 357B of the Resource Management Act provides a right of objection in respect of additional charges. An objection must be in writing and must be lodged within 15 working days of notification of the decision.

LIABILITY FOR PAYMENT – Please note that by signing and lodging this application form you are acknowledging that the details in the invoicing section are responsible for payment of invoices and in addition will be liable to pay all costs and expenses of debt recovery and/or legal costs incurred by QLDC related to the enforcement of any debt.

MONITORING FEES – Please also note that the fee paid at lodgement includes an initial monitoring fee of $273 for land use resource consent applications and designation related applications, as once Resource Consent is approved you will be required to meet the costs of monitoring any conditions applying to the consent, pursuant to Section 35 of the Resource Management Act 1991.

DEVELOPMENT CONTRIBUTIONS – Your development, if granted, may also incur development contributions under the Local Government Act 2002. You will be liable for payment of any such contributions.

A list of Consent Charges is available on the on the Resource Consent Application Forms section of the QLDC website. If you are unsure of the amount to pay, please call 03 441 0499 and ask to speak to our duty planner.

Please ensure to reference any banking payments correctly. Incorrectly referenced payments may cause delays to the processing of your application whilst payment is identified.

If the initial fee charged is insufficient to cover the actual and reasonable costs of work undertaken on the application you will be required to pay any additional amounts and will be invoiced monthly as work on the application continues. Please note that if the Applicant has outstanding fees owing to Council in respect of other applications, Council may choose to apply the initial fee to any outstanding balances in which case the initial fee for processing this application may be deemed not to have been paid.

PAYMENT// An initial fee must be paid prior to or at the time of the application and proof of payment submitted. Unless you have requested an invoice.

Please reference your payments as follows:

Applications yet to be submitted: RM followed by first 5 letters of applicant name e.g RMJONES

Applications already submitted: Please use the RM# reference that has been assigned to your application, this will have been emailed to yourself or your agent and included on the invoice.

Please note processing will not begin until payment is received (or identified if incorrectly referenced).

I confirm payment by:

- [x] Bank transfer to account 02 0948 0002000 00 (If paying from overseas swiftcode is – BKNZNZ22)
- [ ] Invoice for initial fee requested and payment to follow
- [ ] Manual Payment (can only be accepted once application has been lodged and acknowledgement email received with your unique RM reference number)

Reference: RM MACRAE

Amount Paid: Land Use and Subdivision Resource Consent fees - please select from drop down list below

$3696 - Other subdivision (e.g. Rural Residential, Rural Lifestyle)

(For required initial fees refer to website for Resource Consent Charges or speak to the Duty Planner by phoning 03 441 0499)

Date of Payment: 5/14/24

APPLICATION & DECLARATION

The Council relies on the information contained in this application being complete and accurate. The Applicant must take all reasonable steps to ensure that it is complete and accurate and accepts responsibility for information in this application being so.

○ If lodging this application as the Applicant:

I/we hereby represent and warrant that I am/we are aware of all of my/our obligations arising under this application including, in particular but without limitation, my/our obligation to pay all fees and administrative charges (including debt recovery and legal expenses) payable under this application as referred to within the Fees Information section.

OR:

◉ If lodging this application as agent of the Applicant:

I/we hereby represent and warrant that I am/we are authorised to act as agent of the Applicant in respect of the completion and lodging of this application and that the Applicant / Agent whose details are in the invoicing section is aware of all of his/her/its obligations arising under this application including, in particular but without limitation, his/her/its obligation to pay all fees and administrative charges (including debt recovery and legal expenses) payable under this application as referred to within the Fees Information section.

☑ I hereby apply for the resource consent(s) for the Proposal described above and I certify that, to the best of my knowledge and belief, the information given in this application is complete and accurate.

PLEASE TICK

Signed (by or as authorised agent of the Applicant) **	
Full name of person lodging this form	Annemarie Townsley
Firm/Company John Edmonds & Associates Ltd	Dated 14 May 2024

**If this form is being completed on-line you will not be able, or required, to sign this form and the on-line lodgement will be treated as confirmation of your acknowledgement and acceptance of the above responsibilities and liabilities and that you have made the above representations, warranties and certification.

Section 2 of the District Plan provides additional information on the information that should be submitted with a land use or subdivision consent.

The RMA (Fourth Schedule to the Act) requires the following:

1 INFORMATION MUST BE SPECIFIED IN SUFFICIENT DETAIL

- Any information required by this schedule, including an assessment under clause 2(1)(f) or (g), must be specified in sufficient detail to satisfy the purpose for which it is required.

2 INFORMATION REQUIRED IN ALL APPLICATIONS

- (1) An application for a resource consent for an activity (the activity) must include the following:
    - (a) a description of the activity:
    - (b) a description of the site at which the activity is to occur:
    - (c) the full name and address of each owner or occupier of the site:
    - (d) a description of any other activities that are part of the proposal to which the application relates:
    - (e) a description of any other resource consents required for the proposal to which the application relates:

Information provided within the Form above

    - (f) an assessment of the activity against the matters set out in Part 2:
    - (g) an assessment of the activity against any relevant provisions of a document referred to in section 104(1)(b).

(2) The assessment under subclause (1)(g) must include an assessment of the activity against—

    - (a) any relevant objectives, policies, or rules in a document; and
    - (b) any relevant requirements, conditions, or permissions in any rules in a document; and
    - (c) any other relevant requirements in a document (for example, in a national environmental standard or other regulations).

(3) An application must also include an assessment of the activity's effects on the environment that—

    - (a) includes the information required by clause 6; and
    - (b) addresses the matters specified in clause 7; and
    - (c) includes such detail as corresponds with the scale and significance of the effects that the activity may have on the environment.

Include in an attached Assessment of Effects (see Clauses 6 & 7 below)

ADDITIONAL INFORMATION REQUIRED IN SOME APPLICATIONS

- An application must also include any of the following that apply:
    - (a) if any permitted activity is part of the proposal to which the application relates, a description of the permitted activity that demonstrates that it complies with the requirements, conditions, and permissions for the permitted activity (so that a resource consent is not required for that activity under section 87A(1)):
    - (b) if the application is affected by section 124 or 165ZH(1)(c) (which relate to existing resource consents), an assessment of the value of the investment of the existing consent holder (for the purposes of section 104(2A)):

ASSESSMENT OF ENVIRONMENTAL EFFECTS

Clause 6: Information required in assessment of environmental effects

- (1) An assessment of the activity's effects on the environment must include the following information:
    - (a) if it is likely that the activity will result in any significant adverse effect on the environment, a description of any possible alternative locations or methods for undertaking the activity:
    - (b) an assessment of the actual or potential effect on the environment of the activity:
    - (c) if the activity includes the use of hazardous substances and installations, an assessment of any risks to the environment that are likely to arise from such use:
    - (d) if the activity includes the discharge of any contaminant, a description of—
        - (i) the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and
        - (ii) any possible alternative methods of discharge, including discharge into any other receiving environment:
    - (e) a description of the mitigation measures (including safeguards and contingency plans where relevant) to be undertaken to help prevent or reduce the actual or potential effect:
    - (f) identification of the persons affected by the activity, any consultation undertaken, and any response to the views of any person consulted:
    - (g) if the scale and significance of the activity's effects are such that monitoring is required, a description of how and by whom the effects will be monitored if the activity is approved:
    - (h) if the activity will, or is likely to, have adverse effects that are more than minor on the exercise of a protected customary right, a description of possible alternative locations or methods for the exercise of the activity (unless written approval for the activity is given by the protected customary rights group).

(2) A requirement to include information in the assessment of environmental effects is subject to the provisions of any policy statement or plan.

(3) To avoid doubt, subclause (1)(f) obliges an applicant to report as to the persons identified as being affected by the proposal, but does not—

- (a) oblige the applicant to consult any person; or
- (b) create any ground for expecting that the applicant will consult any person.

CLAUSE 7: MATTERS THAT MUST BE ADDRESSED BY ASSESSMENT OF ENVIRONMENTAL EFFECTS

- (1) An assessment of the activity's effects on the environment must address the following matters:
    - (a) any effect on those in the neighbourhood and, where relevant, the wider community, including any social, economic, or cultural effects:
    - (b) any physical effect on the locality, including any landscape and visual effects:
    - (c) any effect on ecosystems, including effects on plants or animals and any physical disturbance of habitats in the vicinity:
    - (d) any effect on natural and physical resources having aesthetic, recreational, scientific, historical, spiritual, or cultural value, or other special value, for present or future generations:
    - (e) any discharge of contaminants into the environment, including any unreasonable emission of noise, and options for the treatment and disposal of contaminants:
    - (f) any risk to the neighbourhood, the wider community, or the environment through natural hazards or the use of hazardous substances or hazardous installations.

(2) The requirement to address a matter in the assessment of environmental effects is subject to the provisions of any policy statement or plan.

A2 APPENDIX 2 // Information requirements for subdivision

UNDER THE FOURTH SCHEDULE TO THE ACT:

- An application for a subdivision consent must also include information that adequately defines the following:
    - (a) the position of all new boundaries:
    - (b) the areas of all new allotments, unless the subdivision involves a cross lease, company lease, or unit plan:
    - (c) the locations and areas of new reserves to be created, including any esplanade reserves and esplanade strips:
    - (d) the locations and areas of any existing esplanade reserves, esplanade strips, and access strips:
    - (e) the locations and areas of any part of the bed of a river or lake to be vested in a territorial authority under section 237A:
    - (f) the locations and areas of any land within the coastal marine area (which is to become part of the common marine and coastal area under section 237A):
    - (g) the locations and areas of land to be set aside as new roads.

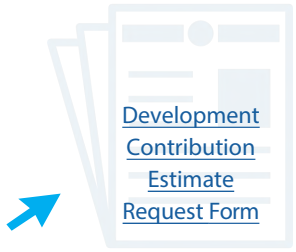
A3 APPENDIX 3 // Development Contributions

Will your resource consent result in a Development Contribution and what is it?

- A Development Contribution can be triggered by the granting of a resource consent and is a financial charge levied on new developments. It is assessed and collected under the Local Government Act 2002. It is intended to ensure that any party, who creates additional demand on Council infrastructure, contributes to the extra cost that they impose on the community. These contributions are related to the provision of the following council services:
    - Water supply
    - Wastewater supply
    - Stormwater supply
    - Reserves, Reserve Improvements and Community Facilities
    - Transportation (also known as Roading)

Click here for more information on development contributions and their charges

OR Submit an Estimate request *please note administration charges will apply



A4 APPENDIX 4 // Fast - Track Application

Please note that some land use consents can be dealt with as fast track land use consent. This term applies to resource consents where they require a controlled activity and no other activity. A 10 day processing time applies to a fast track consent.

If the consent authority determines that the activity is a deemed permitted boundary activity under section 87BA of the Act, written approval cannot be withdrawn if this process is followed instead.

A fast-track application may cease to be a fast-track application under section 87AAC(2) of the Act.

A5 APPENDIX 5 // Naming of documents guide

While it is not essential that your documents are named the following, it would be helpful if you could title your documents for us. You may have documents that do not fit these names; therefore below is a guide of some of the documents we receive for resource consents. Please use a generic name indicating the type of document.

- Application Form 9
- Assessment of Environmental Effects (AEE)
- Computer Register (CFR)
- Covenants & Consent Notice
- Affected Party Approval/s
- Landscape Report
- Ecological Report
- Engineering Report
- Geotechnical Report
- Wastewater Assessment
- Traffic Report
- Waste Event Form
- Urban Design Report

230

ASSESSMENT OF EFFECTS ON THE ENVIRONMENT

2 Lot Subdivision and Building Platform

Earthworks and Construction of a Dwelling with Accessory Buildings

832 Malaghans Road

For RB and IP Macrae

May 2024

1.0 EXECUTIVE SUMMARY OF PROPOSAL

[1] **Ronald Bernard Macrae, Irene Patricia Macrae & Ardmore Trustee Malaghans 2023 Limited** (the Applicant) seek resource consent to undertake a two lot subdivision, to establish a residential building platform, to undertake earthworks, and to construct a residential dwelling with associated accessory buildings, at 832 Malaghans Road in the Wakatipu Basin.

[2] The Applicant requests public notification of the application.

Location:	832 Malaghans Road, Wakatipu
Legal Description:	Lot 5 DP 521688
Territorial Authority:	Queenstown Lakes District Council (QLDC)
Plan:	Proposed District Plan
Zoning:	Wakatipu Basin Rural Amenity Zone
Natural Hazards:	Identified as 'Possibly Susceptible' to liquefaction on the QLDC Hazards Maps. Potential rockfall and flooding hazards to the building platform have also been assessed – see attached Geosolve report.
Other:	There are no known heritage features, or cultural heritage or archaeological sites. The site is not identified as a HAIL site. The site is within the Lake Hayes catchment.
Activity Status:	Non-complying

2.0 APPENDICES

Appendix 1 – Record of Title
Appendix 2 – Consent Notice 11169054.6
Appendix 3 – Land Covenant
Appendix 4 – Proposed Conditions
Appendix 5 – Subdivision Scheme Plan
Appendix 6 – Geotechnical and Flooding Assessment Report
Appendix 7 – Landscape Concept Plan
Appendix 8 – Landscape Assessment Report
Appendix 9 – Water Supply Design for RM161092
Appendix 10 – Domestic Wastewater System Design Report
Appendix 11 – Chorus Connection Confirmation
Appendix 12 – Aurora Energy Supply Confirmation
Appendix 13 – Earthworks Plan
Appendix 14 – Environmental Management Plan
Appendix 15 – Architectural Plans
Appendix 16 – Rules Assessment
Appendix 17 – Preliminary/Detailed Site Investigation Report
Appendix 18 – Wetland Delineation Memo

3.0 INTRODUCTION

[3] This Assessment of Effects on the Environment (AEE), inclusive of appendices, has been prepared in accordance with Schedule 4 of the Resource Management Act (RMA). Together these documents provide:

- a description of the application site and surrounding environment;
- a description of the proposal;
- a description of the consents sought;
- an assessment of environmental effects;
- identification and assessment of relevant objectives and policies of the District Plan; and
- a conclusion.

3.1 Overview

[4] Resource consent is sought for the following at 832 Malaghans Road, in the Wakatipu Basin:

- Subdivision consent to create one additional saleable lot, and to establish a residential building platform with associated access and landscaping, including the construction of a vehicle bridge across Mill Creek.

- Land use consent to undertake earthworks and landscaping, to construct a residential dwelling within the approved building platform, and to construct two accessory buildings outside the building platform.

[5] The location of the subject site is shown outlined in yellow below (Figure 1).

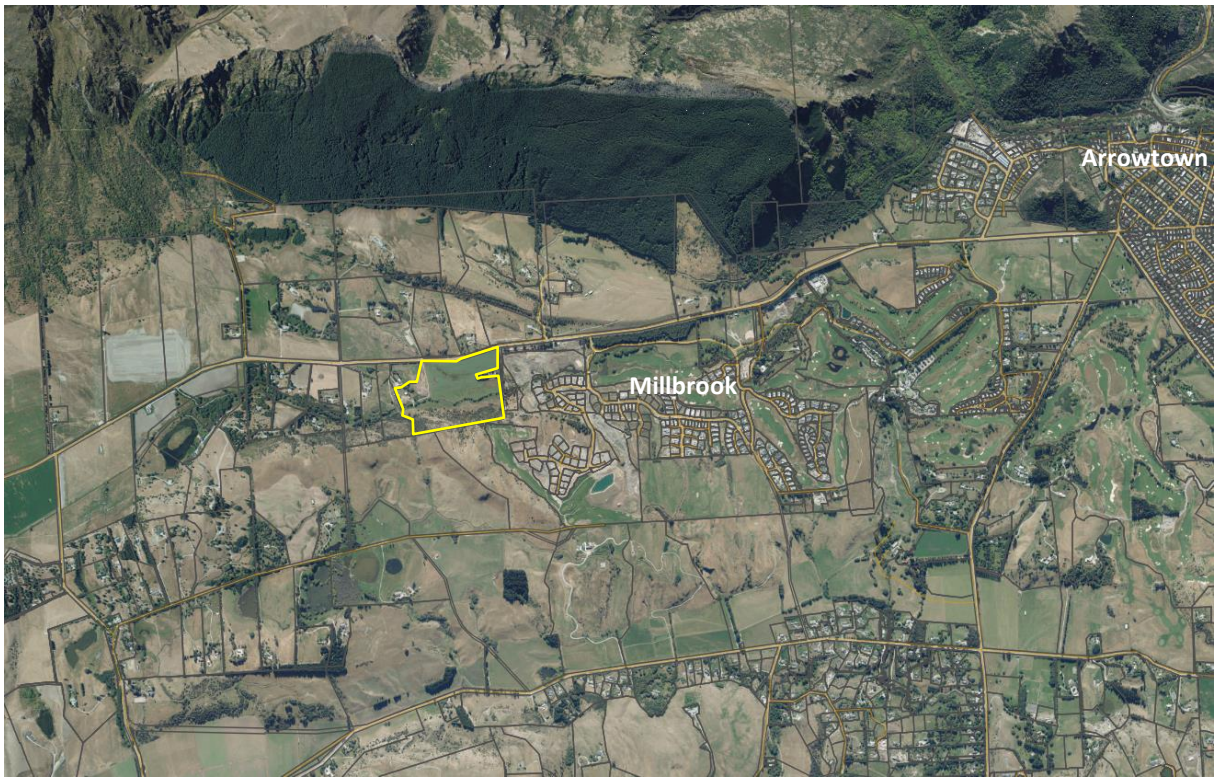


Figure 1: *Site Location (subject site identified in yellow)*

[6] The Applicant requests public notification of the application.

3.2 Site Description

[7] The site is located on the southern side of Malaghans Road and has an area of 16.9372ha. It is roughly rectangular in shape, with irregular boundaries on the eastern and western sides.

[8] An aerial view of the site is shown in Figure 2 below.

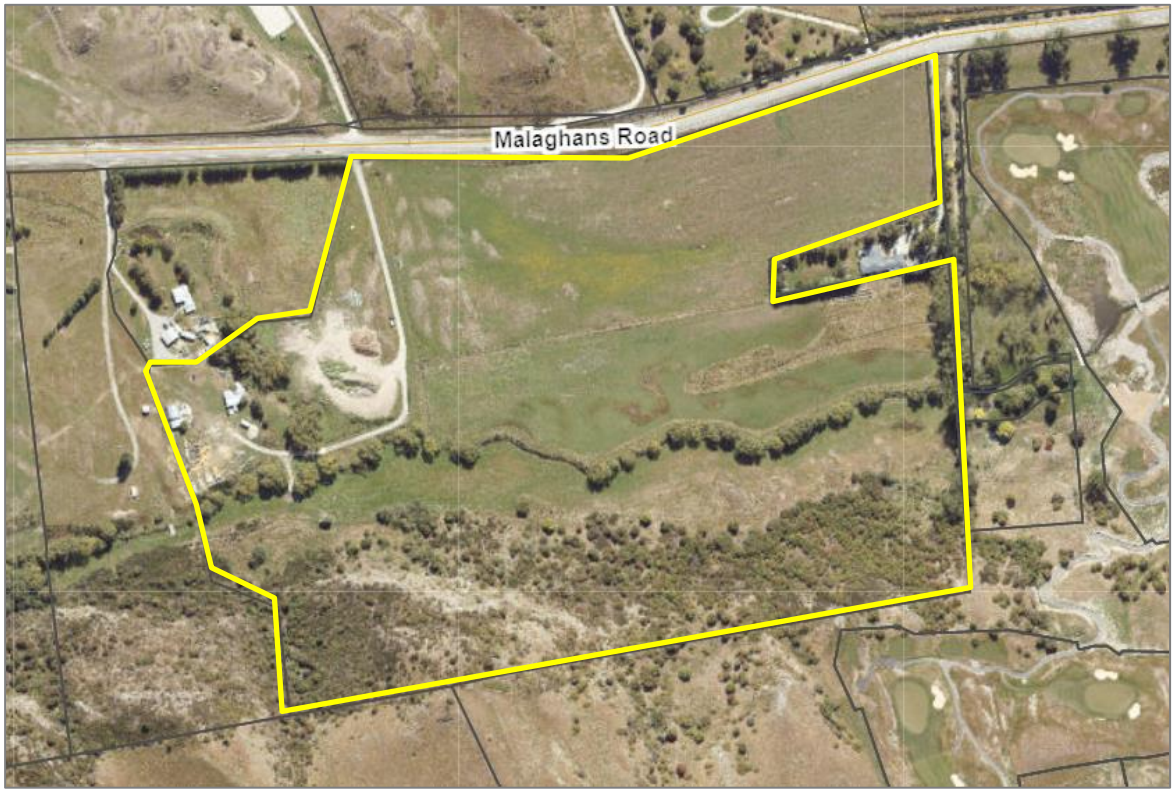


Figure 2: *Aerial View of Site (subject site identified in yellow)*

[9] The western part of the site contains farm buildings and an existing, but as yet undeveloped, residential building platform accessed by a gravel driveway from Malaghans Road. This area has also recently been used as a yard for contractors working on the construction of the new trail from Arthurs Point to Arrowtown for the Queenstown Trails Trust.

[10] To the east of the existing driveway, the site comprises a large, open, grassed paddock which generally slopes gently down from Malaghans Road. There are some small rock outcrops visible. The southern part of the site comprises the steep, rocky northern face of the Wharehuanui Hills, which has a cover of woody weeds including hawthorn, broom and briar.

[11] Mill Creek crosses the site from west to east. The creek is lined with crack willows and some native riparian vegetation, including flaxes, toe toe and grasses. A trail has recently been constructed by the Queenstown Trails Trust along the northern side of Mill Creek through the site. The northern side of the trail is fenced.

[12] A tributary stream enters the site in the north west corner and runs to the east of the existing building platform before joining Mill Creek. A culvert under Malaghans Road discharges into a grassed drain along the eastern side of the driveway, which then enters Mill Creek via another culvert under the recently-constructed trail.

[13] There are patches of existing wetland in the paddock area to the north of Mill Creek, the largest being to the south of the McTaggart property, which forms an indent in the eastern boundary of the site. The McTaggart property is surrounded by trees and a tall hedge along the southern boundary.

[14] The site also adjoins Millbrook Resort along the eastern boundary, as well as a small lot (the Young property) which has an approved but as yet unregistered and undeveloped building platform[i].

[15] The proposed building platform will be located on the narrow area of pasture between the creek and the escarpment rising to the south.

3.3 Record of Title

[16] The site is legally described as Lot 5 DP 521688 and held in Record of Title 825873 (a copy of which is attached as **Appendix 1**).

[17] The Applicant is the owner of the site.

[18] Consent Notice 11169054.6 (**Appendix 2**) was registered on the title under the previous subdivision (RM161092), which created the existing lot and building platform. The consent notice includes conditions relating to design controls for future buildings and landscaping on the lot, as well as servicing requirements.

[19] The consent notice also requires future owners to protect indigenous vegetation within the 'Rock Ridge Management Area' identified on the approved landscape plan, which covers the rocky northern face of the Wharehuanui Hills within the site.

[20] Land Covenant in Easement Instrument 11169054.9 (attached as **Appendix 3**) was registered on the title by the Dennisons, who undertook the RM161092 subdivision. This is a private covenant covering the sharing of fencing expenses, and the height of trees on the boundary between Lots 3 and 4 DP 521688. It also includes a non-objection clause. The covenant is not considered relevant to the current application.

[21] The site contains the following easements:

- Easement area marked V on DP 521688 (identified in blue in Figure 3) – pedestrian and cycle right of way in favour of Queenstown Lakes District Council (QLDC). This easement runs along the northern side of Mill Creek through the site.
- Easement areas marked Q and R on DP 521688 (identified in orange in Figure 3) – right to take and convey water from the bore on the site in favour of Lots 3 and 4 DP 521688.

[i] RM170433

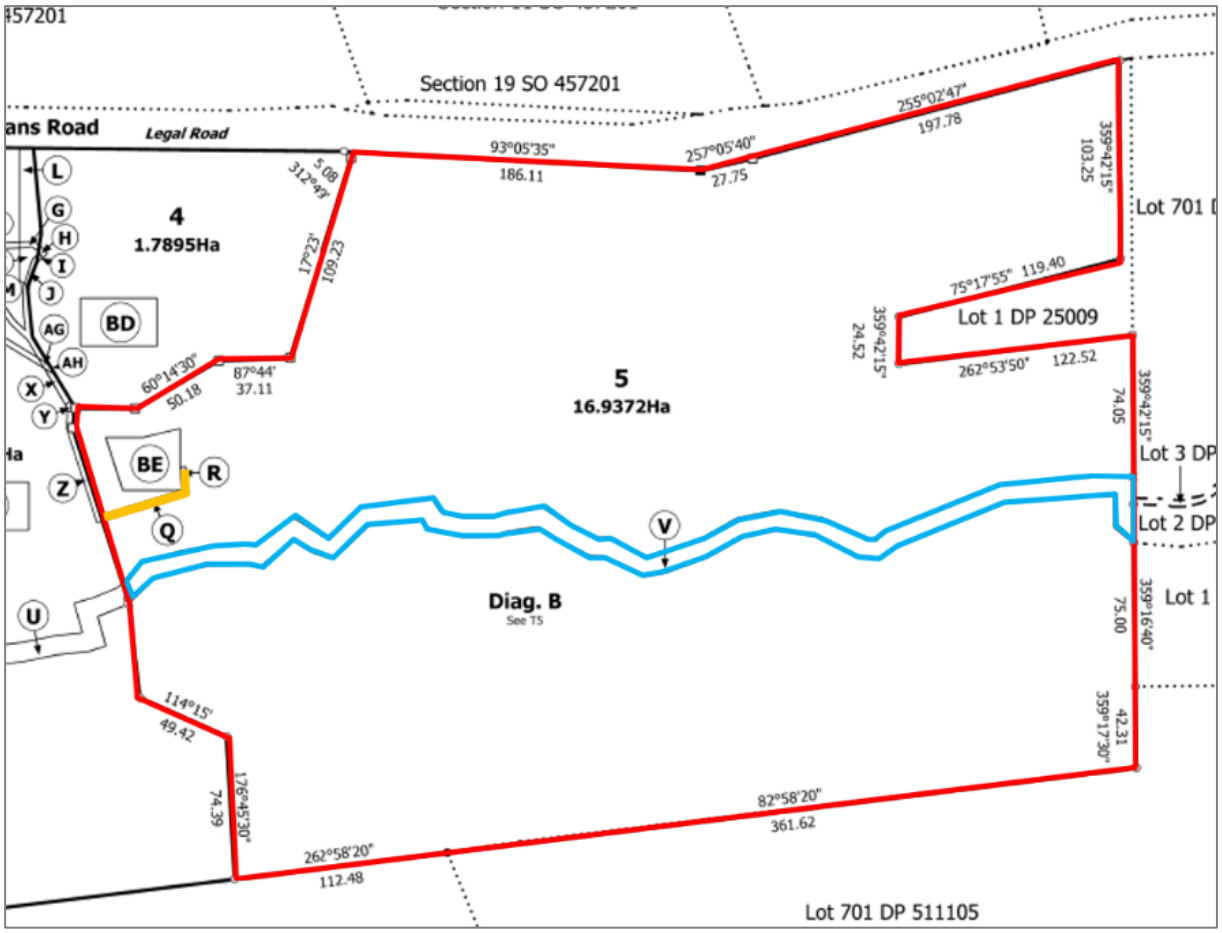


Figure 3: *Location of Easements on the Site (site boundaries outlined in red)*

3.4 Consent History

RM161092

[22] Resource consent (RM161092) was approved on 27 June 2017 to undertake a five lot subdivision and to establish a 1,000m^2 building platform on each allotment, and to undertake associated landscaping and earthworks.

[23] The subject site was created through this subdivision (Lot 5). Lot 5 comprised the balance land with a 1,000m^2 building platform around an existing shed set back approximately 150m from the boundary of Malaghans Road. Access was provided via a vehicle crossing located opposite the entrance to 833 Malaghans Road with a gravel driveway formed to the building platform.

[24] As outlined above, a consent notice was registered on the title for Lot 5 setting out design controls for future development within the building platform.

[25] RM161092 required the implementation of a landscape plan including wetland planting along the tributary of Mill Creek to the east of the building platforms on Lots 4 and 5, the establishment of a Riparian Management Zone on either side of Mill Creek, and the protection of native vegetation within the 'Rock Ridge Management Area' covering the steep northern face of the Wharehuanui Hills within the site.

[26] At the time of the decision, the PDP was given little weight as no decisions had been released.

RM171151

[27] Resource consent (RM171151) was approved on 26 January 2018 to vary RM161092 to allow for a public pedestrian right of way easement along Mill Creek instead of the approved Riparian Management Zone. This easement has now been registered on the relevant titles.

[28] The Planting Plan approved under RM171151 is reproduced in Figure 4 below.

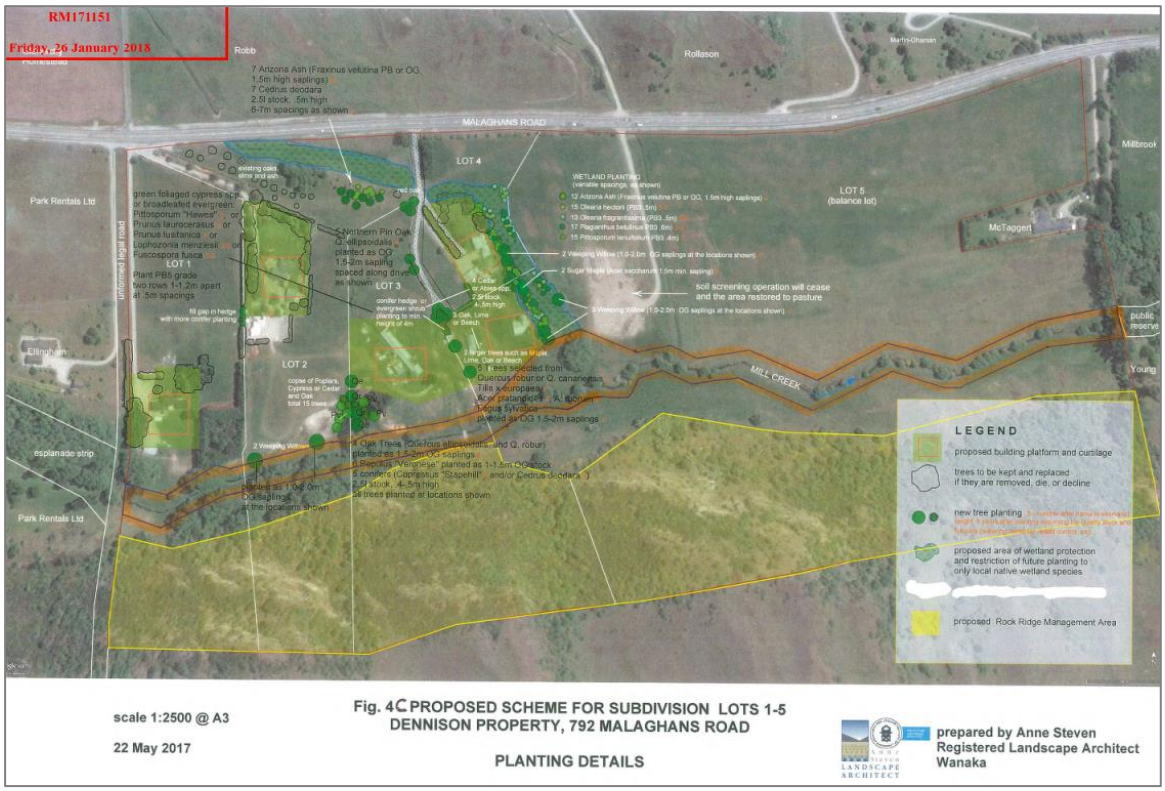


Figure 4: *Planting Plan approved under RM171151*

RM200336

[29] Resource consent (RM200336) was granted on 11 June 2021 to the Queenstown Trails Trust to establish the Tucker Beach to Arthurs Point to Arrowtown Trail Project. Formation of the section of trail through the site (within the public pedestrian and cycle easement) has recently been completed. The trail is not yet open to the public.

RM21.404.01

[30] Resource consent (RM21.404.01) was granted by the Otago Regional Council (ORC) on 27 June 2022 to the Mana Tāhuna Charitable Trust (Mana Tāhuna) to undertake in-stream works (willow removal, bank battering and installation of online and offline sediment traps) in Mill Creek and other streams within the Lake Hayes catchment, to contribute to the restoration of the catchment and ultimately improve water quality in Lake Hayes.

[31] Within the site, Mana Tāhuna proposes to undertake willow removal and riparian planting of the creek margins with native species. However, the timing and completion of the works is subject to funding availability.

4.0 DESCRIPTION OF PROPOSAL

4.1 Proposed Conditions of Consent

[32] A full list of the proposed conditions referred to in the following description of the proposal is attached as **Appendix 4**.

4.2 Subdivision

[33] The subdivision proposes two freehold titles as described in the table below:

Allotment	Description	Site Area
Lot 1	Rural living allotment, containing the proposed residential building platform	12.79ha
Lot 2	Rural living allotment, containing the existing residential building platform	4.152ha

[34] The Scheme Plan for the subdivision is attached as **Appendix 5** and reproduced in Figure 5 below.

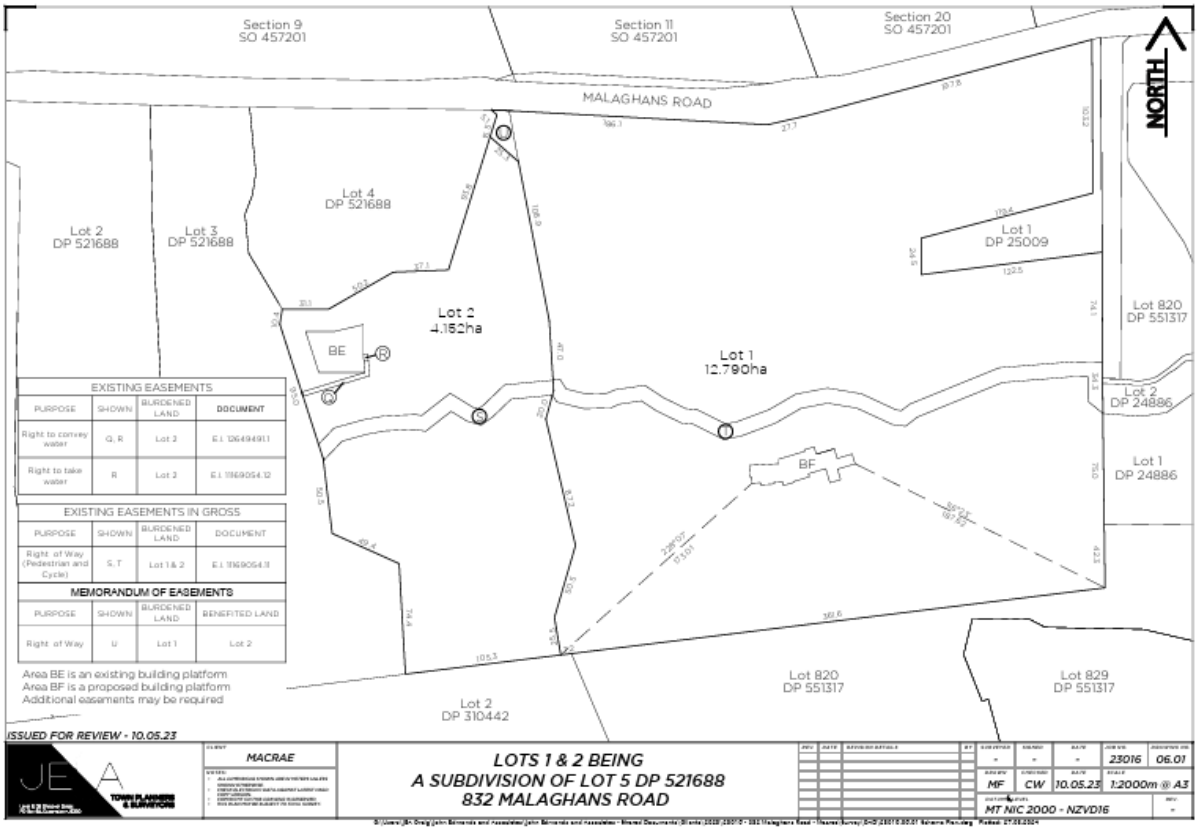


Figure 2: *Proposed Scheme Plan for Subdivision*

Easements

[35] As part of the subdivision, a right of way easement will be created over the first part of the driveway from Malaghans Road, which proposed Lots 1 and 2 will share. This is shown as easement area 'U' on the scheme plan. The driveway will be located within Lot 1, so the easement is in favour of Lot 2.

[36] Easements will be required to take and convey water over Lot 2 in favour of Lot 1 if the existing bore is used to supply Lot 1. The locations of these easements will be confirmed at the detailed design stage; the alignment of the water supply pipe to Lot 1 is yet to be determined.

[37] Any additional easements that may be required will be identified at the time the survey plan is approved under s223.

4.3 Residential Building Platform

[38] It is proposed to establish a 1,000m^2 residential building platform on Lot 1.

[39] The building platform will be located on the southern side of the creek, at the foot of the slope, in the middle of the site. This is shown as area 'BF' on the scheme plan in Figure 5 above.

[40] The building platform has an irregular shape as it has been designed to fit around the footprint of the proposed dwelling.

[41] Future development on the building platform will be subject to a controlled activity resource consent and the following design standards for the zone in the District Plan:

- Roof claddings with maximum 20% light reflectance value (LRV) and wall claddings with maximum 30% LRV (Rule 24.5.4);
- Maximum ground floor area of 500m^2 (Rule 24.5.5);
- Maximum building height of 6.5m (Rule 24.5.8.1), or up to 8m as a restricted discretionary activity (Rule 24.5.8.2); and
- Exterior lights must be directed away from the road and site boundaries, there is to be no upward light spill, and no light spill of more than 3 lux beyond the site (Rule 24.5.17).

4.4 Natural Hazards

[42] Geosolve has undertaken a Geotechnical and Flooding Assessment Report, which is attached as **Appendix 6**.

[43] The proposed building platform is located in close proximity (approximately 15m at the closest point) to Mill Creek. Based on conservative assumptions, and also taking into account the effects of climate change, the 1% Annual Exceedance Probability (AEP) flood flow in Mill Creek has been calculated as 22.87m^3/s. Modelling of the water level adjacent to the building platform shows a peak water surface elevation of 409.14m. A minimum of 500mm freeboard above this level is recommended by Geosolve, measured from the maximum water level to the building platform level or the underside of the floor joists or underside of the floor slab. The proposed floor level of 410m for the future dwelling will achieve this freeboard.

[44] Geosolve has also identified that the proposed building platform is located within a potential overland flow path which drains the hillside immediately to the south. The catchment has an area of 5ha, and the calculated peak flow in a 1% AEP event is approximately 0.8m^3/s. Diversion of the overland flow will be required at the time a dwelling is constructed, using standard engineering solutions such as diversion channels/drains along the edge of the driveway/parking area at the base of the slope.

[45] The near-vertical schist bluffs on the escarpment in the southern part of the site present a potential rockfall hazard to the proposed building platform. A rock fall assessment has therefore been undertaken by GeoSolve to quantify the rockfall hazard. Geosolve notes that the proposed building platform location reduces the risk from rockfall, as it is not directly beneath the main bluffs.

