APPLICATION AS NOTIFIED

Name of D & S Brent (RM210037)

Submissions Close 4 May 2021

FORM 12

File Number RM210037

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:

D and S Brent

What is proposed:

To undertake a three lots subdivision and to establish a residential building platform on each lot. The proposed lot sizes are as follows:

Lot Number	Size	Building Platform
Lot 1	2 Ha	1000m^2 (31.62m x 31.62m)
Lot 2	2 Ha	1000m^2 (31.62m x 31.62m)
Lot 3	44 Ha	1000m^2 (31.62m x 31.62m)

Access is proposed from Riverbank Road.

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

Riverbank Road, Wanaka. Legally described as Lot 3 Deposited Plan 383485 held in Record of Title 333154.

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 RM210037 as the reference https://edocs.qldc.govt.nz/Account/Login

The Council planner processing this application on behalf of the Council is Erin Stagg, who may be contacted by phone at 03 450 0331 or email at erin.stagg@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:

Tuesday 4 May 2021

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 as soon as reasonably practicable after serving your submission to Council. The applicant's contact details are:

D & S Brent
C/- Nicole Malpass
nicole@ipsolutions.nz
IP Solutions
15 Cliff Wilson Street, Wanaka, 9305

QUEENSTOWN LAKES DISTRICT COUNCIL

(signed by Sarah Gathercole, Senior Planner pursuant to a delegation given under Section 34A of the Resource Management Act 1991)

Date of Notification: Thursday 1 April 2021

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**

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: Deborah and Stephen Brent
(Name Decision is to be issued in)

All trustee names (if applicable):

*Contact name for company or trust:

*Postal Address: PO Box 219 WANAKA

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

*Post code: 9343

*Email Address: deb.tony@xtra.co.nz

*Phone Numbers: Day 02101084863

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: Nicole Malpass, IP Solutions

*Phone Numbers: Day 02108060084

Mobile:

*Email Address: nicole@ipsolutions.nz

*Postal Address: 15 Cliff Wilson Street, Wanaka

*Postcode: 9305

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: [ ]
- Post: [ ]

*Attention: Deborah and Tony Brent

*Postal Address: PO Box 219 WANAKA

*Please provide an email AND full postal address.

*Post code: 9343

*Email: deb.tony@xtra.co.nz

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

Owner Name: deb.tony@xtra.co.nz

Owner Address: As above

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:

*Email:

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:

Riverbank Road, RD 2, Wanaka, 9382

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

Lot 3, DP 383485

District Plan Zone(s): Rural / Rural General

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

☑ Land use consent
☑ Subdivision consent
☐ Change/cancellation of consent or consent notice conditions
☐ Certificate of compliance
☐ Extension of lapse period of consent (time extension) s125
☐ 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:

Three lot subdivision with three associated building platforms.

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 http://www.mfe.govt.nz/laws/standards/contaminants-in-soil/.

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

Are any additional consent(s) required that have been applied for separately?

■ Otago Regional Council

Consents required from the Regional Council (note if have/have not been applied for):

☐ Yes ☑ N/A

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 Applicant is 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 if this application 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.

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.

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)
- [ ] Cheque payable to Queenstown Lakes District Council attached
- [ ] Manual Payment (can only be accepted once application has been lodged and acknowledgement email received with your unique RM reference number)

*Reference RMBRENT

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

$3920 - Rural General subdivision

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

*Date of Payment 25/1/2021

Invoices are available on request

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 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.

☑ PLEASE TICK

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.

Signed (by or as authorised agent of the Applicant) **	
Full name of person lodging this form	Nicole Malpass
Firm/Company IP Solutions	Dated 22/1/2021

**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.

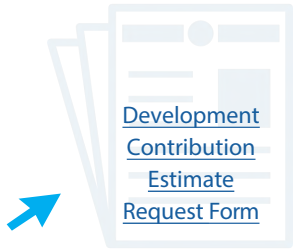
A3 APPENDIX 3 // Development Contributions

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

E Nicole@ipsolutions.nz | **P** 02108060084 | **A** 15 Cliff Wilson Street, Wanaka | **W** ipsolutions.nz

22 January 2021

Queenstown Lakes District Council
Wanaka Office
47 Ardmore Street
WANAKA 9305

Attention: Wanaka Planning Department

1.0 INTRODUCTION

Please find an application for Resource Consent to undertake a three-lot subdivision and establish three residential building platforms on each resultant lot with associated earthworks at Riverbank Road, Wanaka.

The application includes a site description, description of the proposed activity and an assessment of how the proposal aligns with the relevant District Plan rules and assessment criteria. A Landscape Assessment from Vivian and Espie, a Flood Hazard Report and a Geotech Report prepared by Geosolve are also attached.

Please note that the Applicant requests this application be publicly notified.

2.0 APPLICATION DETAILS

APPLICANT	**DEBORAH AND STEPHEN BRENT**
SITE LOCATION	**RIVERBANK ROAD, RD 2, WANAKA, 9382**
LEGAL DESCRIPTION	**LOT 3, DP 383485, RECORD OF TITLE 333154**
SITE AREA	**48.5587ha**
ZONING (ODP)	**RURAL GENERAL**
ZONING (PDP)	**RURAL**

3.0 APPENDICES

APPENDIX A	**FORM 9**
APPENDIX B	**RECORD OF TITLE**
APPENDIX C	**PROPOSED SCHEME PLAN**

APPENDIX D	**LANDSCAPE ASSESSMENT**
APPENDIX E	**GEOTECH REPORT**
APPENDIX F	**FLOOD HAZARD REPORT**
APPENDIX G	**CHORUS TELECOM SUPPLY CONFIRMATION**
APPENDIX H	**AURORA ENERGY SUPPLY CONFIRMATION**
APPENDIX I	**EARTHWORKS PLANS**
APPENDIX J	**WATER TEST RESULTS**

4.0 SITE DESCRIPTION AND DESCRIPTION OF PROPOSAL

This application seeks subdivision and land use consent to undertake a three-lot subdivision and establish three, 1000m^2 residential building platforms with associated access, servicing, earthworks and landscaping.

The southern end of the subject site is located approximately 310m north east of where Riverbank Road intersects Cardrona Valley Road. East of Riverbank Road, including the site, the topography is characterised by large terraced landforms divided by escarpments that step down to the Cardrona River. The site covers 48.5587ha in total and consists of two distinct terraces; an upper terrace (the closest to Riverbank Road) and a lower terrace which sits approximately 8m below the upper.

The majority of the north eastern part of the subject site (within the vicinity of where the subdivision and building platforms are proposed) is land which has been dilapidated through a previous pine tree plantation which has since been cleared. The balance of the site comprises open pasture providing for periodic stock grazing.

Being on the fringe of Wanaka Township, the wider area is a mixture of rural, semi-rural and urban land use. Heading north west from the subject site (towards Wanaka), the density of residential, commercial and industrial activities intensifies, with the resultant character transitioning from rural to urban.

In terms of landscape appreciation and how it is viewed in proximity to the site, the wider distant landscape comprises the slopes of mountains that are predominantly void of built form, whereas most parts of the basin floor in close proximity to Wanaka, (of which the site is situated) exhibits a semi-

rural character, containing scatterings of rural living/domestic occupation upon marginally productive agricultural land.

The subject site is nestled between rural living development to the north, south and west. The development to the north and south forms a linear stretch of rural living development, the majority of which is situated in a prominent position on the upper terrace. The lower terrace currently contains a limited number of residential and accessory buildings to the north of the subject site. These rural living occupations consist mainly of large, detached dwellings and accessory buildings, outdoor living areas and established amenity planting, trees and shelter belts. The proposed subdivision and building platforms will form continuity, sympathetically adding to the existing stretch of established rural living development that extends along the eastern side of Riverbank Road.

The subject site is currently void of built form aside from one existing farm shed which is positioned at the base of the escarpment. There are two formed access ways that extend from Riverbank Road; one to the existing farm shed and one to the area of proposed development detailed by this application.

This proposal will not result in any additional vehicle crossings but will result in the upgrading of the northern vehicle crossing to Council standards and the extension of this access to form a private right of way to each of the proposed lots. Please refer to the Scheme Plan below (as attached as **Appendix C**).

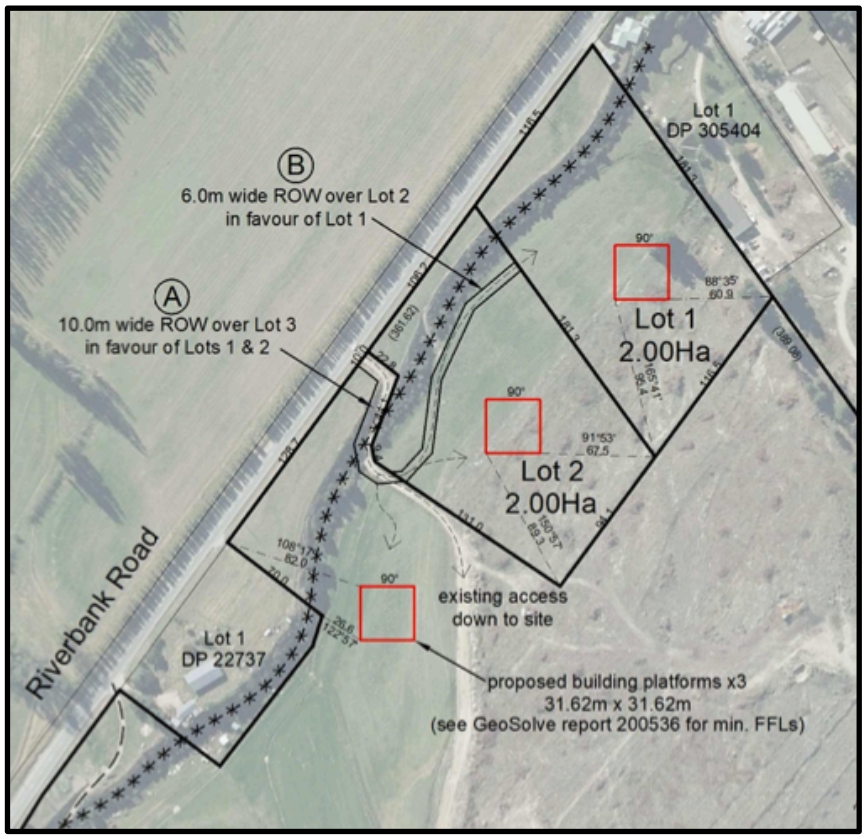


Figure 1: Subdivision Scheme Plan, attached as part of this application as **Appendix C**.

The site is zoned as Rural General under the Operative District Plan (ODP) and Rural Zone under the Proposed District Plan (PDP). The site and its surroundings are classified as Rural Character Landscape in the Rural Zone of the PDP. It is noted that the lower reaches of the Cardrona River, closest to the subject site, are not identified as ONL by the PDP. It is also noted that this river corridor has been extensively modified through gravel tracks, gravel extraction, stockpiling, rural industrial and farming activities.

A flooding report has been prepared by Geosolve and is attached as **Appendix F** which explains and confirms appropriate flood mitigation which involves the recommendation of finished floors levels 1.5m above the estimated 1999 flood levels. Due to this conclusion, a total of approximately 4668m^3 of certified fill is required in order to raise each building platform.

The Applicant would welcome dialogue with Council as to the timing of such mitigation, more specifically the appropriateness of earthwork components of mitigation being constructed pre 224c

or simply prior to the establishment of a residential development within each building platform (detailed as a Consent Notice requirement).

A geotechnical site investigation has been prepared by Geosolve and is attached as **Appendix E**. Ground that is suitable for building has been confirmed in the location of the building platforms on proposed Lots 1, 2 and 3. Please refer to **Appendix E** for details.

Proposed Lot 1 and 2 have an area of 2ha and include a proposed 1000m^2 building platform in each lot. Proposed Lot 3 has an area of 44.56ha and includes a 1000m^2 building platform.

4.1 PROPOSED SUBDIVISION

Table 1. Proposed Lot Configurations

Proposed Allotment	Area (ha)	Building Platform Shape and Area (m2)	Access
1	2	Square (1000m^2)	Existing formed track from Riverbank Road and proposed Right of Way
2	2	Square (1000m^2)	Existing formed track from Riverbank Road and proposed Right of Way
3	44.56	Square (1000m^2)	Existing formed track from Riverbank Road

The boundary between proposed Lots 1 and 2 runs north west, parallel to the existing boundary. The boundary between Lot 2 and 3 is irregular and follows the 10m right of way.

There will be no additional vehicle crossings constructed as part of this proposal. Access to all proposed Lots will be via an existing access from Riverbank Road on the western boundary. This access and the proposed the right of way will be upgraded and/or constructed to meet applicable Council standards.

All proposed platforms are situated on the lower terrace, sensitively placed within the vicinity of the foot of the escarpment. The access extension and right of way is similarly placed closer to the foot of the escarpment to limit the impact on the landscape from a public domain.

4.2 SERVICING

Water

It is the intention that, as part of this development, a new bore will be established for the take of water for domestic purposes, to a volume suitable to service proposed Lots 1-3.

It is noted that whilst there is no current bore application submitted to the Otago Regional Council (ORC), in the interest of water efficiency, ORC are rightfully hesitant about allocating water to uses that are not confirmed by consent approval. As a result, there is a volunteered condition of consent which ensures prior to engineering acceptance, all required consents are gained and provided to QLDC.

With this in mind, lab testing of samples from a nearby existing bore (within the subject site) have been undertaken as this has been confirmed as the same source supply from which the proposed bore will take from. These results are attached as **Appendix J**.

It is noted that under Rule 12.2.2.1 of Otago Regional Council's Water Policy the taking and use of groundwater for domestic needs or the needs of animals for drinking water is a permitted activity providing; a) No take is for a volume greater than 25,000 litres per day and b) the taking or use does not have an adverse effect on the environment. If this subdivision and bore are to be approved, the 25,000 litres will serve three rural living activities. This is considered sufficient.

Telecom

A Telecom connection is available at Riverbank Road. This service is able to be extended to the proposed building platforms. Confirmation from Chorus that these connections can be made is attached as **Appendix G.**

Electricity

Electricity is able to be extended to the proposed lots/building platforms. Confirmation from Aurora Energy that these connections are able to be made is attached as **Appendix H.** Electricity supply from Riverbank Road to the proposed building platforms would be underground.

Wastewater and Stormwater

Onsite wastewater disposal systems would be installed to service the future dwellings on proposed lots 1-3. A report prepared by Geosolve is attached as **Appendix E.** This finds that the ground conditions at each proposed platform are suitable for disposal to ground for both wastewater and stormwater.

A consent condition is volunteered that a wastewater disposal system be designed and installed by a suitably qualified professional prior to occupation of future dwellings. The disposal system will be located to ensure a minimum 50m distance from existing bores as highlighted by the Geotech report in **Appendix E**.

4.3 PROPOSED DEVELOPMENT CONTROLS

The following controls on development associated with the subdivision and building platforms are proposed. These align with the recommendations in the Landscape Report and are volunteered as conditions of consent:

1. Prior to commencing any work on the site, the consent holder shall install measures to control and/or mitigate any dust, silt, run-off and sedimentation that may occur, in accordance with QLDC's Land Development and Subdivision Code of Practice to ensure neighbouring sites remain unaffected from earthworks.

2. Prior to commencing works on the site, the consent holder shall obtain 'Engineering Review and Acceptance' from the QLDC for development works to be undertaken and information requirement specified below. The application shall include all development items listed below:
    a. Provision of a minimum supply of 2,100ltrs per day of potable water to the building platforms on Lots 1-3 that complies with/can be treated to consistently comply with the requirements of the Drinking Water Standard for New Zealand 2005 (revised 2018).
    b. The formation of the utilising of the vehicle crossing in accordance with Council Standards.

c. The formation of the Right of Way to be constructed in accordance with Council standards.

Earthworks

3. In accordance with QLDC environmental guidelines, an Environmental Management Plan shall be implemented.

4. The consent holder shall obtain and implement a traffic management plan approved by Council prior to undertaking any works within or adjacent to Council's road reserve that affects the normal operating conditions of the road reserve through disruption, inconvenience or delay.

5. The consent holder shall remedy any damage to all existing road surfaces and berms that result from work carried out for this consent.

6. All earth worked and/or exposed areas created as part of the subdivision shall be top-soiled and grassed, re-vegetation or otherwise stabilised.

Landscaping

1. The maximum height for any built form within the building platform shall be 5m above the minimum finished floor level as set out in the Geosolve report attached as **Appendix E**.

2. Any new fencing shall be of post and wire, and a maximum height of 1.2m.

3. All gardens and outdoor domestic activities shall be confined to the specified "curtilage areas" as identifies on the proposed Structural Landscape Plan.

4. All external lighting shall be down lighting only and not create light spill beyond any of the lots. External lighting shall not be used to accentuate or highlight built form as it is viewed

from beyond any of the lots. All external lighting shall be located within the curtilage areas only as identified on the Structural Landscape Plan.

5. The driveway shall be maintained in an unsealed gravel formation. The use of kerb and channel is prohibited.

Ongoing Conditions

6. Wastewater systems on Lots 1-3 shall be designed by a suitably qualified engineer prior to the construction of a residential dwelling, taking account of Geotech report attached as **Appendix E**.

4.4 NATIONAL ENVIRONMENTAL STANDARDS FOR ASSESSING CONTAMINANTS IN SOIL

With respect to a preliminary site investigation (PSI) of soil contaminants, consistent with the published guidelines for assessing and managing contaminants in soil to protect human health, a site walk over has been undertaken, followed by an investigation of known land use associated with the site.

Both the Queenstown Lakes District Council's GIS hazard register and Otago Regional Council records have been searched and there is no known history of use of chemicals and/or any other hazardous contaminants (herbicides/pesticides/waste discharges and/or other). Accordingly, no adverse effects are anticipated in this regard.

5.0 SITE HISTORY

The following resource consents are relevant to this application:

- RM910032 Approved subdivision of the site. There are no available council documents related to this subdivision.
- RM010362 Approved a three-lot subdivision and a building platform on two of the sites (not on that of the balance lot which is the subject of this consent). This subdivision created the

subject site and its boundaries as it is currently.

- RM110114 Approved the establishment and operation of a paintball activity on the subject site.
- RM110557 Varied condition 1 of RM110114 relating to carpark location and design.

6.0 RELEVANT PROVISIONS OF THE OPERATIVE DISTRICT PLAN

6.1 ACTIVITY STATUS (Operative District Plan)

The subject site is zoned Rural General under the Operative District Plan, and the proposed activity requires the following consents:

- A **discretionary** activity pursuant to **Rule 5.3.3.3(i)(b)** regarding identification of building platforms of not less than 70m^2 in area and not greater than 1000m^2 in area;

- A **discretionary** activity pursuant to **Rule 15.2.3.3(vi)** which states that any application for a subdivision, including the identification of residential building platforms in the Rural General Zone shall be processed as a discretionary activity.

Overall, under the Operative District Plan, the proposal qualifies as a **discretionary** activity.

6.2 ACTIVITY STATUS (Proposed District Plan)

Under the Proposed District Plan, the site is to be zoned Rural and the proposed subdivision and building platforms require the following consents:

- A **discretionary** activity consent pursuant to **Rule 21.4.10** regarding identification of building platforms not less than 70m^2 and not greater than 1000m^2;

- A **discretionary** activity consent pursuant to **Rule 27.5.11** regarding all subdivision activities in the rural zone which specifies that any subdivision should be processed as a discretionary activity.

Overall, under the Proposed District Plan, the proposal qualifies as a **discretionary** activity.

7.0 ASSESSMENT OF ADVERSE EFFECTS

7.1 PERMITTED BASELINE

Pursuant to Section 104(2) of the Act, when considering the actual and potential effects of an application for resource consent, a consent authority may disregard an adverse effect of an activity on the environment if the plan permits an activity with that effect (the permitted baseline).

In this instance, the permitted baseline includes:

- Vehicle movements associated with the two access points to the property;
- Farming activities;
- Horticultural and viticultural activities;
- Landscape planting;
- Fencing; and
- Earthworks up to 1000m^3 per year.

7.2 EXISTING ENVIRONMENT

The existing environment is of relevance to the consideration of the proposed subdivision and comprises of consented development. The existing environment includes an existing farm building and a remnant pine plantation. Within the general location of this remnant plantation is evidence of a recently ceased paintballing operation.