[46] Preliminary rockfall modelling has indicated that a rockfall protection bund will be required to reduce the risk to life for the main dwelling. The final size and position of the bund is to be defined during detailed design. It will be an earth bund located at the top of the cut batter to the rear of the dwelling, will be designed to follow the natural contour of the slope, is likely to be approximately 1.5m high, and will be planted. The rockfall bunding can also act as a diversion channel for the overland flows described above.

[47] The proposed barn is only to be used for storage as it will be subject to a higher risk of rockfall that is not acceptable for residential buildings.

[48] Geosolve has assessed that the liquefaction risk for the proposed building platform location is expected to be very low based on the shallow depth to schist bedrock and the composition of the alluvial sand and gravel. No liquefaction-mitigation foundation design will be required for the proposed dwelling.

4.5 Landscaping

[49] A Landscape Concept plan has been prepared by Anne Steven Landscape Architecture (ASLA). A copy of the plan is shown in Figure 6 below and it is also attached as **Appendix 7**.

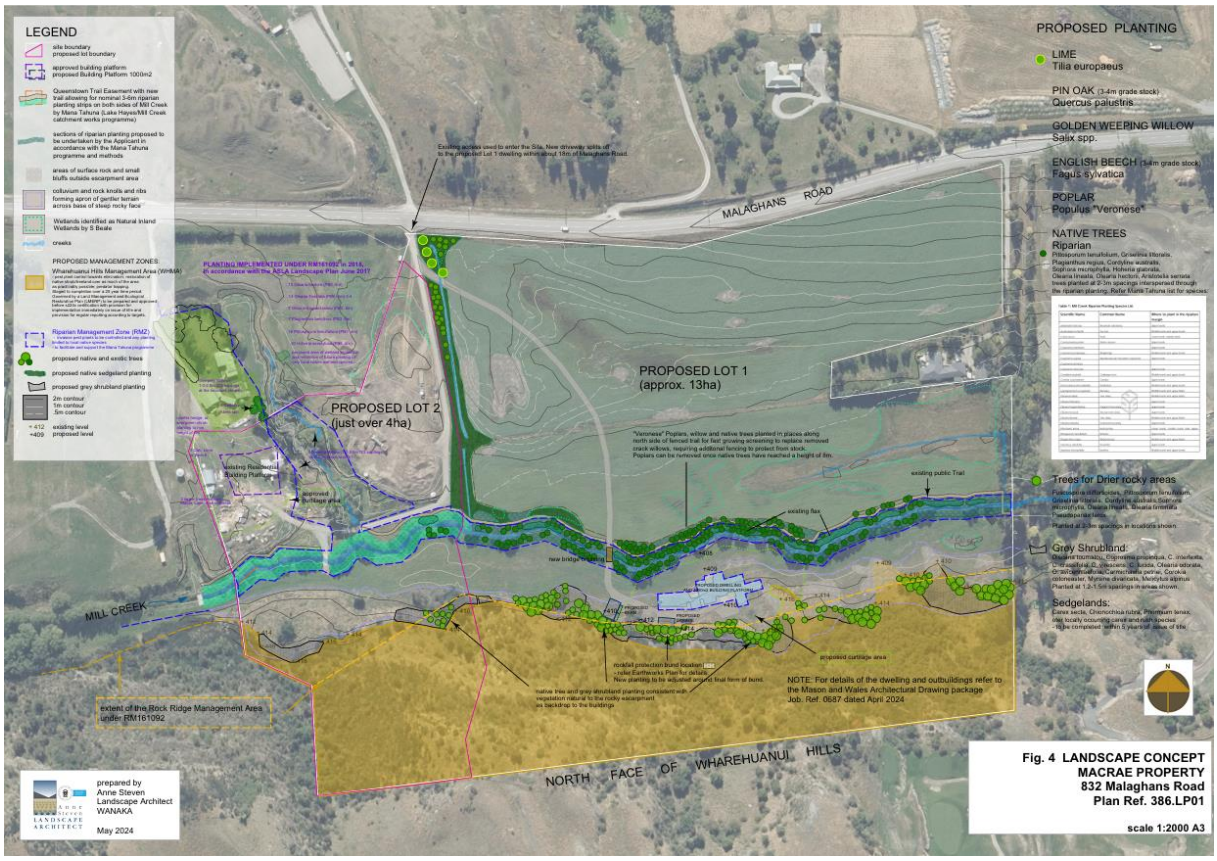


Figure 6: *Proposed Landscape Concept*

[50] A detailed description of the proposed planting is given in the ASLA Landscape Assessment Report, attached as **Appendix 8**. In summary, this planting includes:

- native tree planting along Mill Creek to combine with the riparian planting proposed to be undertaken by Mana Tāhuna;
- exotic tree planting to the north of the existing trail to provide fast-growing screening to replace the removed crack willows;
- exotic tree planting outside of the 6m riparian strip on the southern side of Mill Creek in the vicinity of the dwelling for visual screening and amenity purposes;
- wetland planting (mainly sedges) along the drain running on the eastern side of the existing driveway;
- native trees and larger exotic broadleaf trees at the north end of the drain to screen out existing 'clutter' and built form on Lot 2 and adjoining properties to the west; and
- native tree and grey shrubland planting to kickstart ecological restoration of the escarpment and mitigate the visual effects of the proposed rockfall bund.

[51] The Applicant intends to collaborate with Mana Tāhuna regarding completion of the willow removal and riparian planting within the site, and discussions have already commenced in this regard. It is proposed that these works be completed within proposed Lot 1 prior to 224c certification for the subdivision, along with the tree planting between the southern side of the creek and the building platform.

[52] The trees at the northern end of the driveway, and planting of the rockfall bund, will be undertaken in the first planting season following the completion of earthworks for the dwelling. Wetland planting along the drain will be undertaken within 5 years of completion of the dwelling.

[53] It is proposed to place a Riparian Management Zone, as intended under RM161092, back over Mill Creek and its tributary through Lots 1 and 2. This will be referenced in a consent notice condition requiring future owners to manage invasive weed species, and to only plant locally occurring riparian species, within the identified area once the willows have been removed.

[54] A Land Management and Ecological Restoration plan (LMERP) is proposed for the ochre shaded area on the Landscape Concept plan, being the steep north-facing slope of the Wharehuanui Hills. This will build on and supersede the Rock Ridge Management Area that applies to the existing title under Consent Notice 11169054.6, and simply requires any existing indigenous vegetation to be retained. The LMERP is to be prepared as part of 224c certification, and will be referenced in a consent notice condition.

4.6 Design Controls

[55] Proposed design controls for future development on Lot 1 are included in the set of proposed conditions attached as **Appendix 4**. It is anticipated that these would be included in a consent notice registered on the title for proposed Lot 1.

[56] The proposed residential building platform will have a specified curtilage area for domestic activity around it with a total area of 5,268m^2. All domestic activities and structures, and amenity gardens, will be limited to the curtilage area.

[57] The existing consent notice and design controls will continue to apply to future development on proposed Lot 2.

4.7 Services Infrastructure

[58] The site is not serviced by QLDC's reticulated water supply, wastewater or stormwater networks.

Water Supply

[59] Water supply to the new lot (Lot 1) can be provided from an existing bore on the site. This bore is located within the existing building platform on proposed Lot 2 and currently supplies Lots 3 – 5 DP 521688 for domestic purposes. Pump tests provided for 224c for the underlying subdivision confirm that the bore has capacity to supply an additional lot with at least 2,100 litres/day. This information is attached as **Appendix 9**. The applicant could also establish a new bore to service Lot 1, subject to obtaining the necessary approvals from ORC.

[60] The water supply connection to Lot 1 will be provided as part of the subdivision works.

[61] As noted above, easements will be created as necessary for the supply of water to Lot 1.

Firefighting Water Supply

[62] At the time a dwelling is constructed on Lot 1, static firefighting storage will be installed in accordance with PAS SNZ4509:2008. Domestic storage will also be required. It is expected that water will be stored in one or two 30,000 litre tanks. These will be located outside of and to the rear of the building platform, and will be screened from view.

Wastewater Disposal

[63] An on-site wastewater treatment and disposal system has been designed by Ralph Moir Limited (RML). The design report is attached as **Appendix 10**. This confirms the feasibility of on-site treatment and disposal at this site.

[64] The proposed system comprises a Hynds 'FujiClean ACE NZ3000' wastewater treatment plant. This is an advanced secondary treatment system incorporating contact media filtration technology. Treated wastewater will be pumped to an irrigation field in the northern part of the site, close to Malaghans Road, to maximise the setback from Mill Creek.

[65] The irrigation field will be at least 50m from the boundary with the McTaggart property, which contains a water supply bore.

[66] The wastewater system will be installed at the time a dwelling is constructed.

Stormwater Disposal

[67] Stormwater disposal from the dwelling and associated impervious areas will be to ground via soak pits. Geotechnical investigations have confirmed that the ground conditions (permeable sands and gravels) are suitable for this method of disposal. Detailed design will be undertaken for building consent.

Electricity and Telecommunications

[68] Chorus NZ Ltd and Aurora Energy have confirmed that fibre network and power connections can be made to the additional lot. Confirmation letters are attached as **Appendix 11** and **Appendix 12**.

[69] The applicant proposes to either connect the site to the fibre network at the time of subdivision, or impose a consent notice condition that a wireless telecommunications service shall be provided when a dwelling is constructed.

[70] The power connection to Lot 1 will be made prior to subdivision.

4.8 Access and Bridge

[71] Proposed Lots 1 and 2 will share the existing vehicle crossing from Malaghans Road. A new driveway to the building platform on Lot 1 will branch off the existing driveway after approximately 20m.

[72] The driveway will be 4m wide and surfaced with gravel. Within the curtilage area around the building platform, an asphalt or concrete surface may be used.

[73] A new bridge is required to provide vehicle access across Mill Creek to the building platform. This will be constructed as part of the subdivision works. The bridge design will be single-span, with the abutments placed outside of the creek bed or banks. It will be 3.6m wide and constructed from concrete and/or steel, with timber cladding. Refer to Figure 7 below for the concept design. Note that the final design, including the nature and height of barriers, will be subject to ORC approval and building consent requirements.

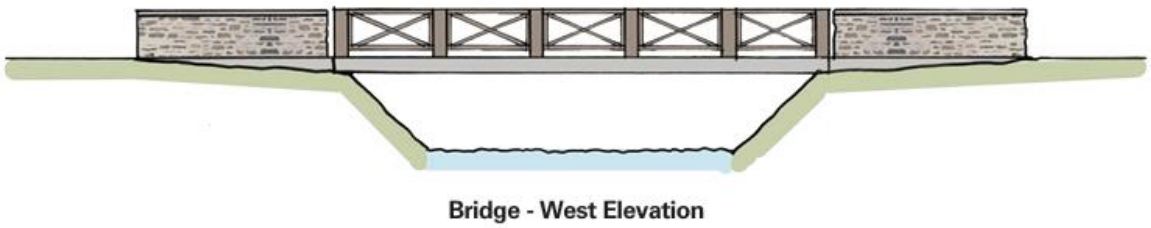


Figure 7: *Proposed Bridge Concept (Source: Architectural Plans – Appendix 15)*

4.9 Earthworks

[74] Earthworks will be required for the construction of the driveway, which will form part of the subdivision works, and to excavate the building platform in preparation for construction of the dwelling. A small area of engineered fill will be required at the front/northern side of the building platform, and fill is also required to form a rockfall bund on the slope to the rear of the dwelling. It is anticipated that cut material from the excavation can be re-used as fill within the site.

[75] An Earthworks Plan has been prepared by JEA. This is attached as **Appendix 13** and reproduced in Figure 8 on the following page.

[76] A total earthworks volume of 3,506m^3 is proposed, comprising 2,695m^3 of cut and 811m^3 of fill, over an area of 5,809m^2. The maximum height of cut will be 3.8m, into the slope behind the dwelling, and the maximum depth of fill will be approximately 2m, to form the rockfall bund.

[77] Fill in front of the dwelling may be retained with a low stone or timber landscaping wall. A retaining wall approximately 1 - 2m high may be constructed along the rear of the vehicle manoeuvring area behind the dwelling (unless the cut is in rock) with a batter slope above. L';

[78] Batter slopes will be formed in accordance with the recommendations of the Geosolve Report (**Appendix 6**).

[79] Any excess cut material will be removed from the site via truck.

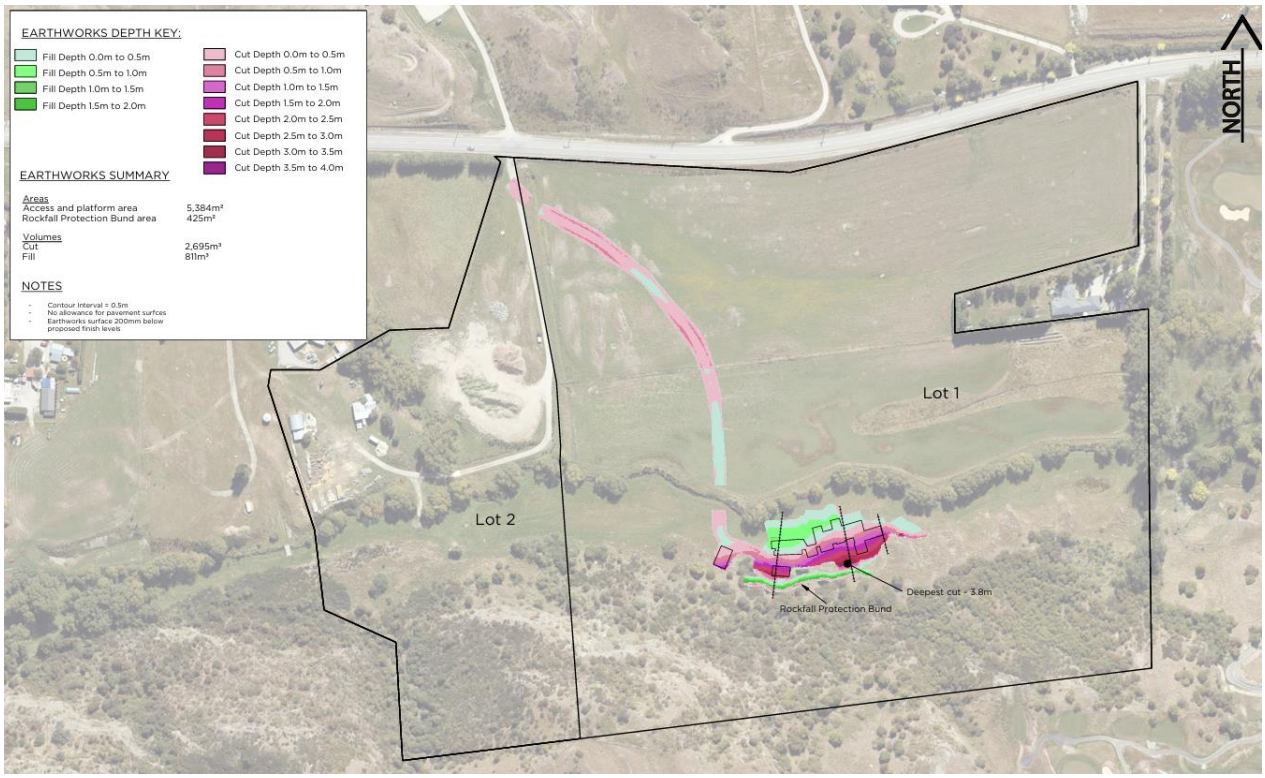


Figure 8: *Earthworks Plan*

Site Management

[80] An Environmental Management Plan (EMP) has been prepared by Enviroscope and is attached as **Appendix 14**.

[81] The site is deemed to have a 'high' environmental risk in terms of the risk categories outlined in the QLDC *Guidelines for Environmental Management Plans, June 2019* due to the proximity of Mill Creek.

[82] The EMP includes a preliminary staging methodology for completion of the earthworks and installation of site mitigation measures in accordance with the Erosion and Sediment Control Plan. It also includes a monitoring and reporting regime.

[83] The first stage of the earthworks, to be completed prior to subdivision, comprises the construction of the driveway and bridge to provide access to the building platform on Lot 1. Dirty water diversion channels will be installed within the driveway alignment to capture sheet flows which will be diverted to drop-out pits, and then a series of silt socks (mesh or fabric tubes filled with sand and/or compost), before entering the creek. A culvert will be placed towards the northern end of the driveway where it crosses the existing drain. This will be done when there is low, or no, flow in the drain during a period of fine weather.

[84] Geotextile erosion matting will be used to cover exposed surfaces associated with construction of the bridge, to reduce potential erosion and sedimentation. Silt socks will also be used downslope of the footings excavations to capture any contaminants. The bridge will be designed so that the footings are outside of the creek banks or bed.

[85] The second stage of the earthworks will be the excavation of the building platform area, and construction of the rockfall protection bund on the slope above, prior to construction of the dwelling. A super silt fence will be installed along the northern boundary of the works to prevent sediment entering Mill Creek. A temporary stockpile area will be located to the west of the building platform. A silt fence will be erected on the southern side of the stockpile.

[86] All exposed areas outside of the building footprint will be progressively stabilised, for example by covering with topsoil and regrassing, as soon as possible following earthworks to prevent erosion.

4.10 Dwelling

[87] Once the subdivision has been completed, it is proposed to construct a dwelling within the building platform established on Lot 1.

[88] Architectural Plans have been prepared by Mason & Wales and are attached as **Appendix 15**. The northern elevation of the proposed dwelling (and associated accessory buildings described under 4.11) is shown in Figure 9 below.

Figure 9: *Proposed Dwelling and Accessory Buildings – Northern Elevation (Source: Mason & Wales)*

Design and External Appearance

[89] The main dwelling will be single level. It will have a total length of approximately 70m, and will be aligned to run parallel with Mill Creek, set against the base of the steep slope behind.

[90] The design includes several north facing gable roof forms, which gives the impression of a number of individual building units linked together.

[91] External cladding materials will include a Colorsteel roof in a dark natural grey colour, and dark grey aluminium window joinery. Walls will be stacked schist in bagged plaster and cedar weatherboards stained a dark earthy colour (a range of suitable colours in included in the Architectural Plans). Two schist chimneys will extend from the central part of the dwelling. A third, lower chimney will extend from the western wing of the building.

[92] A grass lawn will extend from the northern side of the dwelling to the edge of the riparian area along Mill Creek.

Height

[93] Most of the proposed dwelling will be less than the permitted height of 6.5m for the WBRAZ, with the following exceptions:

- The gable roof form above the living area (RL 416m) will have a maximum height of 7m above existing ground level.
- The gable roof over the covered outdoor area (RL 416m) will have a maximum height of 7.1m above existing ground level.
- Two central chimneys (RL 417m), which each measure 1.2m x 3.5m, will be 7.5m above existing ground level.
- A third chimney (RL 416.6m), extending from the guest wing, will be 7.5m above existing ground level. This chimney measures 1m x 1m but as it has a wider cap that increases the total width to more than 1.1m it is assumed that it does not meet the exemptions for chimneys in the definition of building height in the PDP.

[94] The dwelling will have a maximum height of RL 417m, and a maximum height above existing ground level of 7.5m.

Building Coverage

[95] The dwelling will have a total floor area of 745m^2, including the covered outdoor spaces.

4.11 Accessory Buildings

[96] It is proposed to construct two accessory buildings outside the building platform: a detached garage measuring 11m x 7.2m (79m^2), and a two-storey 'barn' with a footprint of 95m^2 that will be used for storage.

[97] The garage will be hidden behind the main dwelling in most views. The barn will be to the west of the dwelling and can be seen to the right of it in Figure 9 above.

[98] Both accessory buildings will be clad in schist, with a dark grey Colorsteel roof. The garage will be less than 6.5m above existing ground level. The barn will have a maximum height of 7.8m on its front (north) elevation.

4.12 Cancellation of Existing Consent Notice

[99] It is proposed to cancel the existing consent notice in its entirety as it applies to proposed Lot 1.

[100] A new consent notice will be imposed, setting out the specific design controls, landscaping obligations, and servicing requirements for this proposal. The proposed consent notice conditions are set out in **Appendix 4**.

5.0 DISTRICT PLAN PROVISIONS

5.1 Proposed District Plan (PDP)

[101] All of the provisions of the PDP that are relevant to this proposal have been finalised and made operative. The ODP provisions have therefore not been considered.

[102] The site is located entirely within the Wakatipu Basin Rural Amenity Zone (WBRAZ) as shown in Figure 10 below.

Figure 10: *Zoning of the Site (blue = Wakatipu Basin Rural Amenity Zone; yellow = Millbrook Resort Zone; green = Nature Conservation Zone)*

Wakatipu Basin Rural Amenity Zone

[103] The purpose of the WBRAZ is described in Part 24.1 of the PDP as:

'to maintain or enhance the character and amenity of the Wakatipu Basin, while providing for rural living and other activities.

The Rural Amenity Zone is applied to areas of the Wakatipu Basin which have either reached, or are nearing a threshold where further landscape modification arising from additional residential subdivision, use and development (including buildings) is not likely to maintain the Wakatipu Basin's landscape character and visual amenity values. There are some areas within the Rural Amenity Zone that have a landscape capacity rating to absorb additional development of Moderate, Moderate-High or High. In those areas limited and carefully located and designed additional residential subdivision and development is provided for while maintaining or enhancing landscape character and visual amenity values.

…

While the Rural Amenity Zone does not contain Outstanding Natural Features or Landscapes, it is a distinctive and high amenity value landscape located adjacent to, or nearby to, Outstanding Natural Features and Landscapes. There are no specific setback rules for development adjacent to Outstanding Natural Features or Landscapes. However, all buildings (except small farm buildings) and subdivision require resource consent to ensure that inappropriate buildings and/or subdivision does not occur adjacent to those features and landscapes.

…

Integral to the management of the Rural Amenity Zone and Precinct is Schedule 24.8, which defines 24 Landscape Character Units. These Landscape Character Units are a tool that assists with the identification of the Basin's landscape character and visual amenity values that are to be maintained and enhanced.

Proposals in areas rated to have Very Low, Low or Moderate-Low development capacity are to be assessed against the landscape character and amenity values of the landscape character unit they are located within, as well as the Wakatipu Basin as a whole.

Proposals in areas rated to have Moderate development capacity are to be assessed against the landscape character and amenity values of the landscape character unit they are located within. Controls on the location, scale and visual effects of buildings are used to provide a design led response to the identified character and values.'

[104] The site is located within the Malaghans Valley (1) Landscape Character Unit (LCU). Refer to Figure 11 below. The landform pattern of this character unit is described as[ii]:

'Relatively open and gently-rolling valley framed by mountain range (Coronet Peak) to the north (outside the LCU), and steeply sloping hillslopes and escarpment faces that define the northern edges of the Fitzpatrick Basin, Dalefield and the Wharehuanui Hills, to the south (within the LCU).'

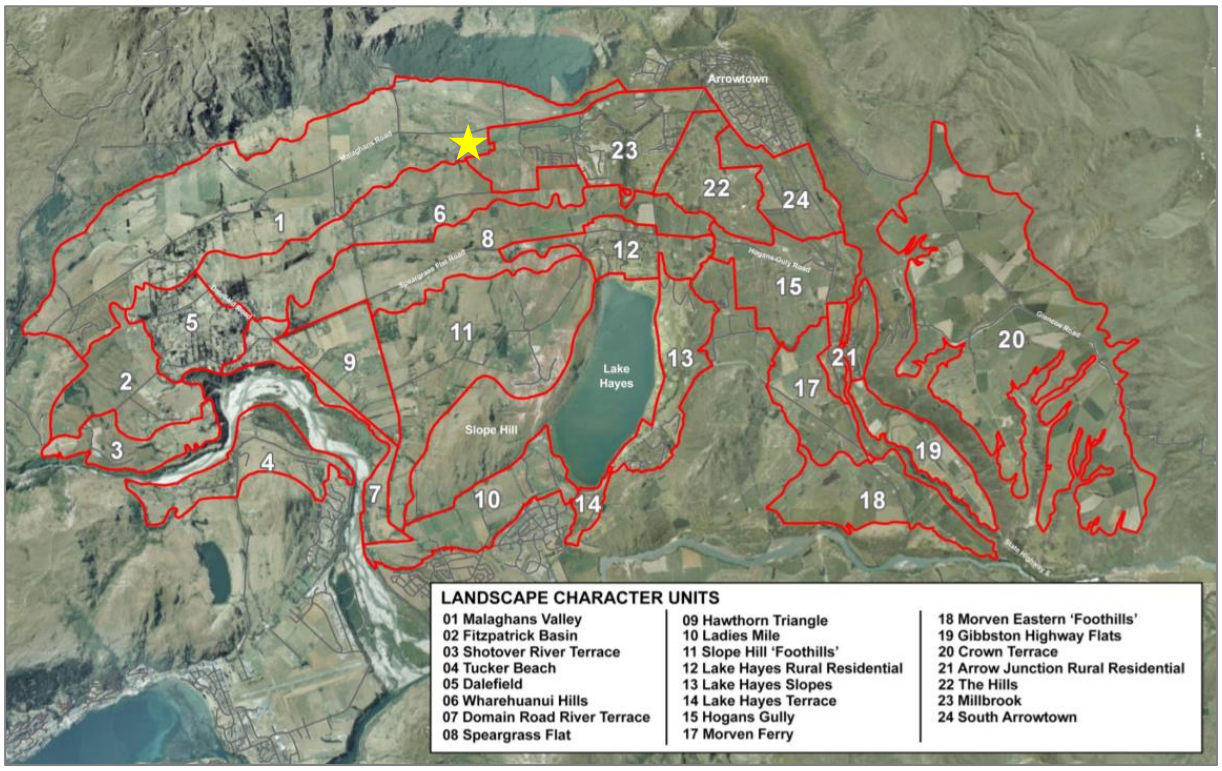


Figure 11: *Location of the Site within the Landscape Character Units (subject site identified with yellow star)*

[ii] PDP Schedule 24.8 Landscape Character Units

[105] Existing land use within this LCU is described as being predominantly pastoral, with pockets of rural residential. Potential landscape issues and constraints associated with additional development include:

'*the relatively open, exposed and 'undeveloped' nature of the unit, in addition to its importance as a scenic route, providing a buffer between Queenstown and Arrowtown, and as a transition to the ONL…*'

[106] Potential landscape opportunities and benefits associated with additional development include riparian restoration and the integration of walkways/cycleways.

[107] In general, the LCU is identified as having a *Very low* capacity to absorb additional development.

[108] Schedule 24.8 notes that:

'*Although the landscape character unit descriptions apply to specific areas within the Wakatipu Basin that share similar landscape or settlement pattern characteristics, they do not uniformly describe the landscape character of any unit. Across each unit there is likely to be variation in landform, development and vegetation patterns, which will require consideration and assessment through consent applications. The descriptions also acknowledge that there will be change, through future development and use, particularly within the Lifestyle Precinct*.'

[109] In the Landscape Assessment Report, ASLA has determined that the relevant landscape context for this site is a section of the Malaghans Road landscape corridor at its eastern end, bound by the Wharenui Hills to the south, the Coronet Forest reserve to the north, a pinch point on Malaghans Road to the east where a low glaciated rocky ridge meets Millbrook Resort, and the vicinity of Millers Flat (at the junction of Alan Reid Road) to the west.

[110] While the wider LCU includes large expanses of open pasture, ASLA describes the context landscape as having a more visually complex character, with a denser pattern of rural living and a variety of tree and hummocky ridge elements in a narrower valley form. ASLA is of the opinion that the landscape capacity of the site's landscape context is better described as *Low*.

5.2 Consents Required

[111] A full assessment of the proposal against the relevant rules in the PDP is attached as **Appendix 16**.

[112] The consents required under the rules in each chapter of the PDP are listed below. The rules relating to subdivision are listed first, as some of the land use rules rely on the subdivision having already been completed, for example those relating to the construction of a dwelling within an approved building platform.

Chapter 27 – Subdivision and Development

[113] Resource consent is sought for the following:

- A **restricted discretionary** activity pursuant to Rule 27.5.9 for the subdivision of land within the Wakatipu Basin Rural Amenity zone.

  Discretion is restricted to:

  a. *Location of building platforms and vehicle access;*
  b. *Subdivision design and lot layout including the location of boundaries, lot shape and dimensions (but excluding lot area);*
  c. *Location, scale and extent of landform modification, and retaining structures;*
  d. *Property access and roading;*

e. Esplanade provision;

f. Natural hazards;

g. Firefighting water supply and access;

h. Water supply;

i. Network utility services, energy supply and telecommunications;

j. Open space and recreation provision;

k. Opportunities for nature conservation values, and natural landscape enhancement;

l. Easements;

m. Vegetation, and proposed planting;

n. Fencing and gates;

o. Wastewater and stormwater management;

p. Connectivity of existing and proposed pedestrian networks, bridle paths, cycle networks;

q. Where the site is location in the Lake Hayes catchment as identified in Schedule 24.9, the contributions of, and methods adopted by, the proposal to improving water quality within the Lake Hayes Catchment.

- A **non-complying** activity pursuant to Rule 27.5.22 as the proposed subdivision will breach the minimum lot size prescribed for the WBRAZ of 80 hectares.

- A **restricted discretionary** activity pursuant to Rule 27.7.20 which states that the minimum setback of any building platform identified through subdivision from the bed of a wetland, river or lake shall be 30m in the WBRAZ. The building platform will be approximately 15m from the bed of Mill Creek at the closest point.

  Discretion is restricted to:

  a. Biodiversity and nature conservation values;

  b. Landscape and natural character;

  c. Landform modification and earthworks;

  d. Natural hazards;

  e. Esplanade provision.

- A **non-complying** activity pursuant to Rule 27.7.35.6 as it proposed that the applicant retain the option of providing a wireless telecommunications service to the new dwelling rather than installing a connection to the fibre network at the time of subdivision.

<u>Chapter 24 – Wakatipu Basin Rural Amenity Zone</u>

[114] Resource consent is required for the following:

- A **controlled** activity pursuant to Rule 24.4.5.1, for the construction of buildings for residential activity, that are located within a building platform approved by a resource consent and registered on the applicable record of title. This rule will apply to the construction of the proposed dwelling once the subdivision has been completed.

  Control is reserved over:

  a. Effects on landscape character associated with the bulk and external appearance of buildings;

  b. Access;

  c. Infrastructure;

d. Landform modification, exterior lighting, landscaping and planting (existing and proposed).

e. Where the site is located within the Lake Hayes Catchment as identified in Schedule 24.9, the contribution of, and methods adopted by, the proposal to improving water quality within the Lake Hayes Catchment.

- A **restricted discretionary** activity pursuant to Rule 24.4.6 for the construction of a building for residential activity not provided for by Rules 24.4.5 to27.4.7A. This rule applies to construction of the proposed bridge over Mill Creek, which is not provided for by Rules 24.4.5 to 27.4.7A as it will be undertaken prior to completion of the subdivision (and subsequent registration of the building platform).

  Discretion is restricted to:

  a. Effects on landscape character associated with the bulk and external appearance of buildings;

  b. Access;

  c. Infrastructure;

  d. Landform modification, exterior lighting, landscaping and planting (existing and proposed);

  e. Natural hazards.

  f. Where the site is located within the Lake Hayes Catchment as identified in Schedule 24.9, the contribution of, and methods adopted by, the proposal to improving water quality within the Lake Hayes Catchment.

  g. n/a

- A **non-complying** activity pursuant to Rule 24.4.7 for the construction of buildings for residential activity outside a building platform approved by a resource consent and registered on the applicable record of title on a site where there is such a building platform. This applies to the construction of the barn and detached garage outside the building platform, and the installation of water tanks outside the platform.

- A **restricted discretionary** activity consent pursuant to Rule 24.5.5 which states that where a residential building is constructed within a building platform under Rule 24.4.5, the ground floor of all buildings must not exceed 500m^2.

  Discretion is restricted to:

  a. Building scale and form;

  a. Visual prominence from both public places and private locations.

- A **restricted discretionary** activity pursuant to Rule 24.5.8.1 which states that the maximum height of buildings shall be 6.5m.

  For buildings with a height greater than 6.5m (but no more than 8m), discretion is restricted to:

  a. Visual prominence from both public places and private locations;

  b. External appearance including materials and colours;

  c. Landform modification/pla nting (existing and proposed).

- A **restricted discretionary** activity pursuant to Rule 24.5.12 which states that the minimum setback of any building from the bed of a wetland, river or lake shall be 30m. This rule does not apply to buildings constructed within an approved building platform but does apply to the proposed barn accessory building which will be 20m from the bed of Mill Creek.

Discretion is restricted to:

a. Biodiversity values;

b. Natural Hazards;

c. Visual and recreational amenity values;

d. Landscape and natural character;

e. Open space.

f. Where the site is located within the Lake Hayes Catchment as identified in Schedule 24.9, the contribution of, and methods adopted by, the proposal to improving water quality within the Lake Hayes Catchment.

Chapter 25 – Earthworks

[115] It is noted that under 25.3.2.5 of the PDP, earthworks associated with subdivision under Chapter 27 are exempt from the following rules:

- 25.2 Maximum Volume;
- 25.5.15 Cut Standard;
- 25.5.16 Fill Standard; and
- 25.5.21 Transport of Cleanfill.

[116] The only earthworks associated with the subdivision are those to form the driveway and construct the bridge. The earthworks to excavate the building platform area will require separate land use consent as they will be undertaken once the subdivision has been completed.

[117] Based on the above, resource consent is required for the following:

- A **restricted discretionary** activity under Rule 25.4.2 to breach the maximum volume of 400m^3 in the WBRAZ specified under 25.5.4.
- A **restricted discretionary** activity to breach Rule 25.5.11.1 which specifies that earthworks over a contiguous area of land shall not exceed 2,500m^2 where the slope is 10 degrees or greater.
- A **restricted discretionary** activity to breach Rule 25.5.15 which specifies that the maximum depth of cut shall be 2.4m. A maximum cut depth of 3.8m is proposed.
- A **restricted discretionary** activity to breach Rule 25.5.19.1 which states that earthworks within 10m of the bed of any water body shall not exceed 5m^3 in total volume, within any consecutive 12-month period.
- A **restricted discretionary** activity to breach Rule 25.5.21 which states that no more than 300m^3 of cleanfill shall be transported to or from an area of earthworks. Excess cut material will be taken off the site.

[118] The matters of discretion relating to the above earthworks rules are listed under 25.7.1:

- *Soil erosion, generation and run-off of sediment*
- *Landscape and visual amenity values*
- *Effects on infrastructure, adjacent sites and public roads*
- *Land stability*
- *Effects on water bodies, ecosystem services and biodiversity*
- *Cultural, heritage and archaeological sites*

- *Nuisance effects*
- *Natural Hazards*
- *Functional aspects and positive effects*

5.3 Other Consenting Matters

Resource Management Act 1991

[119] Pursuant to section 221(3)(a), the Applicant requests the cancellation of Consent Notice 11169054.6 in its entirety as it applies to proposed Lot 1.

Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011

[120] The Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (the NES) apply to activities if the land is covered by the NES, i.e. if any activity or industry on the Hazardous Activities and Industries List (HAIL) is being undertaken, has been undertaken, or is more likely than not to have been undertaken on the piece of land.

[121] A combined Preliminary/Detailed Site Investigation has been undertaken by WSP and is attached as **Appendix 17**.

[122] The western part of the site is identified on the ORC's Listed Land Use Register as having been used for HAIL activities: livestock dip or spray race operations, and storage of fuel tanks. Anecdotal evidence also suggests that part of the site has been used for soil screening activities.

[123] WSP undertook a Preliminary Site Investigation (PSI) which confirmed that HAIL activities may have occurred on the site. A potential piece of land was delineated (within proposed Lot 2 of this application) and the need for a Detailed Site Investigation (DSI) was triggered due to subdivision and ground disturbance of a possible HAIL site.

[124] The DSI included soil sampling from within the piece of land comprising the western part of the site. Samples were analysed for the presence of contaminants in accordance with the relevant Ministry for the Environment requirements. The results concluded that none of the samples revealed contaminants in sufficient quantities to post a risk to human health associated with the proposed residential use of the land.

[125] In summary, the proposed subdivision and associated soil disturbance are determined to be permitted activities in terms of the NES.

Resource Management (National Environmental Standards for Freshwater) Regulations 2020

[126] The Resource Management (National Environmental Standards for Freshwater) Regulations 2020 (the NES-FW) came into force on 3 September 2020. The NES-FW includes rules for activities relating to natural inland wetlands that are relevant to this proposal.

[127] Simon Beale, an ecologist, was commissioned by the Applicant to identify the extent of 'natural inland wetlands' as defined in the National Policy Statement for Freshwater Management (NPS-FM 2020, amended 2023) within the site. A copy of his report is attached as **Appendix 18**, which includes a map of the identified wetlands.

[128] The proposal has been designed to ensure that no earthworks will occur within 10m of a natural wetland, which would otherwise trigger consent under Regulation 54. The proposal also does not propose the discharge of water into water within a 100m setback of any wetland, where the discharge would enter the wetland[iii].

[129] In summary, consent is not required under the NES-FW.

Regional Plan: Water

[130] Consents will be required under the Regional Plan: Water for the following activities:

- disposal of wastewater to land within the Lake Hayes Catchment; and
- earthworks associated with residential development exceeding 2,500m^2 in area and within 10m of a water body.

[131] The proposed rockfall bund may require ORC consent for defence against water if it is also used to divert overland flows around the building platform.

[132] The erection or placement of a single span bridge is a permitted activity, subject to certain standards, which the proposed bridge is likely to meet. The bridge abutments will be constructed outside of the bed or banks of Mill Creek.

[133] Consents from ORC have not yet been applied for.

National Policy Statement for Highly Productive Land 2022

[134] The National Policy Statement for Highly Productive Land (NPS-HPL) came into force on 17 October 2022, with most provisions having immediate effect, placing restrictions on rezoning, subdivision and land-use proposals on land that meets the transitional definition of Highly Productive Land (Land Use Capability (LUC) classes 1–3, with some exceptions).

[135] Clause 3.5(7) of the NPS-HPL sets out what is to be treated as highly productive land before the required maps are included in an operative regional policy statement:

> ***3.5 Identifying highly productive land in regional policy statements and district plans***
>
> *(7) Until a regional policy statement containing maps of highly productive land in the region is operative, each relevant territorial authority and consent authority must apply this National Policy Statement as if references to highly productive land were references to land that, at the commencement date:*
>
> *(a) is*
>
> *(i) zoned general rural or rural production; and*
>
> *(ii) LUC 1, 2, or 3 land; but*
>
> *(b) is not:*
>
> *(i) identified for future urban development; or*
>
> *(ii) subject to a Council initiated, or an adopted, notified plan change to rezone it from general rural or rural production to urban or rural lifestyle.*

[iii] Regulation 54(d) of the NES-FW

[136] It is unclear whether the NPS-HPL is actually relevant to the WBRAZ, as it is not a general rural or rural production zone. However, the site is identified as LUC 4[iv], so the NPS-HPL does not apply to the land in any case.

5.4 Overall Activity Status

[137] The overall activity status of the application is **non-complying**.

6.0 ASSESSMENT OF ENVIRONMENTAL EFFECTS

6.1 Permitted Baseline

[138] Under section 104(2) of the RMA, Council may disregard an adverse effect of a proposed activity on the environment if a plan permits an activity with that effect. In this case, there is no relevant 'permitted baseline' as all subdivision and construction of residential buildings requires resource consent in the WBRAZ.

6.2 Receiving Environment

[139] The receiving environment is the environment on which the proposal might have effects. This includes the existing environment, and the reasonably foreseeable future environment, which includes modifications to the existing environment due to permitted activities and approved but as yet unimplemented consents.