7.3 RECEIVING ENVIRONMENT

In addition to the permitted baseline and existing environment, it is important to consider the receiving environment which includes existing and consented development adjacent to and in the vicinity of the application site. The receiving environment includes residential units, accessory buildings and landscaping on the properties immediately to the north, south and west of the site.

The broader area of which the site is located is characterised by a band of rural living activities (established upon both terrace levels) on the eastern side of Riverbank Road.

To the west of the subject site, on the opposite side of Riverbank Road, there is open paddock land interspersed with rural living type developments, the closest being approximately 100m west of Riverbank Road. It is noted that due to the topography of the land, residential development located on the upper terrace to the east of Riverbank Road as well as development to the west of Riverbank Road is highly visible. Consequently, despite its Rural zoning, when travelling on Riverbank Road, visual evidence of rural living development extends from the intersection of Riverbank Road and Cardrona Valley Road northwards.

It is within the context of the above-described permitted baseline, existing and receiving environments that the actual and potential effects of the proposed development will be considered below.

7.4 ASSESSMENT OF ADVERSE EFFECTS ON THE ENVIRONMENT

In addition to the earthworks matters of discretion, the assessment matters include:

21.21.2.1 Existing Vegetation;
21.21.2.2 Effects on landscape quality and character;
21.21.2.3 Effects on visual amenity;
21.21.2.4 Design and density of Development;
21.21.2.5 Tangata Whenua, biodiversity and geological values; and
21.21.2.6 Cumulative effects of subdivision and development on the landscape.

Each of the above matters will be addressed in the assessment below. An assessment of landscape and visual effects has been undertaken by Vivian+Espie (V+E) and is attached as **Appendix D** to this application which is adopted for the purposes of this report and is drawn on below.

Existing Vegetation

As stated in **Appendix D**, no trees planted after 28th September 2002 have been considered as beneficial to any of the assessment matters.

Effects on Landscape Quality and Character

As mentioned above, the area in which the site is located is categorised as RCL under the PDP. It is not directly adjacent to an ONL or ONF, the closest ONL being Mt Alpha which is located approximately 800m to the west.

The proposed subdivision and building platforms are to be somewhat clustered in the north western corner of the site. This will retain the greater area of the site for rural land use. This scheme/layout will not be discordant with the broad pattern of rural living development within the area, whereby smaller rural living sites are more prevalent (density becomes more evident) as one travels out of the Cardrona Valley and onto Riverbank Road (heading north).

The proposed building platforms are nestled into the escarpment meaning that when viewed from the upper terrace (for example from Riverbank Road) any future built will be '*almost entirely obscured and the views of the rural and natural landscape will remain relatively unchanged*' (refer to **Appendix D**).

In addition to this, the proposed structural landscape plan involves planting the top of terrace out in mixed native plants as well as in proximity to each building platform. Not only will this planting assist to visually screen future built form, but it will also increase elements of natural character which are otherwise absent in this locality of the site.

In terms of landscape character, the V+E report concludes the following:

- The site has capacity to absorb effects of development without compromising the existing character of the Rural Zone;
- Adverse effects of the proposal on rural landscape character will be of a low degree, seeing only a slight increase in the natural character of the site;

- The proposal is in keeping with the existing spatial distribution of rural living development;
- The openness of the lower terrace is retained, ensuring the sense of spaciousness associated with the Rural Zone as observed, is retained;
- Structural landscaping will assist with mitigating adverse effects;
- Adverse effects of this proposal on landscape character are considered to be of low degree.

The above conclusions are adopted for the purposes of this report and therefore, the adverse effects in terms of landscape character are considered to be minor.

Visual Amenity

In terms of visibility from particular locations, the V+E report includes a visual effects assessment which concludes:

Riverbank Road

- Due to the topography and vegetation along Riverbank Road, the eastern boundary screens the lower terrace of the site;
- Domestic activities can be seen the entire length of Riverbank Road and as such, the development will appear contiguous with the existing level of residential development;
- Riverbank Road is a straight road with a speed limit of 80kmph with no footpath thus, views of the site will be fleeting and often in the peripheral view of road users;
- Proposed native planting which is proposed at the top of the escarpment will further screen built form;
- The degree of adverse visual effects perceptible from Riverbank Road is considered to be low initially, becoming very low over time as structural landscaping becomes established.

The Cardrona River and its margins

- Proposed platforms are located approximately 400m from the four-wheel drive track that runs along the western side of the Cardrona River;
- The building platforms are tucked into the toe of a large escarpment that forms a visual backdrop and will help future buildings recede into the landscape. Native planting will further

enhance the effectiveness of this location;

- The degree of adverse visual effects perceptible from the Cardrona River and its margins are considered low, becoming very low over time as structural landscaping becomes established.

The V+E report also focuses on visual amenity from neighbouring properties which will be considered in the assessment of adverse effects on persons below.

Overall, in consideration of the assessment made by V+E, the proposed development will result in adverse visual effects that will be less than minor in degree.

Form and Density of Development

As aforementioned, the proposed development will sit within an existing band of established rural living development. The V+E report finds that the proposal will be akin to the immediately surrounding development and due to the topographical features of the site (and the eastern side of Riverbank Road), offers a unique ability to absorb further residential development. The development will not spread beyond the confines of this band of existing rural living development.

The position of the development carefully utilises topography and existing vegetation to minimise visibility of future development. Proposed conditions involve further structural landscaping which will serve to progressively minimise potential adverse effects which may arise from the development, both in terms of visual amenity, and landscape character.

The location of the proposed building platforms, whilst contributing to an increase in domestication, will not be out of character when considering surrounding development. Through the careful placement of vegetation and utilisation of topography as proposed, residual visibility will appear recessive within the landscape.

Overall, it is considered that the scheme configuration, location of building platforms and proposed building controls (coupled with that of the District Plan) will suitably ensure that any adverse effects associated with form and density of development will be less than minor in degree.

Cumulative Effects of Development on the Landscape

The nature and extent of existing development has been described in Section 4 above and also in the landscape assessment attached as **Appendix D.** The subject site and its vicinity is zoned as Rural General under the ODP and Rural under the PDP, although it is recognised that the landscape within the immediate vicinity of the site has been significantly altered by rural and rural residential development. Directly adjacent to the site is a cluster of rural living development, and several rural living sites are visible within the wider landscape forming a scattered extension of domestic activity along Riverbank Road. Consequently, the proposal is not inconsistent with the existing pattern of development within the area and proposes to place the development on the more inconspicuous lower terrace.

As supported by the V+E report, the main effects associated with the proposal will relate to an increased establishment of built form, however it will not be established in such a way that is contrasting or discordant with the existing rural character of the site's location. Overall, the landscape of the area will retain an open character. The proposal is not considered to breach any threshold of acceptability in relation to cumulative effects.

The effects of the proposal on landscape character are essentially an increase of the existing development within the wider area. The actual visual compromise that would arise from the proposal will likely be from Riverbank Road and the Cardrona River and its margins, and in time, will generally be less than minor. The surrounding rural landscape will continue to have a character that is dominated by rural land uses and rural amenity.

Overall, in terms of the cumulative effects of development on the landscape, such adverse effects will be less than minor in degree.

7.5 EARTHWORK CONSIDERATIONS

Soil Erosion, Generation and Run-off Sediment

As assessed in the Geotech report attached as **Appendix E**, this site has the potential to generate silt runoff during heavy rainfall and this would naturally drain downslope. These adverse effects can be mitigated through appropriate conditions of consent. These measures will involve systems such as runoff diversion drains and contour drains, while for sediment control the options are earth bunds, silt fences, vegetation buffer strips and sediment ponds. Minimal subsoil will be exposed at any stage of construction and surfacing will be established as soon as is practical.

It is anticipated that conditions of consent will appropriately mitigate adverse effects such that any potential adverse effects relating to soil erosion, generation and run-off sediment will be less than minor.

Landscape and Visual Amenity Values

While effects on landscape quality, character and visual amenity have been addressed as a whole, it should be noted that as a consequence of each building platform being raised by earthworks, the potential adverse effects of this have been recognised and mitigated through a volunteered restriction in building height, limiting future buildings to be no higher than 5m above each platform.

Effects on Infrastructure, Adjacent Sites and Public Roads

The earthworks will generate the requirement for heavy machinery to be coming and going from the site. It is anticipated that conditions of consent will adequately address site management matters.

With the implementation of appropriate conditions in this regard, it is considered that the adverse effects of earthworks on infrastructure and/or adjacent sites and public roads will be no more than minor.

Land stability

Due to the location and extent of these earthworks in relation to the subject site and surrounding structures, the works will not result in adverse effects relating to land stability (or instability). This is supported in reporting attached at **Appendix E** to this application.

Effects on Water Bodies, Ecosystem Services and Biodiversity

There is both the Cardrona River and the Cardrona Aquifer within the vicinity of the site. The design of wastewater disposal systems will be required to account for these natural features and a condition of consent is offered in this regard.

The proposed earthworks will be subject to conditions of consent that will limit any adverse effects related to sediment deposition and/or run-off which will also limit the impact of any earthworks on water bodies and/or ecosystems. Importantly, as part of this application, there is proposed to be a net increase in native vegetation and along with the minimal disturbance of existing vegetation, approval of the proposal will lead to an increase in indigenous biodiversity. Overall, adverse effects in this regard will be less than minor in degree.

Cultural Heritage and Archaeological Sites

The application site does not include any known archaeological site or site of cultural significance. Whilst it is noted that the southeast corner of the subject site is situated within the Wahi Tapuna area, Orau, the development is proposed to take place over 700m away from this area. Consequently, there will be no adverse effects in relation to Wahi Tapuna.

Nuisance effects

Nuisance effects have been considered within reporting attached at **Appendix E** to this application. It is noted that the vibrations associated with the placement of engineered fill will not present any issue to third parties. The noise will arise from machinery including trucks, excavators, plate compactors and/or rollers, as the surrounding area is of a rural living character, noise is unlikely to be a significant issue during construction.

Overall, adverse nuisance effects will be less than minor in degree.

Natural Hazards

As with all sites in the district, the risk of seismic activity has been identified and appropriate allowance will be made as part of the building consent process.

Liquefaction risk has been assessed and the results are presented in section 5 of **Appendix E**. There is 'no to low' liquefaction risk at the surface of the site. Consequently, foundation recommendations are provided in section 6.5 of this report and are anticipated to form conditions of consent.

Flooding hazard has been assessed by GeoSolve in **Appendix F**. Reporting explains and confirms appropriate flood mitigation which involves the recommendation of finished floor levels 1.5m above the estimated 1999 flood levels. Due to this conclusion, a total of approximately 4668m^3 of certified fill is required in order to raise each platform. As previously outlined, it is requested that council consider the timing of such works (pre- or post-224c approval).

Functional and Positive Effects

The functional aspects of this subdivision is that it will allow for three additional rural living opportunities whilst suitably mitigating adverse effects on landscape quality, character and productive land. Details of the proposal will mitigate adverse effects on productive land through the placement of platforms within the extent of the site that is less viable to cultivate, while the southern most platform will be positioned as part of the largest allotment area that will be retained for a level of rural production. As discussed, much of the area where the development is proposed is not currently productive and is not cultivated. It is in a poor state, generally suffering as a result of historic land use associated with forestry.

Conversion of such land into a productive soil resource would involve extensive time and expense, which is not viable given the economic viability of the subject site if solely applying permitted agricultural land uses.

The application therefore offers an opportunity for the land to provide rural living opportunities which are in demand by the community whilst not adversely compromising landscape character and quality.

Further positive effects include the establishment of indigenous vegetation that will enhance natural character values and overall, a provision for more intensive custodian management of land, that is likely to enable more intensive improvement of land than if left solely as a non-productive rural unit.

Overall, the proposal will function such that there will be positive effects.

7.6 SUBDIVISION CONSIDERATIONS

The relevant assessment matters include:

(a) The extent to which subdivision and the location of residential building platforms maintain and enhance:

1. Rural character
2. Landscape values
3. Heritage values
4. Visual amenity
5. Life supporting capacity of soils, vegetation and water
6. Infrastructure;

(b) Effects on adjoining land uses;

(c) Servicing;

(d) Natural hazards;

(e) Consideration of long-term development;

(d) Life supporting of soils.

The effects on rural character, landscape values and visual amenity have been addressed in section 7.5 above and in the Landscape and Visual assessment reporting attached as **Appendix D** to this application.

The site does not include any known heritage values. No adverse effects are anticipated in this regard.

The proposal will utilise existing roading infrastructure and an existing vehicle access. All access will be constructed in accordance with applicable council standards. Vehicles will be able to safely enter and exit the site whilst benefiting from sufficient visibility in both directions.

The proposed subdivision and associated building platforms are consistent with surrounding land use which comprises rural living development in proximity to larger rural productive land in the wider vicinity.

The proposed building platforms are well setback from the site boundaries and have been sensitively placed near the toe of an escarpment, rather upon wider open spaces that do not offer such topographical features.

No adverse effects are anticipated with regard to reverse sensitivity or on adjacent land uses.

The proposed building platforms can be appropriately serviced.

The application site is not shown as being susceptible to any specific natural hazard on QLDC or ORC's hazard maps. There is seismic hazard associated with local and regional faults, however this hazard presents no greater risk on the subject site than on any other site within the district.

The subject site is within the QLDC/ORC mapped flood hazard zone. There has been a detailed Flood Hazard Assessment undertaken by Geosolve and reporting is attached as **Appendix F**.

Reporting concludes that the most appropriate mitigation measure is to elevate building floors to provide adequate freeboard above extreme flood levels. This will be achieved by raising each platform to the following heights:

Table 2: Flood and floor level calculations

	Lot 1	Lot 2	Lot 3	Gradient	B. Rd. bridge	u/s mark
Dist. u/s B. Rd. bridge (m)	1190	1305	1440		0	1090
GL typical	322.75	323.75	324.75			
99 WSE (ORC, extrapolated)	322.58	323.43	324.43	0.00740	**313.77**	**321.84**
			FFL above '99 flood level (m)	1.50		
Adopt FFL	**324.08**	**324.93**	**325.93**			
Fill to FFL (typical)	1.33	1.18	1.18			

Figure 3: Table showing varying amounts to build up floor levels.

There are no other natural hazards that have been identified as being applicable to the subject site and therefore overall, it is considered that the application appropriately addresses the risk of natural hazards.

The life supporting capacity of soils will largely be retained, and whilst earthworks will be undertaken, related effects will be appropriately addressed by conditions of consent.

As a result of identifying building platforms and related controls (including curtilage), future built form will be appropriately managed such that related adverse effects on the environment will be no more than minor in degree.

8.0 ASSESSMENT OF EFFECTS ON PERSONS

Immediately adjacent properties are shown in Figure 4 below:

Figure 4: Aerial image of subject site (outlined in blue) and surrounding sites subject to assessment highlighted with an orange star. QLDC GIS.

The Structural Landscape Plan included in this application identifies curtilage areas whereby all gardens and outdoor domestic activities will be contained. This serves to limit the extent to which domestication can sprawl across each of the proposed sites and will ensure that areas outside of domestication will contribute to open rural character as perceived from outside of the site.

The V+E report notes that, whilst having views of the site, the owners/occupiers of 329, 327 – 325 Riverbank Road, will view the site with existing built form and domestication in the foreground of such views. Additional planting along the northern boundary is proposed to soften and screen views of the proposed development.

Appendix D concludes that whilst the degree of adverse visual effects on 329 and 377 will initially be minor, this is anticipated to decrease to less than minor over time through the establishment of structural planting. The owners/occupiers 325 – 327 Riverbank Road are considered to be affected to a less than minor degree. These conclusions are adopted for the purposes of this report.

9.0 NOTIFICATION ASSESSMENT

Public notification has been requested by the applicant.

10.0 OBJECTIVES AND POLICIES OF THE OPERATIVE & PROPOSED DISTRICT PLAN

Operative District Plan (ODP)

The relevant objectives and policies are situated in Part 4 (District Wide Issues), Part 5 (Rural Areas), Part 15 (Subdivision, Development and Financial Contributions).

Objective 4.2.5 – *Subdivision, use and development being undertaken in the district in a manner which avoids, remedies or mitigates adverse effects on landscape and visual amenity values*. The relevant policies are 1, 4, 8, 9 and 12. Policy 1 revolves around future development and includes the following;

a) *To avoid, remedy or mitigate the adverse effects of development and/or subdivision in those areas of the District where the landscape and visual amenity values are vulnerable to degradation.*

b) *To encourage development and/or subdivision to occur in those areas of the District with greater potential to absorb change without detraction from landscape and visual amenity values.*

c) *To ensure subdivision and/or development harmonises with local topography and ecological systems and other nature conservation values as far as possible.*

The application site is located within an existing strip of rural living development which leads to an industrial area on the outskirts of Wanaka Town and is set amongst the wider pastoral landscape. This development is well contained through topography, existing as well as proposed planting. It is considered that the application site and the wider ribbon of residential development in which it is located represents an area with potential to absorb change without detracting from landscape and visual amenity values. In addition to this, the proposed subdivision harmonises with, and makes the most of local topography, whilst not compromising ecological systems and/or nature conservation values. It is considered that the proposed development is consistent with the ODP policies relating to future development.

Policy 8 is related to avoiding cumulative degradation. The policies note the following:

a) To ensure that the density of subdivision and development does not increase to a point where the benefits of further planting and building are outweighed by the adverse effect on landscape values of over domestication of the landscape.

b) To encourage comprehensive and sympathetic development of rural areas.

The proposal will result in a slight increase in density and domestication within an area of established rural living properties. As noted above, it is considered that this increase will be well contained through the existing topography as well as existing and proposed vegetation. Consequently, it will not result in significant adverse effects on landscape values or over domestication. This conclusion is supported in the Landscape Report attached as **Appendix D**.

It is considered that the proposed development represents comprehensive and sympathetic development in that it provides for three further rural living opportunities within an established strip of rural living properties while avoiding significant adverse landscape effects or degrading the wider, more open and sensitive landscape.

Overall, it is considered that the proposed subdivision is consistent with the ODP policies relating to the avoidance of cumulative degradation.

Policy 9 related to structures. The policy aims to preserve the visual coherence of:

a) *outstanding natural landscapes and features and visual amenity landscapes by:*
   - *encouraging structures which are in harmony with the line and form of the landscape;*
   - *avoiding, remedying or mitigating any adverse effects of structures on the skyline, ridges and prominent slopes and hilltops;*
   - *encouraging the colour of buildings and structures to complement the dominant colours in the landscape;*
   - *encouraging placement of structures in locations where they are in harmony with the landscape;*
   - *promoting the use of local, natural materials in construction.*

The proposed development will not result in the location of any buildings or structures on skylines, ridges, prominent slopes or hilltops. The proposed conditions, which are expected to be included as consent conditions, as well as the District Plan, include controls to ensure that any subsequent built form will complement the existing landscape in terms of height, vegetation, colours and materials. Overall, it is considered that the development is consistent with the ODP policies relating to structures.

Policy 12 of Part 4 is also of relevance as it relates to Transport Infrastructure and the preservation of the open nature of the rural landscape by;

- *encouraging the location of roads, car parks and tracks along the edges of existing landforms and vegetation patterns.*

An existing access is being utilised to form the access to this subdivision and associated building platforms. Whilst this will be extended slightly, it is proposed to be tucked in behind the proposed platforms, at the toe of the escarpment. Consequently, the proposal will result in no significant change

to the existing access arrangements. It is therefore considered that the proposed development is consistent with the ODP policies relating to transport infrastructure.

The relevant objectives in Part 5 (Rural Areas) are 1 and 3.

Objective 1 – Character and Landscape Value. To protect the character and landscape value of the rural area by promoting sustainable management of natural and physical resources and the control of adverse effects caused through inappropriate activities.

Associated policies 1.1, 1.2, 1.3, 1.4, 1.6, 1.7 and 1.8 are considered relevant as they ultimately seek development which is sensitive to the landscape values, traditional use of rural land and protection of soil whilst allowing for a range of activities.

The application site is surrounded by existing rural living development with most of the northern area of the site being a degraded wasteland which was previously a pine plantation. Consequently, this area is of limited productive value and therefore the subdivision, along with all the proposed planting, will contribute to the sustainable use of the soil resource by locating development within a relatively clustered area of the subject site and retaining the remaining land as open space. This is as opposed to extending rural living into areas that are otherwise used productively.

As discussed above, it is considered that the proposed development will be consistent with the established character of the rural area in which it is located and will not result in significant or inappropriate adverse effects on landscape values. The application site and wider stretch of rural living development has the potential to absorb the proposed change without compromising the visual coherence of the wider landscape. Overall, it is considered that the proposed development is consistent with objective 1 of Part 5 (rural) under the ODP.

Objective 3 – Rural Amenity. Avoiding remedying mitigating adverse effects of activities on rural amenity.

Associated policies 3.1, 3.2, 3.3 and 3.5 are considered relevant to this application. They seek to encourage a range of rural land uses whilst avoiding, remedying or mitigating adverse effects of these activities. As discussed, the development is located within an existing band of rural living properties and will be located in a somewhat clustered arrangement to the north of the subject site, nestled into the escarpment.

Overall it is considered that the proposed development will be consistent with Objective 3 of Part 5 (rural) under the ODP.

The relevant objectives in Part 15 (Rural Areas) are 1, 2 and 5.

Objective 1 – Servicing. The provision of necessary services to subdivided lots and developments in anticipation of the likely effects of land use activities on those lots and within the developments.

The relevant associated policies of this are 1.1, 1.2, 1.4, 1.5, 1.6, 1.8, 1.9, 1.10 and 1.11. In general, these policies seek the provision of appropriate services to subdivision development whilst avoiding, remedying or mitigating any potential related adverse effects.

Access and servicing information has been provided in section 4.2 of this report. The proposed will utilise an existing vehicle crossing from Riverbank Road which provides access to all three proposed lots. This vehicle crossing has adequate sight distances, and the subsequent access will be extended to reach the proposed lots. Whilst the additional sites will add three more frequent users to Riverbank Road, it is considered that the proposed subdivision will result in negligible adverse effects on the safety and efficiency of the adjoining roading network.

All three proposed sites can be provided with electricity and telecommunications connections and, subject to appropriate design wastewater and stormwater provisions can be made prior to dwellings being constructed. Whilst there is no current domestic water supply, volunteered conditions will ensure all relevant consents (primarily for the construction of a bore, as opposed to a 'take' which is permitted) are in place prior to engineering acceptance. It is therefore considered that the proposal

can be appropriately accessed and serviced and is consequently consistent with objective 1 of Part 15 within the ODP.

Objective 2 – Cost of services to be met by subdividers. The costs of the provision of services to and within subdivisions and developments, or the upgrading of services made necessary by that subdivision and development, to the extent that any of those things are necessitated by the subdivision or development to be met by subdividers.

The relevant policies are 2.1 and 2.2. As stipulated above, all necessary services will be provided by the subdivider with the exception of wastewater and stormwater disposal which will be provided onsite when a dwelling is constructed. Given that the wastewater and stormwater disposal design will be based on the size and design of the future dwelling it is considered appropriate (and common practice) for this element of the servicing to be deferred until the dwelling is constructed. Overall, it is considered that the development is consistent with objective 2 of Part 15 within the ODP.

Objective 5 – Amenity Protection. The maintenance or enhancement of the amenities of the built environment through the subdivision and development process.

The associated policies are 5.1, 5.2, 5.3, 5.4, 5.5 and 5.6. Generally, these seek to ensure lot sizes provide for anticipated land uses, avoid adverse effects in terms of visual amenity, services and vegetation. The proposed lot sizes and dimensions are appropriate for the intended residential and potentially productive land uses. The two smaller lots generally reflect the levels of density of built development within the existing rural living stretch either side of the subject site. It is not anticipated that the proposed subdivision will adversely affect landscape, visual, cultural of any other amenity values (refer to **Appendix D**). Existing onsite vegetation will be utilised with many native plants being added in order to protect landscape and amenity values. It is considered that the proposed development will result in negligible adverse effects on the safe and efficient functioning of services and roads. The application site does not include any known archaeological site or site of cultural significance. Overall, it is considered that the development is consistent with objective 5 of Part 15 within the ODP.

Proposed District Plan (PDP)

The relevant objectives and policies are situated in Chapter 3 (Strategic Direction), Chapter 6 (Landscapes and Rural Character), Chapter 21 (Rural) and Chapter 27 (Subdivision & Development).

The relevant strategic policies in Chapter 3 (Strategic Direction) are 3.3.24 and 3.3.26.

3.3.24 Ensure that cumulative effects of new subdivision and development for the purposes of rural living does not result in the alteration of the character of the rural environment to the point where the area is no longer rural in character. (relevant to S.O. 3.2.1.8, 3.2.5.1 and 3.2.5.2)

3.3.26 That subdivision and / or development be designed in accordance with best practice land use management so as to avoid or minimise adverse effects on the water quality of lakes, rivers and wetlands in the District. (relevant to S.O. 3.2.1.8, 3.2.4.1 and 3.2.4.3)

As demonstrated by this application and in particular at **Appendix D**, the proposal is not considered to alter the character of the rural environment to the point where the area is no longer rural in character. The proposed lots will also be appropriately serviced and the subdivision will not result in adverse effects on the water quality of any lake, river or wetland. Therefore, it is considered that the development is consistent with the above objectives and policies of Chapter 3 within the PDP.

The relevant policies in Chapter 6 (Landscapes and Rural Character) are Rural Landscape Categorisation, Managing Activities in the Rural Zone and Managing Activities in Rural Character Landscapes.

In terms of Rural Categorisation, the policy states to classify the rural zoned landscapes in the district as an Outstanding Natural Feature (ONF), Outstanding Natural Landscape (ONL) or Rural Character Landscape (RCL). In this instance, the subject site has been zoned as RCL.

The second relevant policy revolves around; *Managing Activities in the Rural Zone, the Gibbston Character zone, the Rural Residential Zone and the Rural Lifestyle Zone*. Within this, the relevant

policies are 6.3.4, 6.3.5, 6.3.9 and 6.3.11. These seek to avoid urban densities, avoid light pollution, encourage development proposals to promote biodiversity and to encourage ecologically viable landscaping. The development proposal will not result in urban densities and the location and direction of lights is controlled by standards in the PDP such that lighting will not result in excessive glare nor will it degrade views of the night sky or landscape character. Due to the size of the proposal, there is scope for indigenous biodiversity to be encouraged, and this has been applied by nature of structural landscaping offered.

Whilst there will be a slight increase in the intensity of a land use that exists in the vicinity of the site, it is not to the extent that it will compromise indigenous biodiversity nor will the proposal result in the removal of any existing native vegetation. The proposal will not compromise productive rural land, and therefore outcomes will be consistent with the relevant objectives and policies of Chapter 6 within the PDP.

The third relevant policy involves Managing Activities in Rural Character Landscapes. The associated policies relevant to this application are; 6.3.19, 6.3.20, 6.3.21, 6.3.22, 6.3.23, 6.3.26, 6.3.28, 6.3.29. Each of these will be addressed in turn.

6.3.19 seeks appropriate development in RCL's which is consistent with objectives and policies. The proposal, as demonstrated throughout this section, is consistent with objective and policies of the district plan.

6.3.20 encourages plan changes where appropriate. In consideration of site specific details, particularly relating to landscape character, rezoning of the site is not considered appropriate. Accordingly, it is considered that the proposal is an appropriate means of developing the site and providing additional rural living opportunities.

6.3.21 requires proposals to have regard for consented subdivision or development in assessing the potential for adverse cumulative effects. Existing and consented subdivisions have been taken into consideration when assessing the extent of adverse cumulative effects that may arise. In this instance, the subdivision on the opposite side of Riverbank Road is of note and has had consideration however,

these sites have been mostly realised. Furthermore, due to the topography of the subject which has been utilised the subject site offers a unique opportunity to be relatively inconspicuous, and entirely accordant with a development type anticipated to be experienced from those locations that gain views of this part of the district's landscape.

Policy 6.3.23 seeks to ensure incremental changes from subdivision and development do not degrade landscape quality or character, or important views as a result of activities associated with mitigation of the visual effects of proposed development such as screening planting, mounding and earthworks. As discussed in this report as well as **Appendix D**, it is considered that the changes associated with the proposed development will be well contained through existing topography and proposed vegetation. As mentioned above and in **Appendix D**, the proposed vegetation serves to enhance the natural character of the site. The wider landscape change is likely to be indiscernible and will not degrade landscape quality, character or obstruct important views.

6.3.26 seeks to avoid adverse effects on visual amenity from subdivision use and development that; is highly visible from public places and other places frequented by members of the public; or forms the foreground for an ONL or ONF when viewed from public roads. The proposal will not be highly visible from public places. The most available view of the development will be from Riverbank Road from which the development will gain access. Whilst the application site will be fleetingly visible, structural planting is proposed to soften and obstruct this view. It is important to understand the use of Riverbank Road being a public road not often frequented by walkers, nor does this area connect to public walking tracks. Therefore, the majority of the users are likely to be drivers experiencing the environment at 80kmph and are unlikely to be offended by glimpses of the development as proposed within a panoramic backdrop which unfolds beyond the site.

It is likely to also be visible from the Cardrona River and its margins. From this vantage it is mainly both topography and planting which serves to soften and obstruct views however PDP standards as well as volunteered conditions of consent also serve to mitigate and visibility of future built form. It is therefore considered that adverse effects on the visual amenity landscape will be appropriately avoided.

Policy 6.3.28 is specific to the upper Clutha Basin in which this application is located. It seeks for proposals to have regard to the adverse effects from subdivision and development on the open landscape character where it is open at present. As discussed by V+E in **Appendix D**, the application site and its vicinity unique in its stepped topography. The proposed subdivision and associated platforms are tucked into the escarpment which separates the upper and lower terrace, keeping the majority of the subject site open and void of built form. Due to this, it is not considered the proposal will result in significant adverse effects on the openness of the RCL.

Policy 6.3.29 encourages development to utilise shared accesses and infrastructure, and to locate within parts of the site where it will minimise disruption to natural landforms and to rural character. The proposed development will utilise the existing vehicle crossing and access. It is considered that the access and infrastructure associated with the proposed development is likely to result in indiscernible adverse effects on natural landforms and rural character.

Overall, it is considered that the proposal is consistent with the above objectives and policies within Chapter 6 of the PDP.

The relevant objectives in Chapter 21 (Rural) are 21.2.1, 21.2.2, 21.2.3, 21.2.4.

Objective 21.2.1 - A range of land uses, including farming and established activities, are enabled while protecting, maintaining and enhancing landscape, ecosystem services, nature conservation and rural amenity values.

Associated policy 21.2.1.3 seeks development to have appropriate setbacks from boundaries in order to mitigate potential adverse effects on landscape character, visual amenity, outlook from neighbouring properties and to avoid adverse effects on established and anticipated activities. The proposed subdivision layout allows for the building platforms to be adequately set back from the both the internal and road boundaries of the site. When accounting for the careful use of the topography of the site as well as proposed structural planting, it is considered that any adverse effects on landscape character, visual amenity and neighbours outlook will be minimised. Furthermore, the

subject site is within an established stretch of rural living development. It is therefore considered that the proposed subdivision will not result in significant adverse reverse sensitivity effects.

Policy 21.2.1.5 addresses location and direction of light. As discussed above, the PDP standards will control the location and direction of lights so as to avoid glare on other properties, roads, public places or views of the night sky.

Policy 21.2.1.6 seeks to avoid adverse cumulative impacts on ecosystem services and nature conservation values. When accounting for the existing environment, the proposed development will result in negligible adverse cumulative effect on ecosystem services or nature conservation values.

21.2.1.7 seeks for development to have regard to the spiritual beliefs, cultural traditions and practices of Tangata Whenua. The very south east corner of subject site is located within a Wāhi Tūpuna area identified as part of Stage 3 of the Proposed District Plan, however this is 700m away from the proposed development site. Further to this, no site or item of cultural significance has been identified on or in the vicinity of the site. Consequently, it is not anticipated that the proposal will conflict with spiritual beliefs, cultural traditions or practices of Tangata Whenua.

21.2.1.9 addressed adequate firefighting water and fire service vehicle access to ensure an efficient and effective emergency response. It is anticipated that if this application were to be approved, both conditions of consent as well as the District Plan standards will address and secure adequate firefighting water supply and access arrangements.

Objective 21.2.2 and associated policy 21.2.2.2 seek to sustain the life supporting capacity of soils and maintain the productive potential of soil resource of rural zoned land and encourage land management practices and activities that benefit soil and vegetation cover. The application has purposefully provided for two of the building platforms in proximity of a remnant pine plantation that offers little insensitive to improve for rural production use, while providing a building platform on the larger balance will provide for on site management of that part of the land that offers more potential in respect of traditional agricultural activity. Overall, the proposal will sustain but also improve the life supporting capacity of the site's soils, maintaining the productive potential of the site's soil resource.

Objective 21.2.3 and associated policy 24.2.4.1 seeks the safeguarding of the life supporting capacity of water through the management of activities and the discouragement of activities which adversely affect its potable quality, life supporting capacity and associated ecosystems. As discussed, the subject site has yet to gain access to potable water simply by nature of not committing to bore construction prior to gaining consent at district council level. It is noted that conditions of consent will ensure water is adequately provided and that the future proposed wastewater system will be designed by a suitably qualified professional and if necessary, will be disposed on the upper terrace adequately setback from the edge of the terrace as highlighted by the Geotech report in **Appendix E**. It is therefore considered that the proposal is not likely to result in the inefficient use of water and will result in negligible adverse effects on the potable quality and life supporting capacity of the water resource and associated ecosystems.

Objective 21.2.4 addresses conflicts between existing and anticipated activities and seeks the management of these to minimise this. Policies 21.2.4.1 and 21.2.4.2 seeks the recognition of expected nuisance effects such as odour, noise dust and traffic generation as well as the control of non-farming activities so as to minimise conflict between potentially non-compatible activities. The proposed lots and building platforms are adequately set back from potential production operations in the wider rural zone. It is not considered that the proposed development will result in significant adverse effects relating to reverse sensitivity.

Overall, it is considered that the proposal is consistent with the above objectives and the associated policies within Chapter 21 of the PDP.

The relevant objectives in Chapter 27 (Subdivision & Development) are 27.2.1 and 27.2.5.

Objective 27.2.1 seeks to ensure that subdivision will enable quality environments to ensure the District is a desirable place to live, visit, work and play. The relevant associated policies are 27.2.1.1, 27.2.1.3, 27.2.1.5, 27.1.6 and 27.2.1.7. As demonstrated, the proposed subdivision can be appropriately serviced.

Objective 27.2.5 relates to infrastructure and services are provided to new subdivisions and developments. This objective encompasses transport access and roads, water supply, stormwater, wastewater and easements. In terms of Transport, Access and Roads the associated policies are 27.2.5.1, 27.2.5.2, 27.2.5.2, 27.2.5.3, 27.2.5.3, 27.2.5.4 and 27.2.5.5. The proposed subdivision will utilise the existing vehicle crossing from Riverbank Road. Due to the nature of this road and considering it already serves many rural living developments, it is considered that the proposal will result in less than minor adverse effects on the safety or efficiency of the roading network and will not result in a significant increase in traffic levels.

Policy 27.2.5.6 relates to water supply, stormwater and wastewater. No reticulated council services are available in the vicinity of the subject site and those services will be provided by alternative means as detailed in section 4.2.

Policies 27.2.5.7, 27.2.5.8, 27.2.5.9, 27.2.5.10 is related to water supply. As discussed, the subdivision has yet to gain domestic water. However, appropriate conditions of consent will ensure that there the subdivision cannot be created unless proof of sufficient domestic supply is provided to council. Furthermore, this approach serves to promote efficient use of water.

Policy 27.2.5.11 is related to stormwater and the proposed and existing onsite stormwater disposal is considered appropriate and adequate as supported by **Appendix E**. Policy 27.2.5.13, 27.2.5.14 and 27.2.5.15 are related to wastewater. Through the implementation of consent conditions, it is considered that stormwater is considered appropriate and adequate as supported by **Appendix E.** Policy 27.2.5.16 is related to energy supply and telecommunications and it is considered that in this case, electricity and telecommunications connections are considered adequate and appropriate. Policies 27.2.5.17 and 27.5.5.18 are related to easements. Easements have been considered as part of this proposal and these will be granted and/or where applicable, reserved.

Overall, it is considered that the proposal will result in outcomes that are consistent with the objectives and policies of the PDP.

11.0 OBJECTIVES AND POLICIES OF THE OPERATIVE (1998) & PROPOSED (2019) OTAGO REGIONAL POLICY STATEMENT

Operative Otago Regional Policy Statement 1998

Part 5: Land

The relevant objectives are considered to be 5.4.1, 5.4.2, 5.4.3 and associated policies 5.5.2, 5.5.3, 5.5.4 and 5.5.6.

Objective 5.4.1 seeks to promote the sustainable management of the primary productive capacity and life-supporting capacity of land resources and to meet to the needs of Otago's people and communities. Objective 5.4.2 seeks to avoid, remedy or mitigate degradation of Otago's natural and physical resources resulting from activities utilising the land resource. Supporting policies 5.5.2, 5.5.3 and 5.5.4 similarly focus on sustainable land use and soil health. As has been discussed, the majority of the northern part of the site is dilapidated, retired pine plantation. It is noted that there is no compulsion to utilise this area in a agriculturally productive capacity, nor would it likely be viable. This application compels the current land owners to partly remedy the impact this pine plantation has had on the land to some extent by way of clearing the poor quality land which inhibits the proposed platforms. Not only this, but there is a large amount of indigenous vegetation proposed, enhancing the biodiversity of the area. The land to the south of the site will continue to be open land and as and when required, be used for agricultural purposes. Furthermore, proposed Lot 3 allows for custodianship over this area of land. Consequently, it is considered the proposal is consistent with these objectives and policies.

Objective 5.4.3 and Policy 5.5.6 relate to the protection of Otago's outstanding natural features and landscapes from inappropriate subdivision, use and development. As noted in **Appendix D**, the subject site does not adjoin ONL nor any ONFs and therefore, the proposal is not likely to have adverse effects ONL landscapes. Therefore the proposal is consistent to this objective and policy.

Part 9: Built Environment

Objective 9.4.3 seeks to avoid, remedy or mitigate the adverse effects of Otago's built environment on Otago's natural and physical resources. As addressed throughout this report, the proposal will not result in adverse visual effects which have not been appropriately avoided, remedied, or mitigated. Therefore, the development is deemed consistent with this objective.

Proposed (Partially Operative) Otago Regional Policy Statement 2019

Part B: Chapter 1, Resource Management in Otago is integrated

Objective 1 seeks to ensure that Otago's Resources are used sustainably to promote economic, social and cultural wellbeing for its people and communities, with policies 1.1.1 and 1.1.2 relating to economic wellbeing and social and cultural well-being and health and safety. The proposal is considered to provide for the economic wellbeing of the applicant as well as their social wellbeing through the recognition of the need and provision of additional rural living opportunities whilst not depriving the communities of resources. Health and safety is not considered to be adverse effected through this proposal. The development will be consistent with the objective and associated policies.

Objective 1.2 and policy 1.2.1 relate to the integrated management of natural and physical resources to support the wellbeing of people and communities in Otago. The proposal will not adversely affect the land resource and as supported in **Appendix D**, will not cause adverse effects which are more than minor on the surrounding landscape. Consequently, the proposal is considered consistent with this object and associated policy.

Part B: Chapter 3, Otago has high quality natural resources and ecosystems

Objective 3.1 seeks that the values (including intrinsic values) of ecosystems and natural resources are recognised and maintained or enhanced where degraded. Supporting policies 3.1.7 and 3.1.13 address safeguarding and managing the life-supporting capacity of soil, and environmental enhancement respectively. As discussed, this area of land has been dilapidated through the cultivation of a since retired pine plantation. This proposal utilises part of this area to provide for two building platforms resulting in the remediation of at least some of this area. This proposal also puts forward a structural

landscape plan which involves the planting of native vegetation that will contribute to indigenous biodiversity. Consequently, the proposal is considered consistent with this object and associated policy.

Objective 3.2 seeks that Otago's significant and highly-valued natural resources are identified and protected or enhanced where degraded. Supporting policies 3.2.5 and 3.2.6 relate to natural features, landscapes and seascapes, which are highly valued for their contribution to the amenity or quality of the environment but which are not outstanding. The RCL landscape is considered notable and has an important character and value within the District. As supported by **Appendix D**, the proposal will not have adverse effects on this landscape character. Consequently, the application is consistent with this objective.