[140] The existing environment comprises Malaghans Road; existing rural, recreational and rural living activities within the surrounding WBRAZ; commercial and recreation activities on Coronet Peak from which the site is visible; and activities within the neighbouring Millbrook Resort Zone.

[141] The reasonably foreseeable future environment includes the undeveloped residential building platform on Lot 3 DP 521688 (which adjoins the western boundary of the site) and the approved but unregistered building platform on Lot 1 DP 24866 (which adjoins the eastern boundary of the site). It also includes the riparian restoration works along Mill Creek approved by ORC to be undertaken by Mana Tāhuna. It does not include effects on users of the new trail through the site, as under the PDP these effects are not required to be taken into account.

6.3 Positive Effects

[142] The proposal will provide an additional rural living opportunity in the WBRAZ, and will have positive benefits to the Applicant by allowing the construction of a dwelling and associated accessory buildings with high residential amenity values.

[143] According to ASLA, the proposal will have significant ecological benefits including the removal of crack willows (an invasive pest species) from Mill Creek, the riparian restoration of Mill Creek, and the ongoing management of the riparian area. It is acknowledged that the works along Mill Creek may be undertaken in any case by Mana Tāhuna, however there is no requirement for them to be completed and no obligation for Mana Tāhuna to maintain the riparian area on an ongoing basis as is proposed in this application. ASLA

[iv] New Zealand Land Resource Inventory Mapping on the Manaaki Whenua Landcare Research website

notes that the long term maintenance of the riparian corridors is as important as establishing them. In addition, native wetland planting is proposed to replace the rank grass along the existing drain next to the driveway.

[144] The proposal will also provide for the long-term ecological restoration of the northern face of the Wharehuanui Hills within the site, to replace the existing woody weed cover with native grey shrubland over time.

6.4 Landscape and Visual Effects

[145] ASLA has prepared a Landscape Assessment Report (attached as **Appendix 8**), which I have relied on for the purposes of this Assessment of Environmental Effects (AEE). The following assessment in terms of Landscape and Visual Effects provides a summary of the ASLA report.

[146] ASLA recognises that there is limited capacity for further residential development within the WBRAZ, without significantly degrading rural landscape character and associated values. New development requires careful consideration with regard to its location, and the effects of earthworks, access and planting. The capacity of the Malaghan's Valley LCU is scheduled as 'Very Low' overall, but in ASLA's opinion it is better described as 'Low' at the eastern end where the site is located.

Visibility of Development

[147] A dwelling within the proposed building platform will be visible from a stretch of Malaghans Road approximately 400m long. It will be seen across the open paddock adjoining the road, at the base of the rocky escarpment. While the existing willows currently partly screen the building platform, they are not relied on as a form of visual mitigation, as the willows are an invasive species and are planned to be removed as part of approved restoration works by Mana Tāhuna along Mill Creek. Additional native tree planting is proposed along the creek, along with large exotic trees on the southern side, to provide visual screening of future development.

[148] If construction of a dwelling commences within two to three years of the subdivision being completed, it is likely to be highly visible in views from Malaghans Road and other elevated viewpoints until the proposed planting matures. ASLA assesses that visibility would be moderate after seven to ten years, and low in the longer term.

[149] Although the development would be highly visible initially, it would not be visually prominent due to its location at the base of the dominant escarpment feature with open pasture and Mill Creek in the foreground, and its recessive appearance and relatively low profile.

[150] In wider views, such as from the face of Coronet Peak, the dwelling will be a small element seen amongst other built form in the same landscape.

Visual Amenity Effects

[151] The proposal will result in the introduction of built form to the eastern part of the site, as well as a new driveway and extensive planting. Willow removal and native riparian planting are planned to occur along Mill Creek through the site regardless of this application, although the application provides certainty that these works will be completed within proposed Lot 1.

[152] The key view from Malaghans Road across the open paddock to the escarpment will be retained largely as it is. Proposed planting, including the replacement of rank grass to sedgeland along the drain, riparian vegetation along Mill Creek, and the transition from woody weeds to native species on the escarpment, will enhance the visual amenity and naturalness of these features. The exotic tree planting at the northern

end of the driveway will also improve visual amenity by partially blocking views of the neighbouring site to the west.

[153] While visible (initially highly visible) from Malaghans Road and elevated public viewpoints, the location of the proposed building platform and the specific design of the proposed dwelling will ensure it is not visually prominent. Over time, the dwelling will become less visible as planting matures.

[154] The new driveway will be seen in conjunction with the existing driveway and the recently constructed trail, which will have a cumulative domesticating effect.

[155] The elongated shape of the building platform reflects the narrow space between the creek and the base of the escarpment where it is located. The scale and design of the building is also complementary to the character of built form within Millbrook, which neighbours the site to the east.

[156] Overall, ASLA considers that the proposal will retain the visual amenity values associated with the scenic corridor of Malaghans Road. Views across the open part of the site to the rocky escarpment will be retained. In longer, elevated views, development will appear consistent with the existing landscape pattern. Proposed planting will have positive visual amenity effects in the medium to longer term.

Landscape Character Effects

[157] The proposed subdivision and residential development will not have adverse effects on individual landforms or waterbodies, or the overall topographic structure and pattern seen in public views. In particular, the distinctive landform of the rocky escarpment of the Wharehuanui Hills will not be affected. Existing vegetation patterns will be retained and enhanced.

[158] The proposal will both diminish existing natural character (through the introduction of an additional residential unit and associated domestic activities) and improve it (through restoration planting). ASLA considers that the overall outcome in the medium to long term will be to slightly improve the natural character of the site. Over time, with proper management, the escarpment could achieve a high degree of natural character.

[159] The openness of the site will be reduced by the proposed residential development. The site is one of the larger open pastoral spaces remaining in the context landscape at the eastern end of the LCU. Its openness has recently been reduced somewhat by the construction of the trail across it. The location of the building platform on the far side of Mill Creek will retain a large area of open paddock in the foreground of views from Malaghans Road, mitigating effects on openness, and maintaining spaciousness and rural character. However, the proposed driveway will have an adverse effect by adding a domestic element across this open part of the site. The effect of the driveway is mitigated somewhat by its alignment around the existing landform, the sharing of the existing access point onto Malaghans Road, and the proposed planting at the northern end of the driveway which will screen neighbouring development.

[160] The development will be consistent with the existing pattern of land use at the eastern end of the LCU, which generally comprises smaller rural living properties. The form, scale and appearance of the proposed dwelling are appropriate for this particular setting within the rural landscape, and will be complementary to the character of the adjoining Millbrook Resort.

[161] Overall, the proposal will be in keeping with the landscape character of the context landscape and that of the wider LCU. It will not result in adverse effects that are more than minor.

6.5 Subdivision Effects

[162] The following assessment takes into account the matters of discretion for subdivision in the WBRAZ (as set out in Rule 27.5.9) and for building platforms within 30m of a river in the WBRAZ (as set out in Rule 27.7.20), as well as the assessment matters under 27.9.3.3, except for effects relating to landscape character and visual amenity values which have already been addressed under 6.4 above and effects relating to water quality in the Lake Hayes Catchment which are addressed under 6.8 below.

Subdivision Design and Lot Layout

[163] It is proposed to subdivide the site to create one additional lot with a residential building platform. The subdivision will not result in new visible property boundaries as the proposed boundary between the two lots will follow the existing fenceline to the east of the existing driveway and then continue up the face of the escarpment. The subdivision will not result in new fencelines as a condition is proposed to restrict any fencing on the escarpment. The open paddock area to the east of the existing driveway will be contained entirely within proposed Lot 1.

[164] The proposed building platform is located between the southern side of Mill Creek and the base of the rocky northern face of the Wharehuanui Hills. This location maintains the existing open pastoral space between Malaghans Road and the creek.

[165] Overall, the subdivision design will provide each lot with a suitable land area for rural living activities, consistent with the pattern of existing development in the area.

Landform Modification

[166] The proposed subdivision will result in minimal modification to the existing landform. The only earthworks are those to construct a driveway, which has been designed to follow existing contours. The proposal does not rely on mounding to screen future buildings or the access.

[167] Future development on the proposed building platform created by the subdivision will require the construction of an earth bund on the lower part of the escarpment for rockfall protection. Such a bund can be designed to follow the existing contour of the slope, and can be planted with native vegetation, to minimise any visual effects.

[168] Construction of a future dwelling on the building platform will also require earthworks at the toe of the escarpment to excavate a level building area, above the flood level for Mill Creek. This modification to the landform will be hidden behind the completed dwelling.

Access

[169] A new access is proposed to the building platform on Lot 1. It will share the existing vehicle crossing onto Malaghans Road with the existing driveway (to the platform on Lot 2), branching off after approximately 20m into the open paddock. Its alignment follows the existing topography to avoid any large cuts or fills.

[170] A new vehicle bridge will be required to provide access across the creek to the building platform; this will be constructed as part of the subdivision works and will replace an existing timber stock bridge. The new bridge will be designed so that its footings are outside the creek bed or banks, to minimise the impact on the waterbody.

[171] A new public walking and cycle trail has recently been constructed through the site along the northern side of Mill Creek. The trail will link Arthurs Point with Arrowtown. The proposed driveway will cross the trail. This is a common situation and is not expected to result in any safety issues, except when

construction activities are occurring. Temporary traffic management measures can be implemented to ensure the safety of pedestrians and cyclists.

Natural Hazards

[172] Geosolve has assessed the potential risk of natural hazards to the proposed building platform, including liquefaction, flooding of Mill Creek, overland flows, and rockfall. Geosolve concludes that the site is suitable for the proposed development from a geotechnical perspective, provided the recommendations of their report are followed. I have relied on Geosolve's assessment for the purposes of this AEE.

[173] The proposed building platform is not subject to liquefaction, due to schist bedrock at relatively shallow depth.

[174] The proposed floor level the dwelling will provide adequate freeboard above the calculated level of inundation of the building platform area in a 1% AEP rainfall event.

[175] Overland flows originating from the catchment on the slopes to the south of the platform can be captured in diversion channels/drains and diverted around the proposed buildings.

[176] An earth bund, approximately 1.5m high, will need to be constructed at the top of the batter slope behind the dwelling to provide protection from potential rockfall from the schist bluffs on the escarpment.

[177] In summary, natural hazard risks to the proposed building platform can be mitigated using standard engineering solutions. Any adverse effects will be minor. The proposal will not exacerbate any natural hazard risk to any other sites.

Infrastructure and Services

[178] The site contains an existing water bore which will be used to service the proposed building platform. Pump tests undertaken for the previous subdivision confirm that the bore has sufficient capacity to supply an additional dwelling. Water will be piped to tanks behind the building platform which will provide storage for domestic and fire fighting use. In summary, an adequate and reliable water supply can be provided to the proposed new lot.

[179] Onsite wastewater treatment and disposal systems to service future development on the lots will be required to be designed and installed in accordance with the relevant standards, and will be checked as part of the building consent process. A consent notice condition is proposed for Lot 1, to ensure that future owners are aware of these requirements. As the site is located within the Lake Hayes Catchment, consent will also be required from ORC to discharge wastewater to land.

[180] RML has designed an onsite wastewater treatment and disposal system for the proposed new dwelling on Lot 1. This includes an assessment of the specific ground conditions and site constraints, such as the sensitive receptor of Mill Creek, harsh winter conditions, and the waterlogging of topsoil during wet periods. RML has chosen a secondary treatment system with a land application area comprising pressure compensating dripper irrigation as the most effective and practical option for this site. To avoid issues associated with waterlogging, the land application area will be located in an elevated position near the northern boundary of the site. This also maximises the setback from Mill Creek. A very conservative irrigation rate will be applied, and the dripper lines will be widely spaced. The proposed design will ensure that wastewater can be safely disposed of within the site, without adversely affecting water quality or ecological values.

[181] Disposal of wastewater from a dwelling on the existing building platform was assessed under the previous subdivision consent (RM161092) and did not rely on a disposal area being constructed outside the

boundaries of proposed Lot 2. The proposed subdivision layout and lot sizes provide adequate space for a suitable onsite wastewater disposal area within each lot.

[182] Stormwater will be disposed of to ground within the site. Geosolve has undertaken soakage tests in the vicinity of the building platform which confirm that the ground conditions are suitable for this method of disposal.

[183] Network service providers have confirmed that reticulated power and telecommunications connections can be made to proposed Lot 1. These connections will be made underground. Lot 2 has existing connections installed under the previous subdivision.

[184] In summary, the proposed new lot can be serviced in accordance with relevant standards, without resulting in adverse effects on the environment.

Easements

[185] A right of way easement is proposed over the section of shared driveway at the Malaghans Road end to ensure legal access is maintained to both lots, as shown on the proposed subdivision scheme plan.

[186] An easement will be required over proposed Lot 2 in favour of Lot 1 for the supply of water from the existing bore. This is not yet shown on the scheme plan as the alignment of the new water connection has not yet been determined. The easement will be checked as part of the survey plan approval process under s223.

[187] In summary, there will be no adverse effects relating to easements.

Nature Conservation and Cultural Values

[188] The proposal provides for the ecological restoration and enhancement of Mill Creek and the northern face of the Wharehuanui Hills within the site, which is a significant positive effect.

[189] The restoration of the riparian area of Mill Creek is proposed to be undertaken by Mana Tāhuna regardless of this application, although there is no guarantee that the approved works will be completed. The overarching goal is to improve water quality in the Lake Hayes Catchment. It is proposed to complete the willow removal and planting of the riparian area with native species within the site prior to subdivision, in collaboration with Mana Tāhuna. The crack willows are an invasive exotic species. In addition, a consent notice condition is proposed requiring future owners to manage the riparian area on an ongoing basis, by removing invasive weeds.

[190] A consent notice condition is also proposed regarding the ongoing ecological restoration of the northern face of the Wharehuanui Hills within the site, to replace the existing woody weed cover with native grey shrubland over time.

[191] The site does not contain any known areas of archaeological, cultural or spiritual significance that may be affected by the proposal.

Esplanade Provision and Connectivity of Trail Networks

[192] There is no requirement to provide an esplanade strip or reserve as both of the lots being created are greater than 4ha in area[v]. Under RM171151 (variation to the previous subdivision consent RM161092) it was agreed that a public right of way easement be provided through the site along the northern side of Mill Creek to facilitate the construction of a trail. The trail has now been constructed by the Queenstown Trails Trust. The trail provides public access along Mill Creek, through the site and connecting to neighbouring land. The existing trail has a similar benefit to an esplanade strip or reserve within the site (although an esplanade is on both sides of a waterbody). Any adverse effects associated with the lack of esplanade provision in the current application will therefore be less than minor.

6.6 Buildings

Dwelling

[193] Following subdivision, it is proposed to construct a dwelling of a specific design within the approved building platform.

[194] ASLA considers that the design and appearance of the proposed dwelling will confer a high level of visual amenity in this particular rural setting. The long form of the building is sensitive to the linear nature of the space where it will be located. Although large, the building will appear to be comprised of several interconnected smaller units, which will prevent a sense of bulk. The proposed natural cladding materials will ensure that the building is visually recessive and will give it the appearance of a farmstead, with a large area of open paddock in the foreground, maintaining existing rural character.

[195] The height of the majority of the dwelling is less than the permitted maximum height of 6.5m in the WBRAZ. As the ground level slopes slightly across the building platform, the front of the building has a greater height above existing ground level than the rear. The maximum building level will be RL 417m, which is 7m above the finished floor level of RL 410m. The floor level has been set to provide freeboard above the calculated flood level of RL 409.2m for Mill Creek. The only parts of the building that will exceed a height of 6.5m above finished floor level are the three chimneys and the top 0.5m of the north-facing gable roof form over the pool area. Overall, the building will have a long, low appearance sitting at the base of the escarpment. The proposed height infringements add articulation to the northern elevation facing Malaghans Road rather than making the building appear bulky or dominant in the surrounding landscape.

[196] Overall, the form, scale and external appearance of the proposed dwelling will not have adverse effects on the environment which are more than minor.

Accessory Buildings

[197] It is proposed to construct two accessory buildings outside of the building platform established at the time of subdivision. These buildings will only be constructed in conjunction with the proposed specific dwelling design.

[198] The proposed detached garage will be set into the base of the slope behind the dwelling, and will be hidden behind the dwelling in views from Malaghans Road. It will be visible, at a distance, from elevated

[v] S230 of the RMA

viewpoints. Its low height, and simple design with natural cladding materials will give it the appearance of a modest farm building.

[199] The proposed two-storey barn will be visible from Malaghans Road. It is the only part of the development which will be two storeys high, and will have a maximum height of 7.8m above existing ground level. Its location to the west of the building platform will spread out the extent of built form seen along the toe of the escarpment.

[200] While the accessory buildings, in addition to the main dwelling, will result in a large amount of built form ASLA considers that the scale of development is appropriate for the site as it will reflect a farmstead node in the rural landscape. The designs of the accessory buildings are complementary to the main dwelling and the rural character of the site, in terms of their forms and cladding materials. For these reasons, I consider that, overall, the barn will have minor adverse effects , and the garage less than minor adverse effects, on visual amenity values and landscape character.

Bridge

[201] A new bridge will be constructed over Mill Creek to provide vehicle access to the building platform. Structural design of the bridge has not yet been undertaken, but to carry vehicle loads it is assumed that it will need to be constructed out of steel and/or concrete. It will have timber cladding to give it a more rustic, rural appearance. It is proposed that the bridge footings will be constructed outside of the bed or banks of Mill Creek, to avoid adverse effects on the waterbody.

[202] In views from Malaghans Road, and wider viewpoints, the bridge will be seen amongst the proposed riparian vegetation along Mill Creek on the edge of the node of development comprising the building platform and associated domestic curtilage area. The timber cladding, and the bridge's low height, will ensure it is not visually dominant.

[203] Overall, I consider that the bridge will result in less than minor visual effects and effects on Mill Creek.

6.7 Earthworks

[204] Earthworks are assessed with regard to the matters of discretion listed under 25.7.1 and the assessment matters under 25.8 in the PDP.

Soil Erosion and Sediment Run-off

[205] An EMP, including an Erosion and Sediment Control Plan (ESCP), has been prepared by Enviroscope, a specialist environmental consultancy with significant experience in preparing such plans.

[206] The EMP and ESCP take into account the proposed staging and scale of the earthworks, and their proximity of Mill Creek. The earthworks methodology set out in the EMP, and the site mitigation measures proposed for the ESCP, will ensure that any adverse effects on water quality as a result of the earthworks are minimised.

[207] The EMP also includes a monitoring and inspection regime to ensure that the mitigation measures continue to operate effectively throughout the duration of the project.

[208] For these reasons, provided that the earthworks are carried out in accordance with the EMP and ESCP, I consider that any adverse effects with regard to soil erosion or sediment run-off will be less than minor.

Landscape and Visual Amenity Values

[209] ASLA has assessed the effects of the proposed earthworks against the assessment matters relating to landscape and visual amenity values. I have relied on this assessment in the summary below.

[210] The proposed earthworks will not alter the existing topography of the site in any meaningful way. The completed dwelling will occupy the excavated area at the base of the escarpment, and the rockfall bund will be planted out in a mixture of grey shrubland and larger species, so the earthworks will only be temporarily apparent in views towards the site. ASLA considers that the landscape of the site has the capacity to absorb the proposed earthworks.

[211] It is anticipated that landscaping will be completed quickly, for private amenity reasons as well as to stabilise and remediate earthworked areas.

[212] The proposed driveway will have a cumulative effect together with the existing driveway and the recently constructed trail. The driveway will follow the existing contours through the paddock so will not result in unsympathetic alteration or scarring of the landform, but it will have a detracting effect on the open and natural character of the site. The adverse effect could be reduced by the lots sharing a longer length of driveway.

[213] Overall, I consider that any adverse effects of the earthworks on landscape and visual amenity values will be, at most, minor.

Effects on Infrastructure, Adjacent Sites and Roads

[214] The proposed earthworks will not affect stormwater flows on, or onto, neighbouring sites. The earthworks will not be undertaken in close proximity to any site boundaries, and so will not affect the stability of any neighbouring land.

[215] The earthworks will not affect any existing infrastructure.

[216] Excess cut material will be removed from the site by truck. The volume of material to be disposed of will not result in a significant number of truck movements that cannot be accommodated on Malaghans Road. A traffic management plan will be implemented to safely manage truck movements, which will mitigate any temporary adverse effect on the road network.

Land Stability

[217] The earthworks will be undertaken in accordance with the recommendations of the Geotechnical and Flooding Assessment Report to avoid any adverse effects in terms of land stability.

Effects on Waterbodies, Ecosystems and Biodiversity

[218] The proposed sediment control measures have been designed by Enviroscope to ensure that sediment run-off does not leave the site or enter Mill Creek or any other waterbodies.

[219] Given the location of the excavation and depth of cut proposed, it is not anticipated that there will be any effects on groundwater.

[220] The proposed earthworks will not adversely affect the natural character, ecosystem services or biodiversity of Mill Creek or any wetlands within the site, provided that the EMP and ESCP are properly implemented. The earthworks have been designed to maintain a setback of at least 10m from any identified natural wetlands, and will not directly affect Mill Creek except where the driveway crosses the

creek via a new bridge. The bridge will be designed so that its footings are outside of the creek banks or bed to minimise adverse effects.

[221] Overall, I assess that adverse effects with regard to waterbodies, ecosystem services and biodiversity will be less than minor.

Cultural, Heritage and Archaeological Values

[222] The site does not contain any known cultural, heritage or archaeological sites.

[223] Although the site is not identified as being within a wāhi tūpuna area, consideration of Manawhenua values is still relevant given that that the proposal involves earthworks in close proximity to a waterbody (Mill Creek). The EMP outlines how water quality will be maintained and managed during the earthworks, to ensure that Manawhenua values and interests are protected.

[224] As set out in the EMP, the Applicant will follow the Accidental Discovery Protocol in Schedule 25.10 of the PDP if any kōiwi or archaeological materials are encountered during earthworks.

[225] In summary, provided that the EMP and ESCP are properly implemented, any adverse effects of the earthworks on cultural, heritage or archaeological values will be less than minor.

Nuisance Effects

[226] Earthworks can potentially generate nuisance effects associated with dust, noise and vibration. Given the location of the proposed driveway and building platform within the site, and the generous setback to neighbouring dwellings, it is not anticipated that nuisance effects will be an issue.

[227] Earthworks and construction activities will be undertaken in accordance with the relevant construction noise standards. Although rock breaking will be required, Geosolve does not consider that noise limits will be exceeded due to the distance to the closest neighbour.

[228] For these reasons, I consider that any nuisance effects are likely to be less than minor.

Natural Hazards

[229] The proposed earthworks include a rockfall protection bund at the rear of the dwelling, that will also assist in diverting overland flows around the buildings.

[230] The earthworks to prepare the building platform for the construction of the dwelling have been designed to establish a finished floor level of RL 410m, which provides more than 0.8m freeboard above the calculated flood level of RL 409.14m for Mill Creek.

[231] The proposed earthworks will not increase the risk associated with any natural hazards that may affect the site.

[232] In summary, the earthworks will not have any adverse effects with regard to natural hazards. The earthworks have been designed to mitigate existing risks associated with potential rockfall and flooding.

6.8 Water Quality in the Lake Hayes Catchment

Water Quality in the Lake Hayes Catchment

[233] The PDP includes specific assessment matters relating to sites located in the Lake Hayes Catchment. The assessment matters relating to the effects of earthworks on water quality in the catchment have been addressed under 6.7 above.

[234] Mill Creek flows through the site. As discussed previously in this report, the proposal includes willow removal and riparian planting along the creek in collaboration with Mana Tāhuna, and the ongoing management of the riparian area by future owners of the lots, which will contribute to the improvement and maintenance of water quality in the catchment.

[235] The proposed onsite wastewater treatment and disposal system for the new dwelling has been designed to minimise adverse effects on water quality, by incorporating a secondary treatment system, locating the disposal area to maximise the setback from Mill Creek, and using a conservative application rate for the dripper irrigation system. The design considers the cumulative effect of nitrates from wastewater disposal to land on groundwater quality. By planting the disposal field with perennial ryegrass which is cut and removed annually, nitrogen can be removed from the site by plant uptake. This will result in a total nitrogen deficit, ensuring that onsite wastewater disposal does not contribute to increased concentrations of nitrogen in the catchment.

[236] Overall, I consider that the proposal will contribute to water quality improvement in the catchment in a way that is commensurate with the scale of proposed development, i.e. one additional rural living lot.

6.9 Cancellation of Consent Notice

[237] Consent Notice will be cancelled as it relates to proposed Lot 1. It will be superseded by a new consent notice registered as part of the subdivision, with specific controls relating to future development on the proposed building platform. The existing consent notice will continue to apply to the existing building platform on Lot 2.

[238] Cancellation of the consent notice will not result in adverse effects.

6.10 Identification of Affected Persons

[239] The applicant has not undertaken any consultation or sought any written approvals as public notification of the application has been requested, allowing any interested person to make a submission on this proposal.

[240] The immediate neighbours on the south side of Malaghans Road, and the closest neighbour on the northern side of Malaghans Road, will potentially be affected by the establishment of a second residential unit within the site and associated impacts on existing rural amenity values. These persons are summarised in the table below, with the locations of their properties marked on the aerial in Figure 12 below.

[241] Given that the location of the proposed building platform is well set back from any adjoining properties, there will be limited effects in terms of increased noise or loss of privacy. The building platform will have limited effects on outlook, as it is located to the south of neighbouring dwellings and building platforms. Buildings are orientated to the north for sun and views. It is also noted that all of the neighbouring properties on the southern side of Malaghans Road are smaller in land area that either of the lots that will be created by the proposed subdivision, and Section 13 SO 457201 has an area of only 4.9ha. For these reasons, I consider that the level of adverse effect on the adjoining neighbours relating to the increase in residential density is, at most, minor.

Map Reference	Legal Description	Name
1	Lot 1 DP 24866	Terence Young
2	Lot 1 DP 25009	Desmond John McTaggart
3	Lot 4 DP 521688	Jennifer Margaret Dennison
4	Lot 3 DP 521688	Emma Monique Norton and Neville Craig Brinsdon
5	Section 13 SO 457201	Jennifer Margaret Rose-Innes

Figure 12: *Map of Affected Persons*

[242] Manawhenua (Te Rūnanga o Moeraki, Kāti Huirapa Rūnaka ki Puketeraki, Te Rūnanga o Ōtākou, Hokonui Rūnanga, Te Rūnanga o Oraka-Aparima, Te Rūnanga o Awarua, and Waihopai Rūnaka) will potentially be affected by the location of the building platform within the 30m setback from Mill Creek, and associated activities including earthworks and domestic wastewater disposal. I note the following with regard to effects on Manawhenua:

- Overall, despite the location of the building platform, the natural character and ecological values of the creek will be enhanced due to the proposed riparian restoration;
- No works are proposed within the creek itself, except those associated with riparian restoration works which will be undertaken in collaboration with Mana Tāhuna under their existing ORC consent;

- A comprehensive EMP has been prepared which sets out the mitigation measures and methodology that will be implemented to minimise adverse effects of the earthworks on water quality;
- The on-site domestic wastewater system will include a secondary treatment system and a land application area adjacent to Malaghans Road to maximise the setback from waterbodies and depth to groundwater.

6.11 Summary of Effects

[243] The key issues for this proposal are the proposed density of residential development within the Malaghans Valley LCU of the WBRAZ , and the visibility of a future dwelling on the proposed new lot and subsequent effects on visual amenity values and landscape character.

[244] ASLA has assessed the proposal and concludes that it is unlikely to result in significant adverse effects on landscape character and associated values including visual amenity. The context landscape at the eastern end of the wider LCU has the capacity to absorb this development, due to the specific location of the proposed building platform between Mill Creek and the Wharehuanui Hills escarpment.

[245] Overall, I assess that the proposal will have minor adverse effects on the environment. Effects will be greatest in the short to medium term while the dwelling is more visible, and will reduce over time as vegetation matures and integrates the development with the surrounding landscape.

[246] Positive effects include the restoration of the riparian margins of Mill Creek and its tributary, which will enhance ecological values as well as contribute to improving water quality in the Lake Hayes Catchment.

7.0 OBJECTIVES AND POLICY ASSESSMENT

[247] All appeals on the relevant objectives and policies of the PDP have been resolved and are beyond contention. Therefore, the ODP objectives and policies have not been considered.

7.1 Proposed District Plan

[248] The relevant provisions are contained within Chapter 3 – Strategic Direction; Chapter 6 – Landscapes, Chapter 24 – Wakatipu Basin, Chapter 25 – Earthworks and Chapter 27 – Subdivision and Development. These provisions are assessed in the table below.

Chapter 3 – Strategic Direction	
Strategic Objective 3.2.4	**The distinctive natural environments and ecosystems of the District are protected.**
Strategic Objective 3.2.4.1	Development and land uses that sustain or enhance the life-supporting capacity of air, water, soil and ecosystems, and maintain indigenous biodiversity.
Indigenous biodiversity will be enhanced – as there is little on the site at present. This will be achieved in conjunction with the works proposed by Mana Tāhuna within the site, which will also contribute to improving water quality in Mill Creek.	

Strategic Objective 3.2.4.2	The spread of wilding exotic vegetation is avoided.
No exotic vegetation with undesirable wilding potential is proposed. Existing invasive species, such as the crack willows, are to be removed to prevent further spread.	
Strategic Objective 3.2.4.3	The natural character of the beds and margins of the District's lakes, rivers and wetlands is preserved, or enhanced where possible, and protected from inappropriate subdivision, use and development.
Although it is proposed to establish a residential building platform in close proximity to Mill Creek, overall the proposal will enhance the natural character of the creek compared to the existing situation due to the extensive riparian planting that will be undertaken. It is not proposed to alter any existing wetlands within the site. Some additional sedgeland planting will be undertaken to enhance existing wetland vegetation. The proposed subdivision and associated residential development are not therefore inappropriate with regard to the natural character of waterbodies within the site.	
Strategic Objective 3.2.4.4	The water quality and functions of the District's lakes, rivers and wetlands are maintained or enhanced.
The water quality and function of Mill Creek will be improved by the proposed riparian restoration works.	
Strategic Objective 3.2.4.5	Public access to the natural environment is maintained or enhanced.
Existing public access provided for under previous consents in the form of a public trail alongside Mill Creek will be maintained.	
Strategic Objective 3.2.4.7	The survival chances of rare, endangered, or vulnerable species of indigenous plant or animal communities are maintained or enhanced.
While there are no known rare, endangered, or vulnerable species within the site, the list of plant species proposed by Mana Tāhuna includes Olearia, Coprosma and native broom species which are identified as being at risk or threatened. The proposed ongoing management of the riparian area would assist the survival of such species if they are planted within the site.	
Strategic Objective 3.2.5	**The retention of the District's distinctive landscapes.**
Strategic Objective 3.2.5.8	Within the Wakatipu Basin Rural Amenity Zone: a. the landscape character and visual amenity values of the Basin and of its Landscape Character Units, as identified in Schedule 24.8 are maintained or enhanced; and b. the landscape capacity of each Landscape Character Unit and of the Basin as a whole is not exceeded.
ASLA has assessed that, overall, the proposal would maintain or enhance the landscape character and amenity values of the Malaghans Valley LCU, due to the following: - the location of the proposed building platform to the south of Mill Creek, with a large open paddock maintained between the north side of the creek and Malaghans Road;	

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<tr><td colspan="2">
- the extensive native planting along Mill Creek (in collaboration with Mana Tāhuna) and on the escarpment; and
- the proposed RMZ and LMERP.

The only aspect that would have an adverse effect on character and amenity values is the proposed additional driveway through the open paddock.

Although the landscape capacity for the Malaghans Valley LCU is described as being *Very Low*, ASLA concludes that the landscape capacity for additional residential development within the LCU and the Basin as a whole is not exceeded.

Based on ASLA's assessment, I consider that the proposal is consistent with Strategic Policy 3.2.5.8.
</td></tr>
<tr><td>Strategic Objective 3.3.23</td><td>Ensure that the effect of cumulative subdivision and development for the purposes of Rural Living does not compromise:
a. the protection of the landscape values of Outstanding Natural Features and Outstanding Natural Landscapes; and
b. the maintenance of the landscape character and maintenance or enhancement of the visual amenity values of Rural Character Landscapes</td></tr>
<tr><td colspan="2">Policy 3.3.23 is relevant because the interpretive section (3.1B.5(d)) of the Strategic Chapter states that the term 'Rural Living' applies to residential-type development within the WBRAZ.

However, the site does not adjoin any Outstanding Natural Landscapes or Features and will not affect any associated landscape values. The site also does not adjoin any Rural Character Landscape (RCL), so will not affect the visual amenity values of the RCL.</td></tr>
<tr><td colspan="2">Chapter 6 – Landscapes & Rural Character</td></tr>
<tr><td>Objective 6.3.1</td><td>Rural Landscape Categorisation</td></tr>
<tr><td>Policy 6.3.1.4</td><td>Provide a separate regulatory regime for the Wakatipu Basin Rural Amenity Zone, within which the Outstanding Natural Feature, Outstanding Natural Landscape and Rural Character Landscape categories and the policies of this Chapter related to those categories do not apply.</td></tr>
<tr><td colspan="2">In accordance with Policy 6.3.1.4, the objectives and policies in Chapter 6 relating to rural landscape categories have not been considered.</td></tr>
<tr><td colspan="2">Chapter 24 – Wakatipu Basin</td></tr>
<tr><td>Objective 24.2.1</td><td>Landscape character and visual amenity values in the Wakatipu Basin are maintained or enhanced.</td></tr>
<tr><td>Policy 24.2.1.1</td><td>Identify in Schedule 24.8 and on the planning maps the landscape capacity of areas outside of the Precinct to absorb subdivision and residential development according to the following rating scale:
a. Very Low capacity;
b. Low capacity;
c. Moderate-Low capacity;
d. Moderate capacity;
e. Moderate-High capacity; and</td></tr>
</table>

	f. High capacity.
The site is located within LCU 1 which is identified as having *Very Low* capacity according to the Schedule. ASLA has identified a smaller area at the eastern end of LCU 1 which forms the context landscape for this site. Within the context landscape, the capacity for further development has been assessed as *Low*.	
Policy 24.2.1.2	Subdivision or residential development in all areas outside of the Precinct that are identified in Schedule 24.8 to have Very Low, Low or Moderate-Low capacity must be of a scale, nature and design that: a. is not inconsistent with any of the policies that serve to assist to achieve objective 24.2.1; and b. ensures that the landscape character and visual amenity values identified for each relevant Landscape Character Unit in Schedule 24.8 and the landscape character of the Wakatipu Basin as a whole are maintained or enhanced by ensuring that the landscape capacity is not exceeded.
The scale, nature and design of the proposal as a whole will maintain or enhance landscape character and associated visual amenity values, despite the large footprint of the buildings and their location in proximity to Mill Creek. ASLA considers that the effect of additional domestication on the openness and naturalness of the site will be mitigated by the proposed riparian planting. ASLA has assessed the proposal with regard to the key characteristics and values of the LCU set out in the Schedule, as summarised below, and concludes that the landscape capacity will not be exceeded: *Sense of openness and spaciousness associated with predominantly pastoral landscape* This will be maintained overall and at the scale of the LCU by the generous setback from Malaghans Road to the building platform, which will also be located on the far side of riparian planting along Mill Creek under the dominating feature of the Wharehuanui Hills escarpment. The large open pastoral paddock will remain unchanged, except for the construction of a new driveway. Proposed tree planting at the northern end of the driveway will assist in screening out cultural 'clutter' on the neighbouring site which currently detracts from the openness of the site (ASLA defines 'openness' as a relative absence of built form and human activity in the landscape, rather than a spatial openness which ASLA refers to as 'open character'.) *Subservience of buildings within the overall unit* The proposed buildings will be highly visible initially, but the setback from the road and the dominance of the rocky escarpment will ensure some subservience and ensure buildings are not visually prominent. Subservience will increase as planting matures and provides screening. *Dramatic views from Malaghans Road to the mountain range* These views will not be affected. *Highly attractive rural views from Malaghans Road to the Wharehuanui hillslopes and escarpment faces* Views across the open paddock to the escarpment face will be maintained. The proposed dwelling, tree planting to the north of the building platform, and riparian planting along Mill Creek will be seen along the base of the escarpment but will not detract from views. Over time, the establishment of native vegetation on the escarpment through the outcomes of the LMERP will enhance views. *Impression of the area as a buffer between Queenstown and Arrowtown* *Impression of the area as a sympathetic transition between the wider basin and the surrounding mountain ONL*	

<table>
<tr><td colspan="2">These impressions will be retained. The proposed development will be consistent with the existing pattern of rural living at the eastern end of the LCU, and will maintain the existing open pastoral character of the part of the site adjacent to Malaghans Road and views to the Wharehuanui Hills escarpment.

The overall impression of open pastoral character and a rural landscape dominated by vegetation and landform between Millbrook Resort/Arrowtown and Littles Road basin will be maintained.</td></tr>
<tr><td>Policy 24.2.1.6</td><td>Ensure subdivision and development is designed (including accessways, services, utilities and building platforms) to minimise inappropriate modification to the natural landform.</td></tr>
<tr><td colspan="2">The proposal does not involve any significant or inappropriate modification to the natural landform. Some excavation and fill will be required to form a level building area at the base of the hillslope, but this will not be evident on completion of construction. The proposed driveway will follow existing contours.

An earth bund, approximately 1.5m high, will be required on the lower part of the slope to the rear of the dwelling to provide protection from rockfall from the schist bluffs on the escarpment above. The bund can be designed to follow the contours of the slope, and will be vegetated to minimise visual effects.</td></tr>
<tr><td>Policy 24.2.1.7</td><td>Ensure that subdivision and development maintains or enhances the landscape character and visual amenity values identified in Schedule 24.8 - Landscape Character Units.</td></tr>
<tr><td colspan="2">The proposal will maintain and enhance the landscape character and visual amenity values of the Malaghans Valley LCU, as described with regard to Policy 24.2.1.2 above.</td></tr>
<tr><td>Policy 24.2.1.8</td><td>Maintain or enhance the landscape character and visual amenity values of the Rural Amenity Zone including the Precinct and surrounding landscape context by:

a. controlling the colour, scale, form, coverage, location (including setbacks) and height of buildings and associated infrastructure, vegetation and landscape elements.</td></tr>
<tr><td colspan="2">ASLA has assessed that the proposed buildings will not compromise the landscape and amenity values of the WBRAZ, despite their large coverage and reduced setback from Mill Creek. The forms, materials and colours of the buildings will reflect a rural character and have an attractive appearance. The scale of development, including the location of two accessory buildings outside the platform, will reflect a farm homestead in this location. Over time, as the vegetation along Mill Creek matures it will feature more dominantly in views and enhance natural character and amenity values.</td></tr>
<tr><td>Policy 24.2.1.9</td><td>Require all buildings to be located and designed so that they do not compromise the landscape and amenity values and the natural character of Outstanding Natural Features and Outstanding Natural Landscapes that are either adjacent to the building or where the building is in the foreground of views from a public road or reserve of the Outstanding Natural Landscape or Outstanding Natural Feature.</td></tr>
<tr><td colspan="2">The buildings will not compromise any Outstanding Natural Feature (ONF) or Outstanding Natural Landscape (ONL). The site is not adjacent to any ONF or ONL, and is not in the foreground of views towards these from any public road or reserve.</td></tr>
</table>

Policy 24.2.1.13	Control earthworks and vegetation clearance to minimise adverse effects on landscape character and visual amenity values.
The proposed earthworks are not significant given the scale of the site. Earthworks undertaken to prepare the building platform will not be noticeable on completion of construction. Minimal earthworks are required to form the new driveway, as it will follow the existing topography, however on completion it will detract from the existing landscape character and visual amenity values of the site to some degree. It is proposed to remove existing crack willows along Mill Creek that currently screen the proposed building platform (except in winter). The willows are an invasive species that will be replaced by proposed riparian planting along the creek undertaken in collaboration with Mana Tāhuna. Over time, as this planting matures, it will increase the natural character and visual amenity values of the site.	
Policy 24.2.1.14	Enable residential activity within approved and registered building platforms subject to achieving appropriate standards.
The proposed establishment of a residential building platform at the time of subdivision will enable residential activity to occur on the site – whether or not the specific development proposed in this application goes ahead. An alternative dwelling design within the proposed building platform will be required to meet the relevant PDP standards with regard to building coverage, height, lighting, and external appearance. Design controls relating to the defined curtilage area will be included in a consent notice registered on the title.	
Policy 24.2.1.5	Provide for activities that maintain a sense of spaciousness in which buildings are subservient to natural landscape elements.
The location of the building platform at the far side of Mill Creek from Malaghans Road, at the base of the escarpment, will maintain a sense of spaciousness. The dominating escarpment, and the open paddock in the foreground of views towards the platform, will ensure that buildings are subservient to the landscape to some degree from the outset. The level of subservience will increase as the proposed planting matures.	
Policy 24.2.1.16	Manage lighting so that it does not cause adverse glare to other properties, roads or public places or degrade views of the night sky.
Lighting will be in accordance with the relevant PDP rule to ensure that there is no adverse glare and views of the night sky are not degraded.	
Policy 24.2.1.17	Have regard to the spiritual beliefs, cultural traditions and practices of Tangata Whenua in the manner directed in Chapter 5: Tangata Whenua.
Mill Creek is not known as being used for mahinga kai, and the site is not identified as being a wāhi tupuna in the PDP. The proposal involves the establishment of a residential building platform and associated earthworks in proximity to Mill Creek. A comprehensive EMP has been prepared to avoid and minimise adverse effects on water quality during earthworks. The extensive riparian planting that is proposed will have positive effects on the natural character and ecological values of the waterbody. Domestic wastewater will be treated to a high standard using a secondary treatment system prior to discharge to land. The disposal area will be located adjacent to Malaghans Road, to maximise the setback from Mill Creek and natural wetlands identified within the site.	

Policy 24.2.1.19	Require buildings, or building platforms identified through subdivision, to maintain views from roads to Outstanding Natural Features and the surrounding mountain Outstanding Natural Landscape context, where such views exist; including by: a. implementing road setback standards; and b. ensuring that earthworks and mounding, and vegetation planting within any road setback, particularly where these are for building mitigation and/or privacy, do not detract from views to Outstanding Natural Features or Outstanding Natural Landscapes; while c. recognising that for some sites, compliance with a prescribed road setback standard is not practicable due to the site size and dimensions, or the application of other setback requirements to the site.
There are no views across the site from roads to ONFs or ONLs.	
Objective 24.2.4	**Objective – Subdivision and development, and use of land, maintains or enhances water quality, ecological quality, and recreation values while ensuring the efficient provision of infrastructure.**
Policy 24.2.4.1	Avoid adverse cumulative impacts on ecosystem services and nature conservation values.
There will not be adverse cumulative impacts on ecosystem services and natural conservation values; the proposal will result in positive cumulative impacts due to the extensive planting that will be undertaken.	
Policy 24.2.4.2	Restrict subdivision, development and use of land in the Lake Hayes catchment, unless it can contribute to water quality improvement in the catchment commensurate with the nature, scale and location of the proposal.
The system for on-site treatment and disposal of wastewater from the dwelling has been designed to avoid adverse impacts on water quality in the catchment. This will be achieved through the use of a secondary treatment system, the location and design of the land application area, and the planting and harvesting of rye grass to remove nitrogen. Riparian planting that will be undertaken in collaboration with Mana Tāhuna, and the ongoing management of the riparian area by the lot owners, will contribute to water quality improvement in the catchment in a way that is commensurate with the establishment of an additional residential unit.	
Policy 24.2.4.3	Provide for improved public access to, and the maintenance and enhancement of, the margins of waterbodies including Mill Creek and Lake Hayes.
The recently constructed trail provides public access along Mill Creek through the site, where such access was not previously available. The Mana Tāhuna works and additional landscaping proposed in this application, along with ongoing management of the riparian area by the lot owners, will enhance the margins of the creek within the site.	

Policy 24.2.4.4	Provide adequate firefighting water and emergency vehicle access to ensure an efficient and effective emergency response.
On-site water tanks will provide emergency firefighting storage. The proposed new driveway, including the bridge over Mill Creek, will be designed to provide emergency vehicle access to the building platform.	
Policy 24.2.4.5	Ensure development has regard to servicing and infrastructure costs that are not met by the developer.
As this is a rural site that does not have connections to reticulated drainage networks, stormwater and wastewater disposal systems will be provided at the time a dwelling is constructed, in accordance with the requirements of the specific dwelling design. Consent notice conditions will ensure that future owners are aware of this.	
Policy 24.2.4.6	Facilitate the provision of walkway and cycleway networks and consider opportunities for the provision of bridle path networks.
A public walking and cycling trail has recently been constructed through the site within an easement on the northern side of Mill Creek created for this purpose. The trail is part of the wider Queenstown Trails network.	
Policy 24.2.4.8	Encourage the removal of wilding exotic trees.
Existing crack willows along Mill Creek will be removed.	
Policy 24.2.4.9	Encourage the planting, retention and enhancement of indigenous vegetation that is appropriate to the area and planted at a scale, density, pattern and composition that enhances indigenous biodiversity values, particularly in locations such as gullies and riparian areas, or to provide stability.
The proposal will give effect to this policy as significant riparian planting will be undertaken within Lot 1. This will be planted at a scale and density, and using appropriate species, to enhance indigenous biodiversity values. The proposed LMERP will also provide for the long-term establishment and retention of indigenous vegetation to replace existing woody weeds on the northern face of the Wharehuanui Hills within the site, enhancing the indigenous biodiversity values of this area.	
Chapter 25 – Earthworks	
Objective 25.2.1	**Objective – Earthworks are undertaken in a manner that minimises adverse effects on the environment, including through mitigation or remediation, and protects people and communities.**
Policy 25.2.1.1	Ensure earthworks minimise erosion, land instability, and sediment generation and offsite discharge during construction activities associated with subdivision and development.
The earthworks will be undertaken in accordance with the EMP and ESCP to minimise erosion, instability, sediment generation and any offsite discharge.	

Policy 25.2.1.2	Manage the adverse effects of earthworks to avoid inappropriate adverse effects and minimise other adverse effects, in a way that: a. Protects the values of Outstanding Natural Features and Landscapes; b. Maintains the amenity values of Rural Character Landscapes; c. Protects the values of Significant Natural Areas and the margins of lakes, rivers and wetlands; d. Minimises the exposure of aquifers, in particular the Wakatipu Basin, Hāwea Basin, Wānaka Basin and Cardrona alluvial ribbon aquifers; Note: These aquifers are identified in the Otago Regional Plan: Water for Otago 2004. e. Protects Māori cultural values, including wāhi tapu and wāhi tūpuna and other sites of significance to Māori; f. Protects the values of heritage sites, precincts and landscape overlays from inappropriate subdivision, use and development; and g. Maintains public access to and along lakes and rivers
The earthworks will not affect any ONF or ONL, and will maintain the amenity values of the WBRAZ. The EMP and ESCP include measures to prevent any adverse effects on Mill Creek. The earthworks have been designed to maintain at least a 10m setback from any natural wetlands. The depth and location of the excavation will not expose any aquifers. The site is not known to have any particular significance to Māori, however the earthworks and other construction activities will be managed so that any adverse impacts on water quality in Mill Creek are avoided or minimised. Public access along the trail will be maintained during earthworks, although traffic management measures may need to be implemented to ensure the safety of trail users while heavy vehicles are accessing the site.	
Policy 25.2.1.3	Avoid, where practicable, or remedy or mitigate adverse visual effects of earthworks on visually prominent slopes, natural landforms and ridgelines.
The earthworks will be undertaken at the base of the visually prominent slope and natural landform of the Wharehuanui Hills. ASLA is of the opinion that the earthworks will not have adverse visual effects, as the excavation will essentially be filled by the completed buildings, and any exposed areas of soil, including the rockfall bund, will be remediated with landscaping.	
Policy 25.2.1.4	Manage the scale and extent of earthworks to maintain the amenity values and quality of rural and urban areas.
The scale and extent of earthworks are not significant given their location within a large rural site, and for this reason I consider that the amenity values of the rural area will be maintained.	
Policy 25.2.1.5	Design earthworks to recognise the constraints and opportunities of the site and environment.
The earthworks have been designed to avoid or minimise adverse impacts on waterbodies within the site, which include Mill Creek and natural wetlands.	

The driveway will follow the existing topography to minimise the amount of earthworks required. ASLA considers that the driveway alignment does not recognise the constraints of the site with regard to its effects on the openness and natural character of the landscape.	
Policy 25.2.1.6	Ensure that earthworks are designed and undertaken in a manner that does not adversely affect infrastructure, buildings and the stability of adjoining sites.
The earthworks will be undertaken centrally within the site, away from property boundaries, and so will not adversely affect existing infrastructure, buildings or the stability of adjoining sites.	
Policy 25.2.1.7	Encourage limiting the area and volume of earthworks being undertaken on a site at any one time to minimise adverse effects on water bodies and nuisance effects of adverse construction noise, vibration, odour, dust and traffic effects.
The earthworks will be managed in accordance with the EMP to minimise adverse effects on waterbodies and nuisance effects. The earthworks will be staged so that the driveway is constructed as part of the subdivision works, and the earthworks to prepare the building platform will be undertaken at the time the dwelling is constructed. In this case, it is not practical to further limit the amount of earthworks being undertaken at one time, however the volume and area of earthworks are not particularly large given the scale of the rural site.	
Policy 25.2.1.9	Manage the potential adverse effects arising from exposing or disturbing accidentally discovered material by following the Accidental Discovery Protocol in Schedule 25.10.
As set out in the EMP, the Applicant will follow the Accidental Discovery Protocol if any archaeological materials are encountered during earthworks.	
Policy 25.2.1.10	Ensure that earthworks that generate traffic movements maintain the safety of roads and accesses, and do not degrade the amenity and quality of surrounding land.
The site is accessed directly from Malaghans Road, which has the capacity to accommodate heavy traffic movements associated with the proposed earthworks without degrading the amenity and quality of surrounding land. Traffic movements will be managed to ensure the safety of other road users, and trail users, in accordance with the relevant QLDC requirements.	
Policy 25.2.1.11	Ensure that earthworks minimise natural hazard risk to people, communities and property, in particular earthworks undertaken to facilitate land development or natural hazard mitigation.
Earthworks include a rockfall protection bund at the rear of the dwelling. This will be subject to detailed engineering design prior to construction. The earthworks to prepare the building platform for the construction of the dwelling have been designed to establish a finished floor level with sufficient freeboard above the calculated flood level for Mill Creek. The earthworks will not exacerbate any natural hazard risk to the site and its occupants, or to any other people or property.	

Chapter 27 – Subdivision and Development	
Objective 27.2.1	**Subdivision that will enable quality environments to ensure the District is a desirable place to live, visit, work and play.**
Policy 27.2.1.1	Require subdivision infrastructure to be constructed and designed so that it is fit for purpose, while recognising opportunities for innovative design.
The subdivision infrastructure, including the proposed driveway, water supply and method of wastewater disposal have been designed to meet the relevant engineering standards as well as the Applicant's needs.	
Policy 27.2.1.3	Require that allotments are a suitable size and shape, and are able to be serviced and developed for the anticipated land use under the applicable zone provisions.
The lots are of a suitable size and shape for future rural living activities as proposed in this application, and will provide for the effective on-site disposal of stormwater and wastewater.	
Policy 27.2.1.4	Discourage non-compliance with minimum allotment sizes. However, where minimum allotment sizes are not achieved in urban areas, consideration will be given to whether any adverse effects are mitigated or compensated by providing: a. desirable urban design outcomes; b. greater efficiency in the development and use of the land resource; c. affordable or community housing.
The proposal is not consistent with this policy, as the proposed lots will not meet the minimum lot size of 80ha in the WBRAZ. However, the proposal is not necessarily contrary to the policy, which seeks to discourage non-compliance rather than avoid it. The site is not located in an urban area, so the particular matters for consideration listed in the policy do not apply.	
Policy 27.2.1.5	Recognise that there is an expectation by future landowners that the key effects of and resources required by anticipated land uses will have been resolved through the subdivision approval process.
The creation of a building platform at the time of subdivision provides a level of certainty for future landowners regarding residential development on Lot 1. Access to the building platform, including a bridge across Mill Creek, will be provided as part of the subdivision works, as will connections to a bore water supply and the electricity network. The riparian planting, which is relied on to mitigate the effects of future residential development on the platform, will also be completed prior to subdivision.	
Objective 27.2.4	**Natural features, indigenous biodiversity and heritage values are identified, incorporated and enhanced within subdivision design.**
Policy 27.2.4.1	Incorporate existing and planned waterways and vegetation into the design of subdivision, transport corridors and open spaces where that will maintain or enhance biodiversity, riparian and amenity values.

The subdivision, including the location of the new building platform, has been designed taking into account the location of existing natural wetlands and Mill Creek within the site. These waterbodies will not be altered, except that riparian restoration works will be undertaken along Mill Creek and a bridge will be constructed across it. Overall, the riparian planting will enhance the biodiversity and amenity values of the creek.	
Policy 27.2.4.4	Encourage initiatives to protect and enhance landscape, vegetation and indigenous biodiversity by having regard to: a. whether any landscape features or vegetation are of a sufficient value that they should be retained and the proposed means of protection; b. where a reserve is to be set aside to provide protection to vegetation and landscape features, whether the value of the land so reserved should be off-set against the development contribution to be paid for open space and recreation purposes.
The proposal will ensure that the planned riparian restoration of Mill Creek by Mana Tāhuna is completed. The riparian area will be protected by way of a consent notice that will also require future lot owners to manage invasive weeds on an ongoing basis. The escarpment will also be defined as a protected area by way of consent notice and managed in accordance with the proposed LMERP to replace the existing woody weed cover with indigenous vegetation in the long term.	
Objective 27.2.5	**Infrastructure and services are provided to new subdivisions and developments.**
Policy 27.2.5.2	Ensure safe and efficient pedestrian, cycle and vehicular access is provided to all lots created by subdivision and to all developments.
Proposed Lot 1 will use the existing vehicle crossing to Malaghans Road, which was assessed as meeting Council's standards under the previous subdivision approval. A driveway will be formed to the building platform on Lot 1 as part of the subdivision works, including a bridge over Mill Creek. The lots will have direct access to the recently constructed Arthur's Point to Arrowtown trail, which provides a safe off-road connection along the Malaghans Road corridor for pedestrians and cyclists.	
Policy 27.2.5.3	Provide linkages to public transport networks, and to trail, walking and cycling networks, where useful linkages can be developed.
An off-road walking and cycle trail has recently been constructed through the site, which is part of the Queenstown Trail linking Arthur's Point with Arrowtown.	
Policy 27.2.5.4	Ensure the physical and visual effects of subdivision and roading are minimised by utilising existing topographical features.
The visual effects of the subdivision will be mitigated by locating the new residential building platform at the base of the dominating topographic feature of the Wharehuanui Hills. The driveway to proposed Lot 1 will be aligned to follow existing contours, minimising the amount of earthworks required. However, the driveway will have a cumulative domesticating effect due to the existing driveway and the recently constructed trail.	

Policy 27.2.5.5	Ensure appropriate design and amenity associated with roading, vehicle access ways, trails and trail connections, walkways and cycle ways are provided for within subdivisions by having regard to: a. the location, alignment, gradients and pattern of roading, vehicle parking, service lanes, access to lots, trails, walkways and cycle ways, and their safety and efficiency; b. the number, location, provision and gradients of access ways and crossings from roads to lots for vehicles, cycles and pedestrians, and their safety and efficiency; c. the standard of construction and formation of roads, private access ways, vehicle crossings, service lanes, walkways, cycle ways and trails;
No new crossings onto Malaghans Road are proposed. As noted above, the existing crossing point has already been assessed as suitable for residential use under the previous subdivision approval. The new driveway to Lot 1 will be formed to Council's standards for rural accessways with a gravel surface, which will maintain the rural character of the site. Within the curtilage area, a concrete or asphalt surface may be used.	
Policy 27.2.5.6	All new lots shall be provided with connections to a reticulated water supply, stormwater disposal and/or sewage treatment and disposal system, where such systems are available or should be provided for.
The site is not located within the QLDC network boundaries for reticulated water supply, stormwater disposal or sewage disposal services.	
Policy 27.2.5.7	Ensure water supplies are of a sufficient capacity, including fire fighting requirements, and of a potable standard, for the anticipated land uses on each lot or development.
Water supply to proposed Lot 1 can be provided from the existing bore on proposed Lot 2. Bore testing information provided for the underlying subdivision confirms that the bore has sufficient capacity to supply an additional residential unit and is of a potable standard. Water will be piped to tanks on Lot 1 which will provide domestic and fire fighting storage.	
Policy 27.2.5.9	Encourage initiatives to reduce water demand and water use, such as roof rain water capture and use and greywater recycling.
At this stage, the Applicant has not given consideration to initiatives to reduce water demand and water use, however there is no reason why such initiatives could not be incorporated into the final dwelling design.	
Policy 27.2.5.10	Ensure appropriate water supply, design and installation by having regard to: a. the availability, quantity, quality and security of the supply of water to the lots being created; b. water supplies for fire fighting purposes; c. the standard of water supply systems installed in subdivisions, and the adequacy of existing supply systems outside the subdivision; d. any initiatives proposed to reduce water demand and water use.

As noted above with regard to Policy 27.2.5.7, the proposed new lot can be supplied from the existing water bore on the site, in accordance with QLDC requirements for subdivision.	
Policy 27.2.5.11	Ensure appropriate stormwater design and management by having regard to: a. any viable alternative designs for stormwater management that minimise run-off and recognises stormwater as a resource through re-use in open space and landscape areas; b. the capacity of existing and proposed stormwater systems; c. the method, design and construction of the stormwater collection, reticulation and disposal systems, including connections to public reticulated stormwater systems; d. the location, scale and construction of stormwater infrastructure; e. the effectiveness of any methods proposed for the collection, reticulation and disposal of stormwater run-off, including opportunities to maintain and enhance water quality through the control of water-borne contaminants, litter and sediments, and the control of peak flow.
Stormwater from impervious areas associated with development on proposed Lot 1 will be disposed of within the site. At this stage, it is anticipated that stormwater will be discharged to ground via soak pits, not directly into Mill Creek.	
Policy 27.2.5.13	Treat and dispose of sewage in a manner that: a. maintains public health; b. avoids adverse effects on the environment in the first instance; and c. where adverse effects on the environment cannot be reasonably avoided, mitigates those effects to the extent practicable.
Policy 27.2.5.14	Ensure appropriate sewage treatment and disposal by having regard to: a. the method of sewage treatment and disposal; b. the capacity of, and impacts on, the existing reticulated sewage treatment and disposal system; c. the location, capacity, construction and environmental effects of the proposed sewage treatment and disposal system.
With regard to Policies 27.2.5.13 and 27.2.5.14 above, the site is not within the QLDC sewage network, so wastewater will be treated and discharged to land within the site. The proposed system for the dwelling on Lot 1 has been designed taking into account the particular characteristics and constraints of the site, including Mill Creek, to minimise adverse effects on the environment.	
Policy 27.2.5.16	Ensure adequate provision is made for the supply and installation of reticulated energy, including street lighting, and communication facilities for the anticipated land uses while: a. providing flexibility to cater for advances in telecommunication and computer media technology, particularly in remote locations;

	b. ensure the method of reticulation is appropriate for the visual amenity and landscape values of the area by generally requiring services are underground, and in the context of rural environments where this may not be practicable, infrastructure is sited in a manner that minimises visual effects on the receiving environment; c. generally require connections to electricity supply and telecommunications systems to the boundary of the net area of the lot, other than lots for access, roads, utilities and reserves.
A connection to the electricity network will be made to service the new building platform on proposed Lot 1. Given the significant cost associated with connecting Lot 1 to the fibre network, the applicant wishes to retain the option of providing a wireless telecommunications service to the new dwelling, instead of a physical connection. Policy 27.2.5.16 a. above provides for such solutions. Any connections will be made underground, except they are likely to cross Mill Creek in a duct attached to the underside of the bridge.	
Policy 27.2.5.17	Ensure that services, shared access and public access is identified and managed by the appropriate easement provisions.
Policy 27.2.5.18	Ensure that easements are of an appropriate size, location and length for the intended use of both the land and easement.
With regard to Policies 27.2.5.17 and 27.2.5.18 above, easements will be created where necessary to provide for the provision of services and legal access to the lots. Easements will be confirmed at the time the survey plan is approved pursuant to s223.	
Objective 27.2.6	**Esplanades created where opportunities arise.**
Policy 27.2.6.1	Create esplanade reserves or strips where they would provide nature conservation, natural character, natural hazard mitigation, infrastructural or recreational benefits. In particular, Council will encourage esplanades where they: a. are important for public access or recreation, would link with existing or planned trails, walkways or cycleways, or would create an opportunity for public access; b. have high actual or potential value with regard to the maintenance of indigenous biodiversity; c. comprise significant indigenous vegetation or significant habitats of indigenous fauna; d. are considered to comprise an integral part of an outstanding natural feature or outstanding natural landscape; e. would benefit from protection, in order to safeguard the life supporting capacity of the adjacent lake and river; f. would not put an inappropriate burden on Council, in terms of future maintenance costs or issues relating to natural hazards affecting the land.
Policy 27.2.6.2	Use opportunities through the subdivision process to improve the level of protection for the natural character and nature conservation values of lakes and rivers, as provided for in Section 230 of the Act.

It is not proposed to create an esplanade strip or reserve as part of this subdivision. There is no requirement to provide one under s230 as both of the lots being created are greater than 4ha in area. Under RM171151 (variation to the previous subdivision consent RM161092) it was agreed that a public right of way easement be created through the site along the northern side of Mill Creek to facilitate the construction of the public trail from Arthurs Point to Arrowtown. The trail has a similar benefit to an esplanade strip or reserve within the site in terms of public access and recreation. The establishment of an esplanade strip or reserve would not result in significant improvements to natural character or indigenous conservation compared to the current proposal, given that the Applicant has committed to completing and maintaining riparian restoration works along Mill Creek.

In summary, while the proposal is not entirely consistent with the policies above relating to the creation of esplanades, it is also not contrary to them.

[249] In summary, while the proposal is not entirely consistent with all of the policies relating to the retention and enhancement of landscape character and amenity values, due to the proposed second driveway which will have a cumulative domesticating effect, overall the proposal is not contrary to the relevant objectives and policies.

[250] The proposal is also not consistent with the policy relating to minimum lot sizes, as the proposed lots will be much smaller than the minimum 80ha area specified for the WBRAZ. However, the proposal is not necessarily contrary to this policy as it seeks to discourage non-compliance rather than avoid it. The actual effects of the increased density on landscape values are not assessed as significant by ASLA given the specific location of the new building platform.

[251] The proposal will achieve the objectives and policies relating to enhancing natural character, ecological values and indigenous biodiversity values.

[252] Overall, I do not consider that the proposal is contrary to the relevant objectives and policies of the PDP.

8.0 S104D TEST FOR NON-COMPLYING ACTIVITIES

[253] As the application is for a non-complying activity, it must be considered in terms of the 'gateway test' set out in s104D of the RMA:

Despite any decision made for the purpose of notification in relation to adverse effects, a consent authority may grant a resource consent for a non-complying activity only if it is satisfied that either

(a) The adverse effects of the activity on the environment (other than any effect to which section 104(3)(a)(ii) applies) will be minor; or

(b) The application is for an activity that will not be contrary to the objectives and policies of –

(i) The relevant plan, if there is a plan but no proposed plan in respect of the activity; or

(ii) The relevant proposed plan, if there is a proposed plan but no relevant plan in respect of the activity; or

(iii) Both the relevant plan and the relevant proposed plan, if there is both a plan and a proposed plan in respect of the activity.

[254] I have assessed that the proposal will have minor effects on the environment.

[255] I do not consider that the activity will be contrary to the objectives and policies of the District Plan (the relevant plan being the PDP).

[256] The application therefore meets both parts of s104D, allowing consent to be granted.

9.0 THE MATTERS IN PART 2 OF THE RESOURCE MANAGEMENT ACT 1991

[257] In accordance with Clause 2(1)(f) of Schedule 4, an assessment of the activity against the matters set out in Part 2 is required for all resource consent applications.

[258] The purpose of the RMA is 'to promote the sustainable management of natural and physical resources'. With regard to the meaning of 'sustainable management' set out in s5, the proposal will allow the Applicant to develop and use their land to provide for their well-being, will provide a housing unit that can be used by future generations, will restore and enhance the natural environment of Mill Creek and the Wharehuanui Hills within the site, and will mitigate the effects of residential activities through the location and design of the dwelling and associated landscaping.

[259] In s6, the RMA lists matters of national importance that must be recognised and provided for, including the preservation of the natural character of wetlands and rivers and their margins, and the protection of them from inappropriate subdivision, use and development. Public access has been provided for along Mill Creek through the site via the new trail. Proposed landscaping will enhance the natural character (and ecological values) of the riparian area of Mill Creek. I do not consider that the location of the building platform represents an inappropriate development in the vicinity of the creek.

[260] Other matters in s7 that particular regard shall be given to include the maintenance and enhancement of amenity values, and the maintenance and enhancement of the quality of the environment. The proposal will contribute to the amenity values of the surrounding rural living environment through landscaping and the high quality design of the dwelling.

[261] Overall, the proposal is consistent with Part 2 of the Resource Management Act.

10.0 CONCLUSION

[262] The Applicant seeks resource consent to undertake a two lot subdivision and establish a residential building platform, and to construct a specific dwelling with accessory buildings, at 832 Malaghans Road, Queenstown. The application includes earthworks and extensive landscaping, including riparian restoration of Mill Creek in collaboration with Mana Tāhuna.

[263] The Applicant requests public notification of the application.

[264] Overall, the proposal will result in minor adverse effects on the environment, associated with the visibility of residential development, including the domesticating effect of the proposed driveway, and the increase in residential density in the WBRAZ. The effects will be greatest in the short to medium term, and reduce over time as the proposed planting matures and integrates the development with the surrounding landscape.

[265] The proposal will have positive effects on the natural character and ecological values of the site, due to the riparian planting, sedgeland planting, and also the proposed long-term restoration of indigenous species to replace woody weeds on the Wharehuanui Hills within the site.

[266] Overall, the proposal is not contrary to the relevant objectives and policies of the PDP.

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD

Guaranteed Search Copy issued under Section 60 of the Land Transfer Act 2017

R.W. Muir
Registrar-General
of Land

Identifier **825873**

Land Registration District **Otago**

Date Issued 14 September 2018

Prior References
624846

Estate Fee Simple

Area 16.9372 hectares more or less

Legal Description Lot 5 Deposited Plan 521688

Registered Owners

Ronald Bernard Macrae, Irene Patricia Macrae and Ardmore Trustee Malaghans 2023 Limited

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Interests

Appurtenant hereto are rights to convey water specified in Easement Certificate 867616.6 - 19.10.1994 at 9:16 am

11169054.6 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 14.9.2018 at 4:12 pm

Land Covenant in Easement Instrument 11169054.9 - 14.9.2018 at 4:12 pm

Appurtenant hereto is a right to convey electricity created by Easement Instrument 11169054.10 - 14.9.2018 at 4:12 pm

The easements created by Easement Instrument 11169054.10 are subject to Section 243 (a) Resource Management Act 1991

Subject to a right of way - pedestrian and cycle (in gross) over part marked V on DP 521688 in favour of Queenstown Lakes District Council created by Easement Instrument 11169054.11 - 14.9.2018 at 4:12 pm

The easements created by Easement Instrument 11169054.11 are subject to Section 243 (a) Resource Management Act 1991

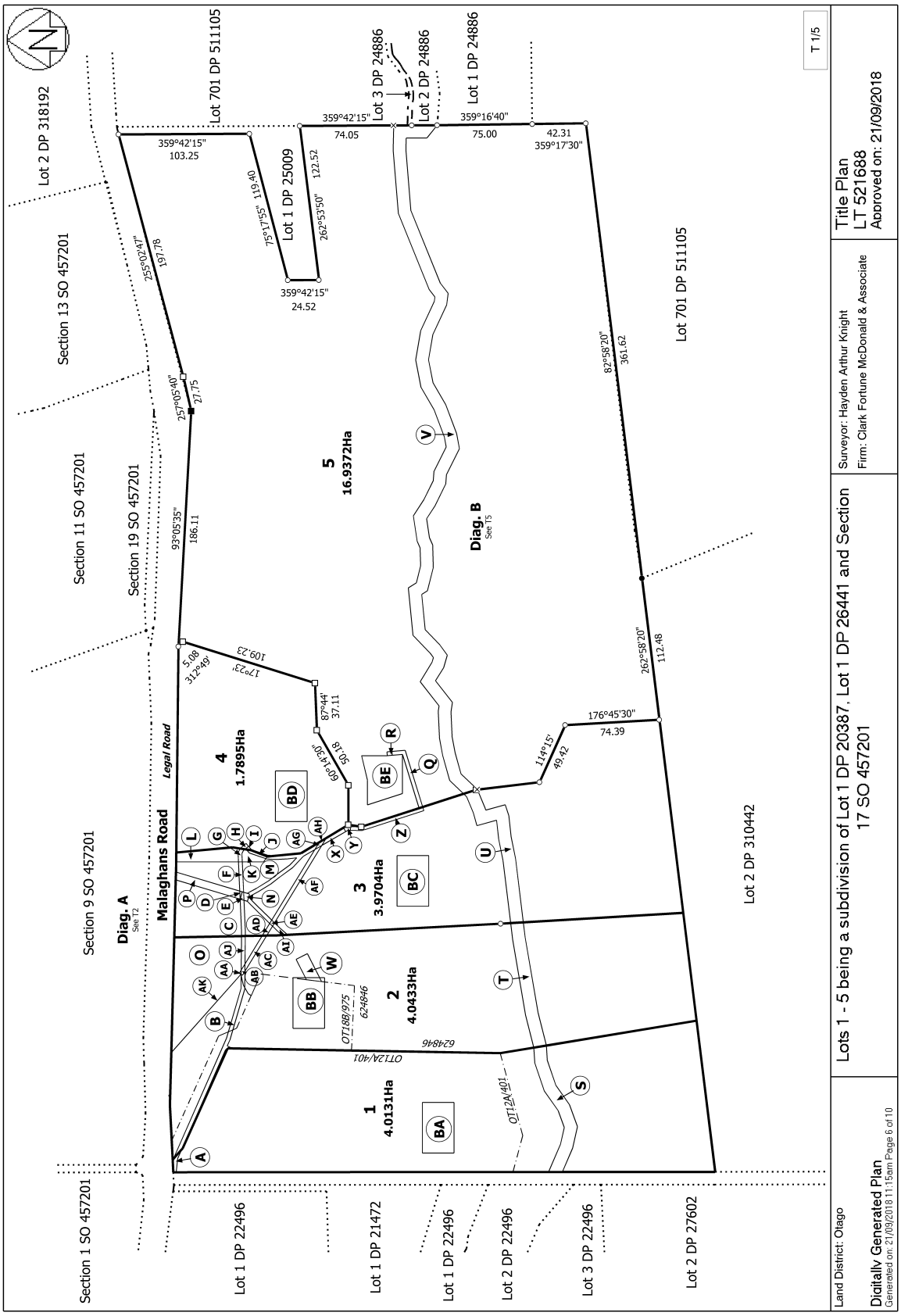
Subject to a right to take water over part marked R and a right to convey water over parts marked Q & R all on DP 521688 created by Easement Instrument 11169054.12 - 14.9.2018 at 4:12 pm

The easements created by Easement Instrument 11169054.12 are subject to Section 243 (a) Resource Management Act 1991

Subject to a right to convey water over part marked Q and R on DP 521688 created by Easement Instrument 12649491.1 - 26.1.2023 at 4:27 pm

12602593.3 Mortgage to (now) NZMS 1st Mortgage Securities Limited - 1.3.2023 at 12:23 pm

12829717.1 Mortgage to New Zealand Mortgages and Securities Limited - 21.9.2023 at 1:15 pm



View Instrument Details

Instrument No	11169054.6
Status	Registered
Date & Time Lodged	14 September 2018 16:12
Lodged By	Stevens, Timothy Arden
Instrument Type	Consent Notice under s221(4)(a) Resource Management Act 1991

Affected Computer Registers	Land District
825869	Otago
825870	Otago
825871	Otago
825872	Otago
825873	Otago

Annexure Schedule: Contains 5 Pages.

Signature

Signed by Timothy Arden Stevens as Territorial Authority Representative on 11/09/2018 09:21 AM

***** End of Report *****

IN THE MATTER of Section 221 of the Resource Management Act 1991

AND

IN THE MATTER of subdivision consent by **E, S, K, R and S Dennison** namely RM161092 (as varied by RM171151)

CONSENT NOTICE

IN THE MATTER of Section 221 of the Resource Management Act 1991

AND

IN THE MATTER of subdivision consent by **E, S, K, R and S Dennison** namely RM161092 (as varied by RM171151)

Background

A. **E, S, K, R and S Dennison** of Queenstown have applied to the Queenstown Lakes District Council (**Council**) pursuant to provisions of the Resource Management Act 1991 for its consent to subdivide land comprised and described in Certificates of Title OT12A/401, OT18B/975 and 624846 (Otago Registry) ("the land").

B. Council has granted consent to the proposed subdivision pursuant to RM161092 (as varied by RM171151) subject to certain conditions which are required to be complied with on a continuing basis by the Owner of the land being those conditions specified in the Operative Part hereof.

Operative Part

The following conditions pertaining to this Consent Notice are to be registered against the following allotments:

- *Lot 1 DP 521688 (CFR 825869)*
- *Lot 2 DP 521688 (CFR 825870)*
- *Lot 3 DP 521688 (CFR 825871)*
- *Lot 4 DP 521688 (CFR 825872)*
- *Lot 5 DP 521688 (CFR 825873)*

Condition:

Buildings

1. All future buildings shall be contained within the Building Platform as shown as Covenant Areas BA, BB, BC, BD and BE as shown on Land Transfer Plan 521688.

2. All building on the platforms to be limited to no more than 6.0 metres above existing ground level

3. Roofing materials shall be in the range of natural grey, brown and green colours and shall have a light reflectivity value (LRV) of between 7% and 15%.

4. Cladding of the future dwelling within the platforms shall be timber, stacked stone, *Colorsteel* or solid plaster, or a similar material approved by the Council. Finishes for all external materials including cladding, spouting, joinery etc. shall be visually recessive and of low colour reflectivity in the range of natural grey, brown and green colours and shall have a light reflectivity value (LRV) of between 7% and 35%

5. Joinery shall be in timber, steel, aluminium. Joinery colours (except timber) shall match roofing and spouting colours.

6. Accessory buildings shall be clad and coloured to match the primary dwelling.

7. None of the following materials may be incorporated into the exterior of the building:
   - Fibre cement weatherboard sidings and roofing
   - Uncoated fibre materials
   - Imitation timber, brick or masonry
   - Metal weatherboards or compressed fibre weatherboards
   - Any metal or asphalt based aggregate covered tiles and shingles.

8. Any water tanks (if required) must be buried, of a dark recessive grey, brown or green colour with a LRV below 20% and/or screened by landform and/or planting so they are not visible outside of the lot.

9. All exterior lighting shall be low level, down lighting only, no greater than 0.5m above ground and directed away from property boundaries to ensure that no upwards light spill or light spill beyond property boundaries will occur. All external lighting within the lot shall be located only within the domestic curtilage area as identified on the approved landscape plan under RM161092 (as varied by RM171151) .

Landscape

10. All domestic activity such as mown lawns, amenity gardens and garden structures, paved areas, play equipment, clothes lines, external lighting shall be restricted to the curtilage areas shown on the approved landscape plan under RM161092 (as varied by RM171151).

11. All boundary fences and internal fences outside the curtilage are to be standard farming post and wire (and/or wire mesh) fences; No fences shall be located within the Rock Ridge Management Area as identified on the approved landscape plan under RM161092 (as varied by RM171151.

12. Vehicle entrances to Lots 1, 3, 4 and 5 from Malaghans Road shall be a standard farm gate of timber or steel not exceeding 1.2m in height.

13. Planting to be completed in accordance with the landscape plan approved under RM161092 (as varied and restamped as approved by variation RM171151) and any tree marked as "To Be Retained" on this landscape plan shall be maintained in good health except wilding or problem trees as noted below. Any plant that dies, is damaged or otherwise fails to thrive, shall be replaced in the next planting season. Any existing trees or trees identified as to be retained on the approved landscape plan that are of the following wilding species (*Pinus contorta, P.nigra, P.sylvestris, P. pinaster, P. radiata, Larix decidua, Psuedotsuga menziesii, Acer psudoplatanus, Crataegus monogyna*) or problematic species such as elderberry, or birch are not protected by the approved landscape plan and may be removed at any time. If any such trees as identified as an existing tree to be retained on the certfied landscape plan shall be replaced with an alternative species of similar form, nature and mature height that is not a wilding species or a problem species.

14. All indigenous vegetation within the Rock Ridge Management Area shown on the approved landscape plan under RM161092 (as varied by RM171151) shall be protected and not removed, damaged or altered in any manner.

15. Any other indigenous species used shall be approved by an experienced ecologist familiar with the ecology of the Wakatipu Basin and approved by Council prior to planting.

General

16. At the time a dwelling is erected on Lots 3 & 5, the owner for the time being shall provide vehicle parking and manoeuvring areas which are in accordance with Council Standards.

17. At the time a dwelling is erected on lots 3 & 5, the owner for the time being shall engage a suitably experienced person as defined in sections 3.3 & 3.4 of AS/NZS 1547:2012 to design an onsite effluent disposal system in compliance with AS/NZS 1547:2012. All Lots with a disposal within 50m of waterways shall design to provide for tertiary Ultra Violet treatment and obtain consent from Otago Regional Council. For Lots outside the 50m waterway setback the owner shall design and provide disposal systems for a minimum secondary treatment. The proposed wastewater system shall be subject to Council review and acceptance prior to implementation and shall be installed prior to occupation of the dwelling.

18. At such a time that Council's wastewater reticulation is available to service the lot in accordance with the Local Government Act Section 459(7)(a)(b), the owner for the time being shall cease the use of the alternative disposal system, decommission it appropriately and connect to the Council system. The cost of making this connection shall be borne by the owner of the lot. At this time the owner for the time being shall pay to the Queenstown Lakes District Council the applicable development contribution.

19. At the time a dwelling is erected on Lots 3 & 5, domestic water and firefighting storage is to be provided. A minimum of 20,000 litres shall be maintained at all times as a static firefighting reserve within a 30,000 litre tank. Alternatively, a 7,000 litre firefighting reserve is to be provided for each dwelling in association with a domestic sprinkler system installed to an approved standard. A firefighting connection in accordance with Appendix B - SNZ PAS 4509:2008 (or superseding standard) is to be located no further than 90 metres, but no closer than 6 metres, from any proposed building on the site. Where pressure at the connection point/coupling is less than 100kPa (a suction source - see Appendix B, SNZ PAS 4509:2008 section B2), a 100mm Suction Coupling (Female) complying with NZS 4505, is to be provided. Where pressure at the connection point/coupling is greater than 100kPa (a flooded source - see Appendix B, SNZ PAS 4509:2008 section B3), a 70mm Instantaneous Coupling (Female) complying with NZS 4505, is to be provided. Flooded and suction sources must be

capable of providing a flow rate of 25 litres/sec at the connection point/coupling. The reserve capacities and flow rates stipulated above are relevant only for single family dwellings. In the event that the proposed dwellings provide for more than single family occupation then the consent holder should consult with the New Zealand Fire Service (NZFS) as larger capacities and flow rates may be required.