Part B: Chapter 4, Communities in Otago are resilient, safe and healthy

Objectives 4.1, 4.2 and policies 4.4.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 4.1.7, 4.1.10 as well as 4.2.2 are considered relevant to the proposal.

Objective 4.1 revolves around natural hazards and the reduction of risk these pose to Otago's communities. The associated policies 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5 and 4.1.6 focus on the identification, likelihood, consequence, and mitigation of risk surrounding natural hazard. This is relevant to the proposal given the potential flooding and seismic risk that this site poses. These are both addressed by **Appendix E** and **F**. Within these reports, it is concluded that flood risk can be mitigated through the raising of the proposed building platforms which has been deemed appropriate without the adverse effect of flood displacement. It is noted that climate change has been accounted for in **Appendix F**.

As discussed above, all sites in the district carry a degree of risk in terms of seismic activity. **Appendix E** recommends allowances for this focusing on seismic loading during the detailed design phase.

Liquefaction was also assessed and the results are presented in section 5 of **Appendix E**. There is no to low liquefaction risk at the surface of this site. Consequently, foundation recommendations are provided in section 6.5 of **Appendix E** and are anticipated to form conditions of consent.

As a result of the above, as well as the conclusions in **Appendix E** and **F**, the proposal is considered inline with the above objective and policies.

Part B: Chapter 5, People are able to use and enjoy Otago's natural and built environment

Objectives 5.1, 5.4 and policies 5.1.1, 5.3.1 are considered relevant to the proposal.

Objective 5.3 seeks to ensure sufficient land is managed and protected for economic production. As discussed above, the subject site will not significantly reduce the potential of the land to be used for primary production given the careful placement and proposed lot sizes, retaining a large open space in the balance lot. Policy 5.3.1 seeks to manage activities in rural areas, to support the region's economy and communities. As identified above, reverse sensitivity effects are not considered to be of concern. The policy seeks to minimise the subdivision of productive rural land into small lots that may result in a loss of its productive capacity or productive efficiency. Whilst it could be seen that the proposal will take away productive capacity, in reality, this capacity is highly unlikely to be ever realised due to its past usage and consequent viable nature. A sizeable balance lot has been retained and will remain available for productive usage. Overall, the proposal is not inconsistent with the above objective and policies.

Objective 5.4 seeks to ensure that adverse effects of using and enjoying Otago's natural and physical resources are minimised. Whilst this isn't particularly relevant, it is noted that the site can be seen from the Cardrona River and its margins, however given the distance the proposal will be experienced from, the surrounding rural residential context as well as proposed vegetation, it is anticipated that visual adverse effects in this regard will be less than minor. Therefore, the proposal is considered consistent with the above objectives and policies.

12.0 PART II OF RMA 1991

In consideration of the relevant principles outlined in Sections 6, 7 and 8 of the Act, it is considered if approved, the proposed subdivision and building platforms will achieve the purpose of the Act as presented in Section 5.

13.0 CONCLUSION

This application seeks Resource Consent for a three-lot subdivision, establish three residential building platforms and associated earthworks at Riverbank Road, Wanaka.

When aligned against the relevant assessment criteria of the District Plan, it is considered that the subdivision and building platforms as proposed will promote outcomes encouraged by the rules, assessment criteria, objectives and policies of the Rural General and Rural zones.

The applicant has requested that this application be processed on a Publicly Notified basis.

As demonstrated throughout this report, the proposal will not give rise to any adverse effects which are more than minor. It is therefore respectfully requested that Council approve this proposal subject to appropriate conditions of consent.

Kind Regards,

Nicole Malpass
IP Solutions

Reviewed by:

Dan Curley
IP Solutions

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**333154**
Land Registration District	**Otago**
Date Issued	11 May 2007

Prior References
89108

Estate	Fee Simple
Area	48.5587 hectares more or less
Legal Description	Lot 3 Deposited Plan 383485

Registered Owners
Deborah Elizabeth Brent and Stephen Ross Brent

Interests

Subject to Section 59 Land Act 1948

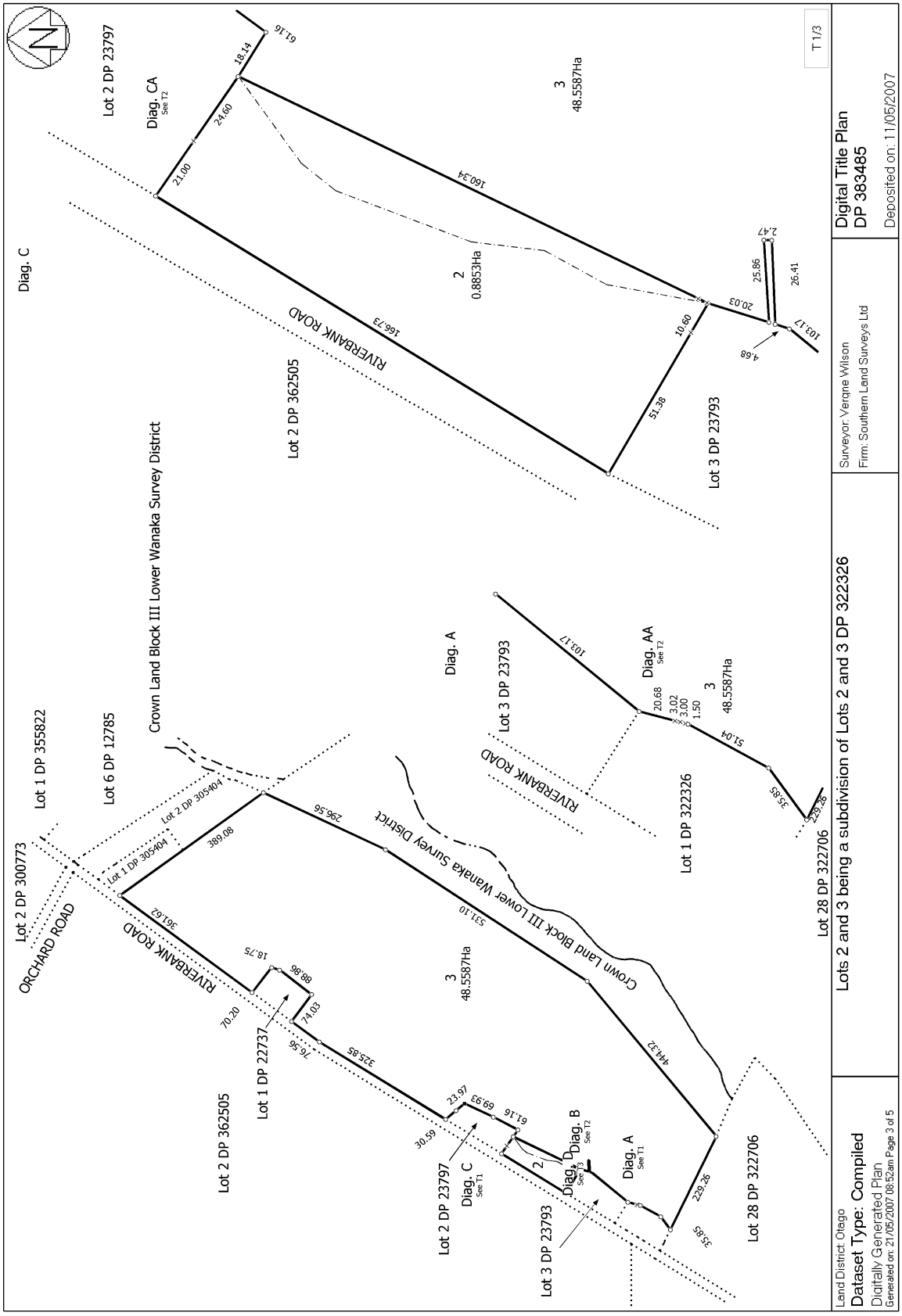
Subject to a right to operate and maintain bore over part marked A and a right to convey water and electricity over part marked B and C on DP 383485 created by Easement Instrument 7001014.5 - 24.8.2006 at 9:00 am

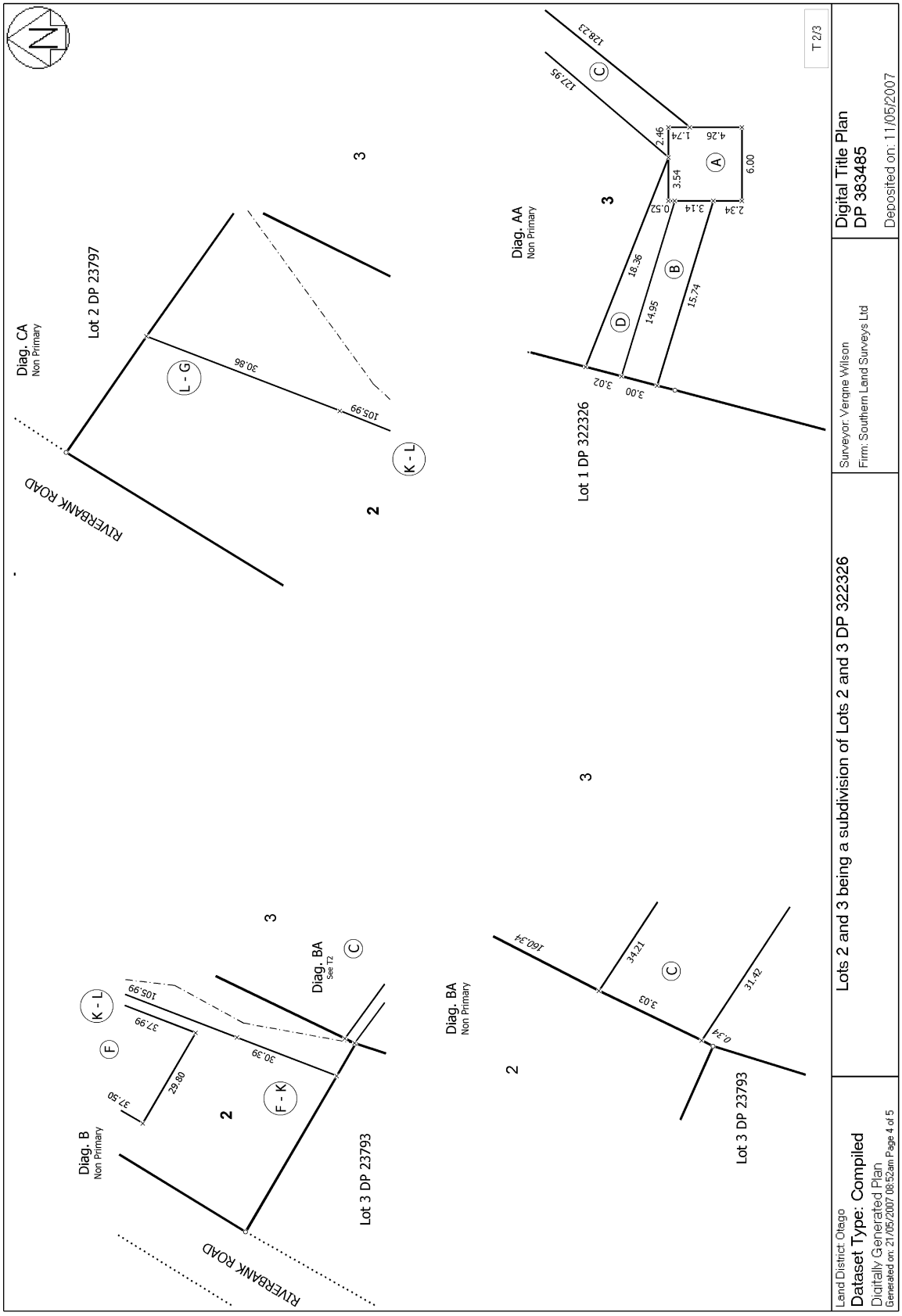
The easements created by Easement Instrument 7001014.5 are subject to Section 243 (a) Resource Management Act 1991

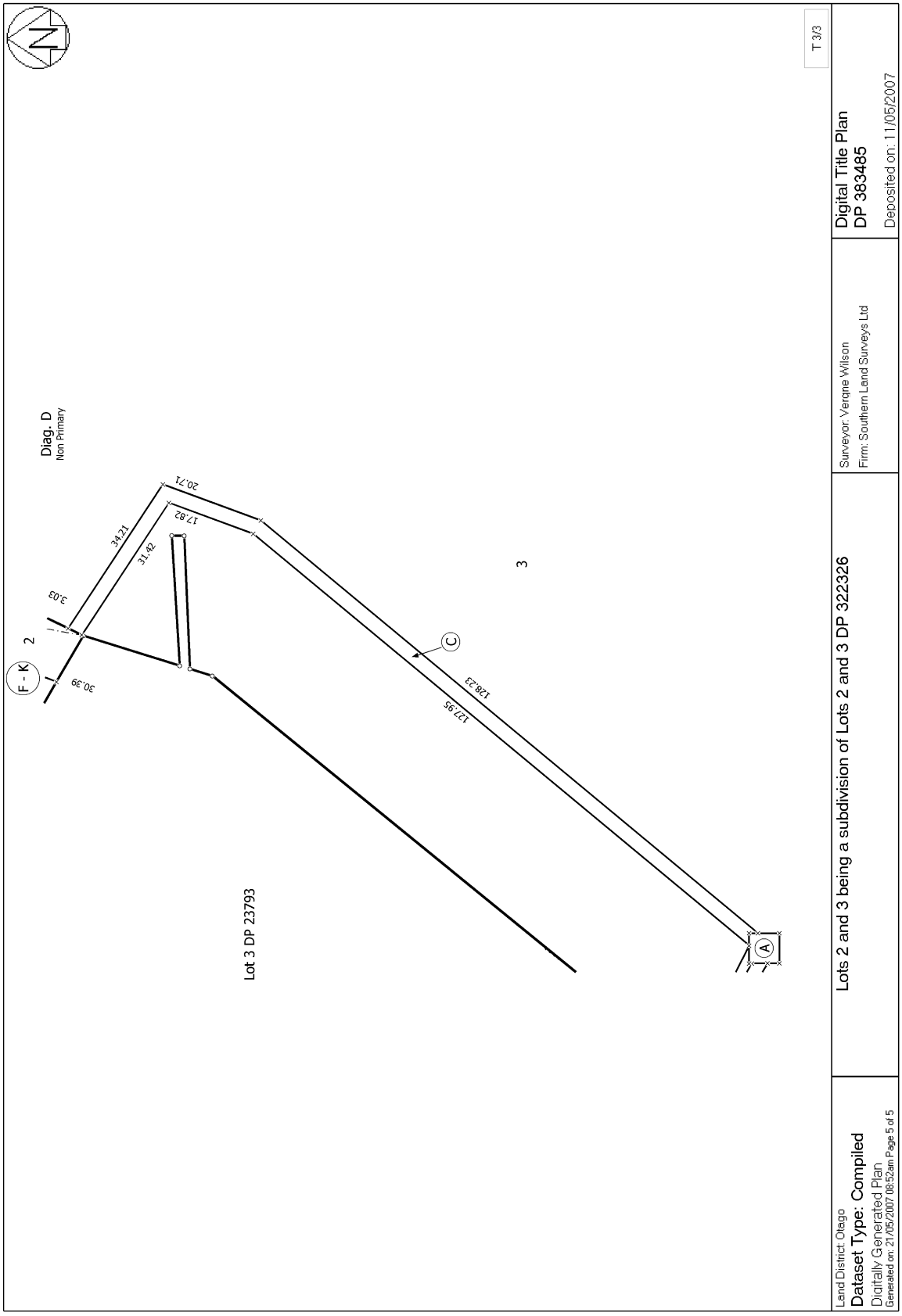
Subject to a right to convey electricity over part marked D on DP 383485 created by Easement Instrument 7101626.3 - 7.11.2006 at 9:00 am

9126179.1 Notice pursuant to Section 195(2) Climate Change Response Act 2002 - - 18.7.2012 at 12:17 pm

9640317.1 Mortgage to ANZ Bank New Zealand Limited - 7.3.2014 at 11:46 am







ASSESSMENT OF LANDSCAPE AND VISUAL EFFECTS

PREPARED FOR:

D & S BRENT

8 DECEMBER 2020

PROPOSAL FOR A THREE LOT SUBDIVISION AT

RIVERBANK ROAD, WANAKA

vivian+espie

INTRODUCTION

1 This report has been prepared to accompany a Resource Consent Application on behalf of D & S Brent.

2 This report identifies and quantifies the landscape and visual effects likely to arise from the proposal to subdivide Lot 3 DP 383485 (the site), which is approximately 48.5ha in area, into three lots and to identify a residential building platform (RBP) each lot. Approximately a third of the site (the southern end) appears to be pastoral grasses used for grazing stock, the remainder of the site is covered in slash and invasive plant species, the remnants of recently cleared exotic forest. The site is located at Riverbank Road, midway between the Cardrona Valley Road intersection and the Ballantyne Road intersection, and is within the Rural General Zone pursuant to the Operative District Plan (**ODP**) and Rural Zone pursuant to the Decisions Versions of the Proposed District Plan (**PDP**).

ASSESSMENT METHODOLOGY

3 The methodology for this assessment has been guided by:

- The landscape related Objectives, Policies and Assessment Matters of the Queenstown Lakes PDP and ODP;
- The Guidelines for Landscape and Visual Impact Assessment produced by the UK's Landscape Institute and Institute of Environmental Management and Assessment[1];
- The New Zealand Institute of Landscape Architects "Landscape Assessment and Sustainable Management" Practice Note[2];
- The landscape assessment guidance of the Quality Planning Resource[3];
- The Joint Witness Statement of landscape witnesses regarding landscape methodology in relation to the appeals on Stage 2 of the PDP[4].

[1] Landscape Institute and Institute of Environmental Management and Assessment; 2013; 'Guidelines for Landscape and Visual Impact Assessment – 3rd Edition'; Routledge, Oxford.

[2] New Zealand Institute of Landscape Architects Education Foundation; 2010; Best Practice Note 10.1 'Landscape Assessment and Sustainable Management'.

[3] http://www.qualityplanning.org.nz/node/805

[4] Joint Statement Arising from Expert Conferencing, Topic: Landscape Methodology and Subtopics 2,3,5,6,7,8, and 10, 29 January 2019,

LANDSCAPE DESCRIPTION

4 The site is located to the east of Riverbank Road, between the Cardrona Valley Road intersection and the Ballantyne Road intersection. The site is within the Upper Clutha Basin. The topography of the Upper Clutha Basin on a broad scale is relatively flat with large terraces associated with the Clutha, Hawea and Cardrona rivers. The Upper Clutha Basin is flanked by the Criffel Range to the east of the site, Mt Alpha to the west and the Cardrona Valley to the south.

5 The wider landscape character is a mix of natural, rural, and urban. The slopes of the mountains surrounding the basin retain a rugged, natural character. On the basin floor, the landscape character is somewhat rural, much of the land is pastoral, grazed and/or retained as open space, with a scattering of rural living sites. Heading north-west towards Wanaka, the density of residential, commercial, and industrial activities intensifies, and the landscape character becomes more urban.

6 The proposed subdivision and RBPs sit within the Rural Zone. The site is on the fringe of the township of Wanaka, within a node of rural living development that follows Riverbank Road. To the west of the site on the opposite side of Riverbank Road, the land has been subdivided to create fourteen rural living sites that sit within grazed pastoral paddocks, and the land strip of land on the east of Riverbank Road largely developed to provide for rural living. To the southeast the Cardrona River runs alongside the site, across the river is an open rural landscape scattered with smaller rural living properties.

7 As mentioned above, the Cardrona River runs adjacent to the site. It has not been identified as an ONL in the ODP or the PDP. The river corridor has been significantly modified over the years by the formation of gravel tracks, gravel extraction and stockpiling, rural industrial and farming activities. The banks and flood plains are vegetated in predominantly invasive species giving the river a relativity unkempt appearance. The river does have a level of natural character associated with the natural processes of a braided river.

8 A linear block of residential living properties runs along the eastern side of Riverbank Road, between the road and the Cardrona River. The character of the east side of Riverbank Road is unique in that the properties are split into an upper terrace and a lower terrace, separated by a steep escarpment. The lower terrace flanks the Cardrona River and flood risk has limited development opportunities leaving these flats predominantly open and pastoral with a scattering of accessory buildings and some houses. Domestic activities including dwellings and accessory

buildings are located on the lower terrace on properties to the north of the site. Generally, though, structures and domestic activities are concentrated on the upper terrace.

9 The site of the proposed subdivision sits within this band of established development that runs along the eastern side of Riverbank Road. The established development comprises rural lifestyle activities interspersed with visitor's accommodation and rural industrial sites. As mentioned above, the properties are split into an upper and lower terrace by an escarpment and the bulk of the residential activities take place on the upper terrace. These properties retain a somewhat pastoral and/or rural character and generally contain large, detached dwellings and accessory buildings, outdoor living areas, and established amenity planting, trees, and shelterbelts. The lower terrace, abutting the Cardrona River, is predominantly open pastoral landscape. However, there are several sheds and at least one dwelling located on the lower terrace, within the vicinity of the site. To the north east of the site, industrial activities including Wastebusters Wanaka, extend down to the lower terraces, towards the Cardrona River. The band of rural living land use that has been discussed reads as a discrete area of well-screened rural living development in a strip along one side of Riverbank Road.

10 In terms of vegetation, there are three distinct vegetation patterns within the site. The majority of the site is pasture for grazing stock, the north eastern corner is a cleared pine plantation that has been fenced off and is now covered in invasive species, and the escarpment is vegetated in a mix of native and exotic shrubs.

11 Overall, the site sits within a band of rural lifestyle sites, located within a broader landscape that is a mix of natural, rural and urban. Within the vicinity, a pleasant rural character is evident, but not one that is particularly natural. Aesthetically and in terms of visual amenity, an observer experiences a landscape on the urban fringes where the township of Wanaka and the surrounding rural landscape converge. Broad, open, agricultural landscapes are evident in the distance with several dwellings interspersed on large lifestyle blocks. To the north west, the township of Wanaka creeps towards Riverbank Road.

RELEVANT STATUTORY CONTEXT

12 The site is within the Rural General (**RGZ**) in the ODP and the Rural Zone (**RZ**) PDP. The lower reaches of the Cardrona River are not identified as an ONL by the PDP but forms a corridor of public land to the east of the site. The site itself is within the Rural Character Landscape of the floor of the Upper Clutha Basin.

13 Part 2 of the PDP (Strategy) has been subject to QLDC Commissioner Decisions and Environment Court Appeals. The Environment Court has issued interim decisions on those appeals. Environment Court decisions have not yet been issued regarding Part 4 of the PDP (Rural Environment). No appeals seek to change the Rural Zoning that has been applied to the site and the surrounding landscape. I, therefore, understand that considerable weight can be placed on the likelyhood that the Rural PDP zoning will not change, but the associated provisions are subject to significant appeals. Therefore, some weight should also be afforded to the ODP. For the purpose of this assessment, I have taken most guidance from the PDP provisions (as amended by the courts interim decision) as they are a statement of the latest QLDC position on matters following the hearing of submissions, but have also given some consideration to the ODP. In any event, while the planning provisions can give useful guidance, an assessment of landscape and visual effects of the proposed activities is likely to come to very similar conclusions, regardless of which version of the District Plan is referenced.

14 A detailed assessment against the relevant assessment matters is attached as Appendix 1 to this report.

PROPOSAL DESCRIPTION

15 The proposal is to subdivide the 48.5ha site at Riverbank Road into three allotments. Lot 1 and Lot 2 will be rural living sites with an identified RBP, and Lot 3 will be a balance lot also containing an identified RBP. The sizes of the proposed lots are:

- Lot 1: 2.00Ha
- Lot 2: 2.00Ha
- Lot 3: 44.5Ha

16 A proposed Structural Landscape Plan is attached as Appendix 3. The plan shows the layout of the proposed activities. The proposal seeks to increase the vegetation within the property, and volunteer consent conditions to restrict the height and final appearance of future buildings within the proposed RBPs. While Lots 1 & 2 will be rural living sites, Lot 3 will be a balance lot (with an RBP), that will include a significant amount of land retained for productive purposes.

17 Volunteered conditions of consent have been proposed to mitigate any potential effect. The volunteered conditions include the following design controls:

- The maximum height for any built form within the building platforms shall be 5 metres above the minimum finished floor level as set out in the GeoSolve report that forms part of the application.
- Any new fencing shall be of post and wire, and a maximum height of 1.2m.
- All gardens and outdoor domestic activities shall be confined to the specified "curtilage areas" as identified on the proposed Structural Landscape Plan (Appendix 2).
- All external lighting shall be down lighting only and not create light spill beyond any of the lots. External lighting shall not be used to accentuate or highlight built form as it is viewed from beyond any of the lots. All external lighting shall be located within the curtilage areas only as identified on the Structural Landscape Plan.
- The driveway shall be maintained in an unsealed gravel formation. The use of kerb and channel is prohibited.

IDENTIFICATION OF VISUAL CATCHMENT AND VIEWING AUDIENCES

18 The proposed activity may be partially visible from:

i. Riverbank Road
ii. The Cardrona River and its margins
iii. Neighbouring properties
iv. Mount Barker Road Rural Lifestyle Zone

ASSESSMENT OF LANDSCAPE AND VISUAL EFFECTS

19 When describing effects, I will use the following hierarchy of adjectives:

- Very Low;
- Low;
- Moderate – Low;
- Moderate;
- Moderate – High;
- High;

- Very High. [5]

Landscape Character Effects Assessment

20 The site sits within the Rural Zone on the fringe of the township of Wanaka, within a node of rural living development. The site is currently a rural property containing one farm shed (tucked under the escarpment near Riverbank Road). The site that lies between Riverbank Road and the Cardrona River.

21 As discussed, a ribbon of rural living properties run along the eastern side of Riverbank Road. Generally, the properties are split into an upper terrace and a lower terrace, separated by a steep escarpment, with structures and domestic activities being concentrated on the upper terrace. However, residential activity is located on the lower terrace to the north of the site.

22 The proposed subdivision will result in the creation of three lots, each with a residential RBP. The two smaller rural living lots that will be in keeping with the existing rural living lots adjacent to the site to the north-east. The third lot will contain an RBP that is relatively clustered with those on Lots 1 & 2. The remainder of the site will be retained as open rural land. For the most part, the rural land use will be retained, with only a small portion of the site being used for residential purposes.

23 The proposed RBPs will be clustered in the north west corner of the site, nestled in below the escarpment. When viewed from the upper terrace, such as from Riverbank Road, the built form will be almost entirely obscured, and the views of the rural and natural landscape will remain relatively unchanged.

24 Mixed native planting is proposed along the escarpment and surrounding the proposed RBPs, with beech trees also proposed around the RBPs. Planting will help to screen built form and increase

[5] Over the last decade the NZILA has intermittently progressed an initiative to prepare a guideline document in relation to the assessment of landscape and visual effects. I understand that the NZILA have progressed these guidelines to the point that the circulation of a draft version to NZILA members is imminent. I also understand that these NZILA guidelines will have much in common with the UK guidelines mentioned in paragraph 3. The hierarchy of adjectives and references to Section 95 of the Act represent my own professional methodology and accord with what I understand to be in the draft NZILA guideline document. They also accord with a Landscape and Visual Effects Assessment Methodology document produced and used in New Zealand by Boffa Miskell Limited (which is generally appended to Landscape and Visual Assessment Reports that are produced by Boffa Miskell Limited). They also accord with a Landscape and Visual Effects Assessment Methodology document presented in evidence to the Environment Court in relation to hearings on the Queenstown Lakes Proposed District Plan ("ENV-2018-331-000019, Supplementary Statement of Evidence of Bridget Mary Gilbert for Queenstown Lakes District Council, Topic 2 – Rural Landscapes" – Appendix 2, dated 29 April 2019). I consider that both the Boffa Miskell guidelines document and the Bridget Gilbert guidelines document set out appropriate professional practice regarding the assessment of landscape and visual effects and I agree with and adopt them.

the natural character of the site, which in parts is currently overwhelmed by invasive species and almost entirely void of native species.

25 The proposal is in keeping with the broad pattern of rural living development in the area, where smaller rural living sites are clustered together, and the majority of the landscape retains an open rural character. The context and viewpoint map attached as Appendix 3 to this report shows multiple examples of smaller rural living sites, with existing dwellings or consented RBPs, within the vicinity of the site. Domestic activities can be seen along the entire length of Riverbank Road, including on either side of the proposed development. The proposed Lots will essentially link the ribbon of residential living site to the north with the rural living site to the south and form a continuation of the existing landscape pattern, and the majority of the site will be retained as open rural landscape. As such, I do not consider that the proposal is exceeding the threshold of residential development that can be absorbed in this part of the Upper Clutha Basin.

26 In conclusion, this area has the capacity to absorb this development without compromising the existing character of the Rural Zone. I considered that the adverse effects of the proposal on rural landscape character will be low, and there will be a slight increase in the natural character of the site. The proposal is in keeping with the existing level and spatial distribution of rural living development. For the most part, the openness of the lower terrace is retained, and this ensures the sense of spaciousness associated with the Rural Zone is retained. Structural landscaping will assist with mitigating adverse effects. Overall, the effects on landscape character are considered to be low.

Visual Effects Assessment

27 Visual effects are the effects that an activity may have on specific views and the general visual amenity experienced by people. The proposed subdivision and RBPs are located on the eastern side of Riverbank Road. The site is visible to users of Riverbank Road, neighbouring properties and the Cardrona River and its margins. Appendix 3 of this report consists of a Viewpoint Location and Context Map, and Appendix 4 contains associated photographs. Reference to these appendices is useful to understand comments relating to visual effects given below. The actual degree of visibility from these potential viewing locations is discussed under the headings below.

Riverbank Road

28 The users of Riverbank Road see an existing band of development along the upper terrace to the east of Riverbank Road although buildings are often screened by vegetation. The topography and

vegetation along Riverbank Road's eastern boundary screens of the lower terrace of the site, abutting the escarpment. As mentioned above, domestic activities can be seen along the entire length of Riverbank Road, including on either side of the proposed development. As such, the development will appear contiguous with the existing level of residential development.

29 The proposed RBPs are located near the base of the escarpment and are generally screened by the topography as can be seen in viewpoints 1 and 4 of Appendix 4. Glimpses of the upper reaches of the building platforms are visible to those travelling along Riverbank Road. Riverbank Road is a straight road with a speed limit of 80 kilometres per hour, thus views of the site will be fleeting. Additionally, the built form will be in the peripheral view of road users, and for the most part, the views will comprise the rural land on the upper terrace and beyond the proposed RBPs. Native planting is proposed along the top of the escarpment and will further screen built form as it becomes established. The degree of adverse visual effects on the users of Riverbank Road is considered low initially, becoming very low over time as structural landscaping becomes established.

The Cardrona River and its margins

30 The proposed RBPs are located approximately 400m from the four-wheel drive track that runs along the western side of the Cardrona River. The cleared forestry block sits between the two, and piles of slash and the unkempt nature of the paddock in the foreground are dominant in views. In the distance, the existing built form can be seen along the upper and lower terraces adjacent to Riverbank Road and the additional built form will be visible and will appear contiguous with the existing level of development. The RBPs are tucked at the toe of a large escarpment that forms a visual backdrop and will help future buildings recede into the landscape. Swathes of native planting and mountain beech are proposed between the proposed sites and the river and seek to soften views of built form in the future. The degree of adverse visual effects from the Cardrona River and its margins are considered low initially, becoming very low over time as structural landscaping becomes established.

Neighbouring properties

31 The site is visible from neighbouring properties along Riverbank Road shown on the Viewpoint and Context Map attached as Appendix 3 to this report. I have viewed these properties from the site but have not accessed these properties to assess visual effects.

32 The properties to the north that may have views of the site are 329, 325 and 327 Riverbank Road. 329 Riverbank Road is located directly north of the site. The bulk of the residential activity on 329 Riverbank Road is located on the upper terrace of this site and angled to the north. A large shed (that appears to be used for vehicle storage) is located on the lower terrace and has a solid back wall on the southern side facing the site. There is existing vegetation along the boundary that will soften views but cannot be relied upon as it is located on the neighbouring property. The proposed RBPs on Lot 1 will be located approximately 40m south east of the large shed, and the RBPs on Lots 2 & 3 will be beyond that. 325 Riverbanks Road and 327 Riverbank Road are further north along Riverbank Road. Views of the site may be available from all the properties to the north with existing built form and domestication in the foreground. Additional planting is proposed along the boundary to soften and screen views.

33 The property to the south of the site that may have views of the site is 377 Riverbank Road. It contains a dwelling on the upper terrace. As with the dwellings to the north, the dwelling is positioned so that the central views are away from the proposed site. The site will be visible from the elevated position. However existing vegetation including some large kanuka on the escarpment soften these views. Additional native planting on the escarpment and around the proposed RBPs is anticipated to soften views initially and screen built form entirely as planting becomes established.

34 The degree of adverse visual effects on the properties adjacent to the site (329 Riverbank Road and 377 Riverbank Road) is considered to be low initially, becoming very low over time as planting becomes established. The degree of adverse visual effects on 325 Riverbanks Road and 327 Riverbank Road is considered to be very low.

Mount Barker Road Rural Lifestyle Zone

35 A Rural Lifestyle Zone is located off Mount Barker Road on the lower slopes of the Criffel Ranges. The rural lifestyle development is on the opposite side of the Cardrona River to the site and on the uphill side of Mount Barker Road. Viewpoint 5 of Appendix 4 shows the views from this location. The views towards the site are currently screened by intervening vegetation. If the vegetation were to be removed, the site would potentially be visible, but at a considerable distance (2.5km) and in this context the development would appear contiguous with the existing development along Riverbank Road. The degree of adverse visual effects from the rural lifestyle zone is considered to be very low.

CONCLUSION AND CONSIDERATION OF STATUTORY CONTEXT

36 The proposed development will result in an increase of domestication within the existing band of rural living activities along Riverbank Road. The proposal will be akin to the surrounding development and will not markedly alter the landscape character of the surrounding landscape which is a mix of rural, residential, commercial, and industrial activities. Due to this, I consider that the proposal will not significantly degrade the landscape character of the surrounding landscape or the wider Upper Clutha Basin and I consider the degree of adverse effects on landscape character to be low.

37 I find the proposal is consistent with the relevant to the Objectives and Policies of the PDP that relate to Rural Character Landscapes. Riverbank Road is unique in its ability to absorb further residential development due to the unusual topography of the existing pattern of residential development in this vicinity. The proposal will bring about development that ties in with the existing patterns of landscape character.

38 In relation to visual effects:

- Visibility of parts of the proposed RBP and its associated activities will be intermittently experienced from Riverbank Road and the Cardrona River and its margins. The increase in built form and associated activities will appear alongside existing dwellings within a relatively consistent strip of rural living activities. Existing and proposed vegetation will partially screen the proposed RBPs and associated activities.

- Due to a level of visual screening provided by proposed and existing vegetation and topography, I consider that the proposed development will not be visually prominent when experienced from further afield and neighbouring properties.

39 Overall, I consider the proposed subdivision and RBP's will have no more than a low degree of adverse effect on landscape character and no more than low effect on the visual amenity experienced by users of the surrounding public and private places. The proposed activities will be appropriately absorbed into this part of the Upper Clutha Basin and will sit comfortably with the relevant assessment matters in the ODP & PDP.

Jess McKenzie

vivian+espie

4 December 2020

Reviewed by Ben Espie

APPENDIX 1: EVALUATION AGAINST RELEVANT STATUTORY CONTEXT

QUEENSTOWN LAKES PROPOSED DISTRICT PLAN ASSESSMENT MATTERS RELATING TO ACTIVITIES IN A RURAL CHARACTER LANDSCAPE

HEADING	ASSESSMENT MATTERS	ASSESSED AFFECTS
21.21.2.1	Existing vegetation that: a. was either planted after, or, self seeded and less than 1 metre in height at 28 September 2002; and, b. obstructs or substantially interferes with views of the proposed development from roads or other public places, shall not be considered: i. as beneficial under any of the following assessment matters unless the Council considers the vegetation (or some of it) is appropriate for the location in the context of the proposed development; and ii. as part of the permitted baseline	No trees planted after 28 September 2002 have been considered as beneficial to any of the assessment matters.
21.21.2.2 **Effects on landscape quality and character**	The following shall be taken into account: a. where the site is adjacent to an Outstanding Natural Feature or Landscape, whether and the extent to which the proposed development will adversely affect the quality and character of the adjacent Outstanding Natural Feature or Landscape; b. whether and the extent to which the scale and nature of the proposed development will degrade the quality and character of the surrounding Rural Character Landscape; c. whether the design and any landscaping would be compatible with or would enhance the quality and character of the Rural Character Landscape	The site is located within the RCL it is not directly adjacent to ONL or an ONF. The nearest ONL is located approximately 800m to the west and encompasses Mt Alpha. The ONL wraps around to the south The surrounding landscape is made up of the terraces and flats within the RCL rising to the surrounding mountains within the ONL. An observer's experience of the terraces and flats encompasses the grazed landforms, shelterbelts, residential development and other productive land uses. In contrast, the mountainous landforms which sit beyond the site dominating the skyline offer a degree of naturalness. The rugged mountainous landforms complement the planting and structures relating to the rural and rural residential development within the valley floor and create a balance between the developed, productive land and the relatively untouched landforms beyond.

		The building platforms will be briefly visible to users of Riverbank Road. However, the majority of the site will remain open and rural, and a significant amount of native planting is proposed. Additionally, it is anticipated that over time the future buildings will continue to integrate into the landscape as the building materials weather and vegetation becomes more established. Due to the proximity of other built forms, the proposed design constraints and the proposed structural landscaping it is anticipated that any future building within the building platforms will not significantly detract from the ONL or degrade the character of the RCL when compared to the existing landscape. As such, is considered that the effect of an additional building platform will have a low adverse effect on the character of the ONL and RCL.
21.21.2.3 **Effects on visual amenity**	Whether the development will result in a loss of the visual amenity of the Rural Character Landscape, having regard to whether and the extent to which: a. the visual prominence of the proposed development from any public places will reduce the visual amenity of the Rural Character Landscape. In the case of proposed development which is visible from unformed legal roads, regard shall be had to the frequency and intensity of the present use and, the practicalities and likelihood of potential use of these unformed legal roads as access; b. the proposed development is likely to be visually prominent such that it detracts from private views; c. any screening or other mitigation by any proposed method such as earthworks and/or new planting will detract from or obstruct views of the Rural Character Landscape from both public and private locations; d. the proposed development is enclosed by any confining elements of topography and/or vegetation and the ability of these elements to reduce visibility from public and private locations; e. any proposed roads, boundaries and associated planting, lighting, earthworks and landscaping will reduce visual	As stated above, the proposed building platform will briefly be visible from Riverbank Road which is a relatively busy road used by residents and as a shortcut to bypass the township of Wanaka. The building platforms sit at the base of an escarpment and will not be visually prominent. Users of Riverbank Road will look over any built form to a view of open paddocks and the Cardrona River with a panoramic mountain backdrop. The visual amenity of the RCL will remain relatively unchanged. The proposed buildings may also be visible from the public land adjacent to the Cardrona River. Topography and existing vegetation will provide some screening and the escarpment will form a backdrop to future built form, helping it recede into the landscape. As with the views from Riverbank Road, views from the marginal strip will be predominantly rural. The proposed building platforms will be in the peripheral view and will sit between existing development on the neighbouring properties and will appear in keeping with the existing level of domestication. It is not anticipated that the proposal will reduce the visual amenity of the RCL of the Cardrona River and adjacent land. The building platforms may be partially visible from neighbouring properties. Additional native vegetation proposed as structural landscaping will increase the natural character of the site and, as it becomes established, it will soften and screen views of the building platforms. It is anticipated that over time the buildings will continue to integrate into the landscape as the building materials weather and vegetation becomes more established. Planting will perform a mitigatory function in the form of native planting along the escarpment and swathes of native planting and trees surrounding the building platforms and curtilage areas. This planting will partially screen and soften views of the proposed buildings and will help them appear as an established and integrated part of the wider rural landscape.