The NZFS connection point/coupling must be located so that it is not compromised in the event of a fire.

The connection point/coupling shall have a hardstand area adjacent to it (within 5m) that is suitable for parking a fire service appliance. The hardstand area shall be located in the centre of a clear working space with a minimum width of 4.5 metres. Pavements or roadways providing access to the hardstand area must have a minimum formed width as required by Council's standards for rural roads (as per Council's s Land Development and Subdivision Code of Practice). The roadway shall be trafficable in all weathers and be capable of withstanding an axle load of 8.2 tonnes or have a load bearing capacity of no less than the public roadway serving the property, whichever is the lower. Access shall be maintained at all times to the hardstand area.

Underground tanks or tanks that are partially buried (provided the top of the tank is no more than 1 metre above ground) may be accessed by an opening in the top of the tank whereby couplings are not required. A hardstand area adjacent to the tank is required in order to allow a fire service appliance to park on it and access to the hardstand area must be provided as above.

The NZFS connection point/coupling/fire hydrant/tank must be located so that it is clearly visible and/or provided with appropriate signage to enable connection of a fire appliance.

Firefighting water supply may be provided by means other than the above if the written approval of the NZFS Central North Otago Area Manager is obtained for the proposed method. The firefighting water supply tank and/or the sprinkler system shall be installed prior to the occupation of the building.

Advice Note: The potable water supply has been tested in accordance with condition 10(c) of RM171151. The report identified that the water had a low pH of 5.98, which renders the water acidic and may cause metal corrosions under normal circumstances. The report recommends that an appropriate pH adjusting system should be installed to raise the pH and eliminate this problem.

Dated this 21st day of August 2018

Signed for and on behalf of the
Queenstown Lakes District Council
under delegated authority by its
Team Leader, Subdivisions, Development
Contributions, and Property

Elizabeth Jane Simpson

QLD00266 6757636.4

View Instrument Details

Instrument No	11169054.9
Status	Registered
Date & Time Lodged	14 September 2018 16:12
Lodged By	Stevens, Timothy Arden
Instrument Type	Easement Instrument

Affected Computer Registers	Land District
825869	Otago
825870	Otago
825871	Otago
825872	Otago
825873	Otago

Annexure Schedule: Contains 3 Pages.

Grantor Certifications

I certify that I have the authority to act for the Grantor and that the party has the legal capacity to authorise me to lodge this instrument ☑

I certify that I have taken reasonable steps to confirm the identity of the person who gave me authority to lodge this instrument ☑

I certify that any statutory provisions specified by the Registrar for this class of instrument have been complied with or do not apply ☑

I certify that I hold evidence showing the truth of the certifications I have given and will retain that evidence for the prescribed period ☑

Signature

Signed by Timothy Arden Stevens as Grantor Representative on 11/09/2018 11:40 AM

Grantee Certifications

I certify that I have the authority to act for the Grantee and that the party has the legal capacity to authorise me to lodge this instrument ☑

I certify that I have taken reasonable steps to confirm the identity of the person who gave me authority to lodge this instrument ☑

I certify that any statutory provisions specified by the Registrar for this class of instrument have been complied with or do not apply ☑

I certify that I hold evidence showing the truth of the certifications I have given and will retain that evidence for the prescribed period ☑

Signature

Signed by Timothy Arden Stevens as Grantee Representative on 11/09/2018 11:40 AM

***** End of Report *****

Form B

Easement instrument to grant easement or *profit à prendre*, or create land covenant

(Sections 90A and 90F Land Transfer Act 1952)

Grantor

Stewart Colin Dennison, Jennifer Margaret Dennison, Evan Peter Dennison and Robert James Maurice Dennison

Grantee

CL Queenstown Trustees Limited, Kirsten Jane Dennison, Robert James Maurice Dennison

Evan Peter Dennison and Susan Gay Dennison

Stewart Colin Dennison, Jennifer Margaret Dennison, Evan Peter Dennison and Robert James Maurice Dennison

Grant of Easement or *Profit à prendre* or Creation of Covenant

The Grantor being the registered proprietor of the servient tenement(s) set out in Schedule A **grants to the Grantee** (and, if so stated, in gross) the easement(s) or *profit(s) à prendre* set out in Schedule A, **or creates** the covenant(s) **set out** in Schedule A, with the rights and powers or provisions set out in the Annexure Schedule(s).

Schedule A *Continue in additional Annexure Schedule, if required*

Purpose (Nature and extent) of easement; *profit* or covenant	Shown (plan reference)	Servient Tenement (Computer Register)	Dominant Tenement (Computer Register) or in gross
Land Covenant	Deposited Plan 521688	Lot 3 Deposited Plan 521688	Lots 1, 2, 4 and 5 Deposited Plan 521688

Form B - *continued*

Easements or *profits à prendre* rights and powers (including terms, covenants and conditions)

Continue in additional Annexure Schedule, if required

~~Unless otherwise provided below, the rights and powers implied in specified classes of easement are those prescribed by the Land Transfer Regulations 2002 and/or Schedule Five of the Property Law Act 2007.~~

~~The implied rights and powers are hereby varied/negatived/added to/substituted by:~~

~~Memorandum number, registered under section 155A of the Land Transfer Act 1952.~~

~~the provisions set out in Annexure Schedule.~~

Covenant provisions

Continue in additional Annexure Schedule, if required

The provisions applying to the specified covenants are those set out in:

~~Memorandum number , registered under section 155A of the Land Transfer Act 1952~~.

Annexure Schedule 2.

Annexure Schedule 2

1. Fencing

1.1. The Grantor shall not require any Grantee to pay for or contribute towards the expense of construction or maintenance of any fence between the Servient Tenement and any contiguous land of the Grantee.

2. Trees

2.1. The Grantor shall not allow any vegetation or trees planted on the boundary between Lot 3 Deposited Plan 521688 (held in certificate of title 825871) and Lot 4 Deposited Plan 521688 (held in certificate of title 825872) to exceed a height of 6 metres.

3. Non-object provisions

3.1. The Grantor covenants that:

3.1.1. It will not object to or Lodge any Submission against any application for resource consent for any subdivision of Lot 1, Lot 2, Lot 4 or Lot 5 that creates any separate allotments, provided such allotments are not smaller than 4000 metres squared in area.

3.2. If requested by the Grantee the Grantor shall promptly give its unqualified:

3.2.1. Written approval including any affected party approval under section 95E of the Resource Management Act 1991, to any application made to the Territorial Authority for any resource consent in accordance with clause 3.1.1 above and shall not withdraw that approval; and/or

3.2.2. Submission in support of any such application and shall not withdraw that submission.

3.3. The Grantor shall sign all documents and do all things required by the Grantee to meet its obligations under this clause.

For the purposes of this clause, "**Lodge any Submission**" means directly or indirectly, lodge or support in any way any objection or submission to any Planning Proposal and includes (without limitation) taking part in any planning hearing, or appeal or reference arising in respect of any application referred to at clause 3.1.1.

PROPOSED CONDITIONS OF CONSENT

Subdivision Conditions

1. Prior to commencing works on the site, the consent holder shall obtain 'Engineering Review and Acceptance' from the Queenstown Lakes District Council for development works to be undertaken and information requirements specified below. The application shall include all development items listed below unless a 'partial' review approach has been approved in writing by the Manager of Development Engineering and Subdivision at Council. The 'Engineering Review and Acceptance' application(s) shall be submitted to the Manager of Development Engineering and Subdivision at Council for review, prior to acceptance being issued. At Council's discretion, specific designs may be subject to a Peer Review, organised by the Council at the applicant's cost. The 'Engineering Review and Acceptance' application(s) shall include copies of all specifications, calculations, design plans and Schedule 1A design certificates as is considered by Council to be both necessary and adequate, in accordance with Condition (X), to detail the following requirements:

    a) Formation of a driveway to access the building platform on Lot 1, in accordance with Council's standards for rural accessways.

    b) Construction of a vehicle bridge across Mill Creek to access the building platform on Lot 1.

    c) The provision of a water supply to Lot 1 in terms of Council's standards.

2. Prior to the Council signing the Survey Plan pursuant to Section 223 of the Resource Management Act 1991, the consent holder shall complete the following:

    a) All necessary easements shall be shown in the Memorandum of Easements attached to the Survey Plan and shall be duly granted or reserved. This shall include:

        - Right of way over the shared section of accessway within Lot 1 in favour of Lot 2.
        - Any necessary easements to take and convey water to service Lot 1.

3. Prior to certification pursuant to s224(c), the applicant shall complete the following:

    a) The completion of all works outlined in Condition 1 above.

    b) The provision of an electricity connection to Lot 1, in accordance with the network supplier's requirements.

    c) The provision of a telecommunications connection to Lot 1, in accordance with the network supplier's requirements OR the registration of a consent notice as per Condition X below.

    d) The removal of all crack willows on Lots 1 and 2.

    e) The completion of all riparian planting on Lot 1 within the 6m riparian strips on either side of Mill Creek, as detailed on the approved Landscape Concept plan.

    f) The completion of all exotic and native tree planting on Lots 1 and 2 along Mill Creek, at the northern end of the drain, and at the base of the escarpment on Lot 2, as detailed on the approved Landscape Concept plan.

    f) A Land Management and Ecological Restoration Plan (LMERP) shall be prepared by a suitably qualified and experienced professional for the Wharenhuanui Hills Management Area (WHMA) being the ochre shaded area on the approved Landscape Concept plan, and a copy shall be submitted to Council. The LMERP shall set out how the restoration of the escarpment to replace the existing woody weed cover permanently with native woody species to the greatest extent practicable will be achieved. Implementation is to start immediately on issue of title and it is to be completed in stages within the

timeframes set in the LMERP. Full restoration is to be completed within a 25 year time frame but the area is to be managed for its values in perpetuity. The LMERP is to provide for regular monitoring and reporting on targets.

4. The following conditions of the consent shall be complied with in perpetuity and shall be registered on the title for Lot 1 by way of Consent Notice pursuant to s221 of the Act:

   a) All buildings shall be located within the building platform shown as Covenant Area X on the title plan, except for the barn and garage approved under RMXXXX.

   b) At the time a dwelling is proposed on Lot 1, the owner for the time being shall be responsible for providing a wireless telecommunications service. The lot does not have a connection to the fibre network.

   Landscape Controls

   c) All domestic elements and activity shall be contained within the curtilage area identified on the Landscape Concept plan approved under RMXXXX (*Macrae Property ref. 386.LP01 1:2000* dated May 2024), such as mown lawns, flower and shrub beds, vegetable gardens and orchard, patios and paved areas, dog kennels, pools, clothes lines, compost storage, garden sheds, parked trailers, caravans, boats, etc. No exotic plants taller than 4m are permitted except for exotic trees of similar character to Golden Willow, Pin Oak, English Beech or Poplar. Trees with brightly coloured red, purple or blue/grey foliage are not permitted.

   d) All fencing and road entrances shall be of typical low-key rural character, limited to post and wire fences and timber fences and/or stone walls under 1.2m high. Concrete and steel may form minor components. All components shall have a natural finish or be painted in earthy grey or brown colours. Entrance wing walls shall be no more than 5m long.

   e) Mitigation and framework planting shall be maintained in accordance with the Landscape Concept plan approved under RMXXXX. Plants shall be maintained with mulching, irrigation and protection from stock and browsing /digging by pests. Trees shall be staked. Any plant that dies, is damaged or fails to thrive shall be replaced in the next planting season.

   g) The sedgeland planting along the drain, as shown on the approved Landscape Concept plan, shall be completed within 5 years of construction of a dwelling on Lot 1.

   h) No lines or groups of trees shall be planted in the open paddock between Mill Creek and Malaghans Road that would substantially block or interfere with views of the Wharehuanui Hills escarpment from Malaghans Road.

   Natural Hazard Mitigation

   i) At the time a dwelling is proposed on Lot 1, a suitably qualified and experienced person shall undertake an assessment of the potential flooding, overland flow and rockfall hazards to the building platform and shall design any necessary mitigation measures, including, but not limited to: minimum floor level for the dwelling, diverson channels/drains for overland flow originating from the slope to the south, and rockfall protection.

5. The following conditions of the consent shall be complied with in perpetuity and shall be registered on the titles for Lots 1 and 2 by way of Consent Notice pursuant to s221 of the Act:

   a) The owners of the lots shall be responsible for maintaining the Riparian Management Zone (RMZ) on either side of Mill Creek and its tributary, as shown on the Landscape Concept plan approved under RMXXXX (*Macrae Property ref. 386.LP01 1:2000* dated March 2024). All invasive weeds shall be

removed within 3 years of titles being issued. Weed control shall be undertaken by the lot owners on an ongoing basis to prevent any reinvasion or new weed species invading. Planting within the RMZ is limited to native species only that would naturally occur in this area.

b) Native planting along the base of the escarpment within Lot 1, as shown on the approved Landscape Concept plan, shall be undertaken within the first planting season following construction of a dwelling on the lot.

c) The owners of the lots shall be responsible for implementing the Land Management and Ecological Restoration Plan (LMERP) prepared for subdivision RMXXXXX and attached to this consent notice. The LMERP shall apply to the Wharehuanui Hills Management Area (WHMA) shown on the approved Landscape Concept plan for RMXXXX which replaces the Rock Ridge Management Area established under RM161092 as varied by RM17115.

The LMERP objectives are to retain and improve the natural character and ecological health of the escarpment by transforming the woody weed cover over time to native vegetation of species that would naturally occur across the escarpment (including trees, shrubs, grasses, ferns, scramblers, herbs). This would be achieved through active planting and promoting natural regeneration.

There shall be no grazing, buildings, structures or stored materials within the WHMA. There shall be no earthworks except where foot tracks are necessary to facilitate ecological restoration. There shall be no fencing within the WHMA except where it promotes and/or is necessary for ecological restoration. Exceptions to the earthworks and fencing requirements may be made to allow the construction of a public trail through the WHMA.

Land Use Conditions

1. Prior to commencing works on the site, the consent holder shall obtain 'Engineering Review and Acceptance' from the Queenstown Lakes District Council for development works to be undertaken and information requirements specified below. The application shall include all development items listed below unless a 'partial' review approach has been approved in writing by the Manager of Development Engineering and Subdivision at Council. The 'Engineering Review and Acceptance' application(s) shall be submitted to the Manager of Development Engineering and Subdivision at Council for review, prior to acceptance being issued. At Council's discretion, specific designs may be subject to a Peer Review, organised by the Council at the applicant's cost. The 'Engineering Review and Acceptance' application(s) shall include copies of all specifications, calculations, design plans and Schedule 1A design certificates as is considered by Council to be both necessary and adequate, in accordance with Condition (X), to detail the following requirements:

   a) Construction of a rockfall protection bund on Lot 1, as recommended by Geosolve in their *Geotechnical and Flooding Assessment Report*, dated April 2024, submitted with the RMXXXX application.

   b) The provision of channels/drains to divert overland flows from the catchment to the south of the building platform around the dwelling, as recommended by Geosolve in their *Geotechnical and Flooding Assessment Report*, dated April 2024, submitted with the RMXXXX application. This may incorporate the rockfall bund required by a) above.

2. Earthworks shall be carried out in accordance with the Environmental Management Plan prepared by Enviroscope and submitted with the RMXXXX application.

3. Prior to occupation of the dwelling, the consent holder shall complete all of the works outlined in Condition 1 above.

4. All joinery and spouting shall match, or be of similar colours to, the walls and roof.

5. Water tanks shall be black, grey, olive green or brown in medium to dark hues and buried or screened so they are not visible from outside the lot.

6. The barn shall only be used for storage.

7. Within the first planting season following completion of the dwelling, the rockfall bund shall be planted with native species appropriate to the ecological restoration of the escarpment, as detailed on the approved Landscape Concept plan.

8. Lighting shall comply with the following to avoid light spill and glare:

    a. All fixed exterior lighting shall be directed away from Malaghans Road and adjacent sites.

    b. The activity shall not result in more than a 3 lux spill (horizontal and vertical) of light to any other site, measured at any point within the boundary of the other site.

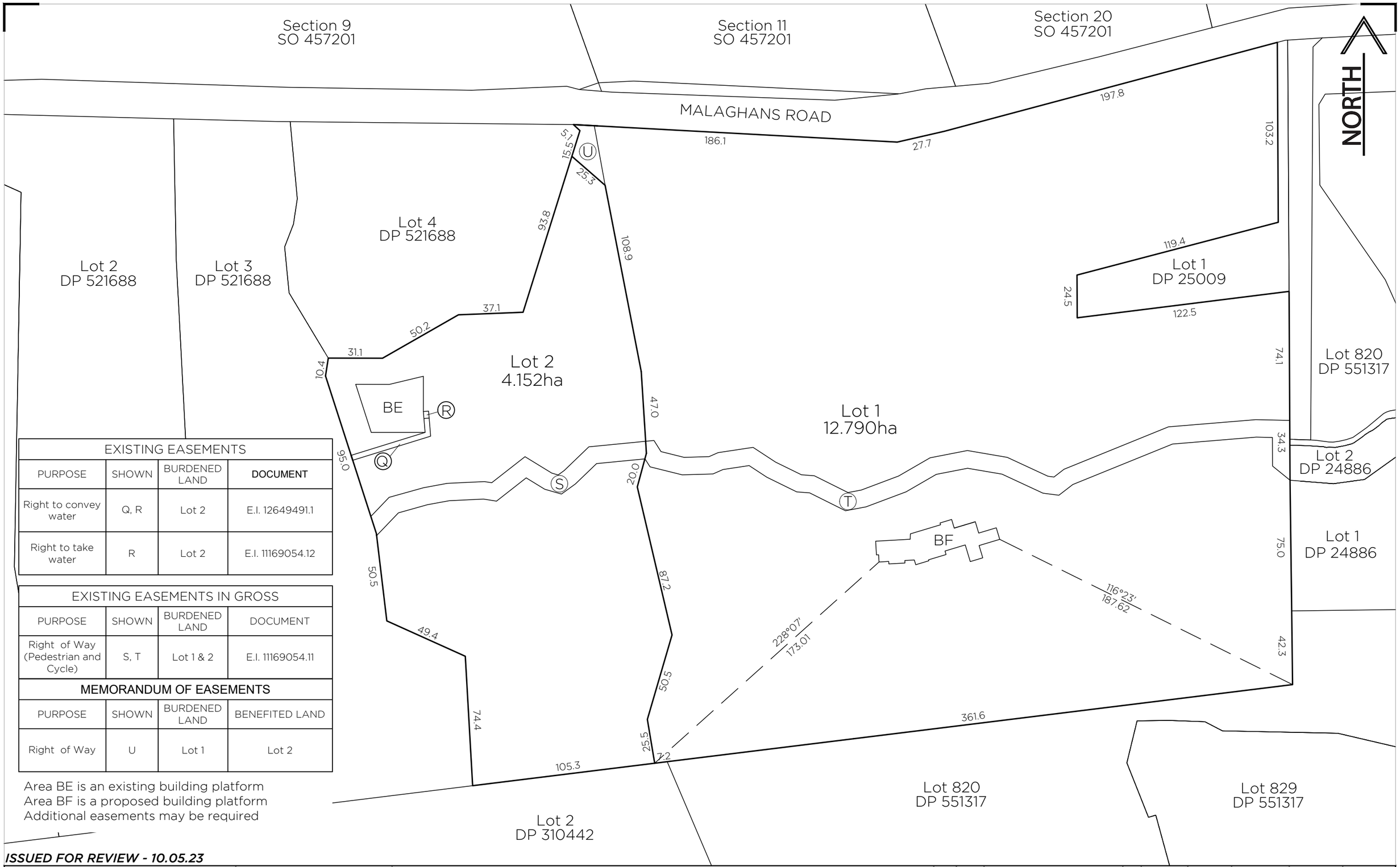
    c. There shall be no upward light spill.

    d. There shall be no driveway lighting outside the curtilage.

    e. Any landscape lighting within the curtilage shall not be visible from Malaghans Road.

TechnologyOne ECM Document Summary
Printed On 27-Aug-2024

Class	Description	Doc Set Id / Note Id	Version	Date
PUB_ACC	Appendix 5 - Scheme Plan	8029150	1	14-May-2024
PUB_ACC	Appendix 6 - Geotechnical and Flooding Assessment Report	8029149	1	14-May-2024



EXISTING EASEMENTS			
PURPOSE	SHOWN	BURDENED LAND	DOCUMENT
Right to convey water	Q, R	Lot 2	E.I. 12649491.1
Right to take water	R	Lot 2	E.I. 11169054.12

EXISTING EASEMENTS IN GROSS			
PURPOSE	SHOWN	BURDENED LAND	DOCUMENT
Right of Way (Pedestrian and Cycle)	S, T	Lot 1 & 2	E.I. 11169054.11

MEMORANDUM OF EASEMENTS			
PURPOSE	SHOWN	BURDENED LAND	BENEFITED LAND
Right of Way	U	Lot 1	Lot 2

Area BE is an existing building platform
Area BF is a proposed building platform
Additional easements may be required

ISSUED FOR REVIEW - 10.05.23

JEA TOWN PLANNERS & SURVEYORS
Level 2, 36 Shotover Street
PO Box 95, Queenstown, 9300

CLIENT
MACRAE

NOTES:
- *ALL DIMENSIONS SHOWN ARE IN METERS UNLESS SHOWN OTHERWISE.*
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- *THIS PLAN MAY BE SUBJECT TO FINAL SURVEY.*

LOTS 1 & 2 BEING A SUBDIVISION OF LOT 5 DP 521688 832 MALAGHANS ROAD

REV.	DATE	REVISION DETAILS	BY

SURVEYED	SIGNED	DATE	JOB NO.	DRAWING NO.
-	-	-	23016	06.01
DRAWN	**CHECKED**	**DATE**	**SCALE**	
MF	CW	10.05.23	1:2000m @ A3	
DATUM & LEVEL				**REV.**
MT NIC 2000 - NZVD16				-

C:\Users\JEA Craig\John Edmonds and Associates\John Edmonds and Associates - Shared Documents\Clients\2023\23016 - 832 Malaghans Road - Macrae\Survey\CAD\23016.06.01 Scheme Plan.dwg Plotted: 27.03.2024

Geotechnical and Flooding Assessment Report

832 Malaghans Road, Arrowtown

Report prepared for:

Ron Macrae

Report prepared by:

GeoSolve Limited

Distribution:

Ron Macrae

John Edmonds & Associates Ltd

GeoSolve Limited (File)

April 2024

GeoSolve Ref: 230249

Revision	Issue Date	Purpose	Author	Reviewed
0	10/04/2024	Client issue	MBS/HDW	PGF/NW
1	17/04/2024	Lot numbers and cut batter update	MBS/HDW	PGF/NW

GEOTECHNICAL WATER RESOURCES PAVEMENTS

Table of Contents

1 Introduction 1
1.1 General 1
1.2 Development 1
2 Site Description 2
2.1 General 2
2.2 Topography and Surface Drainage 2
3 Geotechnical Investigations 4
4 Subsurface Conditions 5
4.1 Geological Setting 5
4.1.1 Regional Geology 5
4.2 Stratigraphy 5
4.3 Groundwater 6
5 Flooding Assessment 7
5.1 Mill Creek Flood Level Assessment 7
5.1.1 Introduction 7
5.1.2 Mill Creek Flood Hazard Assessment 8
5.2 Overland Flow Path Assessment 11
5.2.1 Introduction 11
5.2.2 Overland Flow-Rate Estimation 13
5.2.3 2D Overland Flow Analysis 13
5.2.4 Conceptual Overland Flow Diversion 14
6 Liquefaction 17
7 Rockfall Assessment 18
7.1 General 18
7.2 Geomorphological Observations 18
7.3 Shadow Angle 19
7.4 3D Rockfall Analysis 19
7.5 Results 21
7.5.1 Main Dwelling 21
7.5.2 Barn Dwelling 23
7.6 Quantitative Rock Fall Risk Assessment 25
7.6.1 General 25

7.6.2 Method – APP6 Guidelines 25
7.6.3 Assumptions and Inputs 26
7.6.4 Main Dwelling Results 27
7.6.5 Barn Results 27
7.6.6 Risk Reduction Discussion 27
8 Engineering Considerations 29
8.1 General 29
8.2 Geotechnical Parameters 29
8.3 Site Preparation 29
8.4 Excavations and Recommended Batters 30
8.4.1 Cuts in Soil Materials 30
8.4.2 Cuts in Schist Rock 31
8.5 Engineered Fill & Engineered Fill Slopes 31
8.6 Ground Retention 32
8.7 Groundwater Issues 32
8.8 Settlement and Foundations 33
8.8.1 Dwelling Building Platform 33
8.8.2 Bridge Foundations 33
8.9 Site Subsoil Category 33
9 Stormwater Soakage Assessment 34
9.1 General 34
9.2 Permeability Analysis 34
9.3 Preliminary Soakage Design Considerations 34
10 QLDC Land Development and Subdivision Code of Practice 36
11 Construction Hazards 38
12 Conclusions and Recommendations 39
13 Applicability 41

1 Introduction

1.1 General

This report presents the results of a geotechnical, flooding and overland flow assessment undertaken by GeoSolve Limited for a proposed residential development and associated subdivision at 832 Malaghans Rd, Arrowtown.

Photograph 1.1 - Site photo showing proposed building platform location at the time of the geotechnical investigation.

The assessment was undertaken for Ron Macrae in accordance with GeoSolve Limited proposal dated 23 May 2023, which outlines the scope of work and conditions of engagement. This report has been prepared to support a resource consent application.

1.2 Development

We understand it is proposed to subdivide the property into two lots.

This report provides a detailed assessment of the proposed southern lot (Lot 1) for which a residential dwelling, a barn and a vehicle garage are proposed, see locations on Figure 1a, Appendix A. Concept plans of the buildings have been provided by Mason & Wales Architects. A new bridge is proposed to cross Mill Creek to enable access to the proposed dwelling.

Cut and fill earthworks will be required to form a level building platform and car parking areas on the proposed Lot 1. The earthworks plans provided by John Edmonds & Associates (JEA) indicate a maximum cut depth of 3.8 m and a maximum fill depth of approximately 1 m are proposed. The earthworks plan is attached in Figure 1c, Appendix A.

No development is proposed for Lot 2, which will contain the existing residential dwelling at the site.

2 Site Description

2.1 General

The subject property, legally described as Lot 5 DP 521688, is located approximately 4 km west of Arrowtown, as shown in Figure 2.1 below.

Figure 2.1 – Site location plan

The site comprises farmland and is covered in grass and scattered trees. An existing residential dwelling and associated outbuildings are present in the west of the site, on the proposed Lot 2.

The site is bound by Malaghans Rd to the north, a residential dwelling and Millbrook resort to the east and undeveloped farmland in all other directions. The nearest building (residential) outside the development area is located more than 150 m from the proposed building platform location.

2.2 Topography and Surface Drainage

The site topography (1 m LiDAR contours) is shown on Figure 1a, Appendix A.

Mill Creek flows from the west to east through the site, approximately 20 m north of the proposed dwelling location.

The site topography is generally near-level in the northern two thirds of the property and moderately to steeply sloping towards the north in the southern third of the property.

The topography in the vicinity of the proposed dwelling building platform is generally gently sloping towards the north, at slope angles of approximately 5-15°. Along the southern side of the building, the ground steepens and rises up towards Pt 529, which is located approximately 260 m south of the site.

The topography immediately south of the property has the potential to concentrate overland flow above the property, however no overland flow was observed at the time of the site investigation. Overland flow has been assessed and is discussed in Section 5.2.

Near-vertical schist bluffs are present on the steep slopes in the south of the site, in the locations shown on Figure 1a, Appendix A. The closest schist bluffs are located approximately 50 m south-southwest of the proposed development area.

3 Geotechnical Investigations

In the area of the proposed dwelling, an engineering geological site inspection has been undertaken with confirmatory subsurface investigations. The following site investigations were undertaken on 9 June 2023:

- 8 test pits (TP 1-8) which were advanced to a maximum depth of 3.0 m;
- Scala penetrometer within and adjacent to TP 1-2, 4 and 8;
- 1 soakage test (SP 1) to assess the relative permeability and soakage potential of the subsoils. The soakage test was undertaken at 1 m depth.

Test pit and soak pit locations and logs are contained in Appendices A and B respectively.

4 Subsurface Conditions

4.1 Geological Setting

4.1.1 Regional Geology

The site is located in the Wakatipu basin, a feature formed predominantly by glacial advances. Published references indicate the last glacial event occurred in the region between 10,000 and 20,000 years ago. Glaciations have left deposits of glacial till, glacial outwash and lake sediment over ice–scoured bedrock. Post glacial times have been dominated by the erosion of the bedrock and glacial sediment, with deposition of alluvial gravel by local watercourses and lacustrine sediment during periods of high lake levels.

Active fault traces were not observed at the site or in the immediate vicinity of the site. The closest known active fault is the Nevis-Cardrona Fault system, located approximately 12 km east of the site. A significant seismic risk exists for the region from strong ground motion associated with a rupture of the Alpine Fault, located approximately 80 km northwest from Queenstown along the West Coast of the South Island. Recent research[1] suggests there is a 75% probability of an Alpine Fault earthquake occurring within the next 50 years and an 82% probability that the next earthquake on the Alpine Fault will be of magnitude 8 or greater.

4.2 Stratigraphy

The subsurface soil materials observed during the site investigations typically comprises:

- 0.1 - 0.5 m of topsoil, overlying;
- 0.2 - 1.4 m of alluvial sand, overlying;
- 0 - 2.2 m + of alluvial sand & gravel, overlying;
- Schist bedrock

Topsoil was observed at the surface of all test/soak pits to depths of 0.1-0.4 m. The topsoil comprises soft, organic SILT with a trace of rootlets.

Alluvial sand was observed beneath the topsoil in all test/soak pits, to depths of between 0.5 and 1.8 m. The topsoil comprises very loose to loose, silty SAND and loose to medium dense, SAND with some silt and a trace of gravel.

Alluvial sand & gravel was observed beneath the alluvial sand in TP 1-2, 4-5, 7-8 and SP 1, to depths of between 1.1 and 3+ m. The alluvial sand & gravel comprises loose to medium dense, gravelly SAND and sandy GRAVEL with a trace to minor silt and medium dense, silty gravelly SAND.

Schist bedrock was observed at the base of TP 1, 3, 5-6 and 8, from depths of between 0.5 and 2.2 m. Schist bedrock was also exposed on the ground surface approximately 8 m west of the proposed dwelling location, as shown on Figure 1, Appendix A. The schist

[1] Howarth, JD, *et al.* (2021). Spatiotemporal clustering of great earthquakes on a transform fault controlled by geometry. Nature Geoscience; doi: 10.1038/s41561-021-00721-4

bedrock comprises weak, slightly to moderately weathered, pelitic SCHIST. The schist bedrock is foliated and typically dips at 15-36° to the southwest (225-245°).

Full descriptions of the observed subsurface stratigraphy at the site are provided in the test pit and soak pit logs in Appendix B.

The inferred ground model is shown on Cross Sections A-C, Figure 2A and 2B, Appendix A.

4.3 Groundwater

Groundwater was observed in TP 1-2 and 7-8 at depths of 1.4 to 2.1 m. Depth to groundwater roughly coincides with the level of the nearby Mill Creek.

5 Flooding Assessment

5.1 Mill Creek Flood Level Assessment

5.1.1 Introduction

This section includes an assessment of the potential hazard posed to the proposed residential development from flooding of Mill Creek. Mill Creek originates to the west of the site and drains a catchment of 26.75 km^2 on the south face of Coronet Peak (Figure 5.1 below).

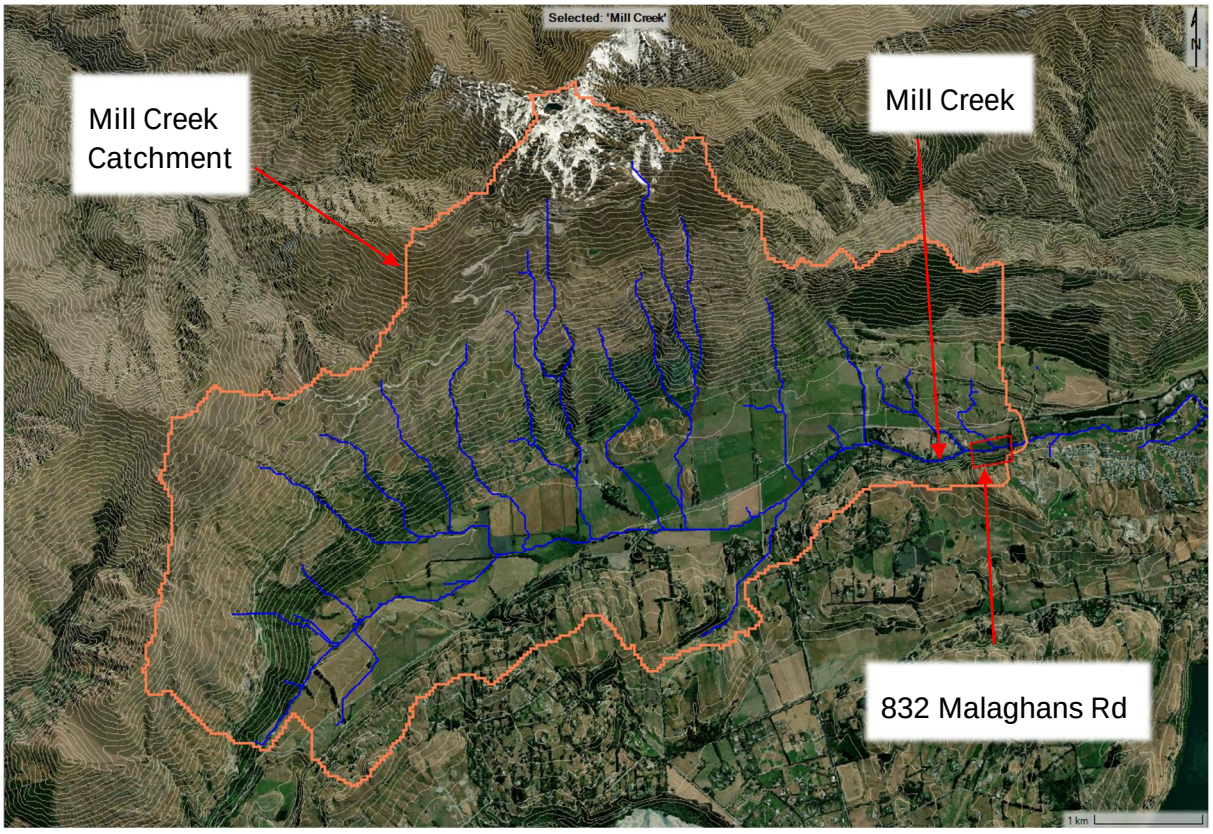


Figure 5.1: Mill Creek Catchment upstream of proposed development site.

The proposed development site is shown below in Photo 5.1 (looking south). Mill Creek runs west to east approximately 20m north of the proposed building platform. The excavator shown in Photo 5.1 is located near the centre of the proposed building platform. Mill Creek is shown on the right.

Photo 5.1: The proposed development area.

Photo 5.2 shows the typical form and vegetation of Mill Creek within the site. No flooding hazards are indicated on the QLDC hazard mapping for the site.

Photo 5.2: Mill Creek channel.

5.1.2 Mill Creek Flood Hazard Assessment

A 1% AEP storm event was selected (as per QLDC standards) as the design event to evaluate the flood hazard to the proposed development from the Mill Creek flow path. The creek reach at the site was shown to have a 1% Annual Exceedance Probability (AEP) flow 19.89 m^3/s by the Henderson and Collins (H&C) method[2].

[2] New Zealand River Flood Statistics, Henderson Colins V2, https://hub.arcgis.com/maps/NIWA::henderson-collins-flood-estimation-map-nz/about

A 15% increase in flood flow was specified to allow for climate change based on the National Institute of Weather and Atmospheric Research's (NIWA) projected increase in annual rainfall for Queenstown (RCP8.5 scenario)[3]. The 1% AEP flow was therefore multiplied by 1.15 to give a value of 22.87 m^3/s for a 1% AEP event.

This flood flow is considered conservative as the presence of significant storage, in the form of ponds and flood plains, along the upstream length of Mill Creek is expected to reduce peak flood flows considerably at the site.

The closest flow gaging station for Mill Creek is at the inlet to Lake Hayes, ~5 km downstream. The maximum flow measured at this location was 6 m^3/s (records exist from 1983-2024[4]). This also suggests the flow specified for 1 % AEP event is conservative.

Hydraulic modelling was undertaken using the Hydrologic Engineering Centre's River Analysis System version 6.4.1(HEC-RAS) program using the peak flow of 22.87 m^3/s determined above, and a Digital Elevation Model (DEM) derived from the LINZ 1 m LiDAR survey of Queenstown. The HEC-RAS default Manning's roughness of 0.06 was used for the entire area. Sensitivity testing indicated that varying the Mannings n value did not have a significant effect on the depth of flooding results. This is expected to be largely due to the low gradient of Mill Creek within the site and backwater effects from topography downstream of the site.

Figure 5.2 shows the maximum modelled water depth in the Mill Creek flow path for the design event. See Figure 5.3 for the cross-section location (black line). The water level adjacent to the building platform is shown to rise to a peak water surface elevation of 409.14 m. A minimum of 500mm freeboard above this level is recommended[5], measured from the maximum water level to the building platform level or the underside of the floor joists or underside of the floor slab.

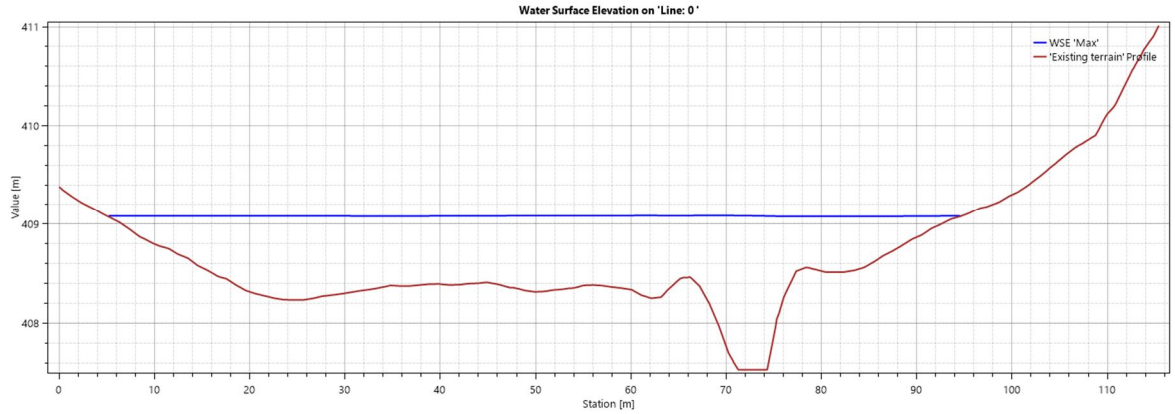


Figure 5.2: HEC-RAS model result showing water depth in Mill Creek adjacent to the proposed development area for a 1% AEP flow.