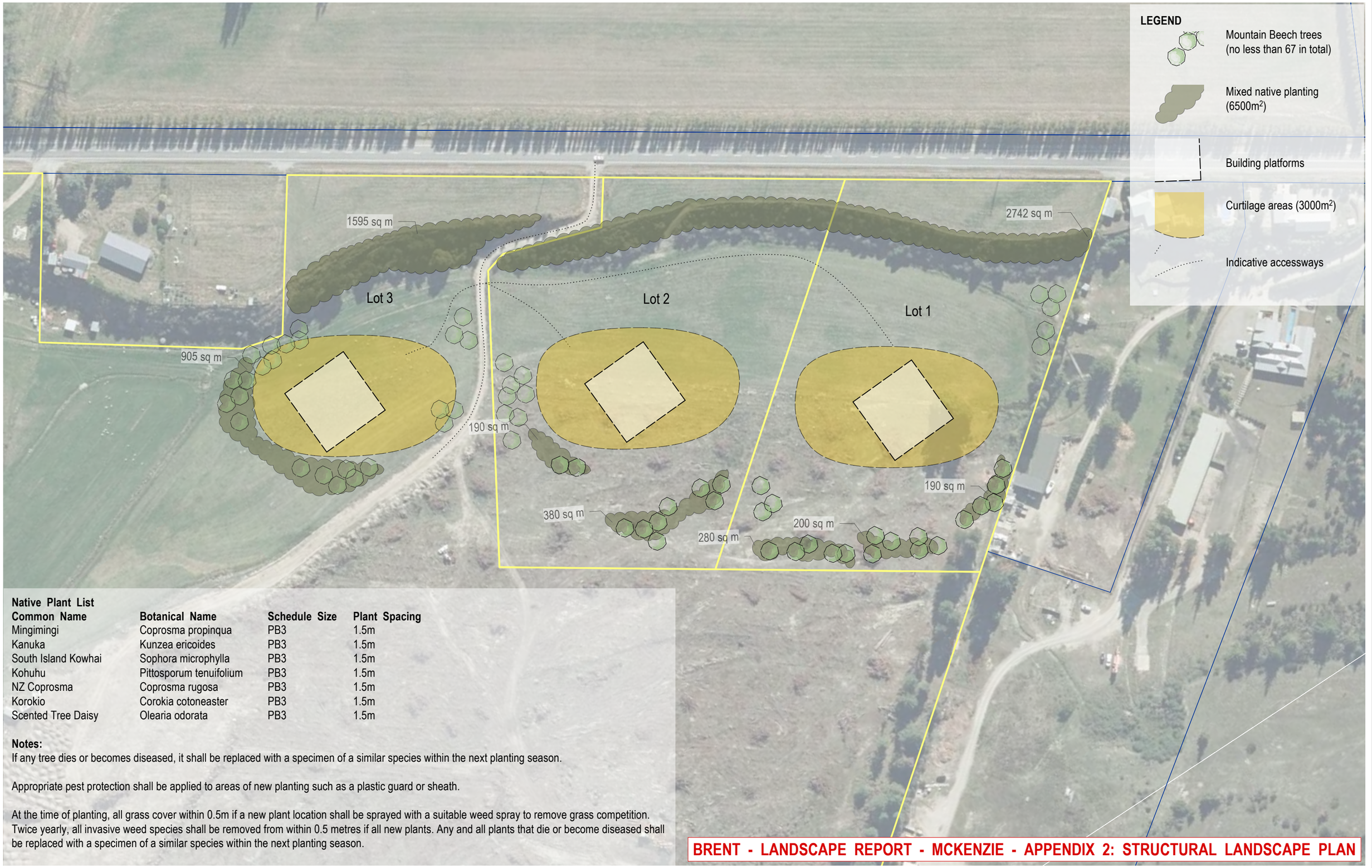
	amenity, with particular regard to elements which are inconsistent with the existing natural topography and patterns; f. boundaries follow, wherever reasonably possible and practicable, the natural lines of the landscape or landscape units.	The building platforms will be accessed using a formed track that is currently used to access the paddocks on the lower terrace. Overall, the effect on visual amenity of the RCL is considered low.
21.21.2.4 **Design and density of development**	In considering the appropriateness of the design and density of the proposed development, whether and to what extent: a. opportunity has been taken to aggregate built development to utilise common access ways including roads, pedestrian linkages, services and open space (i.e. open space held in one title whether jointly or otherwise); b. there is merit in clustering the proposed building(s) or building platform(s) having regard to the overall density and intensity of the proposed development and whether this would exceed the ability of the landscape to absorb change; c. development, including access, is located within the parts of the site where they will be least visible from public and private locations; d. development, including access, is located in the parts of the site where they will have the least impact on landscape character.	Building platforms have been clustered to ensure only one access is required off Riverbank Road. The proposed building platforms are located within a ribbon of rural living development along the south eastern side of Riverbank Road. The site sits between two existing residential properties in close proximity of the road. The remainder of the site will be retained as open rural land. The proposed development will tie in well with the pattern of existing development but will place domestication at the toe of the escarpment, on the lower terrace, rather than closer to Riverbank Road on the upper terrace which is prominent part of the exiting landscape. In terms of visibility, the proposed building platforms are located at the base of an escarpment running parallel to Riverbank Road, ensuring that visibility is limited from Riverbank Road. The access also traverses the escarpment and a very short section on the upper terrace will be visible. This access is existing but will be upgraded.
21.21.2.5 **Tangata Whenua, biodiversity and geological values:**	a. whether and to what extent the proposed development will degrade Tangata Whenua values including Töpuni or nohoanga, indigenous biodiversity, geological or geomorphological values or features and, the positive effects any proposed or existing protection or regeneration of these values or features will have.	I have no knowledge of Tangata Whenua cultural and spiritual values or other heritage values associated with the site. The platform location is not within a Wahi Tipuna as notified through Stage 3 of the PDP.
21.21.2.6	Taking into account whether and to what extent any existing, consented or permitted development (including unimplemented but existing resource consent or zoning) has degraded landscape	The landscape in the immediate vicinity of the proposal has been significantly altered by rural and rural residential development. Directly adjacent to the site is a cluster of rural residential development, and several rural living sites are visible within the wider landscape forming a scattered strip along Riverbank Road. Therefore, the proposal will not create a situation that is entirely inconsistent with the character of the surrounding

Cumulative effects of development on the landscape:	quality, character, and visual amenity values. The Council shall be satisfied; a. the proposed development will not further degrade landscape quality, character and visual amenity values, with particular regard to situations that would result in a loss of valued quality, character and openness due to the prevalence of residential or non-farming activity within the Rural Landscape. b. where in the case resource consent may be granted to the proposed development but it represents a threshold to which the landscape could absorb any further development, whether any further cumulative adverse effects would be avoided by way of imposing a covenant, consent notice or other legal instrument that maintains open space.	landscape. It will contain an existing pattern but will place development on the less conspicuous lower terrace. A number of proposed conditions have been put forward to ensure any future development does not result in adverse effects. These refer to design controls, curtilage controls and structural landscaping.

QUEENSTOWN LAKES PROPOSED DISTRICT PLAN ASSESSMENT MATTERS 21.21.3 OTHER FACTORS AND POSITIVE EFFECTS, APPLICABLE IN ALL THE LANDSCAPE CATEGORIES (ONF, ONL AND RCL)

HEADING	ASSESSMENT MATTERS	ASSESSED AFFECTS
21.21.3.1	In the case of a proposed residential activity or specific development, whether a specific building design, rather than nominating a building platform, helps demonstrate whether the proposed development is appropriate	No specific building design has been submitted however a number of conditions have been proposed to ensure any future development on the site is limited in terms of size, colours and height of built form.
21.21.3.2	Other than where the proposed development is a subdivision and/or residential activity, whether the proposed development, including any buildings and the activity itself, are consistent with rural activities or the rural resource and would maintain or enhance the quality and character of the landscape.	The proposal is for residential activity. Three residential platforms are to be clustered in a relatively inconspicuous part of the site. Two will be on smaller rural residential living lots, and the third lot will be considerably larger with a residential building platform adjacent to the smaller rural living site, meaning the bulk of the site will remain open and rural. For the most part, the rural character of the site will be maintained.
21.21.3.3	In considering whether there are any positive effects in relation to the proposed development, or remedying or mitigating the continuing adverse effects of past subdivision or development, the Council shall take the following matters into account:	No public access measures are proposed as part of the application. The existing indigenous vegetation on the site is negligible. A considerable amount of native vegetation is proposed as part of the proposal which will have positive effects n indigenous biodiversity values.

	a. whether the proposed subdivision or development provides an opportunity to protect the landscape from further development and may include open space covenants or esplanade reserves; b. whether the proposed subdivision or development would enhance the character of the landscape, or protects and enhances indigenous biodiversity values, in particular the habitat of any threatened species, or land environment identified as chronically or acutely threatened on the Land Environments New Zealand (LENZ) threatened environment status; c. any positive effects including environmental compensation, easements for public access such as walking, cycling or bridleways or access to lakes, rivers or conservation areas; d. any opportunities to retire marginal farming land and revert it to indigenous vegetation; e. where adverse effects cannot be avoided, mitigated or remedied, the merits of any compensation; f. whether the proposed development assists in retaining the land use in low intensity farming where that activity maintains the valued landscape character.	No specific compensation measures form part of the proposal.



Native Plant List

Common Name	Botanical Name	Schedule Size	Plant Spacing
Mingimingi	Coprosma propinqua	PB3	1.5m
Kanuka	Kunzea ericoides	PB3	1.5m
South Island Kowhai	Sophora microphylla	PB3	1.5m
Kohuhu	Pittosporum tenuifolium	PB3	1.5m
NZ Coprosma	Coprosma rugosa	PB3	1.5m
Korokio	Corokia cotoneaster	PB3	1.5m
Scented Tree Daisy	Olearia odorata	PB3	1.5m

Notes:
If any tree dies or becomes diseased, it shall be replaced with a specimen of a similar species within the next planting season.

Appropriate pest protection shall be applied to areas of new planting such as a plastic guard or sheath.

At the time of planting, all grass cover within 0.5m if a new plant location shall be sprayed with a suitable weed spray to remove grass competition. Twice yearly, all invasive weed species shall be removed from within 0.5 metres if all new plants. Any and all plants that die or become diseased shall be replaced with a specimen of a similar species within the next planting season.

BRENT - LANDSCAPE REPORT - MCKENZIE - APPENDIX 2: STRUCTURAL LANDSCAPE PLAN

REF: 1661.01 SLP
DATE: 07.12.20
SCALE: 1:1500 @ A3

Structural Landscape Plan

Brent Subdivision Proposal - Riverbank Road, Wanaka

vivian+espie
resource management and landscape planning
vivian+espie Limited Resource Management and Landscape Planning
PO Box 2514
Physical Address 1/211B Glenda Drive Frankton, Queenstown
Tel +64 3 441 4189 Fax +64 3 441 4190 Web www.vivianespie.co.nz

BRENT - LANDSCAPE REPORT - MCKENZIE - APPENDIX 3: CONTEXT AND VIEWPOINT MAP

REF: 1661.01
DATE: 02.12.20
SCALE: 1:5000 @ A3

Context and Viewpoint Map
Riverbank Road, Wanaka

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Viewpoint 1: Looking north east towards proposed Lots 1 & 2 from the site access off Riverbank Road. The upper reaches of the building poles can be seen for both proposed RBPs.

BRENT - LANDSCAPE REPORT - MCKENZIE - APPENDIX 4: PHOTOGRAPHS

All photographs were taken with iPhone SE. Photographs are intended to illustrate points made in this report. If this sheet is printed at A3 size, the photographs are not at full size so as to replicate the full-scale field of view as taken in by the human eye. A red arrow indicates the location of the proposed buildings.

Viewpoint 2: Looking north towards Lots 1 & 2 from within the site. The building poles for both Lots can be seen at the bottom of the escarpment. Riverbank Road runs adjacent to the top of the escarpment.

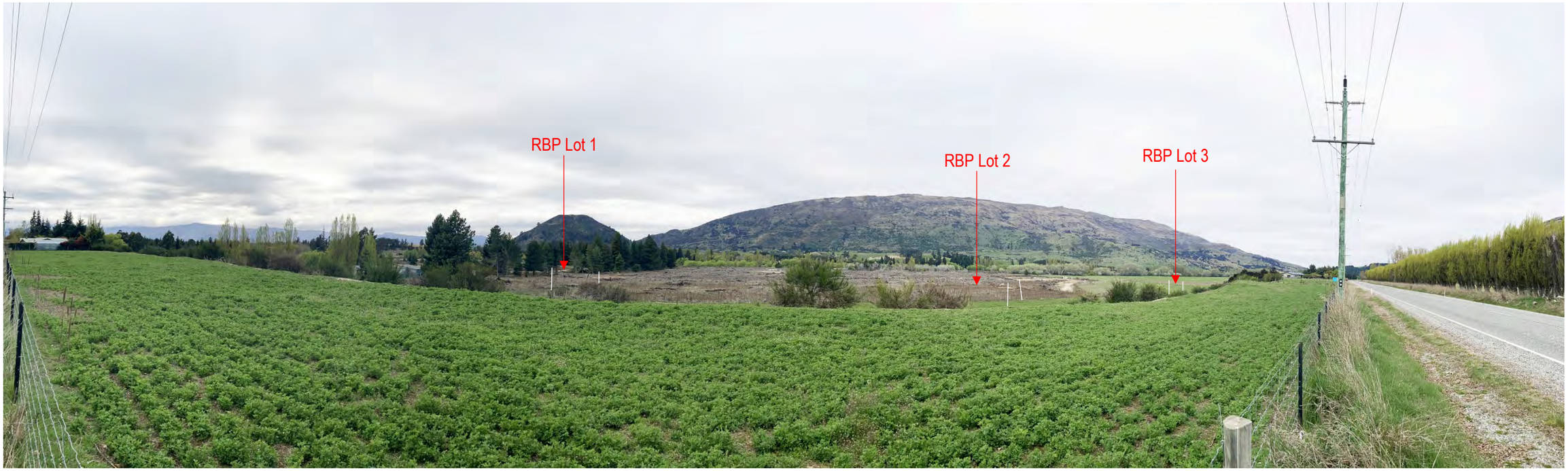
BRENT - LANDSCAPE REPORT - MCKENZIE - APPENDIX 4: PHOTOGRAPHS

All photographs were taken with iPhone SE. Photographs are intended to illustrate points made in this report. If this sheet is printed at A3 size, the photographs are not at full size so as to replicate the full-scale field of view as taken in by the human eye. A red arrow indicates the location of the proposed buildings.

Viewpoint 3: Looking south towards Lot 3 from within the site. The building poles for Lot 3 can be seen at the bottom of the escarpment. Riverbank Road runs adjacent to the top of the escarpment.

BRENT - LANDSCAPE REPORT - MCKENZIE - APPENDIX 4: PHOTOGRAPHS

All photographs were taken with iPhone SE. Photographs are intended to illustrate points made in this report. If this sheet is printed at A3 size, the photographs are not at full size so as to replicate the full-scale field of view as taken in by the human eye. A red arrow indicates the location of the proposed buildings.



Viewpoint 4: Looking towards the site from Riverbank Road. The top of the building poles can be seen on Lots 1, 2 & 3.

BRENT - LANDSCAPE REPORT - MCKENZIE - APPENDIX 4: PHOTOGRAPHS

All photographs were taken with iPhone SE. Photographs are intended to illustrate points made in this report. If this sheet is printed at A3 size, the photographs are not at full size so as to replicate the full-scale field of view as taken in by the human eye. A red arrow indicates the location of the proposed buildings.

Viewpoint 5: Looking north towards the site from the rural lifestyle zone on Mount Barker Road. From this location the building platforms will be obscured by existing vegetation. Views are from a significant distance, therefore, if intervening vegetation were to be removed the built form would make up a very small portion of the wider panoramic views.

BRENT - LANDSCAPE REPORT - MCKENZIE - APPENDIX 4: PHOTOGRAPHS

All photographs were taken with iPhone SE. Photographs are intended to illustrate points made in this report. If this sheet is printed at A3 size, the photographs are not at full size so as to replicate the full-scale field of view as taken in by the human eye. A red arrow indicates the location of the proposed buildings.

Geotechnical Report

Lot 3 DP 383485 Riverbank Road,
Wanaka

Report prepared for:
Deborah and Tony Brent

Report prepared by:
GeoSolve Ltd

Distribution:
Deborah and Tony Brent
IP Solutions
GeoSolve Limited (File)

November 2020
GeoSolve Ref: 200536

Revision	Issue Date	Purpose	Author	Reviewed
0	19/11/2020	Client issue	MDP	FAW

GEOTECHNICAL WATER RESOURCES PAVEMENTS

Table of Contents

1 Introduction

1.1 General

This report presents the results of a geotechnical investigation that has been undertaken for a proposed three lot subdivision at Lot 3 DP 383485 Riverbank Road, Wanaka. This report has been carried out as a variation to GeoSolve's original proposal dated 31 August, 2020 (ref: 200587), under the same terms and conditions.

Photo 1 – Site Photo, view looking east from Riverbank Road across the proposed Lots 1 and 2 building platforms.

1.2 Proposed Development

We understand it is proposed to subdivide the existing lot into three lots. A scheme plan has been provided for the proposed subdivision by IP Solutions, this is shown on the plan attached in Appendix A.

2 Site Description

2.1 General

The subject property is located approximately 3.3 km south-southeast of central Wanaka, as shown in Figure 1 below.

Figure 1: Location of the site (blue marker) in relation to Wanaka township (source: http://qldc.maps.arcgis.com/)

The property is accessed off Riverbank Road and is bounded by Riverbank Road and residential lots adjacent to Riverbank Road to the west, 325-329 Riverbank Road to the north, and Crown reserve land to the south and east.

The current ground cover of the subdivision area predominately comprises grass or previous pine forest that has now been removed.

The Cardrona River flows within Crown reserve land to the east of the proposed subdivision as shown on Appendix A, Figure 1.

2.2 Topography and Surface Drainage

The site has been surveyed with the topography shown within the plan attached in Appendix A, Figure 1.

The building platforms are located on a sub-horizontal to horizontal terrace which extends east to the banks of the Cardrona River. The site slopes steeply on or within the western boundary up to the level of Riverbank Road.

3 Geotechnical Investigations

An engineering geological site inspection was undertaken with confirmatory subsurface investigations in October 2020.

The following geotechnical site investigations have been completed for the purposes of this report:

- 9 test pits (TP1-9), test pits were excavated to a maximum depth of 4.0 m;
- 3 soakage tests (SP1-3), completed within test pits 2, 4 and 7 at between 1.1 and 1.2 m below ground level (bgl);
- 6 Heavy Dynamic Probe (DPH1-6) tests were completed to assess the relative density of the soils underlying the site and were advanced to a maximum depth of 10.5 m bgl;
- Installation and monitoring of piezometers within DPHs 1, 3 and 5 to measure the groundwater level below the site.

Test pit locations and logs are attached in Appendix A and B.

DPH locations and logs are attached in Appendix A and C.

GeoSolve have completed a flood hazard assessment for this site. This report should be read in conjunction with the GeoSolve site-specific flood report.

4 Subsurface Conditions

4.1 Geological Setting

The site is located in the Wanaka Basin, a feature formed predominantly by glacial advances. The schist bedrock within the basin has been extensively scoured by ice and lies at considerable depth below this site. Overburden material above the schist in this region includes glacial till, alluvial outwash sediment, lake sediment and beach deposits.

During the Mt Iron and Hawea Glacial Advances 18-23,000 years before present, the glaciers terminated upstream from Albert Town forming moraine loops and outwash terraces. Well-consolidated glacial till gravels were laid down on the flanks and beds of the glaciers. With the final retreat of the ice, about 18,000 years ago, Lake Wanaka formed and the Clutha River became entrenched in the glacial deposits.

The active Cardrona-Hawea Fault is located approximately 300 m northwest of the site, however due to the estimated 30,000 return period the seismic risk is considered very low. However, significant seismic risk exists in this region from potentially strong ground shaking, likely to be associated with a rupture of the Alpine Fault, located along the West Coast of the South Island. There is a high probability that an earthquake with an expected magnitude of over 8 will occur along the Alpine Fault within the next 50 years.

4.2 Stratigraphy

The subsurface soils observed during site investigations typically comprise:

- 0.05-0.2 m of **topsoil**, overlying;
- 0.25-0.7 m of **flood deposits**, overlying;
- 2.5-3.7 m+ of **Cardrona alluvium.**

Topsoil was observed at the surface of TPs 2, 3, 5, 6, 8 and 9. Topsoil was observed to comprise dark brown, organic silty SAND with minor to trace roots and rootlets.

Flood deposits were observed to underlie the topsoil within TPs 2, 3, 4, 7 and 9. Flood deposits were observed to comprise greyish brown to brownish grey, loose silty SAND with minor roots and trace rootlets and gravel and SAND with some silt. Flood deposits where observed to 0.3 to 0.7 m bgl.

Cardrona alluvium was observed to underlie the topsoil or flood deposits in all test pits and extends to the base of all test pits at 2.8 to 4 m bgl. Cardrona alluvium was observed to comprise light grey to dark grey, medium dense cobbly sandy GRAVEL with some boulders, sandy GRAVEL with some to minor cobbles, minor to trace boulders and trace silt and rootlets.

Full details of the observed subsurface stratigraphy can be found within the test pit logs attached in Appendix B.

4.3 Groundwater

The groundwater level was not observed within test pit excavations that extended to a maximum of 4 m bgl.

Piezometers were installed within DPH test holes 1, 3 and 5 which recorded a water level of 7.1, 6.3 and 5.9 m bgl respectively.

5 Liquefaction Analysis

A liquefaction assessment has been undertaken using test pit and heavy dynamic probe (DPH) data. This site is listed as LIC 2 (P) on the QLDC hazard register. Six heavy dynamic probe (DPH) tests were undertaken (two within each of the building platforms) to assess liquefaction risk.

5.1 Earthquake Scenarios

In accordance with NZS1170 – Structural Design Actions[1], the following two earthquake scenarios were considered based on a building with Importance Level 2 with a 50-year design life.

These scenarios represent the following design performance requirements:

- Serviceability Limit State (SLS) – to avoid damage that would prevent the structure from being used as originally intended, without repair, and;
- Ultimate Limit State (ULS) – to avoid collapse of the structural system.

In terms of NZS 1170, Class D subsoil conditions (deep soils) were assumed to underlie the site.

The methods presented within the NZTA Bridge Manual (2014)[2] have been adopted for deriving the site peak ground accelerations (PGA) as they use unweighted seismic hazard factors and corresponding (effective) earthquake magnitudes that are better suited to be used in the assessment of liquefaction.

Table 1 below provides a summary of the annual exceedance probability, effective magnitude and PGA adopted for each seismic case analysed in the liquefaction assessment.

Table 1 – Annual exceedance probability, effective earthquake magnitude and peak horizontal ground accelerations for each seismic case

Seismic Case	Annual Exceedance Probability (AEP)	Effective Magnitude	Peak Horizontal Ground Acceleration (g)
Serviceability Limit State (SLS) design earthquake	1/25	6.1	0.08
Ultimate Limit State (ULS) design earthquake	1/500	6.2	0.32

5.2 Liquefaction Assessment

5.2.1 General

Liquefaction occurs when susceptible, saturated soils attempt to move to a denser state under cyclic shearing. In this report, liquefaction is defined as when pore pressures rise to reach the overburden stress. When this occurs, the following effects can happen at flat sites:

[1] *NZS1170-5 (2004) Structural Design Actions, Part 5: Earthquake Actions – New Zealand.*
[2] *NZTA Bridge Manual, Third Addition, Amendment 2, Effective from May 2016 (Manual Number SP/M/022).*

- Loss of strength;
- Ejection of material under pressure to the ground surface (i.e. surface disruptions), and;
- Post-liquefaction volumetric densification as the soils reconsolidate.

In addition, sloping sites or sites with a 'free face' may experience lateral spreading or movement.

The occurrence of liquefaction is dependent on several factors, including the intensity and duration of ground shaking, soil density, particle size distribution, and depth to the groundwater table.

5.2.2 Analysis

Analyses were performed to evaluate the liquefaction potential of the Cardrona alluvium, utilising the methods recommended by Idriss & Boulanger (2014)[3]. These methods use information obtained from soil logging and in situ testing, such as soil type, fines content, layer thicknesses, and blow count.

Water levels were based on the recordings within piezometers on site.

The liquefaction assessment indicates the following:

- No liquefaction is predicted for the SLS design earthquake;
- No to negligible liquefaction is predicted for the ULS design earthquake.

A summary of the factors considered to assess the consequences of the predicted liquefaction is presented in Table 2 below:

[3] *Boulanger R.W. and Idriss, I.M. (2014). 'CPT and SPT Based Liquefaction Triggering Procedures,' Report No. UCD/CMG–14/01, Dept. of Civil & Environmental Engineering, University of California at Davis.*

Table 2: Summary of liquefaction results from DPH testing

Factor	Assessment		Implications
Crust thickness	Minor liquefaction is only predicted within DPH5 at between 8.1 and 9.2 m bgl. The crust thickness is determined to be 8.1 m for DPH5 where the crust thickness is undefined in all of the remaining DPH tests for the ULS design earthquake as there is no liquefaction predicted. Data from the Canterbury earthquake sequence plus other historic earthquakes[4] has been collated and observed surface damage compared with crust thickness. This data indicates that surface damage is likely for crusts of less than about 3.5 m thickness.		The non-liquefiable crust below the site is predicted to be 8.1 m within DPH5, no liquefaction is predicted within the remaining DPH tests and therefore the crust thickness is undefined for these tests. The minimum 8.1 m crust will be sufficiently thick to limit surface damage in a ULS seismic event.
LSN	1/500 AEP (ULS)	LSN range = 0-3	Little to no expression of liquefaction, no to minor effects.
Free field settlement	1/500 AEP (ULS)	0-20 mm	Minor differential settlement predicted however at significant depth therefore unlikely to be have effects at the surface.
Lateral spread	The true left Cardrona riverbank is located approximately 450 m from the proposed lots. Given the distance to the observed free face lateral spreading risk is considered very low.		No implications are considered associated with the lateral spreading risk at the site.

Liquefaction assessment results are attached in Appendix C.

Across the building platform, there is no settlement estimated under SLS loading.

Estimated ULS settlements are predicted to be 0-20 mm.

In consideration of the subsurface conditions revealed by the investigations carried out at the site and the estimated liquefaction settlements, the foundations for the development would likely be classified as MBIE foundation technical category **TC1**. No liquefaction mitigating foundation design is required. Foundation recommendations are provided within Section 6.

[4] Bowen, H.J. and Jacka, M.E. (2013). Liquefaction induced ground damage in the Canterbury Earthquake: Predictions versus reality. Proceedings of the 19th NZGS Geotechnical Symposium. Editor CY Chin. Queenstown, New Zealand.

6 Engineering Considerations

6.1 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.

The actual sub-surface conditions may show some variation from those described and all design recommendations contained in this report are subject to confirmation by inspection during construction.

6.2 Geotechnical Parameters

Table 3 provides a summary of the recommended geotechnical design parameters for the soils expected to be encountered during construction of future dwellings within the proposed lots.

Table 3: 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 (organic silty SAND)	0.05-0.2	16	To be removed from building footprint			
Flood deposits (silty SAND and SAND with some silt)	0.25-0.7	18	0	31	5,000	0.3
Cardrona Alluvium (medium dense cobbly sandy GRAVEL with some boulders and sandy GRAVEL with some to minor cobbles and minor boulders)	2.5-3.7+	19	0	35	15,000-20,000	0.3

6.3 Site Preparation

The GeoSolve geotechnical report should be read in conjunction with the flood assessment report. Flooding analysis indicates that the recommended minimum floor level for future construction is between 324.08 and 325.93 m. Based on topographic data the building platforms will require between 1.1 and 1.4 m of filling (from existing levels) to achieve the minimum flood levels.

During earthworks operations all topsoil and other unsuitable materials should be removed from the construction areas in accordance with the recommendations of NZS 4431:1989. Topsoil was observed to extend to between 0.05 and 0.2 m bgl. In conjunction with the fill required to achieve minimum floor levels, between approximately 1.2 and 1.4 m of engineered fill is expected to be required below the proposed building platforms. As the lots propose a building platform of approximately 1000 m^2 it is recommended that at detailed

design, following the confirmation of the building footprint within the platform, that engineered fill is placed to achieve flood levels to minimise the total volume of engineered fill required. Engineered fill should extend a minimum of 1 m outside the building footprint horizontally before battering to the existing ground level at a maximum of 2H:1V. Landscaping fill can be placed surrounding the engineered fill footprint to create a lawn area as required.

Under no circumstances should water be allowed to pond or collect near or under any foundation. Positive grading of the subgrade should be undertaken to prevent water ingress or ponding.

All fill that is utilised as bearing for foundations should be placed and compacted in accordance with the recommendations of NZS 4431:1989 and certification provided to that effect. Cardrona alluvium is not expected to be excavated within the site in a quantity sufficient (to be cost effective to laboratory test for reference for compaction testing) for reuse as engineered fill. The topsoil and flood deposits onsite are unsuitable for reuse as engineered fill but can be used for landscaping purposes. It is recommended that engineered fill be imported from a local source or quarry to be consistent for certification purposes.

6.4 Groundwater Issues

The groundwater was not observed during test pit investigations which extended to a maximum depth of 4 m bgl. A piezometer was installed within DPH test holes 1, 3 and 5 which recorded a groundwater depth of between 5.9 and 7.1 m bgl. The water table is therefore unlikely to be encountered during construction.

It is important that GeoSolve be contacted should there be any seepage, spring flow or under-runners are encountered during construction.

6.5 Foundations

For land categorisation, only settlements in the upper 10 m of the soil profile are considered. Across the site, there is no liquefaction induced settlement estimated under SLS loading. No liquefaction is predicted within all DPHs except for DPH5 where 20 mm of ULS settlement is estimated. No liquefaction mitigating foundation design is required.

As the lots have a minimum floor level between approximately 1.1 and 1.4 m above existing ground level engineered fill will be present below the foundations in all cases. Good ground as per NZS3604:2011 (100 kPa allowable) bearing capacity will be available for the building footprints following placement of the approximately 1.2-1.4 m thick gravel raft.

It is recommended that the foundation subgrade be inspected by a suitably qualified and experienced engineering geologist or geotechnical engineer to confirm the conditions are in accordance with the assumptions and recommendations provided in this report.

6.6 Piled Foundations

As an alternative to constructing a gravel raft below the proposed building platforms, future dwellings can be constructed suspended on driven timber piles extending to a bear within the Cardrona alluvium. Based on test pit investigations Cardrona alluvium was observed from between 0.1 and 0.7 m begl and therefore this is a viable solution for each of the lots.

6.7 Cut and Fill Slopes in Soils

Table 4 summarises the recommended batter angles for temporary and permanent slopes up to 1.5 m high, which are formed in the soils identified at the site.

Table 4 Recommended Maximum Batter Angles for Cut and Fill Slopes up to 1.5 m High in Soils.

Material Type	Recommended Maximum Batter for Permanent Cuts Less than 1.5 m High (horizontal to vertical)		Recommended Maximum Batter for Dry Permanent Cut and Fill Slopes Less than 1.5 m High (horizontal to vertical)
	Dry Ground	Dry Ground	
Topsoil/Floodplain deposits	2.0H : 1.0V	3.0H : 1.0V	3.0H : 1.0V
Engineered Fill	-	-	2.0H : 1.0V

6.8 Site Subsoil Category

For detailed design purposes it is recommended the magnitude of seismic acceleration be estimated in accordance with the recommendations provided in NZS 1170.5:2004.

The site is considered to be Class D (Deep soil site) in accordance with NZS 1170.5:2004 seismic provisions.

7 Stormwater and Wastewater Disposal

7.1 General

Soakage testing was completed to assess the suitability of the ground conditions for wastewater and stormwater disposal.

Three soakage pit tests were completed, one surrounding each of the proposed lots.

The test procedure comprised excavating open pits, introducing water from a water cart and recording the drop in water level over time, i.e. a falling head test.

Geometry of the soakage pits were:

- SP1: 0.65 m wide x 2.8 m long x 1.2 m deep
- SP2: 0.45 m wide x 1.5 m long x 1.2 m deep
- SP3: 0.45 m wide x 1.7 m long x 1.1 m deep

Table 5 provides the results of our assessment.

Table 5: Soakage rate testing and results

Location	Depth of Soakage Test	Depth to Groundwater from base of test	Soil Category AS/NZS 1547:2012	Unfactored Infiltration Rate*
SP1	1.2 m	5.9 m	1	$1x10^{-4}$ m/s
SP2	1.2 m	5.1 m	1	$1x10^{-3}$ m/s
SP3	1.1 m	4.8 m	1	$2.5x10^{-4}$ m/s
*We recommend a reduction factor of at least 0.5 be applied to account for any loss of soakage performance over time.				

7.2 Discussion

Unfactored infiltration rates of between $1x10^{-3}$ and $1x10^{-4}$ m/s were recorded within the soakage tests undertaken at the three building platforms. It is recommended that the lower bound value ($1x10^{-4}$ m/s) is adopted for the design of any stormwater soakage system onsite without additional testing completed by individual lot owners at detailed design. If desired, individual lot owners can complete additional soakage testing to confirm a suitable infiltration rate for design purposes.

With respect to wastewaster soakage to ground, in accordance with Table 5.1 AS/NZS 1547:2012, the soils are classified as Class 1. A QLDC Site and Soils Assessment has been completed and is attached in Appendix D. The following site features will need to be considered in the design of the onsite wastewater system:

- The existing site levels are located at the approximately 1/50 year flood level. Building platforms will be required to be raised a minimum of 1.2-1.4 m above existing ground level to achieve minimum floor levels. If a flood return period of 1/50 within the surrounding soils is not suitable for disposal of treated wastewater then wastewater will be required to be pumped to the upper terrace of the site to the west.

It is recommended that the onsite wastewater disposal system is designed by a suitably qualified professional considering the above flood risk;

- If treated wastewater is pumped to the upper terrace of the site, then it is recommended that dispersal fields are set back at least 10 m from the crest of the slope.

In all cases, we recommend provision for routine inspection and maintenance be included in the system design, and a safe overland flowpath be identified for the system discharge in a super-design storm.

8 Neighbouring Structures/Hazards

Natural Hazards: The risk of seismic activity has been identified for the region as a whole and appropriate allowance should be made for seismic loading during the detailed design phase.

Liquefaction was assessed and the results are presented in section 5 of this report. There is no to low liquefaction risk at the surface of this site. Foundation recommendations are provided in section 6.5 of this report.

Flooding hazard has been assessed by GeoSolve within a separate report. This report should be read in conjunction with the GeoSolve flood assessment report.

Distances to adjoining structures: The site is situated in a rural area with the closest building (an existing shed) approximately 30 m and closest dwelling approximately 80 m from the proposed building platforms, therefore no adverse effects are expected to influence neighbouring structures.

Aquifers: The design of the onsite wastewater disposal system will need to the consider the flooding potential and the depth to groundwater at the site. Assuming these constraints are suitably considered in the design process for the wastewater disposal systems no aquifer resource will be adversely affected by the development.

Erosion and Sediment Control: The site presents some potential to generate silt runoff during heavy rainfall events and this would naturally drain downslope. Effective systems for erosion control are runoff diversion drains and contour drains, while for sediment control, options are earth bunds, silt fences, vegetation buffer strips and sediment ponds. Only the least amount of subsoil should be exposed at any stage and surfacing established as soon as practical. Details for implementation are given within the following link: http://esccanterbury.co.nz/

Noise: Machinery including trucks, excavators and plate compactors/rollers will be required during earthworks. The surrounding area is generally rural with dwellings at least 80 m away, therefore noise is unlikely to be an issue during construction. The construction contractor should take standard measures to control the construction noise.

Dust: Regular dampening of soil materials with sprinklers to QLDC standards should be effective if required.

Vibration: Due to the distance to existing neighbouring dwellings vibrations associated with engineered fill placement are not considered to be an issue.

9 Conclusions

- The subsurface soils observed during site investigations comprises topsoil and flood deposits overlying, Cardrona alluvium.
- Groundwater inflow was not observed during test pit investigations, which extended to a maximum depth of 4 m bgl. Piezometers were installed within DPHs 1, 3 and 5 to record the groundwater level below the site. Piezometers measured a water level between 5.9 and 7.1 m bgl. Groundwater is not expected to be encountered during excavations for the proposed development.
- GeoSolve have completed a flooding assessment for the proposed lots, which recommends a minimum floor level of 324.08, 324.93 and 325.93 for Lots 1, 2 and 3 respectively.
- Liquefaction risk is considered to be low for the site. No liquefaction mitigating foundation design is required;
- All topsoil (observed to a depth of 0.05-0.2 m bgl) should be undercut and replaced with engineered fill during construction;
- Following placement of the minimum 1.2-1.4 m granular certified fill (as required to meet flooding height requirements), the gravel raft will provide good ground bearing capacity as per NZS3604:2011.
- The granular certified fill raft should extend a minimum of 1 m from the edge of the building platform in all cases.
- Geotechnical parameters are presented in Table 3 of this report.
- Any fill that is utilised as bearing for foundations should be placed and compacted in accordance with NZS 4431:1989 and certification provided to that effect.
- For detailed design purposes it is recommended that the site is classified “Class D – deep subsoil” in accordance with NZS 1170.5:2004 seismic provisions.
- Permeability testing was completed to assess the suitability of soakage for wastewater and stormwater disposal at the three proposed lots. Infiltration rates are between $1x10^{-4}$ and $1x10^{-3}$ m/s. The wastewaster disposal systems will need to consider the flooding potential of the proposed lots.
- A QLDC Site and Soils Assessment Form has been completed and is attached in Appendix D.
- A geotechnical practitioner should inspect and test the subgrade prior to placement of engineered fill, footing and foundation slab excavations.

10 Applicability

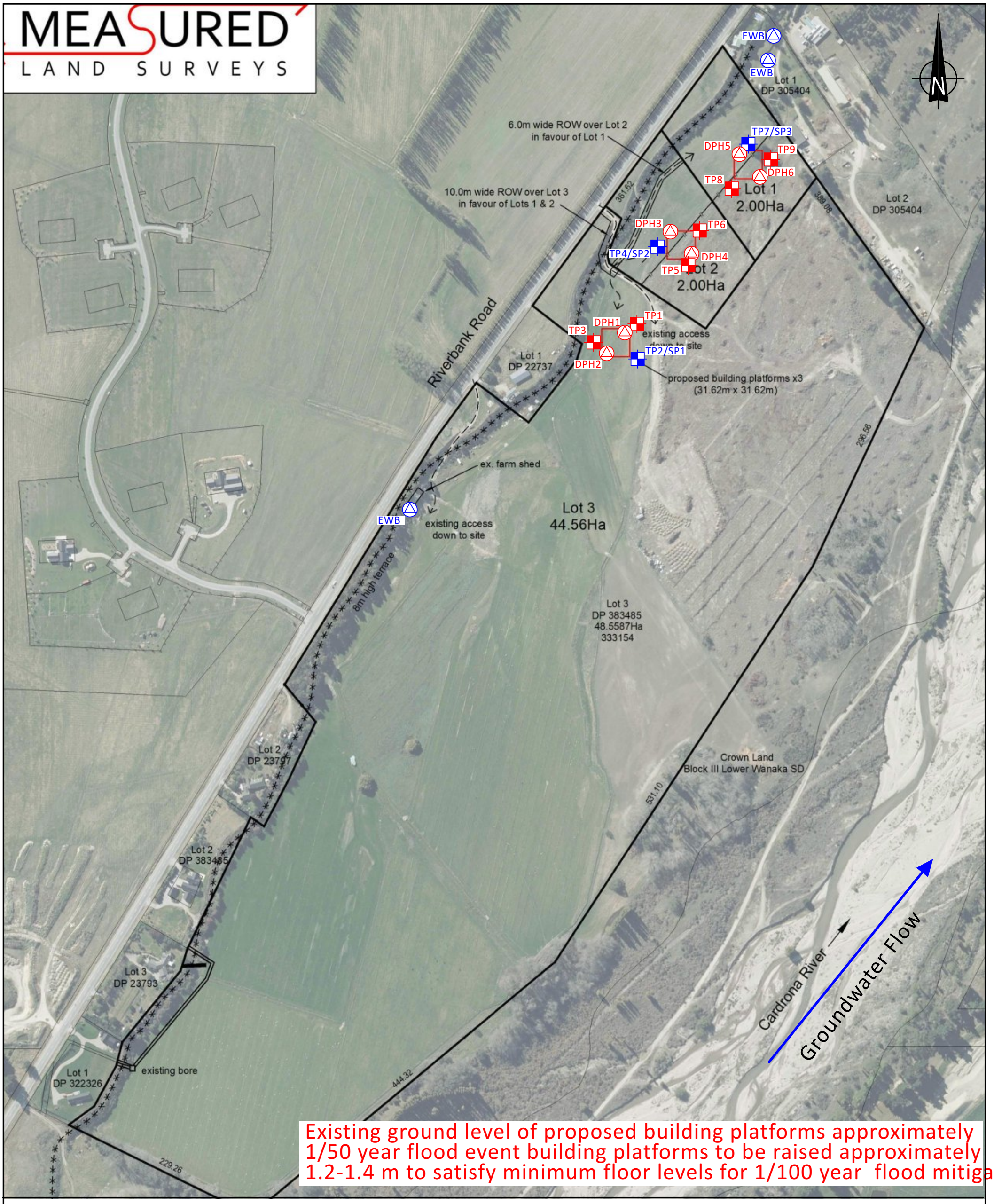
This report has been prepared for the benefit of Deborah and Tony Brent with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose without our prior review and agreement.