[3] Ministry for the Environment 2018. Climate Change Projections for New Zealand: Atmosphere Projections Based on Simulations from the IPCC Fifth Assessment, 2nd Edition. Wellington: Ministry for the Environment.
[4] https://www.lawa.org.nz/explore-data/otago-region/water-quantity/monitoring-sites/mill-creek-at-fish-trap/

The proposed building platform earthworks level is approximately RL 409.8 m and therefor the minimum required freeboard has been met.

Figure 5.3 below shows the HEC-RAS modelling output of maximum water depth for Mill Creek through the site. The separate shallow overland flow shown on the hillside to the south of the property has been modelled separately and is discussed in Section 5.2.

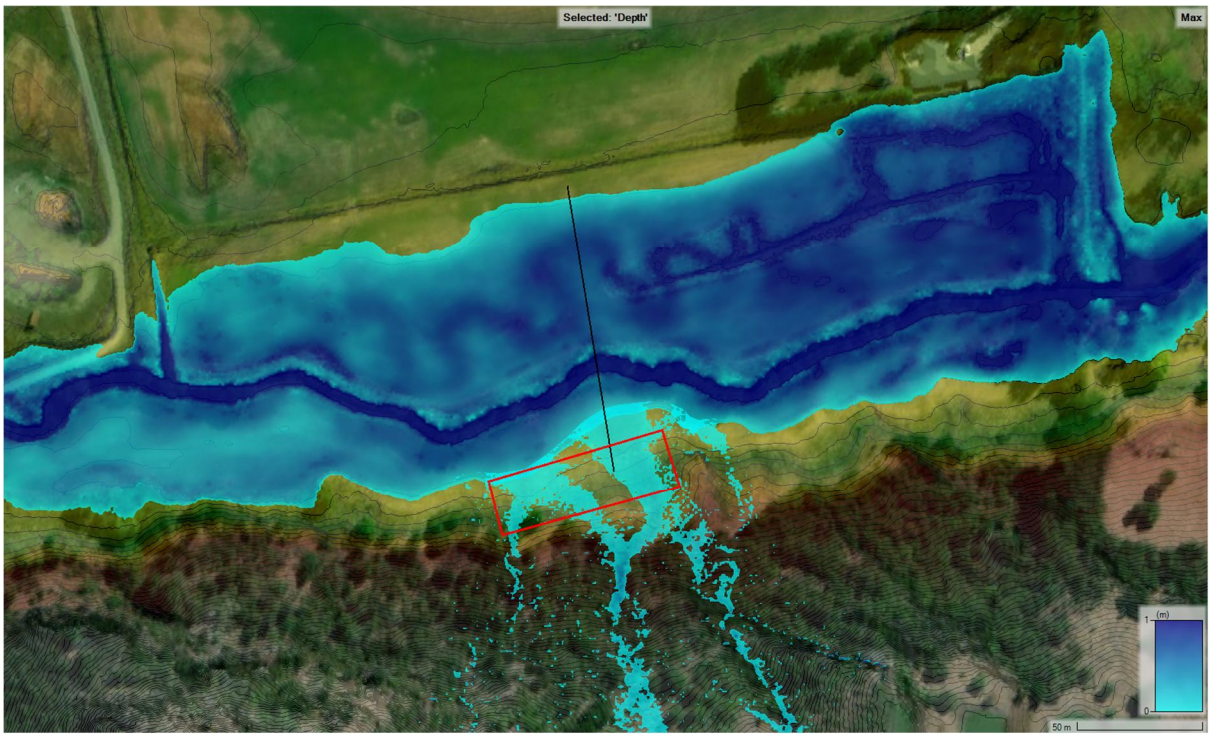


Figure 5.3: HEC-RAS modelling output showing depth.

Calculated flow velocity outside of the Mill Creek channel is relatively low (Figure 5.4). Landscape design within the flood plain should consider potential inundation and flow during floods. However, as already described, the area/depth of inundation shown is considered to be conservative.

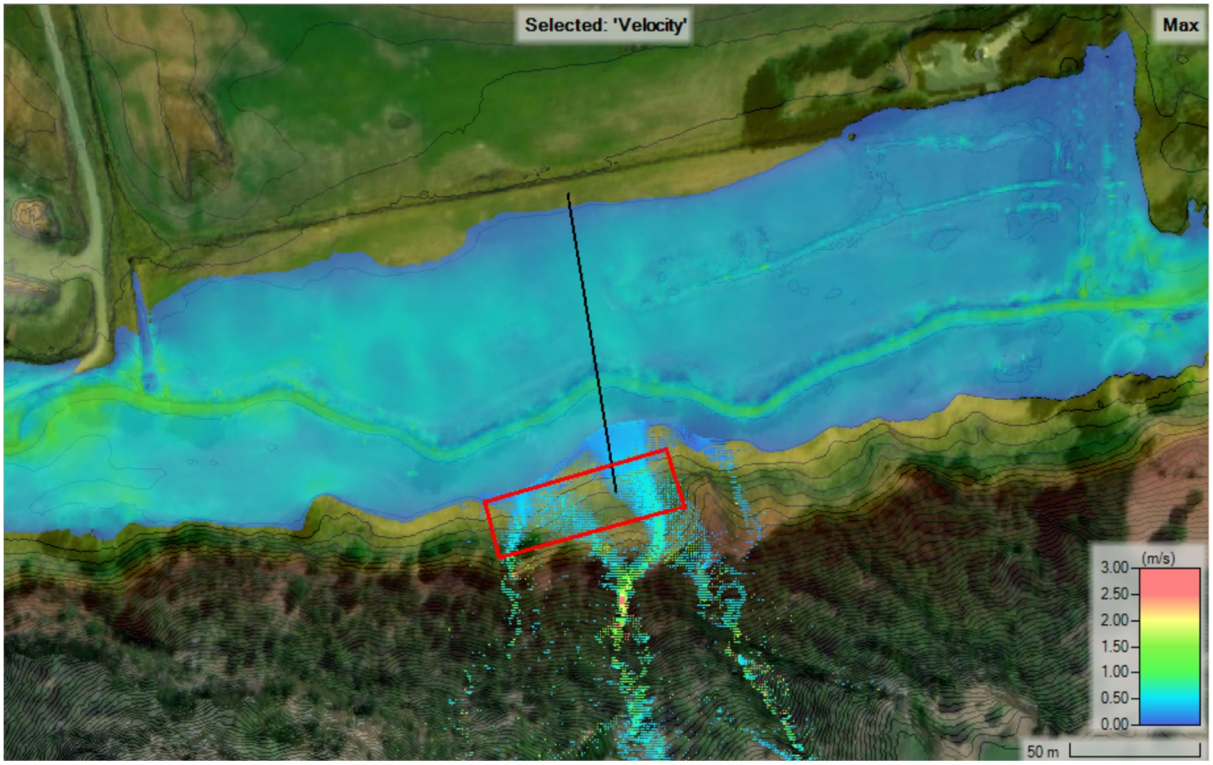


Figure 5.4: HEC-RAS modelling output showing velocity.

Rockfall bunding constructed above the proposed dwelling will not alter the flow path/inundation from Mill Creek.

5.2 Overland Flow Path Assessment

5.2.1 Introduction

The proposed building platform is located within a potential overland flow path which drains the hillside immediately to the south. Analysis of the catchment that feeds into that flow path has therefore been undertaken. The purpose of the analysis is to determine:

- The anticipated flow rate within the flow path during a 1% AEP rainfall event.
- How the runoff could conceptually be diverted around the building platform.
- If/how the runoff may influence the required finished floor level of the dwelling.
- Conceptual design of the diverted channel.
- Whether diversion of the overland flow would have any downstream effects.

The building platform is located at the toe of a north facing slope, see Figure 5.5 below, . A potential overland flow path with an upstream catchment of 5 hectares runs though the building platform. The overland flow path was dry at the time of the site investigation.

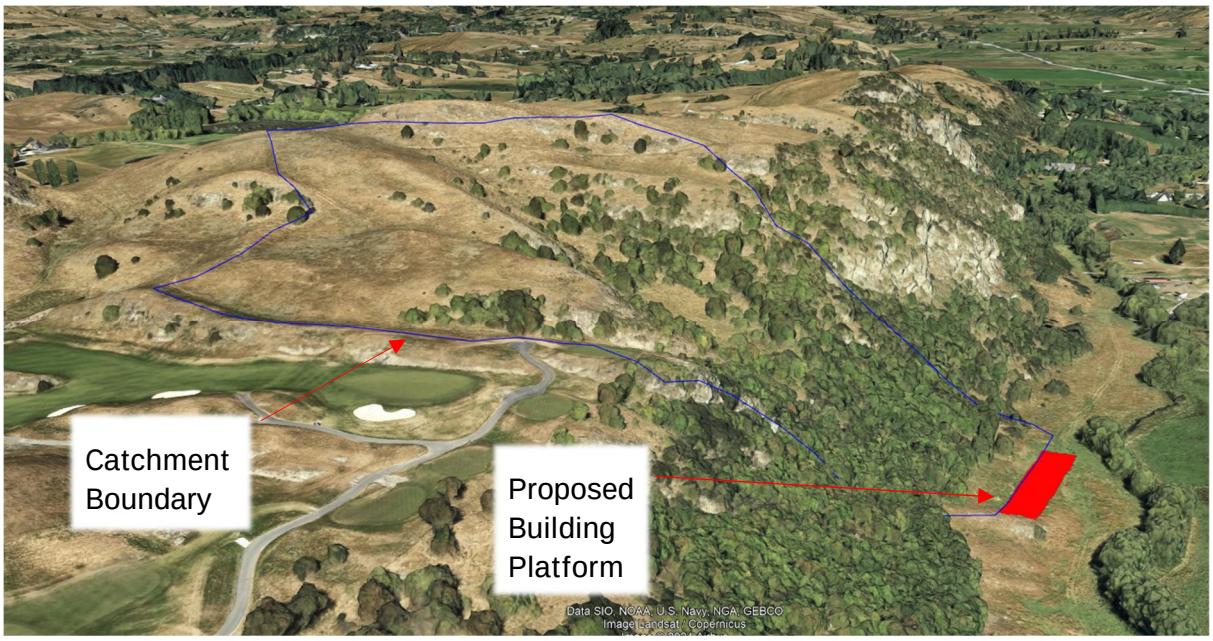


Figure 5.5: Google Earth image showing the upstream catchment.

Photo 5.5 shows the catchment leading to the proposed location of the building platform. The slope is not considered to be at risk of debris flood/flow based on site observations and has a low Melton Ratio of 0.15 (i.e. less than 0.3, and therefore susceptible to 'clear water' flows).

Photo 5.5: Catchment leading towards proposed building platform location (looking north)

5.2.2 Overland Flow-Rate Estimation

The catchment was assessed by both a site visit and a desktop study to inform the input parameters required to calculate the anticipated overland flow from a 1% AEP storm event using the Rational Method.

In order to determine the applicable rainfall design intensity, the time of concentration for the catchment was calculated. The following inputs were obtained from 2021 1m LiDAR contours:

- Longest flow path = 350 m
- Elevation change = 106 m
- Average slope = 30%
- Catchment area (A) = 50,000 m^2 or 5 ha

Using these inputs with the Bransby-Williams Time of Concentration method resulted in the time of concentration being calculated as 8.8 minutes. This equates to the shortest duration/highest intensity (10 min) rainfall values (i) from NIWA's High Intensity Rainfall Design System V4 (HIRDS) being appropriate. The RCP 8.5 for the period 2081-2100 rainfall intensity scenario was used to account for climate change. This value was found to be 82.5 mm/hr for a 1% AEP rainfall event and 53.8mm/hr for a 20% AEP event.

The catchment is expected to be low permeability based on site observations and past permeability testing of similar hillsides nearby. Using the Rational Method with the above inputs, and a runoff coefficient of C = 0.7 (low permeability hilly pastural site[5]) gives the following flows:

- $Q_{1\%}$ = CiA = 0.802 m^3/s
- $Q_{20\%}$ =CiA = 0.523 m^3/s

Therefore, the estimated peak overland flow rate for a 1% AEP rainfall event at the site is ~0.8 m^3/s. Using the same calculation, the design flow rate for a 20% AEP rainfall event at the site is ~0.5 m^3/s.

5.2.3 2D Overland Flow Analysis

In order to investigate spatial distribution of overland flow paths a 2D rain-on-grid HEC-RAS model was developed for the catchment. A 1 hr design storm was chosen as the most appropriate to evaluate overland flow in the catchment. Total rainfall depth for a 1 hr storm is 36.7 mm for a 1% AEP rainfall event at the site (HIRDS V4). The RCP 8.5 for the period 2081-2100 rainfall intensity scenario was used to account for climate change. A 1 hr hyetograph was produced from the total rainfall depth using the method described in the HIRDS NIWA client report[6].

[5] 2020, QLDC Land Development and Subdivision Code of Practice, Queenstown Lakes District Council
[6] Trevor Carey-Smith et al NIWA High Intensity Rainfall Design System Version 4, Prepared for Envirolink August 2018 https://niwa.co.nz/sites/niwa.co.nz/files/2018022CH_HIRDSv4_Final.pdf

A Mannings n value of 0.15 was used to account for the relatively high roughness experienced by shallow overland flow. HEC-RAS model results showing overland flow depth are given in Figure 5.6. Results indicate the majority of overland flow from the catchment will flow through the proposed building platform location due to topography.

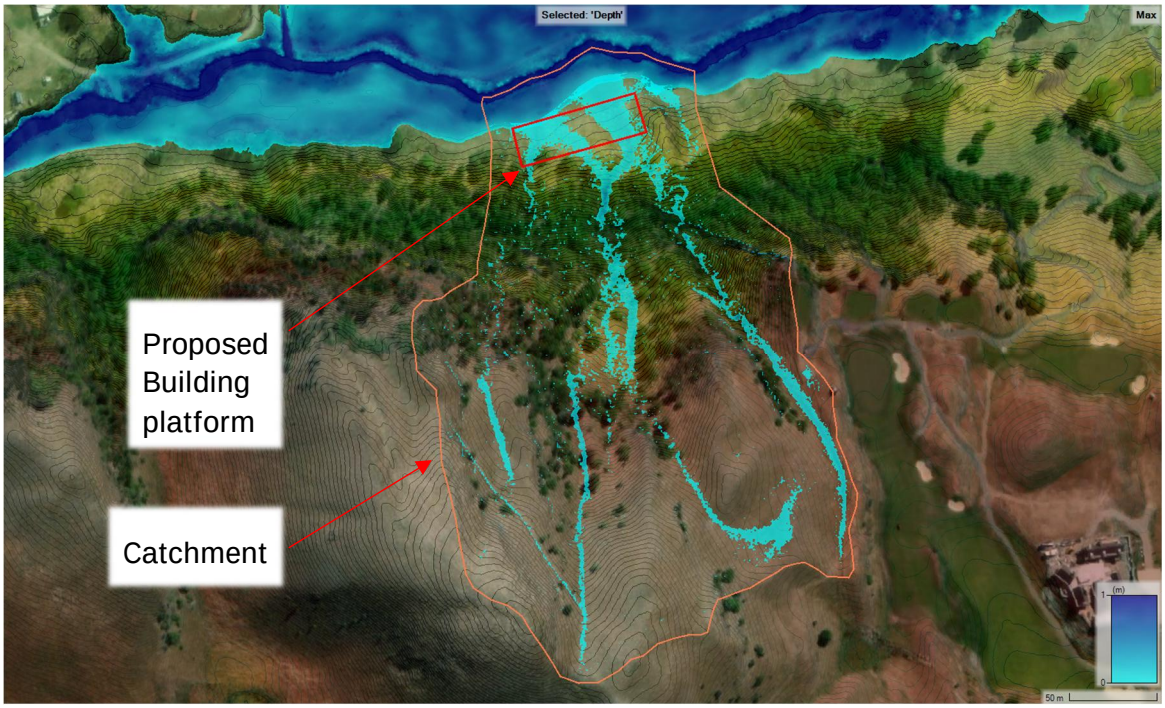


Figure 5.6: HEC-RAS results showing spatial distribution and depth of overland flow.

5.2.4 Conceptual Overland Flow Diversion

Final design of the earthworks and building platform will need to consider the potential overland flow. Diversion of the overland flow will be possible with standard engineering solutions such as diversion channels/drains. Any rockfall bunding constructed upslope of the property will be beneficial with respect to diversion of the flow paths.

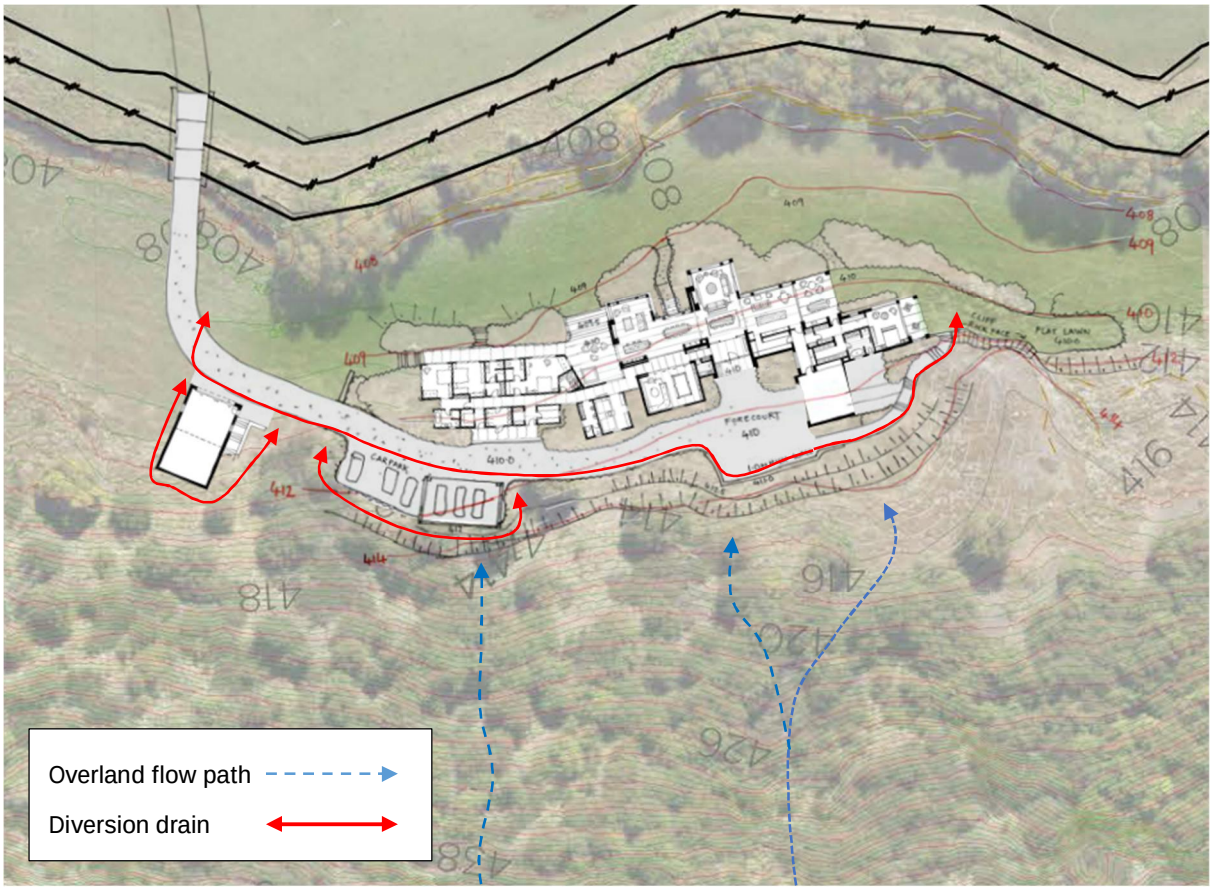


Figure 5.7: Conceptual drainage plan

If the proposed rockfall bund does not provide sufficient surface water flow diversion, then an example potential overland flow diversion solution is provided as Figure 5.7 and 5.8. This would require the following design elements, which should be considered at detailed design in collaboration with other design elements such as landscape architecture: The gravel driveway should have a cross-slope downwards away from the rear of the house. This will direct overland flow away from the house and into a drain onto the south side of the driveway. The majority of the overland flow will be directed west along the driveway. A smaller proportion of flow may be directed east as required.

Specific engineering design will be required at the detailed design stage to size the drain and specify driveway slopes to ensure sufficient capacity. A concrete drain should be sized to carry the estimated 20% AEP overland flow without overtopping. Additional flow during a 1% AEP event can be conveyed along the driveway itself.

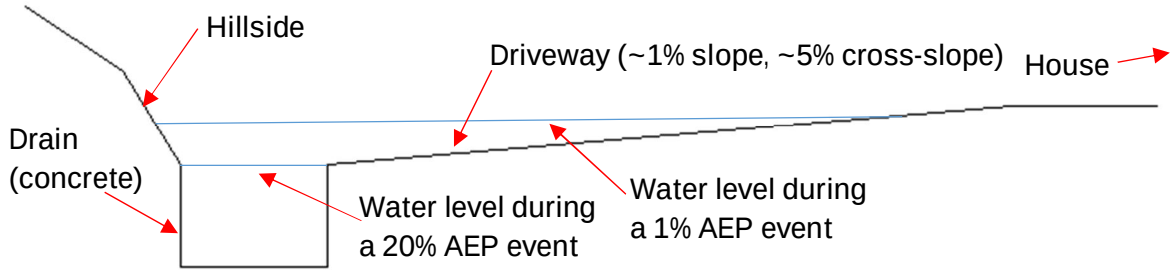


Figure 5.8: Diversion design concept sketch.

Areas of the house above or not adjacent to the driveway will also require sufficient drainage upslope to divert overland flow. Specific design will be required for these areas at the detailed design stage. Diversions consisting solely of drains without suitable overflow paths to direct water away from buildings should consider the potential for blockage and raised floor levels may be prudent where adequate diversion of overland flow cannot be assured.

Outflow from the diversion(s) described above should be directed into a suitable structure to mitigate scouring. A rip-rap basin or similar could be used to reduce flow velocity before discharging to suitable landscaping. Earthworks and landscaping upstream of the diversion and the driveway itself should be designed in such a way to avoid erosion and sediment entrainment during storm events. Provided the above conditions are met the diversion of overland flow is not expected to significantly alter the hydrology of the site compared to pre-development conditions.

As previously noted, the detailed design of any proposed rockfall protection bund(s) should be undertaken in a way that maximises its ability to also divert surface water flows, which would reduce the sizing of the conceptual diversion design described above.

6 Liquefaction

The site is mapped as 'possible susceptible' to liquefaction (Opus, 2005) on the QLDC hazard maps.

More recent mapping show the majority of the proposed dwelling location is mapped as Domain A: ground underlain by rock or firm sediments on the QLDC hazard maps (GNS, 2019). The northern edge of the proposed dwelling location is mapped as Domain B: ground predominantly underlain by poorly consolidated stream sediments.

A liquefaction review has been undertaken based on the results of the site investigation and nearby ORC well data.

The following comments are provided with respect to liquefaction:

- Groundwater was observed in TP 1-2 and 7-8 at depths of 1.4 to 2.1 m.
- Schist bedrock was observed in TP 1, 3, 5-6 and 8 from 0.5 to 2.2 m depth.
- Alluvial sand & gravel (gravelly SAND and sandy GRAVEL) overlies the schist bedrock. These materials typically have a low liquefaction risk due to their composition, even if saturated.
- Alluvial sand (silty SAND to SAND with some silt) overlies the alluvial gravel, however this layer was observed above the groundwater table in test pits excavated around the proposed dwelling location.
- Up to approximately 1 m of engineered fill is proposed beneath the northern side of the proposed dwelling.

The liquefaction risk for the proposed dwelling location is expected to be very low based on the shallow depth to schist bedrock and the composition of the alluvial sand and gravel. No liquefaction-mitigation foundation design will be required for the proposed dwelling.

We note that wet to saturated alluvial sand (silty SAND) was observed within TP 8, which was excavated in the vicinity of the proposed bridge location. It is expected that the bridge foundations will be piled to the schist bedrock, which will mitigate any liquefaction risk.

7 Rockfall Assessment

7.1 General

The proposed building location is located in a position that reduces the risk from rockfall, which is not directly beneath the main bluffs, however, the slopes immediately south of the site do have areas of low schist bluffs, and the larger bluffs are present on the periphery. A rock fall assessment has therefore been undertaken by GeoSolve to quantify the rockfall hazard. Three methods have been undertaken, geomorphological field mapping, empirical shadow angle, and RAMMS: Rockfall (Rapid Mass Movement Simulation) rockfall 3D software modelling.

Photograph 7.1: Photo looking across the proposed development area with a prominent schist bluff in the background.

7.2 Geomorphological Observations

Geomorphic field mapping has been undertaken to determine the extent and characteristics of existing rock fall debris on the site, and to locate potential rock fall source areas which may affect the proposed development area. The locations of the rock fall source areas are shown in Figures 1a and 1b, Appendix A.

A summary of the key rock fall mapping observations is presented below.

- Schist bedrock outcrops of varying heights (2-10m+ high) are present above the site are assessed to be source areas for rockfall;
- Block instability resulting from the interaction between foliation and rock mass defect sets are readily observed;
- Marginally stable rockfall debris that has accumulated on the slope, predominantly at the foot of outcrops may reactivate resulting in rock fall, e.g. during a seismic event;

- Boulders which have weathered loose along foliation and defect planes were observed at the crest of the bluffs;
- Mapped rockfall boulders (see Appendix A, Figures 1) across the site typically ranged in size from 0.3 - 1.5m³ in volume (with some isolated larger boulders up to 2.5 m^3). Boulders are typically elongated to tabular in shape;
- The runout path of the observed rockfall appears to track north to northeast from the bluff source area towards the proposed development area;
- Numerous rockfall boulders were observed directly adjacent to the proposed building platform areas. No rockfall boulders were encountered in the test pit investigations. No rockfall boulders have been observed at the surface within the proposed building platform areas;
- Previous earthworks or land use changes of the subject site may have removed or obscured additional boulders.

The observations above indicate future rock fall events are likely to occur, and general fretting/spalling of small individual rock debris (0.3 m diameter) is assessed to occur on a semi-regular basis from the bluffs.

7.3 Shadow Angle

Determining the shadow angle footprint provides an empirical method to assess the expected downslope limit of rock fall runout[7]. The shadow angle, the angle of a straight line between the highest point of the talus slope and the proposed building platform has been assessed for this site. A minimum shadow angle of 21° is recommended.

The shadow angles for the proposed main dwelling are between approximately 19° and 29° respectively, and are generally above the recommended 21° minimum.

The shadow angle for the proposed barn dwelling are between approximately 30° and 35° respectively, which are well above the recommended 21° minimum.

Empirical evidence indicates that both proposed building platform areas are at risk of rock fall originating from the upslope schist bluffs. A detailed rock fall analysis is therefore warranted and has been undertaken as described below in Section 7.4.

7.4 3D Rockfall Analysis

A 3-Dimensional rock fall analysis has been undertaken using RAMMS. The RAMMS numerical modelling software is used to simulate natural rock falls and considers the influence of the actual environment, underlying geology, topographic features and vegetation.

[7] Massey et al. 2014. Determining rockfall risk in Christchurch using rockfalls triggered by the 2010 – 2011 Canterbury earthquake sequence. Earthquake Spectra. 30(1):155-181.doi:10.1193/021413eqs026m.

The analysis has been run for three rockfall scenarios for the proposed dwelling and the barn. The three scenarios are described as follows:

- Scenario 1 – 1:20 yr event. Boulders less then 1m^3 typically around 0.3-0.5 m^3. Marginally stable rockfall debris and small boulders which have weathered loose along foliation defects, small seismic events.
- Scenario 2 – 1:50 yr event - Boulders greater than 1m^3 but less than 2m^3. Marginally stable large rockfall boulders which have weathered loose along foliation defects.
- Scenario 3 – 1:500 yr event - Boulders greater than 2m^3 but less than 3m^3. New very large boulders forming through the interactions between the schist foliation and rock defect joint sets.

The guidance document "MBIE Design considerations for Passive Protection Structures, October 2016" suggests that where evidence of rock fall exists on the slope, either new or historic, then selecting the largest of the most common boulders would be appropriate.

For the purposes of this assessment a boulder with a volume of 1.0 m^3 elongated to tabular in shape has been chosen to represent the size of the 95th percentile boulder

The rock fall hazard assessment assumes no vegetation is present. It is often difficult to predict the influence of vegetation on rock fall runout, bounce heights and energies. Therefore, a more conservative, vegetation free approach has been taken. This approach also allows for future unplanned removal of the vegetation, e.g. by fire.

7.5 Results

7.5.1 Main Dwelling

The results of the 3D modelling show that out of a total number of 10,691 rock fall trajectories modelled, (< 1%) passed through the subject site. A quantitative risk assessment has been conducted and is discussed below. The results of the rockfall modelling are generally in agreement with geomorphic observations and shadow angle assessment which both indicate there is potential for rock fall to reach the building platform. The RAMMS output for the Main Dwelling with a 1.5 m high rockfall protection bund added to the DEM are shown in Figures 7.1 to 7.3 below.

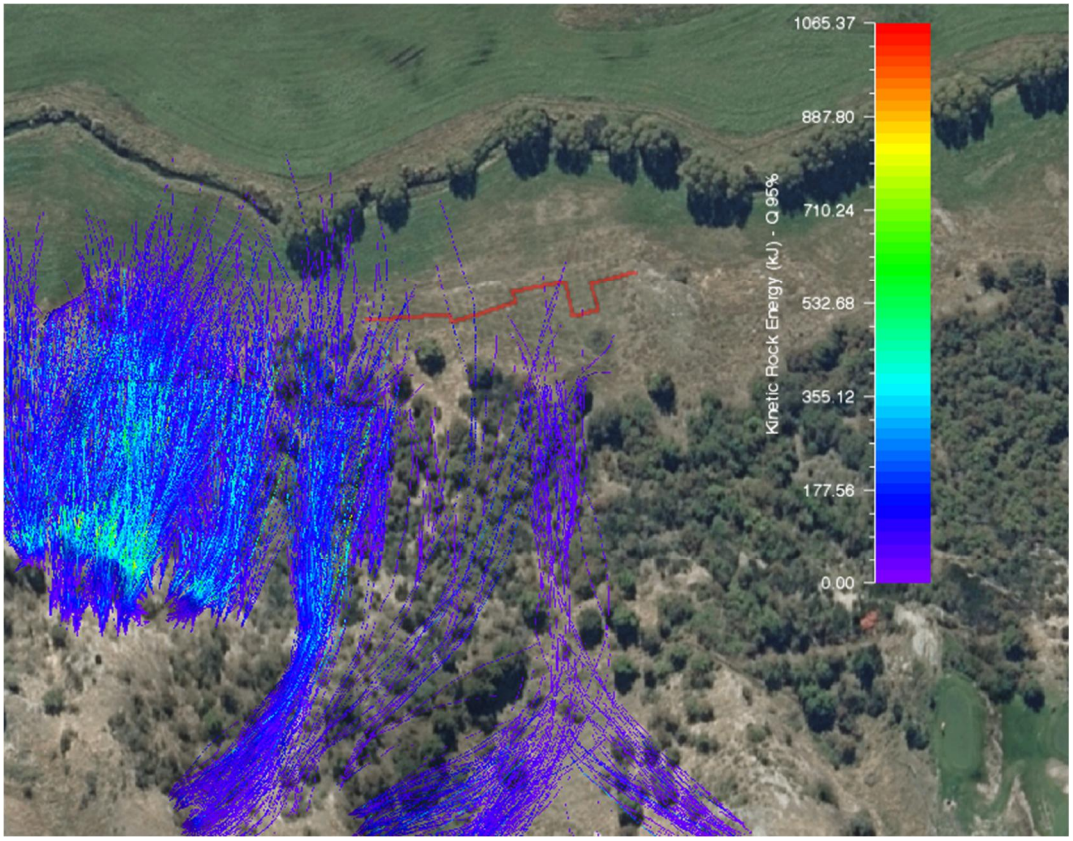


Figure 7.1: Modelled rock fall kinetic energy of simulation results for Scenario 1 (proposed main dwelling footprint shown in red).

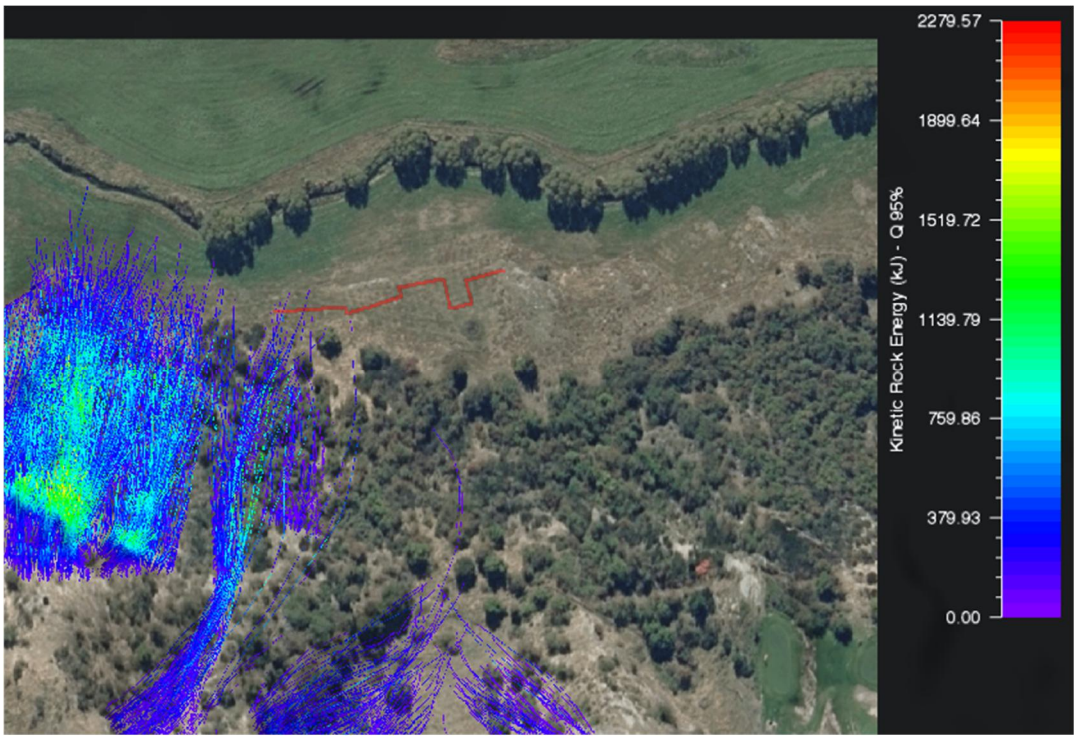


Figure 7.2: Modelled rock fall kinetic energy of simulation results for Scenario 2 (proposed main dwelling footprint shown in red).

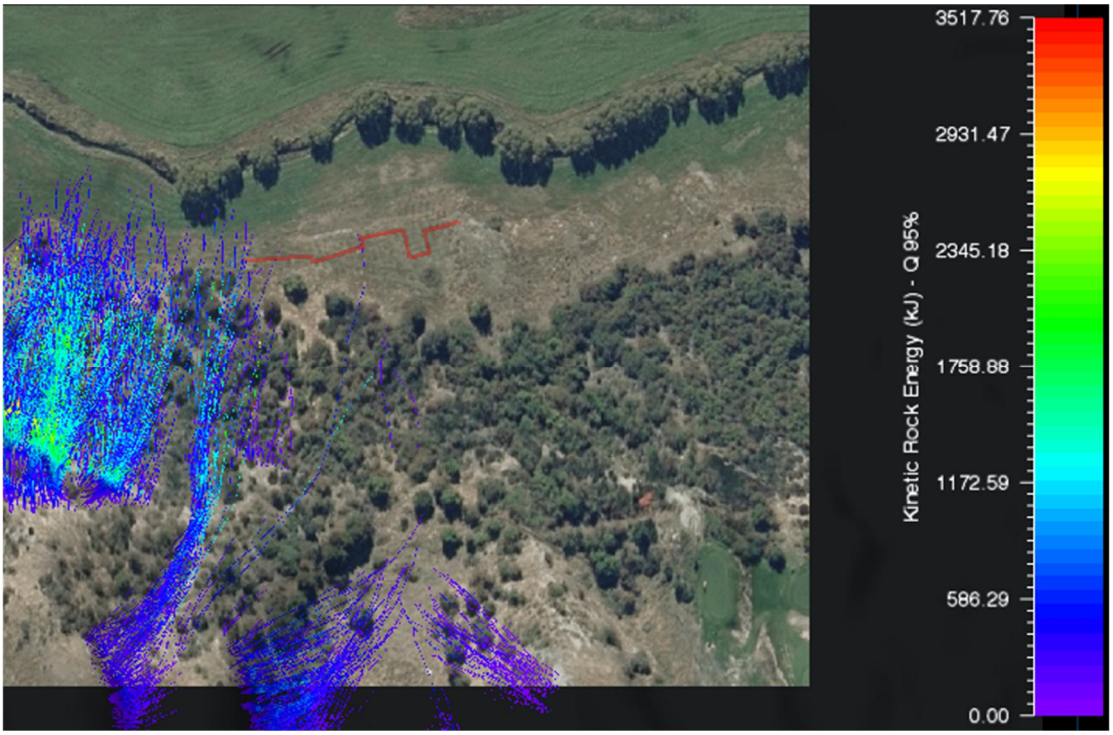


Figure 7.3: Modelled rock fall kinetic energy of simulation results for Scenario 3 (proposed main dwelling footprint shown in red).

7.5.2 Barn Dwelling

The results of the 3D modelling show that out of a total number of 8,951 rock fall trajectories modelled, 127 (1.5%) passed through the subject site. A quantitative risk assessment has been conducted and is discussed below. The results of the rockfall modelling are generally in agreement with geomorphic observations and shadow angle assessment, which both indicate a that there is a potential of rock fall reaching the proposed building platform. The RAMMS output for the Barn dwelling is shown in Figures 7.4 to 7.6 below.

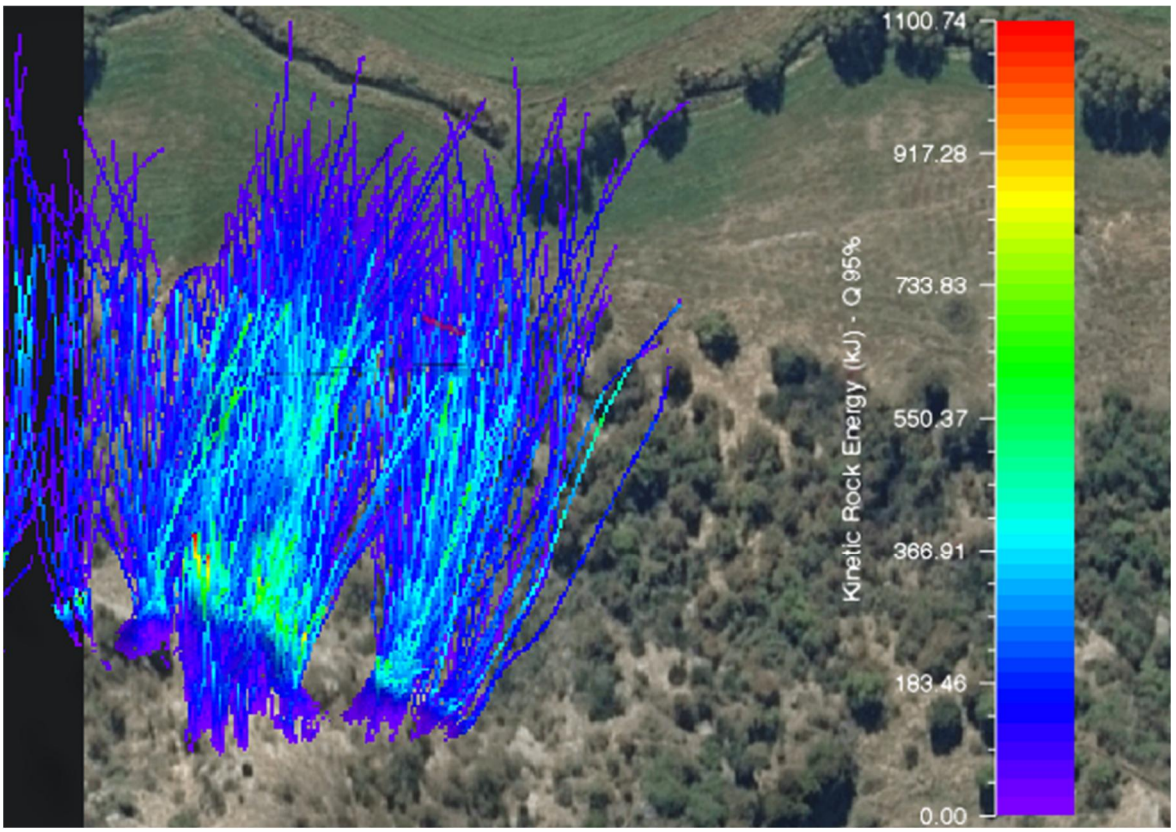


Figure 7.4: Modelled rock fall kinetic energy of simulation results for Scenario 1 (proposed barn dwelling footprint shown in red).

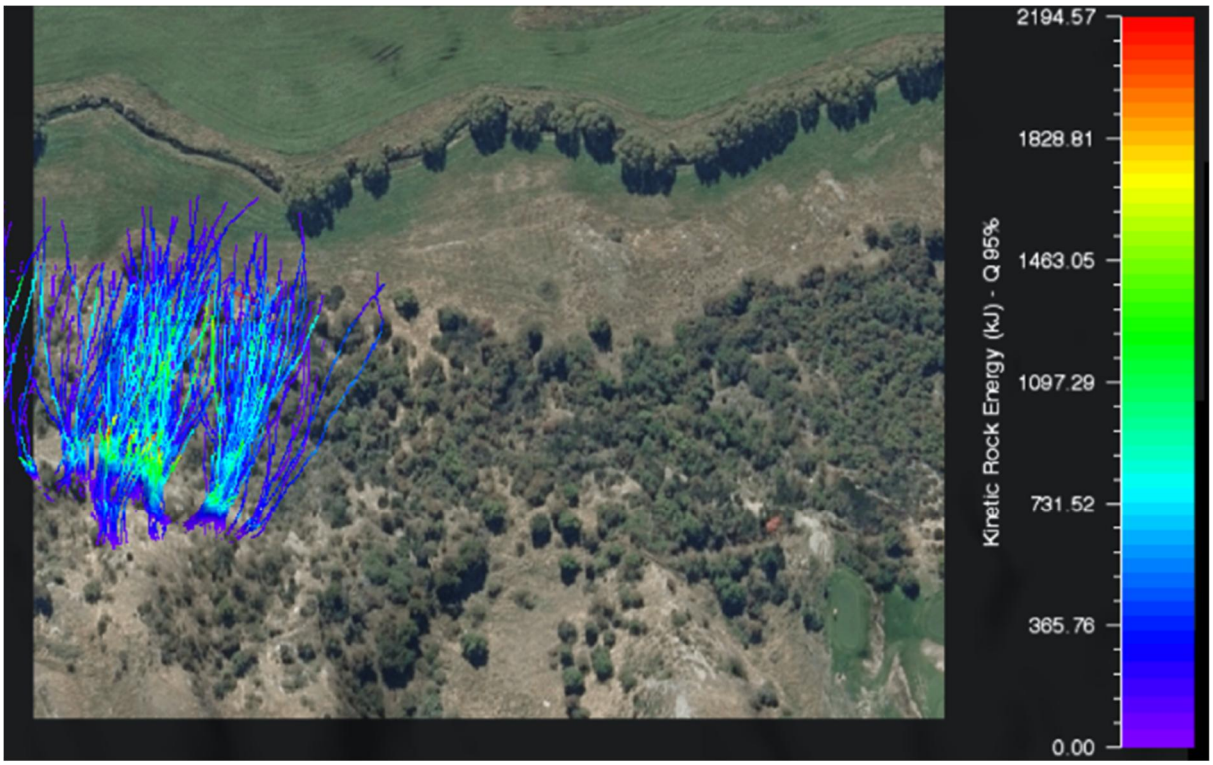


Figure 7.5: Modelled rock fall kinetic energy of simulation results for Scenario 2 (proposed barn dwelling footprint shown in red).

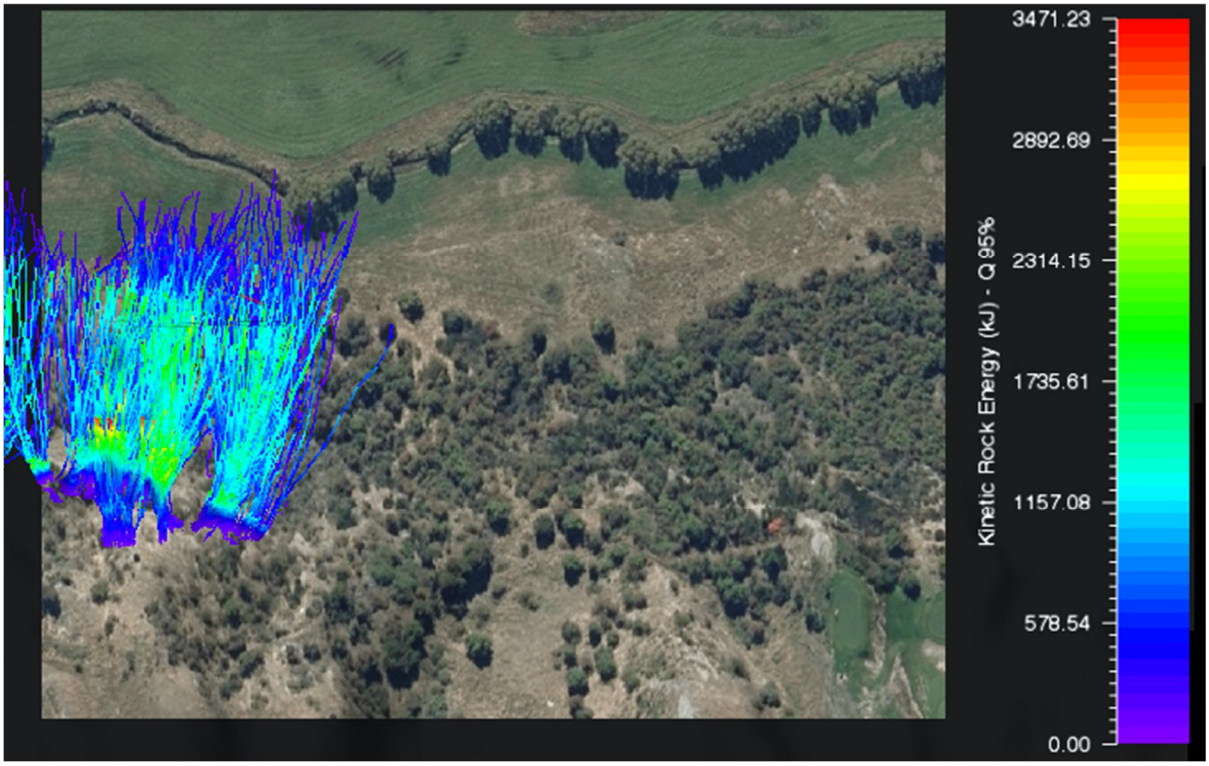


Figure 7.6: Modelled rock fall kinetic energy of simulation results for Scenario 3 (proposed barn dwelling footprint shown in red).

7.6 Quantitative Rock Fall Risk Assessment

7.6.1 General

The results of the rockfall assessment methods as outlined in Section 7.4 are in general agreement and are summarised as follows:

- Field mapping has concluded that there is little to no evidence of previous rockfall entering the building platform areas, however numerous boulders are present in close proximity;
- A shadow angle assessment shows the proposed building platform areas are within the maximum recommended rock fall run-out area;
- RAMMS modelling indicates rockfall boulders have the potential to pass through the subject site as shown on Error! Reference source not found. to 7.6 in the section above.

Given the above, a quantitative risk assessment is considered appropriate, and the results are presented below. The risk to people in a residential dwelling within the proposed residential lot from rock fall has been calculated and the assessment includes:

- Calculation of the probability of an individual rock fall affecting the dwelling, and the associated risk to the person who will spend most time there, i.e. the "person most at risk".
- Calculation of the probability of a large rock fall from a seismic event affecting the dwelling, and the associated risk to the "person most at risk".
- To place the risk in context comparisons to guidelines, and other causes of fatality, are provided.

Estimates of the Annual Individual Fatality Risk (AIFR) are provided below. The proposed development is for a residential dwelling. The person most at risk' i.e. the person who spends the most time in the dwelling may be senior, very young, disabled, or vulnerable, and may spend a very high proportion of their life within their home.

7.6.2 Method – APP6 Guidelines

A review of the Regional Policy Statement (RPS) has been undertaken for the purposes of this natural hazard assessment. The RPS recommends that natural hazard risk assessments are undertaken in accordance with the criteria set out in Appendix APP6 – Methodology for natural hazard risk assessment (provided in Appendix C).

The risk calculation method used for this assessment generally follows the approach used for assessing the annual probability loss of life (death) of an individual from rockfalls[8] and cliff collapse[9] of the Port Hills, this approach was adapted from AGS 2007[10].

This assessment has considered the acceptability, tolerability or significance of the natural hazard risk in accordance with the relevant provisions in the QLDC Operative District Plan, the Proposed District Plan (Chapter 28), and the partially operative Regional Policy Statement[11] (Objective 4.1 and supporting Policies), which are summarised in Figure

[8] Massey, C. I., et al. "Canterbury earthquakes 2010/11 Port Hills slope stability: life-safety risk from rockfalls (boulder rolls) in the Port Hills." *GNS Science Consultancy Report* 123 (2012): 34

[9] Massey, C. I., et al. "Canterbury Earthquakes 2010/11 Port Hills Slope Stability: Pilot study for assessing life-safety risk from cliff collapse." *GNS Science Consultancy Report* 57 (2012)

[10] Australian Geomechanics Society, Volume 42, No. 1 March 2007.

[11] Otago Regional Council (2021) Proposed Otago Regional Policy Statement. Integrating the management of Otago's natural and physical resources. Published June 2021

7.7Error! Reference source not found. below from the calculated Annual Individual Fatality Risk (AIFR) risk values.

(4) Implementing a first-past-the-post principle for the AIFR and APR:

(a) for areas of new development where the greatest AIFR or APR is:

(I) less than 1 x 10^{-6} per year, the *risk* is re-categorised as acceptable,

(ii) between 1 x 10^{-6} and 1 x 10^{-5} per year, the *risk* is re-categorised as tolerable, or

(iii) greater than 1 x 10^{-5} per year, the *risk* is re-categorised as significant.

(b) for areas with existing development, where the greatest AIFR or APR is:

(I) less than 1 x 10^{-5} per year, the *risk* is re-categorised as acceptable;

(ii) between 1 x 10^{-5} and 1 x 10^{-4} per year, the *risk* is re-categorised as tolerable; or

(iii) greater than 1 x 10^{-4} per year, the *risk* is re-categorised as significant.

Figure 7.7: APP6 suggested acceptable, tolerable and significant loss of life values for individual risk.

Figure 7.8 below outlines the required outcomes for a new activity based on the risk calculated for a natural hazard.

HAZ–NH–P3 – New activities

Once the level of *natural hazard risk* associated with an activity has been determined in accordance with HAZ–NH–P2, manage new activities to achieve the following outcomes:

(1) when the *natural hazard risk* is significant, the activity is avoided,

(2) when the *natural hazard risk* is tolerable, manage the level of *risk* so that it does not become significant, and

(3) when the *natural hazard risk* is acceptable, maintain the level of *risk*.

Figure 7.8: RPS suggested actions for significant, tolerable and acceptable natural hazard risk (Source- RPS) .

7.6.3 Assumptions and Inputs

- Based on geomorphic and empirical evidence rock falls originating from upslope bluffs have potential to reach the subject site.
- Scenario 1 is assessed as a 1:20 yr event. Boulders less then 1m^3 typically around 0.3-0.5 m^3. Marginally stable rockfall debris and small boulders which have weathered loose along foliation defects.
- Scenario 2 is assessed as a 1:50 yr event - Boulders greater than 1m^3 but less than 2m^3. Marginally stable large rockfall boulders which have weathered loose along foliation defects.
- Scenario 3 is assessed as a 1:500 yr event - Boulders greater than 2m^3 but less than 3m^3. New very large boulders forming through the interactions between the schist foliation and rock defect joint sets.
- The probability of a boulder being dislodged during a seismic event is inferred to be 50%.
- The probability of a boulder being dislodged during a rainfall event is inferred to be 50%.
- RAMMS rockfall data has been used to calculate the probability of spatial impact (i.e. the likelihood that rockfall will reach the site).

- Any future dwelling will offer some protection and a vulnerability of between 0.3 and 0.8 has been adopted for an individual present in the rock fall path (AGS 2007c, Practice Note for Landslide Risk Management, Appendix F).
- An occupancy rate of 80% or 0.8 has been assumed for the purposes of occupancy of any residential dwelling within the proposed building platform.
- A 1.5 m high bund has been added to the DEM upslope of the main dwelling, the size and position of the bund is to be constrained during detailed design.

7.6.4 Main Dwelling Results

Based on the assumptions outlined above, the following AIFR result has been calculated for the proposed main dwelling.

For the Main dwelling an AIFR of 1.12×10^{-6} has been calculated where a 1.5 m high bund is added upslope of the building platform and proposed earthworks areas. This value just inside the Tolerable Risk category/on the tolerable - acceptable transition for a new development. During detailed design of the bund fine tuning the position, and the height, is expected to achieve an Acceptable risk level.

Full tabulated results and the APP6 AIFR criteria for rockfall risk assessment are presented in Appendix D.

7.6.5 Barn Results

If the Barn is utilised as a dwelling an AIFR of 5.93 x 10-5 has been calculated. This is assessed to be a Significant Risk for a new development as proposed by APP6. We understand final use of the barn is likely to exclude residential use and be storage only. If this is the case then low occupancy of several minutes per day will yield an Acceptable risk.

7.6.6 Risk Reduction Discussion

The tolerability and acceptability of risk from a natural hazard is a complex subject with much research and published debate. GeoSolve cannot prescribe a level of tolerable risk for the site. This decision must be made by the relevant stakeholders and the regulating body.

Preliminary rockfall modelling has indicated that a rockfall protection bund is required to reduce the risk to life for the main dwelling. The final size and position of the bund is to be defined during detailed design. A preliminary and indicative rockfall bund position is shown on Figure 1b Appendix B.

Once the location of the proposed building platform and bund location has been established, we can provide a rockfall bund design and construction specifications and documentation. A preliminary bund height of approximately 1.5 – 2.0 m would be expected depending on the final bund location based on our analysis. The bund can be formed by both cut and fill earthworks e.g. with a ditch on the upslope side utilised to increase bund height and limit visual impact. Figure 7.9 below shows a schematic cross-section showing the approximate configuration of an appropriate bund solution.

Even with successful implementation of the rockfall bund it is expected that a residual risk of damage to property will remain.

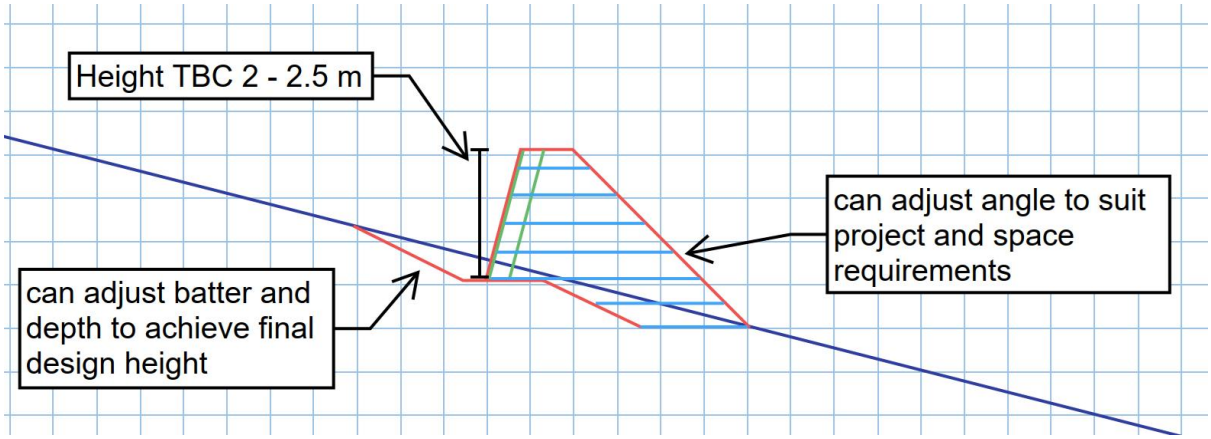


Figure 7.9: Schematic Cross-section through the rock fall bund.

8 Engineering Considerations

8.1 General

The recommendations and opinions contained in this report are based upon ground investigation data obtained at discrete locations and historical information held on the GeoSolve database. The nature and continuity of subsoil conditions away from the investigation locations is inferred and cannot be guaranteed.

8.2 Geotechnical Parameters

Table 8.1 provides a summary of the recommended geotechnical design parameters for the soil materials expected to be encountered during construction of the proposed development.

Table 8.1 – Recommended geotechnical design parameters.

Unit	Thickness (m)	Bulk density γ (kN/m^3)	Effective cohesion c´ (kPa)	Effective friction ϕ´ (deg)	Elastic modulus **E** (kPa)	Poissons ratio ν
Topsoil	0.1-0.5	16	N/A	N/A	N/A	N/A
Alluvial Sand (very loose to loose, silty SAND to SAND with some silt)	0.2-1.4	18	0	30	2,000-5,000	0.3
Alluvial Sand & Gravel (loose to medium dense, sandy GRAVEL and gravelly SAND)	0-2.2+	18	0	34	10,000-20,000	0.3
Schist Bedrock	Not proven (> 100 m)	26	100+	30	100,000	0.3
Schist Bedrock Defects (strength primarily controlled by defects)	N/A	N/A	0 (along defect)	25 (along defect)	N/A	0.2

8.3 Site Preparation

During the earthworks operations all topsoil, organic matter, uncontrolled fill and other unsuitable materials should be removed from the construction areas in accordance with the recommendations of NZS3604.

Robust, shallow graded sediment control measures should be instigated during construction where rainwater and drainage run-off over exposed soils is anticipated.

Exposure to the elements should be limited for all soils and re-establishment of vegetation cover over the prepared platform as soon as practical is recommended.

Water should not be allowed to pond or collect near or under a footing or foundation slab. Positive grading of the subgrade should be undertaken to prevent water ingress or ponding.

All engineered fill that is utilised as bearing for foundations should be placed and compacted in accordance with the recommendations of NZS 4431:2022 and certification provided to that effect.

We recommend topsoil stripping and subsequent earthworks be undertaken only when a suitable interval of fair weather is expected, or during the earthworks construction season.

We recommend topsoil stripping and subsequent earthworks be undertaken only when a suitable interval of fair weather is expected, or during the earthworks construction season.

8.4 Excavations and Recommended Batters

The earthworks plans provided by JEA show maximum cut depths of 3.8 m and a maximum fill depth of approximately 1 m.

Maximum cut depths are along the south side of the forecourt, to the south of the proposed dwelling location. The concept plans provided by Mason & Wales Architects indicate that a combination of permanent batters and retaining is proposed in this area.

It is expected that cuts will be formed in both soil and rock materials. The excavation depth in schist bedrock is generally expected to be < 2.5 m.

All slopes should be periodically monitored during construction for signs of instability and excessive erosion, and, where necessary, corrective measures should be implemented to the satisfaction of a Geotechnical Engineer or Engineering Geologist.

8.4.1 Cuts in Soil Materials

Recommendations for permanent and temporary batters in dry soil are described in Table 8.2 below. Slopes required to be steeper than those described below should be structurally retained or subject to specific engineering design

Table 8.2 – Recommended batters for cuts up to 4 m in height in dry soil

Material Type	Recommended Maximum Batter for Temporary Cuts ≤ 3 m High (horizontal to vertical)	Recommended Maximum Batter for Permanent Cuts ≤ 3 m High (horizontal to vertical)
Topsoil, Alluvial Sand	1.5H : 1.0V	2.5H : 1.0V
Alluvial Sand & Gravel	1.5H : 1.0V	2.0 H : 1.0 V

If wet soils, seepages or under runners are encountered, it is recommended they be inspected by Geosolve who will provide additional recommendations where required.

Shallower batters, retaining and/or the installation of drainage, may be required to achieve long-term stability requirements if wet soils are encountered

8.4.2 Cuts in Schist Rock

As discussed above, the proposed cuts are expected to be partially formed in schist bedrock. The stability of cut slopes in schist rock is governed by the strength and orientation of the defects present within the rock mass (joints, fractures, crush zones, foliation shear zones etc).

The primary defect present within the schist rock is the foliation which is a persistent plane of weakness with the potential to cause slope instability. The foliation dips into the proposed excavations at relatively shallow angles (between 12 and 20° for Cross Sections A-C) and is therefore not expected to result in significant stability issues.

Secondary defect sets are also expected present in the rock mass which can interact with the foliation to form unstable blocks and effect the stability of the proposed cut slopes. The presence, location, condition and impact of the secondary defects is difficult to assess prior to construction.

As the cuts in schist bedrock are expected to be relatively low and the foliation dips into the proposed cuts, Geosolve recommend that the cuts can be formed at 0.25H:1.0V in the first instance. The cuts should then be mapped by Geosolve to confirm any local instability that may arise from the foliation and secondary defects. Given the relatively low height of the cuts and the orientation of the cuts (i.e. foliation dipping into the main excavations), excavation of any identified unstable areas will provide the most practical solution. Structural support, e.g. rock anchors or bolts, can also be used to achieve stability, however are unlikely to be necessary.

8.5 Engineered Fill & Engineered Fill Slopes

Fill depths of up to approximately 1 m are proposed on the north side of the proposed dwelling location.

The alluvial sand is not recommended for re-use as engineered fill but can be used in landscaping areas. Blended Alluvial sand & gravel, and crushed rock can be re-used as engineered fill.

If site-won fill is to be used, then laboratory compaction tests will need to be undertaken on representative samples prior to the placement of any fill. All engineered fill should be placed, compacted and certified in accordance with the recommendations of NZS4431: 2022 and Queenstown Lakes District Council Standards.

Alternatively, granular fill can be imported from a local source or quarry for consistency. An earth fill specification can be provided by GeoSolve on request.

For landscaping purposes (where building loads are not applied), certification is generally not required but we recommend that a compaction methodology should be specified to control risks of instability.

As general guideline all engineered fill slopes up to 2 m in height should not exceed a batter of 2:1 (horizontal to vertical), if well drained, and they do not directly support a building. Deeper or steeper fills slopes will require specific engineering assessment.

The earthworks plans provided show fill batters are proposed at slope angles of between approximately 8 and 18°, with a minimum building setback of approximately 1 m. This configuration is expected to be acceptable from geotechnical perspective.

To minimise erosion, effective vegetation cover should be established on fill batters and no water flows should be directed to towards fill slope crest.

8.6 Ground Retention

We understand a 1 m high retaining wall is proposed along parts of the south side of the proposed forecourt. A retaining wall is also expected to be required on the south side of the proposed barn. Any retaining wall proposed should be designed by a chartered professional engineer.

All retaining walls should be designed using the geotechnical parameters recommended in Table 8.1 of this report. Due allowance should be made during the detailed design of all retaining walls for any additional loads upslope of the wall (i.e. surcharge due to backslope).

All temporary slopes for retaining wall construction should be battered in accordance with the recommendations of Table 8.2.

Groundwater was observed in TP 1-2 and 7-8 at 1.4-2.1 m depth, and has the potential to develop following completion of the earthworks, in particular as a result of heavy or prolonged rainfall. To ensure potential groundwater seeps and flows are properly controlled behind the retaining walls, the following recommendations are provided:

- A minimum 0.3 m width of durable free draining granular material should be placed behind all retaining structures;
- A heavy duty non-woven geotextile cloth, such as Bidim A14, should be installed between the natural ground surface and the free draining granular material to prevent siltation and blockage of the drainage media; and
- A heavy-duty (TNZ F/2 Class 500) perforated pipe should be installed within the drainage material at the base of all retaining structures to minimise the risk of excessive groundwater pressures developing. This drainage pipe should be connected to the permanent piped storm water system.

8.7 Groundwater Issues

The permanent water table is expected to lie below the indicated excavation levels. Perched groundwater seepages may be encountered, in particular where shallow soils overly schist bedrock.

Reduced foundation bearing capacities and slope instability may result when soils become saturated.

Any drainage should be constructed as per the recommendations of a geotechnical engineer/engineering geologist. The outlet of all sub-soil or horizontal drains should be connected to the permanent piped stormwater system or other suitable engineer approved location.

8.8 Settlement and Foundations

8.8.1 Dwelling Building Platform

No foundation plans have been provided to GeoSolve at this stage, however it is expected the building foundations will comprise a concrete slab on strip footings, or a waffle raft.

Due to the sloping nature of the site and the proposed earthworks, the dwelling foundations will span 4 distinct units: schist bedrock in the southeastern part, alluvial sand & gravel in the middle to southern part, and engineered fill in the northern corner, depending on foundation depth.

The foundation bearing capacity of these soil types will vary and 'Good Ground' as outlined in NZS3604 will not be achieved in some areas. Specific engineering design with respect to foundations is therefore expected to be required at the detailed design phase. Final geotechnical inputs for foundation design can be provided following construction of the earthworks. An NZS3604 compliant platform can be constructed if preferred.

8.8.2 Bridge Foundations

As discussed within Section 6, the bridge foundations should be piled to schist bedrock to mitigate the liquefaction and lateral spreading risk from the saturated alluvial sand (Silty SAND) observed adjacent to Mill Creek.

No test pits have been undertaken adjacent to the bridge location due to the proposed bridge location shifting since the site investigation was undertaken (June 2023). Schist bedrock was encountered at 2.2 m depth within TP 8, which was excavated approximately 25 m southeast of the proposed bridge location.

Depth to schist bedrock in the vicinity of the proposed bridge location can be confirmed for the geotechnical completion report.

8.9 Site Subsoil Category

The following geotechnical information has been used to characterise the site subsoil class in respect of NZS 1170.5:2004 Structural Design Actions:

- Schist bedrock was observed at the base of TP 1, 3, 5-6 and 8, from depths of between 0.5 and 2.2 m.
- Up to approximately 1 m of engineered fill is proposed beneath the northern part of the proposed building platform.

Based on the above, the dwelling building platform is Class B (rock). Subsoil class will need to be considered by the structural engineer during detailed design.

9 Stormwater Soakage Assessment

9.1 General

Soakage testing was undertaken in SP 1 at 1.0 m depth in the alluvial sand (refer to Appendix A, B and C for test location, log and results respectively). Note, alluvial sands and sands and gravel are consistently present between Mill Creek and the bluffs.

Prior to undertaking soakage testing, an adjacent test pit (TP7) was excavated to 2.4 m depth to log the subsoil conditions and determine a suitably consistent layer for soakage testing. A shallower 1.0 m deep test pit/soak pit was then excavated adjacent to the deep pit. The dimensions of the soakage pits were recorded to calculate volumes and areas of soakage during testing.

Before soakage testing was undertaken, the soak pit was pre-soaked by introducing 1000 L from the water trailer. The water from the pre-soak completely drained in a short period of time, hence soakage testing commenced.

Soakage testing was performed by introducing water until the designated testing level was reached. The inflow was then shut off and the time it took for the water level to drop was recorded. Testing was completed multiple times until 3 consistent readings had been achieved.

9.2 Permeability Analysis

The results from field soakage testing are presented below in Table 9.1 and Appendix C.

Table 7.1 - Calculated permeability rates

Test	Depth (m)	Soil type at base of pit	Unfactored infiltration rate*	Depth to groundwater from ground surface
SP 1	1.3	Gravelly SAND with minor silt (Alluvial Sand)	165 mm/hr	2.1 m
*Does not include a reduction factor to account for loss of soakage performance over time.				

9.3 Preliminary Soakage Design Considerations

Groundwater was observed within the adjacent test pit (TP7) at 2.1 m depth, and within TP 1-2 and 7 at 1.4 to 1.7 m depth. The groundwater level roughly coincides with the level of Mill Creek.

Soakage will be limited by the depth to groundwater table beneath the base of the soakage system. Therefore, the infiltration rate is expected to vary depending on depth and location of any future soakage system.

Unfactored infiltration rates are provided above within Table 9.1. The unfactored infiltration rates should be divided by an appropriate reduction factor to account for loss of soakage

performance of over time. The reduction factor is to be calculated by the stormwater designer.

Surficial layers of topsoil are not suitable for stormwater disposal to ground. The underlying silty SAND (alluvial sand) has not been tested at this site, however, based on previous permeability testing within this soil type at other sites in the area, we anticipate that stormwater disposal to ground within this soil type is not expected to be practical due to the low permeability rate. Disposal should target the underlying gravelly SAND (alluvial sand) or sandy GRAVEL in all cases.

GeoSolve are to be consulted to review the final depth and location of the proposed soakage system(s) to ensure the infiltration rates and recommendations of this report are applicable. Further testing may be required to confirm the suitability of the proposed locations.

Provision should be included for long-term inspection and routine maintenance of any soakage system installed. Performance of the disposal systems may decline below an acceptable level over time if sufficient maintenance is not completed.

A suitable emergency overflow/overland flow path should be identified for super-design storm events where surcharging is possible. A geotechnical practitioner who is familiar with the findings of this report should inspect the base of any proposed soakage system location to ensure the infiltration rates presented in Table 9.1 above are applicable.

10 QLDC Land Development and Subdivision Code of Practice

Section 2.4.4 of the QLDC Land Development and Subdivision Code of Practice (QLDC CoP) requires the developer of any subdivision to appoint a geo-professional to carry out the following functions from the planning to construction phases of the subdivision:

a) Check regional and district plans, records, and requirements prior to commencement of geotechnical assessment;

b) Prior to the detailed planning of any development, to undertake a site inspection and such investigations of subsurface conditions as may be required, and to identify geotechnical hazards affecting the land, including any special conditions that may affect the design of any pipelines, underground structures, or other utility services;

c) Before construction commences, to review the drawings and specifications defining any earthworks or other construction and to submit a written report to the TA on the foundation and stability aspects of the project (if required);

d) Before and during construction, to determine the extent of further geo-professional services required (including geological investigation);

e) Any work necessary to manage the risk of geotechnical instability during the construction process;

f) Before and during construction, to determine the methods, location, and frequency of construction control tests to be carried out, determine the reliability of the testing, and to evaluate the significance of test results and field inspection reports in assessing the quality of the finished work;

g) During construction, to undertake regular inspection consistent with the extent and geotechnical issues associated with the project;

h) On completion, to submit a written report (i.e. Geotechnical Completion Report) to the Territorial Authority (TA) attesting to the compliance of the earthworks with the specifications and to the suitability of the development for its proposed use including natural ground within the development area. Where NZS 4431 is applicable, the reporting requirements of that Standard shall be used as a minimum requirement.

This resource consent level report can be considered to have completed items a) and b) from the above list. Once resource consent for the subdivision has been granted a geo-professional will need to be appointed by the developer to review the earthworks drawings and specifications prior to finalising the documentation for tendering and/or construction, and to oversee the construction phase of the project including certification of fill and provide a Geotechnical Completion Report (GCR) and Schedule 2A in accordance with the QLDC CoP.

The GCR and Schedule 2A should detail the results of site observations, testing and monitoring during earthworks construction, confirm the stability of the finished earthworks, and identify any specific geotechnical design requirements that must be addressed in order to construct a building on site. Any identified specific design requirements will then be registered on the subject lots' 'certificate of title' and will need to be addressed during the building consent process.

The geo-professional completing the GCR and Schedule 2A which includes the certification of fill should in all cases be engaged by the developer not the contractor. It is also advisable that the geo-professional review the earthworks contract to assist in managing the developers risk and ensuring that the contract is clear with respect to geotechnical risks and responsibilities during construction.

The use of this report and any of its findings or recommendations as part of the GCR and Schedule 2A may only be used with our prior review and written agreement.

11 Construction Hazards

Vibrations and distances to adjoining structures: The proposed subdivision is located in a rural setting. The nearest building outside the development area is located more than 150 m from the proposed building platform location. Vibrations may cause annoyance to neighbouring occupants, but vibrations are unlikely to result in structural damage.

Aquifers: No aquifer resource will be adversely affected by the development. The site is located above the Wakatipu Basin Aquifer, and any requirement for boring, e.g. for ground source heat pumps, will require consent from the Otago Regional Council (ORC). Water extraction/bore construction will also require ORC consent.

Erosion and Sediment Control: The site presents some potential to generate silt runoff and this would naturally drain downslope. Only the least amount of subsoil should be exposed at any stage and surfacing established as soon as practical. Silt runoff should not be permitted to enter any watercourse.

Noise: The proposed building platform is located in a rural location. It is expected that earthmoving equipment, such as excavators, compactors and rock breakers will be required during construction. As the surrounding area includes residential properties within it, the construction contractor should take standard measures to control the construction noise and ensure QLDC requirements are met in regard to this issue. No noise limits are likely to be exceeded due to the distance to closest neighbouring dwelling (more than 150 m).

Dust: Regular dampening of soil materials with sprinklers should be effective if required.

12 Conclusions and Recommendations

- The site is considered suitable for the proposed development from a geotechnical perspective, provided the recommendations of this report are followed.
- The stratigraphy beneath the proposed building platform comprises topsoil overlying alluvial sand & gravel and schist bedrock.
- Groundwater was observed in TP 1-2 and 7-8 at depths of 1.4 to 2.1 m. This roughly coincides with the level of Mill Creek.
- The water level adjacent to the building platform has been calculated to reach a peak level of 409.14 m in a 1% AEP+CC storm event, with conservative input assumptions. A minimum of 500mm freeboard above this level for the base of the foundation is recommended for all habitable buildings (measured to the underside of the slab or joists). This freeboard is met by the proposed earthworks platform level.
- A rock fall assessment of the bluffs present above the site has been completed, see Section 7. The risk is assessed to be on the Tolerable/acceptable margin for the main building with a1.5 m high bund. Reduction to Acceptable is considered to be readily achievable during the detailed design of the bund height and position.
- For the proposed Barn Dwelling a Significant Risk of Rockfall has been modelled. Repositioning of the barn and / or removal of the accommodation is recommended. If the position is required significant engineering defences will be required to the risk to acceptable levels. For storage us, e.g. minutes of occupancy each day, and acceptable risk is present.
- The driveway, building platform, landscaping and house will need to consider overland and subsurface flow from the hillside above and ensure suitable diversions are designed and installed to maintain a stable and dry platform. Estimated peak overland flow-rates are provided in this report. The design of any rockfall protection bunding should include provision for surface water flow diversion wherever possible.
- The liquefaction risk for the proposed dwelling location is expected to be very low based on the shallow depth to schist bedrock and the composition of the alluvial sand and gravel. No liquefaction-mitigation foundation design will be required for the proposed dwelling.
- Rockfall assessment shows a bund is required on the upslope side of the house to achieve an acceptable rock fall risk. A bund height of 1.5 m, which can be achieved by a combination of excavation and fill, is required. The bund can also be utilised for overland flow control.
- A review of the proposed excavation batters indicates no significant issues however local retaining, construction review will be required to confirm the final engineering requirements.
- Foundation bearing will vary across the platform and will not meet Good Ground as outlined in NZS3604. Specific engineering design will therefore be required.

- Any fill that is utilised as bearing for foundations should be placed and compacted in accordance with NZS 4431:2022 and certification provided to that effect;
- Based on the available information, we consider the site subsoil class in terms of NZS 1170.5:2004 Clause 3.1.3 to be Class B (rock) for the dwelling building platform.
- Inspections of the earthworks batters, foundation sub-grade and engineered fills should be completed during construction by a suitably qualified Geotechnical Engineer or Engineering Geologist to confirm geotechnical conditions are in accordance with the recommendations of this report.

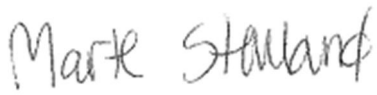
13 Applicability

This report has been prepared for the sole use of our client, Ron Macrae, with respect to the particular brief and on the terms and conditions agreed with our client. It may not be used or relied on (in whole or part) by anyone else, or for any other purpose or in any other contexts, without our prior review and written agreement.

Investigations have been undertaken at discrete locations in accordance with the brief provided. It must be appreciated that the nature and continuity of subsoil conditions away from the investigation locations cannot be guaranteed.

During construction, foundation excavations should be examined by an inspector or engineer competent to confirm that subsurface conditions encountered throughout are compatible with the findings of this report. It is important that we be contacted if there is any variation in subsoil conditions from those described in this report.

Report prepared by:



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Marte Stemland
Engineering Geologist

.....

Henry Wadworth-Watts
Water Resources Engineer

Reviewed for GeoSolve Limited by:

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Paul Faulkner
Senior Engineering Geologist

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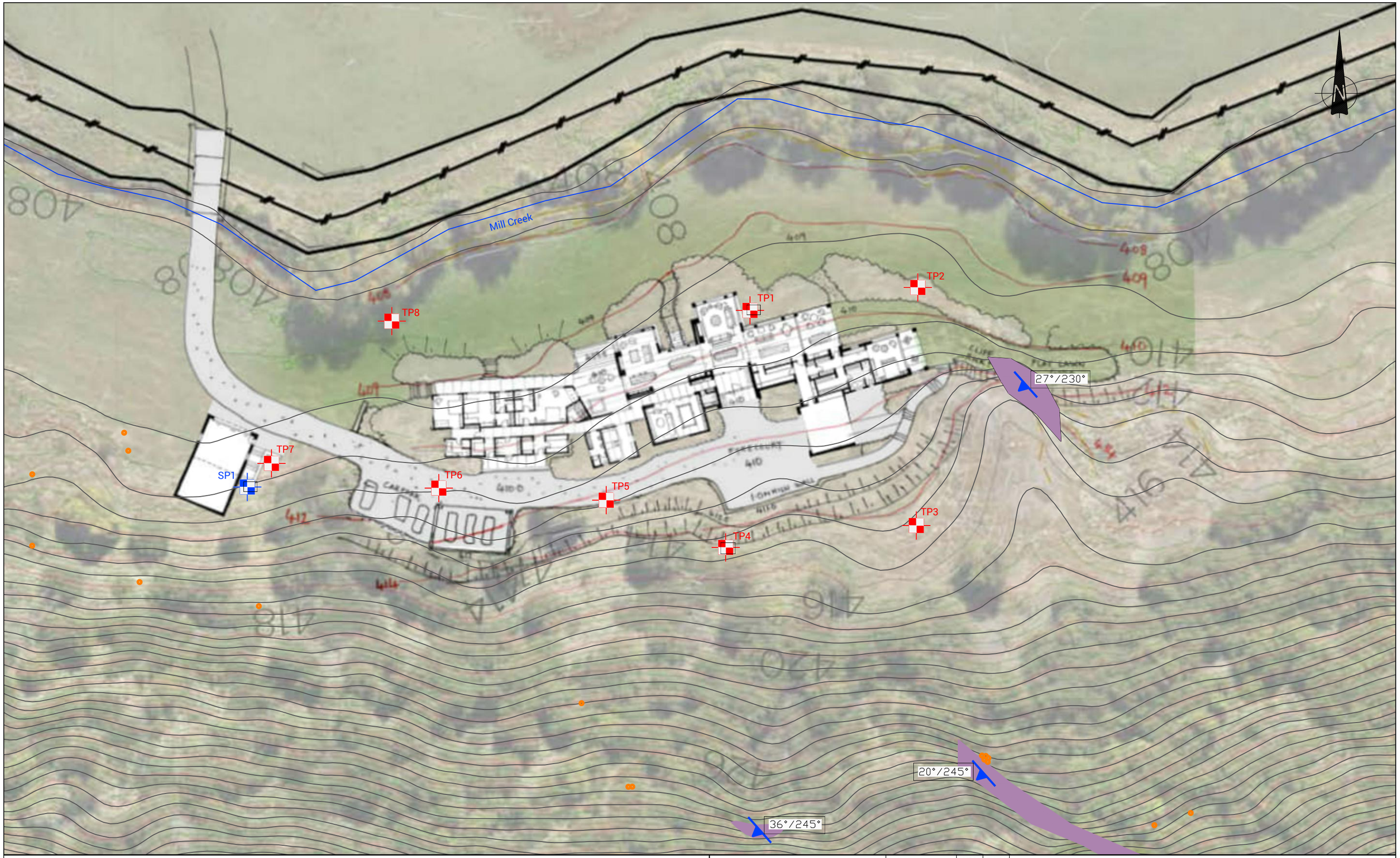
Neil Williman
Senior Water Resources Engineer

Appendix A: Site Plan & Cross-sections



Notes:
1. These drawings have been prepared for the benefit of Ron Macrae with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose without our prior review and agreement.

TEST PIT
TEST PIT
OBSERVED BOULDER
SCHIST BEDROCK
36°/245° FOLIATION DIP/DIP DIRECTION

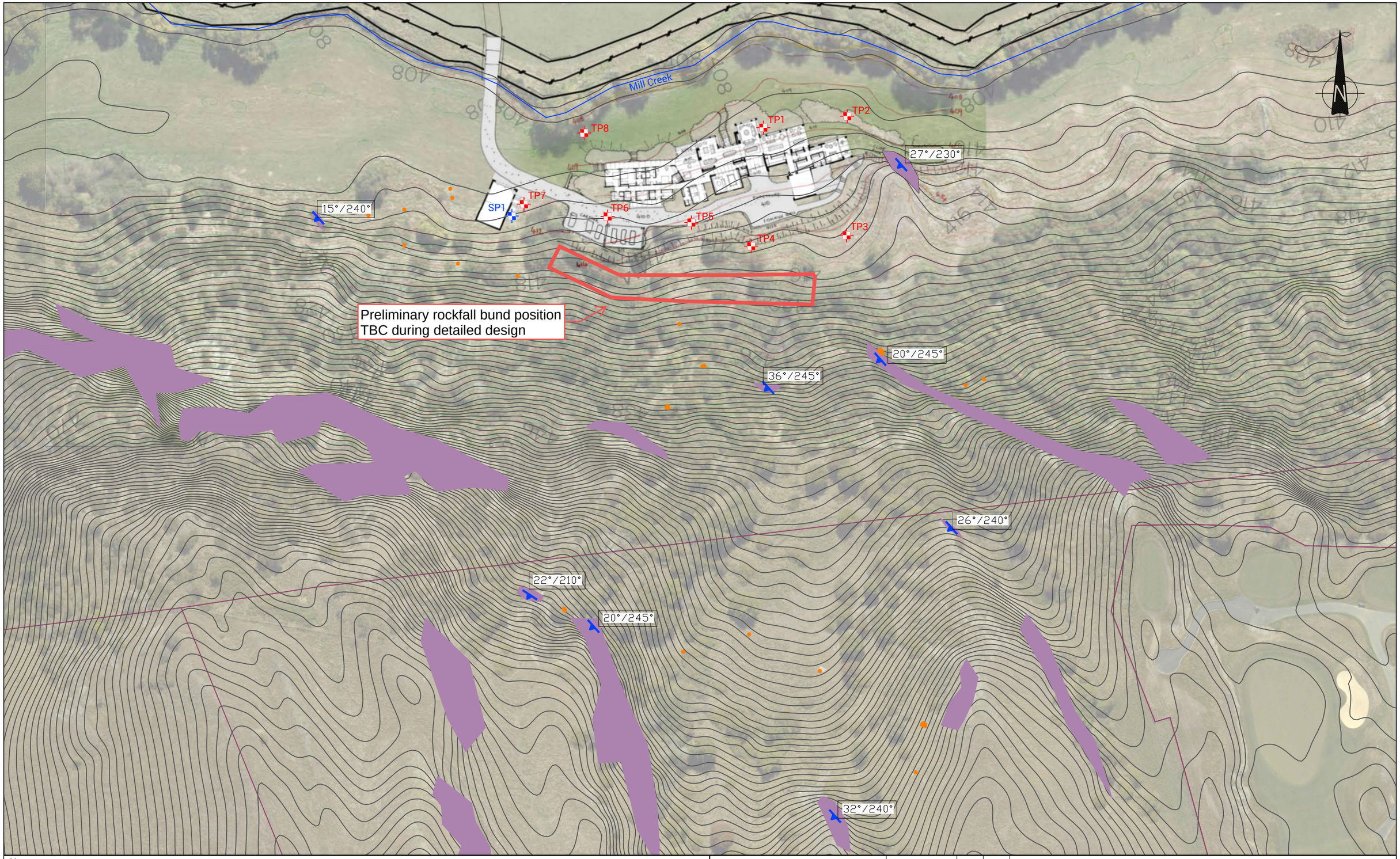
SCALE 1:500
0 5 10 15 20 25 (m)

GEOSOLVE
Level 1, 70 MacAndrew Road, South Dunedin
www.geosolve.co.nz

DRAWN	MBS	Feb.24
DRAFTING CHECKED	PGF	Mar.24
APPROVED	PGF	Mar.24
CADFILE: 230249.dwg		
SCALES (AT A3 SIZE): 1:500		
PROJECT No: 230249		

Ron Macrae
Geotechnical Assessment
832 Malaghans Rd, Queenstown
Site Investigation Plan - Building Platform

FIG No: FIG NO 1a
REV. 0



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TEST PIT
TEST PIT
OBSERVED BOULDER
SCHIST BEDROCK
36°/245° FOLIATION DIP/DIP DIRECTION

SCALE 1:1000
0 10 20 30 40 50 (m)

GEOSOLVE
Level 1, 70 MacAndrew Road, South Dunedin
www.geosolve.co.nz

DRAWN	MBS	Mar.24
DRAFTING CHECKED	PGF	Jul.23
APPROVED	PGF	Jul.23
CADFILE: 230249.dwg		
SCALES (AT A3 SIZE): 1:1000		
PROJECT No: 230249		

Ron Macrae
Geotechnical Assessment
832 Malaghans Rd, Queenstown
Site Investigation Plan - Overview

FIG No: FIG NO 1b
REV. 0

Notes:
1. These drawings have been prepared for the benefit of Ron Macrae with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose without our prior review and agreement.

TEST PIT
SOAK PIT
OBSERVED BOULDER
SCHIST BEDROCK
36°/245° FOLIATION DIP/DIP DIRECTION

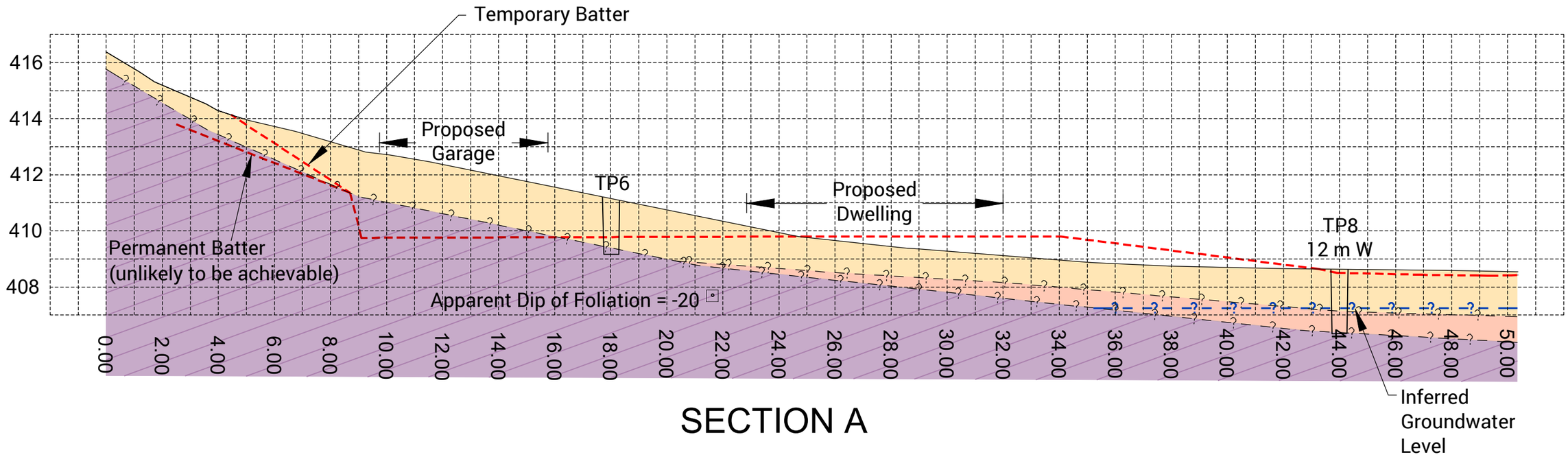
SCALE 1:500
0 5 10 15 20 25 (m)

GEOSOLVE
Level 1, 70 MacAndrew Road, South Dunedin
www.geosolve.co.nz

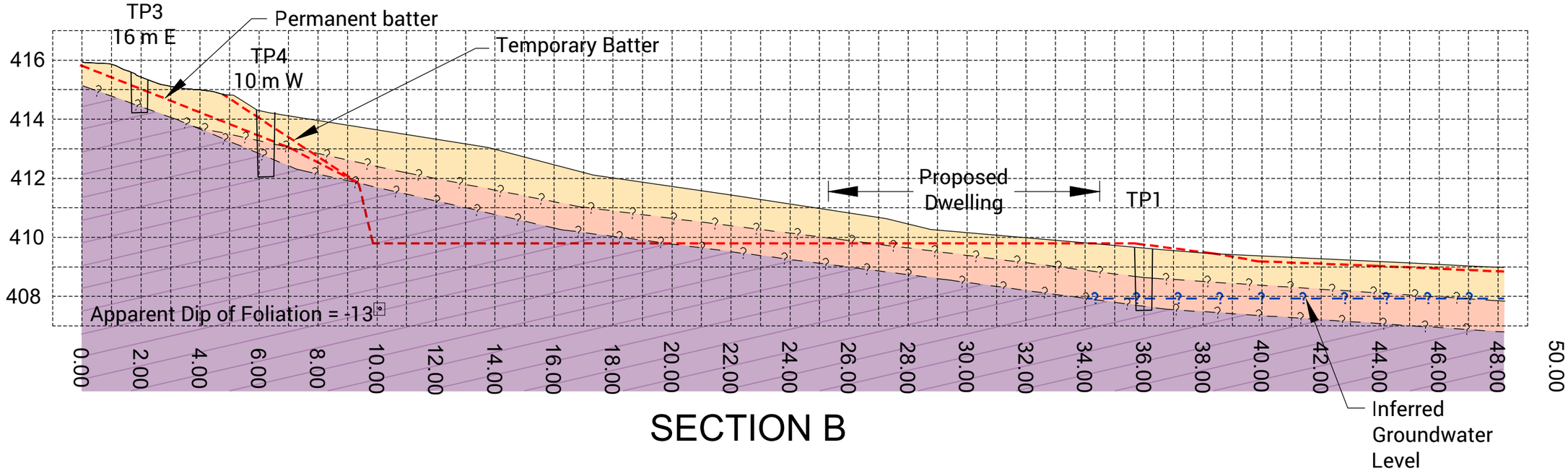
DRAWN	MBS	Feb.24
DRAFTING CHECKED	PGF	Feb.24
APPROVED	PGF	Feb.24
CADFILE: 230249.dwg		
SCALES (AT A3 SIZE): 1:500		
PROJECT No: 230249		

Ron Macrae
Geotechnical Assessment
832 Malaghans Rd, Queenstown
Site Investigation Plan - Earthworks

FIG No: FIG NO 1C
REV. 0



SECTION A



SECTION B

Notes:
1. These drawings have been prepared for the benefit of Ron Macrae with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose without our prior review and agreement.

Topsoil & Alluvial Sand
Alluvial Sand & Gravel
Schist Bedrock

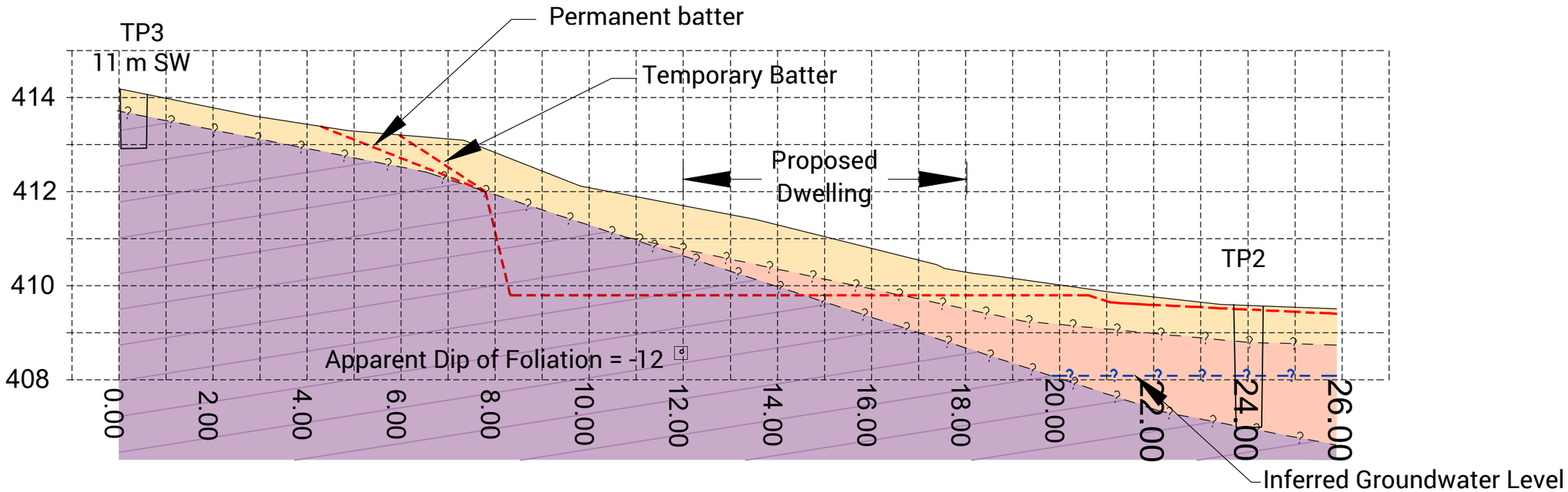
SCALE 1:150
0 1.5 3 4.5 6 7.5 (m)

GEOSOLVE
Level 1, 70 MacAndrew Road, South Dunedin
www.geosolve.co.nz

DRAWN	MBS	Mar.24
DRAFTING CHECKED	PGF	Mar.24
APPROVED	PGF	Apr.24
CADFILE: 230249.dwg		
SCALES (AT A3 SIZE): 1:150		
PROJECT No: 230249		

Ron Macrae
Geotechnical Assessment
832 Malaghans Rd, Queenstown
Cross Sections A & B

FIG No: FIG NO 2A
REV. 1



SECTION C

Notes:
1. These drawings have been prepared for the benefit of Ron Macrae with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose without our prior review and agreement.

Topsoil & Alluvial Sand
Alluvial Sand & Gravel
Schist Bedrock

SCALE 1:100
0 1 2 3 4 5 (m)

GEOSOLVE
Level 1, 70 MacAndrew Road, South Dunedin
www.geosolve.co.nz

DRAWN	MBS	Mar.24
DRAFTING CHECKED	PGF	Mar.24
APPROVED	PGF	Apr.24
CADFILE: 230249.dwg		
SCALES (AT A3 SIZE): 1:100		
PROJECT No: 230249		

Ron Macrae
Geotechnical Assessment
832 Malaghans Rd, Queenstown
Cross Section C

FIG No: FIG NO 2B
REV. 1

Appendix B: Investigation Data

GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

EXCAVATION NUMBER: **TP 1**

PROJECT:	823 Malaghans Rd			JOB NUMBER:	230249
LOCATION:	See Site Plan	INCLINATION:			

EASTING:		EQUIPMENT:	5.5 Tonne Excavator	OPERATOR:	Paul
NORTHING:		COORD. SYSTEM:		COMPANY:	NuRoad Civil
ELEVATION:		EXCAV. DATUM:	Ground Level	HOLE STARTED:	09/06/2023
METHOD:	Aerial Photography	ACCURACY:		HOLE FINISHED:	09/06/2023

Soil / Rock Type	Description	Graphic Log	Depth (m)	Groundwater / Seepage	Scala Penetrometer (Blows per 100mm)
TOPSOIL	Organic SILT with a trace of rootlets; dark brown. Soft; moist. 0m – 0.5m		0.0 – 0.5		
ALLUVIAL SAND	Silty fine SAND; light brown, massive. Loose; moist. 0.5m – 1m		0.5 – 1.0		
ALLUVIAL SAND & GRAVEL	Silty gravelly fine to coarse SAND; grey. Medium dense; moist, saturated from 1.7 m; gravel, fine to medium, subangular; sand, fine to coarse. 1m – 2m		1.0 – 2.0	Groundwater @ 1.7 m	
SCHIST BEDROCK	Pelitic SCHIST; grey, foliated. Weak; slightly to moderately weathered. 2m – 2.1m		2.0 – 2.1		

0 5 10 15

Total Excavation Depth = 2.1 m

COMMENT:	Groundwater at 1.7 m depth. Test pit walls collapsing below goundwater table. Excavator refusing on schist bedrock.	LOGGED BY:	MBS
		CHECKED DATE:	20/06/2023
		SHEET:	1 of 1

GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

EXCAVATION NUMBER: **TP 2**

PROJECT:	823 Malaghans Rd			JOB NUMBER:	230249
LOCATION:	See Site Plan	INCLINATION:			

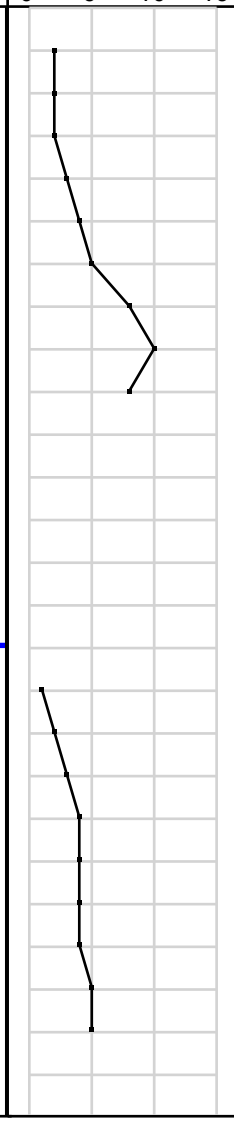
EASTING:		EQUIPMENT:	5.5 Tonne Excavator	OPERATOR:	Paul
NORTHING:		COORD. SYSTEM:		COMPANY:	NuRoad Civil
ELEVATION:		EXCAV. DATUM:	Ground Level	HOLE STARTED:	09/06/2023
METHOD:	Aerial Photography	ACCURACY:		HOLE FINISHED:	09/06/2023

Soil / Rock Type	Description	Depth (m)
TOPSOIL	Organic SILT with a trace of rootlets; dark brown. Soft; moist.	0m – 0.3m
ALLUVIAL SAND	Silty fine SAND; light brown, massive. Loose to medium dense; moist.	0.3m – 0.8m
ALLUVIAL SAND & GRAVEL	Sandy fine to coarse GRAVEL with a trace of silt; grey, bedded. Loose to medium dense; moist, saturated from 1.5 m; gravel, subangular to angular; sand, fine to coarse.	0.8m – 2.6m

Graphic Log

Groundwater / Seepage: Groundwater @ 1.5 m

Scala Penetrometer (Blows per 100mm)



Total Excavation Depth = 2.6 m

COMMENT:	Groundwater at 1.5 m depth. Test pit walls collapsing below goundwater table. Excavator refusing at 2.6 m depth. Possible schist bedrock.	LOGGED BY:	MBS
		CHECKED DATE:	20/06/2023
		SHEET:	1 of 1

GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

EXCAVATION NUMBER: **TP 3**

PROJECT:	823 Malaghans Rd			JOB NUMBER:	230249
LOCATION:	See Site Plan	INCLINATION:			

EASTING:		EQUIPMENT:	5.5 Tonne Excavator	OPERATOR:	Paul
NORTHING:		COORD. SYSTEM:		COMPANY:	NuRoad Civil
ELEVATION:		EXCAV. DATUM:	Ground Level	HOLE STARTED:	09/06/2023
METHOD:	Aerial Photography	ACCURACY:		HOLE FINISHED:	09/06/2023

Soil / Rock Type	Description	Graphic Log	Depth (m)	Groundwater / Seepage	Scala Penetrometer (Blows per 100mm) 0 5 10 15
TOPSOIL	Organic SILT with a trace of rootlets; dark brown. Soft; moist. 0m – 0.3m		0.0 – 0.3	NO SEEPAGE	
ALLUVIAL SAND	Silty fine SAND; light brown, massive. Loose; moist. 0.5m		0.5		
SCHIST BEDROCK	Pelitic SCHIST; grey, foliation dipping 33°/ 235°. Weak; slightly to moderately weathered. 1.2m		0.6 – 1.2		

Total Excavation Depth = 1.2 m

COMMENT:	Test pit dry. Walls remained stable during excavation. Excavator refusing on schist bedrock.	LOGGED BY:	MBS
		CHECKED DATE:	20/06/2023
		SHEET:	1 of 1

GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

EXCAVATION NUMBER: **TP 4**

PROJECT:	823 Malaghans Rd			JOB NUMBER:	230249
LOCATION:	See Site Plan	INCLINATION:			

EASTING:		EQUIPMENT:	5.5 Tonne Excavator	OPERATOR:	Paul
NORTHING:		COORD. SYSTEM:		COMPANY:	NuRoad Civil
ELEVATION:		EXCAV. DATUM:	Ground Level	HOLE STARTED:	09/06/2023
METHOD:	Aerial Photography	ACCURACY:		HOLE FINISHED:	09/06/2023

Soil / Rock Type	Description	Graphic Log	Depth (m)	Groundwater / Seepage	Scala Penetrometer (Blows per 100mm)
TOPSOIL	Organic SILT with a trace of rootlets; dark brown. Soft; moist. 0m – 0.4m		0.0 – 0.4		
ALLUVIAL SAND	Silty fine SAND; light brown, massive. Loose; moist. 0.4m – 0.8m		0.4 – 0.8		
ALLUVIAL SAND & GRAVEL	Sandy fine to coarse GRAVEL with minor silt; grey, subhorizontal bedding. Loose to medium dense; moist; gravel, subangular to angular; sand, fine to coarse. 0.8m – 3m		0.8 – 3.0	NO SEEPAGE	

0 5 10 15

Total Excavation Depth = 3.0 m

COMMENT:	Test pit dry. Walls remained stable during excavation.	LOGGED BY:	MBS
		CHECKED DATE:	20/06/2023
		SHEET:	1 of 1

GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

EXCAVATION NUMBER: **TP 5**

PROJECT:	823 Malaghans Rd			JOB NUMBER:	230249
LOCATION:	See Site Plan	INCLINATION:			

EASTING:		EQUIPMENT:	5.5 Tonne Excavator	OPERATOR:	Paul
NORTHING:		COORD. SYSTEM:		COMPANY:	NuRoad Civil
ELEVATION:		EXCAV. DATUM:	Ground Level	HOLE STARTED:	09/06/2023
METHOD:	Aerial Photography	ACCURACY:		HOLE FINISHED:	09/06/2023

Soil / Rock Type	Description	Graphic Log	Depth (m)	Groundwater / Seepage	Scala Penetrometer (Blows per 100mm) 0 5 10 15
TOPSOIL	Organic SILT with a trace of rootlets; dark brown. Soft; moist. 0m – 0.3m		0.0 – 0.3		
ALLUVIAL SAND	Silty fine SAND; light brown, massive. Loose; moist. 0.6m		0.4 – 0.6		
ALLUVIAL SAND & GRAVEL	Silty gravelly fine to coarse SAND; brown grey. Loose to medium dense; moist; gravel, fine to medium, subangular. 1.1m		0.7 – 1.1		
SCHIST BEDROCK	Pelitic SCHIST; grey, foliation dipping 35°/ 225°. Weak; slightly to moderately weathered. 1.3m		1.2 – 1.3	NO SEEPAGE	

Total Excavation Depth = 1.3 m

COMMENT:	Test pit dry. Walls remained stable during excavation.	LOGGED BY:	MBS
		CHECKED DATE:	20/06/2023
		SHEET:	1 of 1

GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

EXCAVATION NUMBER: **TP 6**

PROJECT:	823 Malaghans Rd			JOB NUMBER:	230249
LOCATION:	See Site Plan	INCLINATION:			

EASTING:		EQUIPMENT:	5.5 Tonne Excavator	OPERATOR:	Paul
NORTHING:		COORD. SYSTEM:		COMPANY:	NuRoad Civil
ELEVATION:		EXCAV. DATUM:	Ground Level	HOLE STARTED:	09/06/2023
METHOD:	Aerial Photography	ACCURACY:		HOLE FINISHED:	09/06/2023

Soil / Rock Type	Description	Graphic Log	Depth (m)	Groundwater / Seepage	Scala Penetrometer (Blows per 100mm) 0 5 10 15
TOPSOIL	Organic SILT with a trace of rootlets; dark brown. Soft; moist. 0m – 0.4m		0.0 – 0.4		
ALLUVIAL SAND	Silty fine SAND; light brown, massive. Loose; moist. 0.4m – 1.5m		0.4 – 1.5		
ALLUVIAL SAND	Fine to medium SAND with some silt and a trace of gravel; brown grey, massive. Loose to medium dense; moist; gravel, fine to medium, subangular. 1.5m – 1.8m		1.5 – 1.8		
SCHIST BEDROCK	Pelitic SCHIST; grey, foliated. Weak; slightly to moderately weathered. 1.8m – 2m		1.8 – 2.0	NO SEEPAGE	

Total Excavation Depth = 2.0 m

COMMENT:	Test pit dry. Walls remained stable during excavation.	LOGGED BY:	MBS
		CHECKED DATE:	20/06/2023
		SHEET:	1 of 1

GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

EXCAVATION NUMBER: **TP 7**

PROJECT:	823 Malaghans Rd			JOB NUMBER:	230249
LOCATION:	See Site Plan	INCLINATION:			

EASTING:		EQUIPMENT:	5.5 Tonne Excavator	OPERATOR:	Paul
NORTHING:		COORD. SYSTEM:		COMPANY:	NuRoad Civil
ELEVATION:		EXCAV. DATUM:	Ground Level	HOLE STARTED:	09/06/2023
METHOD:	Aerial Photography	ACCURACY:		HOLE FINISHED:	09/06/2023

Soil / Rock Type	Description	Graphic Log	Depth (m)	Groundwater / Seepage	Scala Penetrometer (Blows per 100mm) 0 5 10 15
TOPSOIL	Organic SILT with a trace of rootlets; dark brown. Soft; moist. 0m – 0.4m		0.0 – 0.4		
ALLUVIAL SAND	Silty fine SAND; light brown, massive. Loose; moist. 0.6m		0.4 – 0.6		
ALLUVIAL SAND & GRAVEL	Gravelly fine to coarse SAND with minor silt; grey, bedded. Loose to medium dense; moist; gravel, fine to coarse, subangular to angular. 2.4m		0.6 – 2.4	Groundwater @ 2.1 m	

Total Excavation Depth = 2.4 m

COMMENT:	Groundwater at 2.1 m depth. Test pit walls collapsing below groundwater table.	LOGGED BY:	MBS
		CHECKED DATE:	20/06/2023
		SHEET:	1 of 1

GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

EXCAVATION NUMBER: **TP 8**

PROJECT:	823 Malaghans Rd			JOB NUMBER:	230249
LOCATION:	See Site Plan	INCLINATION:			

EASTING:		EQUIPMENT:	5.5 Tonne Excavator	OPERATOR:	Paul
NORTHING:		COORD. SYSTEM:		COMPANY:	NuRoad Civil
ELEVATION:		EXCAV. DATUM:	Ground Level	HOLE STARTED:	09/06/2023
METHOD:	Aerial Photography	ACCURACY:		HOLE FINISHED:	09/06/2023

Soil / Rock Type	Description		Graphic Log	Depth (m)	Groundwater / Seepage	Scala Penetrometer (Blows per 100mm) 0 5 10 15
TOPSOIL	Organic SILT with a trace of rootlets; dark brown. Soft; moist.	0m 0.1m		0.0		
ALLUVIAL SAND	Silty fine SAND; dark grey, massive. Very loose; moist to wet; micaceous.	1.5m		0.1 – 1.5	Groundwater @ 1.4 m	
ALLUVIAL SAND & GRAVEL	Sandy fine to coarse GRAVEL with minor silt; grey. Loose to medium dense; saturated; gravel, subangular; sand, fine to coarse.	2.2m		1.6 – 2.1		
SCHIST BEDROCK	Pelitic SCHIST; grey, foliation dipping 35°/ 225°. Weak; slightly to moderately weathered.	2.3m		2.2 – 2.3		

Total Excavation Depth = 2.3 m

COMMENT:	Groundwater at 1.4 m depth. Test pit walls collapsing below groundwater table. Excavator refusing on schist bedrock.	LOGGED BY:	MBS
		CHECKED DATE:	20/06/2023
		SHEET:	1 of 1

GEOSOLVE
ENGINEERING CONSULTANTS

SOAKAGE PIT LOG

EXCAVATION NUMBER: **SP 1**

PROJECT:	823 Malaghans Rd			JOB NUMBER:	230249
LOCATION:	See Site Plan	INCLINATION:			

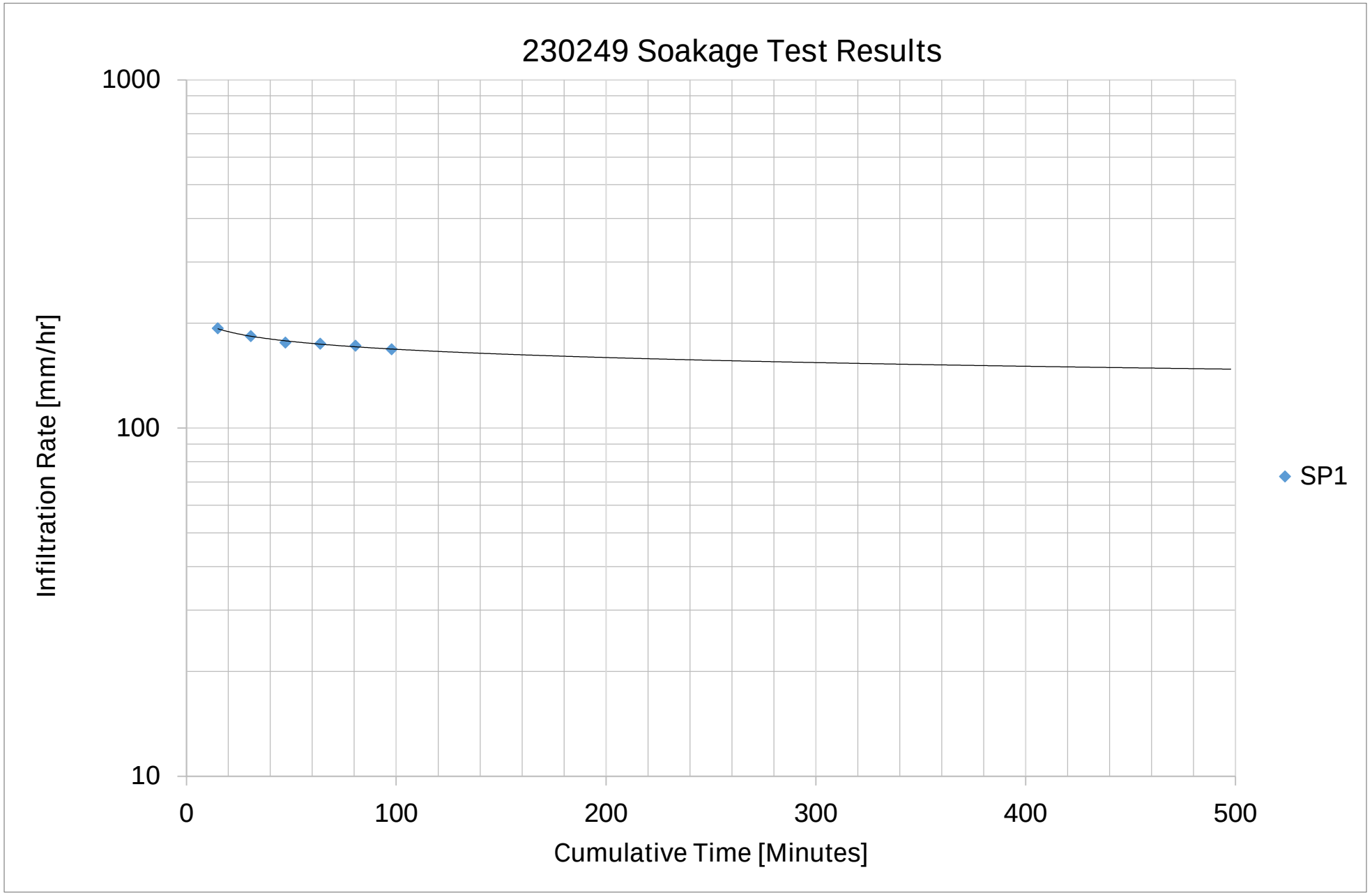
EASTING:		EQUIPMENT:	5.5 Tonne Excavator	OPERATOR:	Paul
NORTHING:		COORD. SYSTEM:		COMPANY:	NuRoad Civil
ELEVATION:		EXCAV. DATUM:	Ground Level	HOLE STARTED:	09/06/2023
METHOD:	Aerial Photography	ACCURACY:		HOLE FINISHED:	09/06/2023

Soil / Rock Type	Description	Graphic Log	Depth (m)	Groundwater / Seepage	Scala Penetrometer (Blows per 100mm) 0 5 10 15
TOPSOIL	Organic SILT with a trace of rootlets; dark brown. Soft; moist. 0m – 0.3m		0.0 – 0.3		
ALLUVIAL SAND	Silty fine SAND; light brown, massive. Loose; moist. 0.3m – 0.6m		0.3 – 0.6		
ALLUVIAL SAND & GRAVEL	Gravelly fine to coarse SAND with minor silt; grey. Loose to medium dense; moist; gravel, fine to coarse, subangular to angular. 0.6m – 1m		0.6 – 1.0	NO SEEPAGE	

Total Excavation Depth = 1.0 m

COMMENT:	Test pit dry. Walls remained stable during excavation. Soakage test @ 1 m depth.	LOGGED BY:	MBS
		CHECKED DATE:	20/06/2023
		SHEET:	1 of 1

Appendix C: Permeability Test Results



Document Set ID: 8029149
Version: 1, Version Date: 14/05/2024

Appendix D: Risk Numbers

GEOSOLVE

MacRae Residence	Date:	5/04/2024
832 Malaghans Rd, Arrowtown	Logged by:	SR
Rockfall Risk to Life Assessment	Revision:	1
Main Dwelling with Bund	Project No:	230249

Bluff Characteristics	Annual probability of rockfall occurring under normal conditions		Annual probability of rockfall occurring under seismic conditions			RAMMS: Rockfall Analysis Data							Probability of spatial impact		Probability of person present	Vulnerability	Normal conditions AIFR ($R_{(LOL)}$)	Seismic conditions AIFR ($R_{(LOL)}$)	Total AIFR (i.e. normal + seismic)
Scenario - for all mapped susceptible bluffs above the site	Adopted		Annual probability	Probability of boulder dislodging under shaking	Adopted	Boulders	m3	Orientations	Start vert velocity	Total Rockfall Trajectories	Trajectories through building platform boundary (barrier)	Barrier 95% Energy (kJ)	Building platform	Length of impacted area		Building platform	Building platform	Building platform	Building platform
Scenario 1 - Small	20	2.50E-02	2.00E-02	0.50	1.00E-02	13	< 1	1	0	3653	31	303	0.000121	70	8.00E-01	0.3	7.27E-07	2.91E-07	**1.02E-06**
Scenario 2 - Medium	50	1.00E-02	2.00E-02	0.50	1.00E-02	3	1 > 2	1	0	4212	7	175	0.000024	70	8.00E-01	0.2	3.80E-08	3.80E-08	**7.60E-08**
Scenario 3 - Large	500	1.00E-03	2.00E-03	0.50	1.00E-03	3	2 > 3	1	0	2826	6	463	0.000030	70	8.00E-01	0.5	1.21E-08	1.21E-08	**2.43E-08**
																			1.12E-06

GEOSOLVE

MacRae Residence	Date:	26/03/2024
832 Malaghans Rd, Arrowtown	Logged by:	ME
Rockfall Risk to Life Assessment	Revision:	1
Barn Dwelling	Project No:	230249

Bluff Characteristics	Annual probability of rockfall occurring under normal conditions		Annual probability of rockfall occurring under seismic conditions			RAMMS: Rockfall Analysis Data							Probability of spatial impact		Probability of person present	Vulnerability	Normal conditions AIFR ($R_{(LOL)}$)	Seismic conditions AIFR ($R_{(LOL)}$)	Total AIFR (i.e. normal + seismic)
Scenario - for all mapped susceptible bluffs above the site	Adopted		Annual probability of alpine fault	Probability of boulder dislodging under shaking	Adopted	Boulders	m3	Orientations	Start vert velocity	Total Rockfall Trajectories	Trajectories through building platform boundary (barrier)	Barrier 95% Energy (kJ)	Building platform	Length of impacted area		Building platform	Building platform	Building platform	Building platform
Scenario 1 - Small	20	5.00E-02	2.00E-02	0.50	1.00E-02	14	< 1	1	0	2198	57	245	0.003242	8	8.00E-01	0.2	2.59E-05	5.19E-06	**3.11E-05**
Scenario 2 - Medium	50	2.00E-02	2.00E-02	0.50	1.00E-02	3	1 > 2	1	0	2241	29	598	0.001618	8	8.00E-01	0.5	1.29E-05	6.47E-06	**1.94E-05**
Scenario 3 - Large	500	2.00E-03	2.00E-02	0.50	1.00E-02	3	2 > 3	1	0	4512	41	1714	0.001136	8	8.00E-01	0.8	1.45E-06	7.27E-06	**8.72E-06**
																			5.93E-05