It is important that we be contacted if there is any variation in subsoil conditions from those described in this report.

Report prepared by:	Reviewed for GeoSolve Ltd by:
	
.....	.....
Mike Plunket	Fraser Wilson
Geotechnical Engineer	Senior Engineering Geologist

Appendix A: Site Investigation Plan

MEASURED
LAND SURVEYS



Existing ground level of proposed building platforms approximately
1/50 year flood event building platforms to be raised approximately
1.2-1.4 m to satisfy minimum floor levels for 1/100 year flood mitigatio

Key

DPH1 = Dynamic Probe Heavy Test (DPH)

TP1/SP1 = Test Pit/Soak Pit Locations

TP1 = Test Pit Locations

EWB = Existing Water Bore

Scale 1:4000

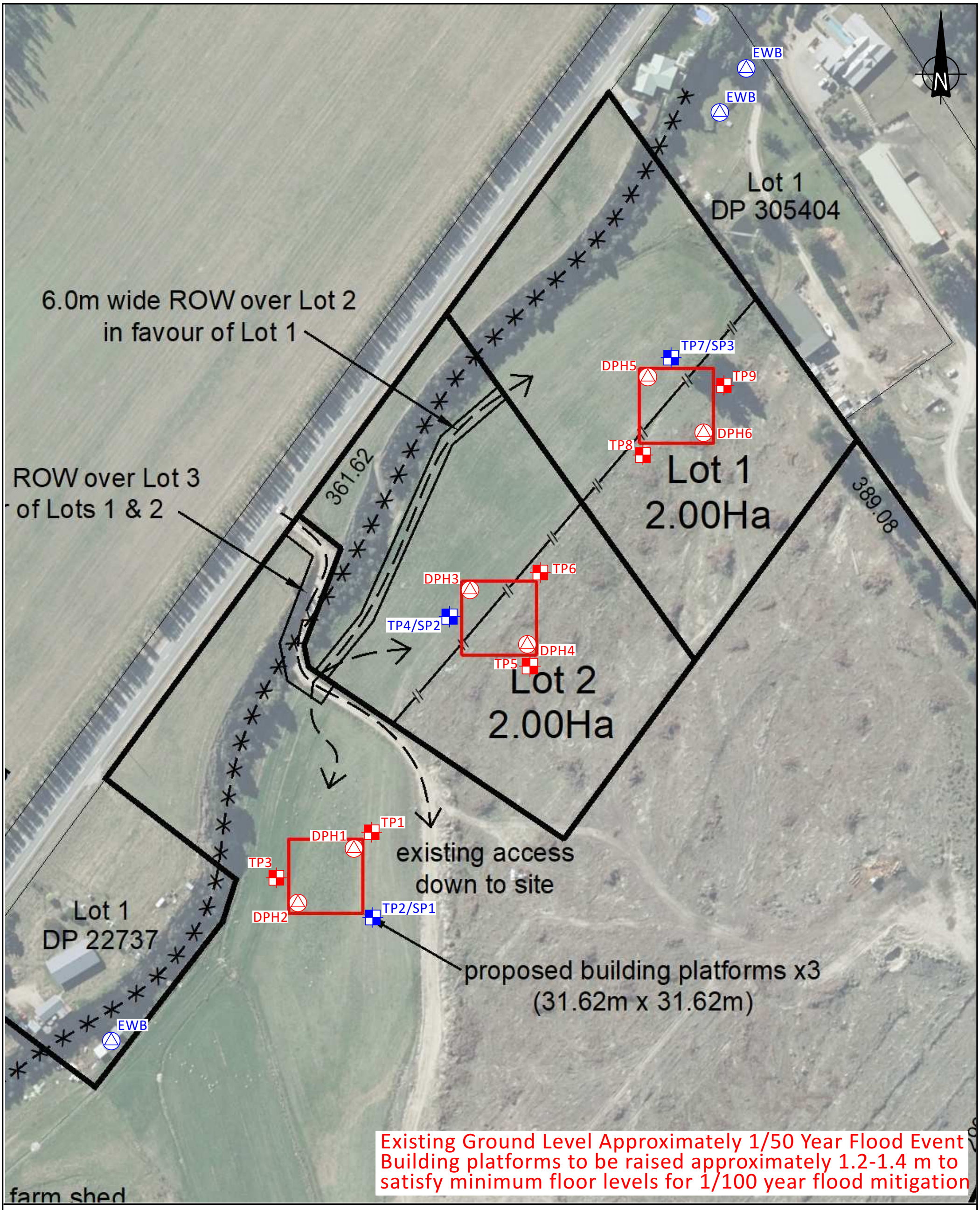
0 50 100 150 200(m)

GEOSOLVE
ENGINEERING CONSULTANTS

DRAWN	JXH	10/20
DRAFTING CHECKED	MDP	11/20
APPROVED	FAW	11/20
FILE : PDF		
SCALE: (AT A3 SIZE) As Shown		
PROJECT No. 200536		

Deborah and Stephen Brent
Lot 3 DP 383485 Riverbank Road, Wanaka
Geotechnical Investigation
Site Plan

FIG No. Appendix A - Figure 1 REV. 0



Key

DPH1 = Dynamic Probe Heavy Test (DPH)

TP1/SP1 = Test Pit/Soak Pit Locations

TP1 = Test Pit Locations

EWB = Existing Water Bore

Scale 1:1500

0 25 50 75 100 (m)

GEOSOLVE ENGINEERING CONSULTANTS

DRAWN	JXH	10/20
DRAFTING CHECKED	MDP	11/20
APPROVED	FAW	11/20
FILE : PDF		
SCALE: (AT A3 SIZE) As Shown		
PROJECT No. 200536		

Deborah and Stephen Brent
Lot 3 DP 383485 Riverbank Road, Wanaka
Geotechnical Investigation
Zoomed Site Plan

FIG No. Appendix A - Figure 2 REV. 0

Appendix B: Investigation Data

GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

EXCAVATION NUMBER: **TP 1**

PROJECT:	Riverbank Road			JOB NUMBER:	200536
LOCATION:	See Site Plan	INCLINATION:	Vertical		

EASTING:		EQUIPMENT:	5 tonne excavator	OPERATOR:	Jamie
NORTHING:		COORD. SYSTEM:		COMPANY:	Diverse Works
ELEVATION:		EXCAV. DATUM:		HOLE STARTED:	14/10/2020
METHOD:	Aerial Photography	ACCURACY:		HOLE FINISHED:	14/10/2020

Soil / Rock Type	Description	Depth (m)
TOPSOIL	Organic silty SAND with trace of rootlets; dark brown. Dry; sand is fine to medium.	0m – 0.05m
FLOOD DEPOSITS	Silty SAND with trace of gravel & rootlets; greyish brown, massive. Loose; dry; sand is fine to medium.	0.05m – 0.3m
CARDRONA ALLUVIUM	Sandy GRAVEL with trace of silt & rootlets; grey, bedded. Medium dense; dry; sand is fine to coarse. Gravel is fine to coarse; sub-rounded.	0.3m – 0.4m
CARDRONA ALLUVIUM	Cobbly sandy GRAVEL with some boulders; grey, bedded. Medium dense; dry; sand is fine to coarse. Gravel is fine to coarse; sub-rounded.	0.4m – 1.3m
CARDRONA ALLUVIUM	Cobbly sandy GRAVEL with some boulders; dark grey, bedded. Medium dense; moist; sand is fine to coarse. Gravel is fine to coarse; sub-rounded.	1.3m – 4m

Graphic Log

Depth (m): 0.0, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 2.0, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 3.0, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 4.0

Groundwater / Seepage: NO SEEPAGE

Scala Penetrometer

Total Excavation Depth = 4.0 m

COMMENT:		LOGGED BY:	MDP
		CHECKED DATE:	3/11/20
		SHEET:	1 of 1

GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

EXCAVATION NUMBER: TP2/SP1

PROJECT:	Riverbank Road			JOB NUMBER:	200536
LOCATION:	See Site Plan	INCLINATION:	Vertical		

EASTING:		EQUIPMENT:	5 tonne excavator	OPERATOR:	Jamie
NORTHING:		COORD. SYSTEM:		COMPANY:	Diverse Works
ELEVATION:		EXCAV. DATUM:		HOLE STARTED:	14/10/2020
METHOD:	Aerial Photography	ACCURACY:		HOLE FINISHED:	14/10/2020

Soil / Rock Type	Description	Graphic Log	Depth (m)	Groundwater / Seepage	Scala Penetrometer
TOPSOIL	Organic silty SAND with trace of rootlets; dark brown. Dry; sand is fine to medium. (0m – 0.05m)		0.0		
FLOOD DEPOSITS	Silty SAND with trace of gravel & rootlets; greyish brown, massive. Loose; dry; sand is fine to medium. (0.05m – 0.3m)		0.1 – 0.3		
CARDRONA ALLUVIUM	Sandy GRAVEL with some cobbles & minor boulders; light grey, bedded. Medium dense; wet; sand is fine to coarse. Gravel is fine to coarse; sub-rounded. (0.3m – 1.3m)		0.4 – 1.3		
CARDRONA ALLUVIUM	Sandy fine to coarse GRAVEL with some to minor cobbles & trace of boulders; grey, bedded. Medium dense; wet; sand is fine to coarse. Gravel is fine to coarse; sub-angular to sub-rounded. (1.3m – 3.3m)		1.4 – 3.3	NO SEEPAGE	

Total Excavation Depth = 3.3 m

COMMENT:	Soakage test completed at 1.2 m bgl	LOGGED BY:	MDP
		CHECKED DATE:	3/11/20
		SHEET:	1 of 1

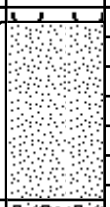
GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

EXCAVATION NUMBER:
TP 3

PROJECT:	Riverbank Road			JOB NUMBER:	200536
LOCATION:	See Site Plan	INCLINATION:	Vertical		

EASTING:		EQUIPMENT:	5 tonne excavator	OPERATOR:	Jamie
NORTHING:		COORD. SYSTEM:		COMPANY:	Diverse Works
ELEVATION:		EXCAV. DATUM:		HOLE STARTED:	14/10/2020
METHOD:	Aerial Photography	ACCURACY:		HOLE FINISHED:	14/10/2020

Soil / Rock Type	Description	Graphic Log	Depth (m)	Groundwater / Seepage	Scala Penetrometer
TOPSOIL	Organic silty SAND with trace of rootlets; dark brown. Dry; sand is fine to medium. (0m – 0.05m)		0.0 – 0.6	NO SEEPAGE	
FLOOD DEPOSITS	SAND with some silt; greyish brown, massive. Loose; dry; sand is fine to medium. (0.05m – 0.65m)				
CARDRONA ALLUVIUM	Sandy GRAVEL with some cobbles & minor boulders; grey, bedded. Medium dense; dry to moist; sand is fine to coarse. Gravel is fine to coarse; sub-angular to sub-rounded. (0.65m – 1.4m)		0.6 – 1.4		
CARDRONA ALLUVIUM	Sandy GRAVEL with some cobbles & minor boulders; dark grey, bedded. Medium dense; moist; sand is fine to coarse. Gravel is fine to coarse; sub-angular to sub-rounded. (1.4m – 2.9m)		1.4 – 2.9		
CARDRONA ALLUVIUM	Sandy GRAVEL with minor cobbles & trace of boulders; dark grey, bedded. Medium dense; moist; sand is fine to coarse. Gravel is fine to coarse; sub-angular to sub-rounded. (2.9m – 3.3m)		2.9 – 3.3		

Total Excavation Depth = 3.3 m

COMMENT:		LOGGED BY:	MDP
		CHECKED DATE:	3/11/20
		SHEET:	1 of 1

GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

EXCAVATION NUMBER: TP4/SP2

PROJECT:	Riverbank Road			JOB NUMBER:	200536
LOCATION:	See Site Plan	INCLINATION:	Vertical		

EASTING:		EQUIPMENT:	5 tonne excavator	OPERATOR:	Jamie
NORTHING:		COORD. SYSTEM:		COMPANY:	Diverse Works
ELEVATION:		EXCAV. DATUM:		HOLE STARTED:	14/10/2020
METHOD:	Aerial Photography	ACCURACY:		HOLE FINISHED:	14/10/2020

Soil / Rock Type	Description	Graphic Log	Depth (m)	Groundwater / Seepage	Scala Penetrometer
FLOOD DEPOSITS	Silty SAND with trace of roots & rootlets; brownish grey, massive. Loose; moist; sand is fine to medium. 0m – 0.7m		0.0 – 0.7		
CARDRONA ALLUVIUM	Sandy GRAVEL with some cobbles & minor boulders; grey, bedded. Medium dense; moist; sand is fine to coarse. Gravel is fine to coarse; sub-angular to sub-rounded. 0.7m – 2.6m		0.7 – 2.6		
CARDRONA ALLUVIUM	Sandy GRAVEL with minor cobbles & trace of boulders; grey, bedded. Medium dense; moist; sand is fine to coarse. Gravel is fine to coarse; sub-angular to sub-rounded. 2.6m – 3.2m		2.6 – 3.2	NO SEEPAGE	

Total Excavation Depth = 3.2 m

COMMENT:	Soakage test completed at 1.2 m bgl	LOGGED BY:	MDP
		CHECKED DATE:	3/11/20
		SHEET:	1 of 1

GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

EXCAVATION NUMBER: **TP 5**

PROJECT:	Riverbank Road			JOB NUMBER:	200536
LOCATION:	See Site Plan	INCLINATION:	Vertical		

EASTING:		EQUIPMENT:	5 tonne excavator	OPERATOR:	Jamie
NORTHING:		COORD. SYSTEM:		COMPANY:	Diverse Works
ELEVATION:		EXCAV. DATUM:		HOLE STARTED:	14/10/2020
METHOD:	Aerial Photography	ACCURACY:		HOLE FINISHED:	14/10/2020

Soil / Rock Type	Description	Graphic Log	Depth (m)	Groundwater / Seepage	Scala Penetrometer
TOPSOIL	Organic silty SAND with minor roots; brownish grey. Dry to moist; sand is fine to medium. 0m		0.0		
CARDRONA ALLUVIUM	Sandy GRAVEL with some cobbles & minor boulders; grey, bedded. Medium dense; dry to moist; sand is fine to coarse. Gravel is fine to coarse; sub-angular to sub-rounded. 0.2m		0.1 – 3.2		
	3.3m		3.3	NO SEEPAGE	

Total Excavation Depth = 3.3 m

COMMENT:		LOGGED BY:	MDP
		CHECKED DATE:	3/11/20
		SHEET:	1 of 1

GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

EXCAVATION NUMBER: **TP 6**

PROJECT:	Riverbank Road			JOB NUMBER:	200536
LOCATION:	See Site Plan	INCLINATION:	Vertical		

EASTING:		EQUIPMENT:	5 tonne excavator	OPERATOR:	Jamie
NORTHING:		COORD. SYSTEM:		COMPANY:	Diverse Works
ELEVATION:		EXCAV. DATUM:		HOLE STARTED:	14/10/2020
METHOD:	Aerial Photography	ACCURACY:		HOLE FINISHED:	14/10/2020

Soil / Rock Type	Description	Graphic Log	Depth (m)	Groundwater / Seepage	Scala Penetrometer
TOPSOIL	Organic silty SAND with minor roots & rootlets; brownish grey. Dry to moist; silt is non-plastic; sand is fine to medium.	0m	0.0		
CARDRONA ALLUVIUM	Sandy cobbly GRAVEL with some boulders; grey, bedded. Medium dense; dry to moist; sand is fine to coarse. Gravel is fine to coarse; sub-angular to sub-rounded.	0.1m	0.1		
			0.2		
			0.3		
			0.4		
			0.5		
			0.6		
			0.7		
			0.8		
			0.9		
			1.0		
			1.1		
			1.2		
			1.3		
			1.4		
			1.5		
			1.6		
			1.7		
			1.8		
			1.9		
			2.0		
			2.1		
			2.2		
			2.3		
			2.4		
			2.5		
			2.6		
			2.7		
		2.8m	2.8	NO SEEPAGE	

Total Excavation Depth = 2.8 m

COMMENT:		LOGGED BY:	MDP
		CHECKED DATE:	3/11/20
		SHEET:	1 of 1

GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

EXCAVATION NUMBER: TP7/SP3

PROJECT:	Riverbank Road			JOB NUMBER:	200536
LOCATION:	See Site Plan	INCLINATION:	Vertical		

EASTING:		EQUIPMENT:	5 tonne excavator	OPERATOR:	Jamie
NORTHING:		COORD. SYSTEM:		COMPANY:	Diverse Works
ELEVATION:		EXCAV. DATUM:		HOLE STARTED:	14/10/2020
METHOD:	Aerial Photography	ACCURACY:		HOLE FINISHED:	14/10/2020

Soil / Rock Type	Description	Graphic Log	Depth (m)	Groundwater / Seepage	Scala Penetrometer
FLOOD DEPOSITS	Silty SAND with minor roots & trace of rootlets; brownish grey, massive. Loose; moist; sand is fine to medium. 0m – 0.4m		0.0 – 0.4		
CARDRONA ALLUVIUM	Sandy GRAVEL with some cobbles, minor boulders, roots & rootlets; grey, bedded. Medium dense; moist; sand is fine to coarse. Gravel is fine to coarse; sub-angular to sub-rounded. 0.4m – 3.25m		0.4 – 3.2	NO SEEPAGE	

Total Excavation Depth = 3.25 m

COMMENT:	Soakage test completed at 1.1 m bgl	LOGGED BY:	MDP
		CHECKED DATE:	3/11/20
		SHEET:	1 of 1

GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

EXCAVATION NUMBER:
TP 8

PROJECT:	Riverbank Road			JOB NUMBER:	200536
LOCATION:	See Site Plan	INCLINATION:	Vertical		

EASTING:		EQUIPMENT:	5 tonne excavator	OPERATOR:	Jamie
NORTHING:		COORD. SYSTEM:		COMPANY:	Diverse Works
ELEVATION:		EXCAV. DATUM:		HOLE STARTED:	14/10/2020
METHOD:	Aerial Photography	ACCURACY:		HOLE FINISHED:	14/10/2020

Soil / Rock Type	Description	Graphic Log	Depth (m)	Groundwater / Seepage	Scala Penetrometer
TOPSOIL	Organic silty SAND with minor roots & rootlets; dark brown. Moist; silt is non-plastic. (0m – 0.1m)		0.0 – 0.1		
CARDRONA ALLUVIUM	Sandy GRAVEL with some cobbles, minor boulders & rootlets; grey, bedded. Medium dense; moist; sand is fine to coarse. Gravel is fine to coarse; sub-angular to sub-rounded. (0.1m – 3.3m)		0.1 – 3.3	NO SEEPAGE	

Total Excavation Depth = 3.3 m

COMMENT:		LOGGED BY:	MDP
		CHECKED DATE:	3/11/20
		SHEET:	1 of 1

GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

EXCAVATION NUMBER: **TP 9**

PROJECT:	Riverbank Road			JOB NUMBER:	200536
LOCATION:	See Site Plan	INCLINATION:	Vertical		

EASTING:		EQUIPMENT:	5 tonne excavator	OPERATOR:	Jamie
NORTHING:		COORD. SYSTEM:		COMPANY:	Diverse Works
ELEVATION:		EXCAV. DATUM:		HOLE STARTED:	14/10/2020
METHOD:	Aerial Photography	ACCURACY:		HOLE FINISHED:	14/10/2020

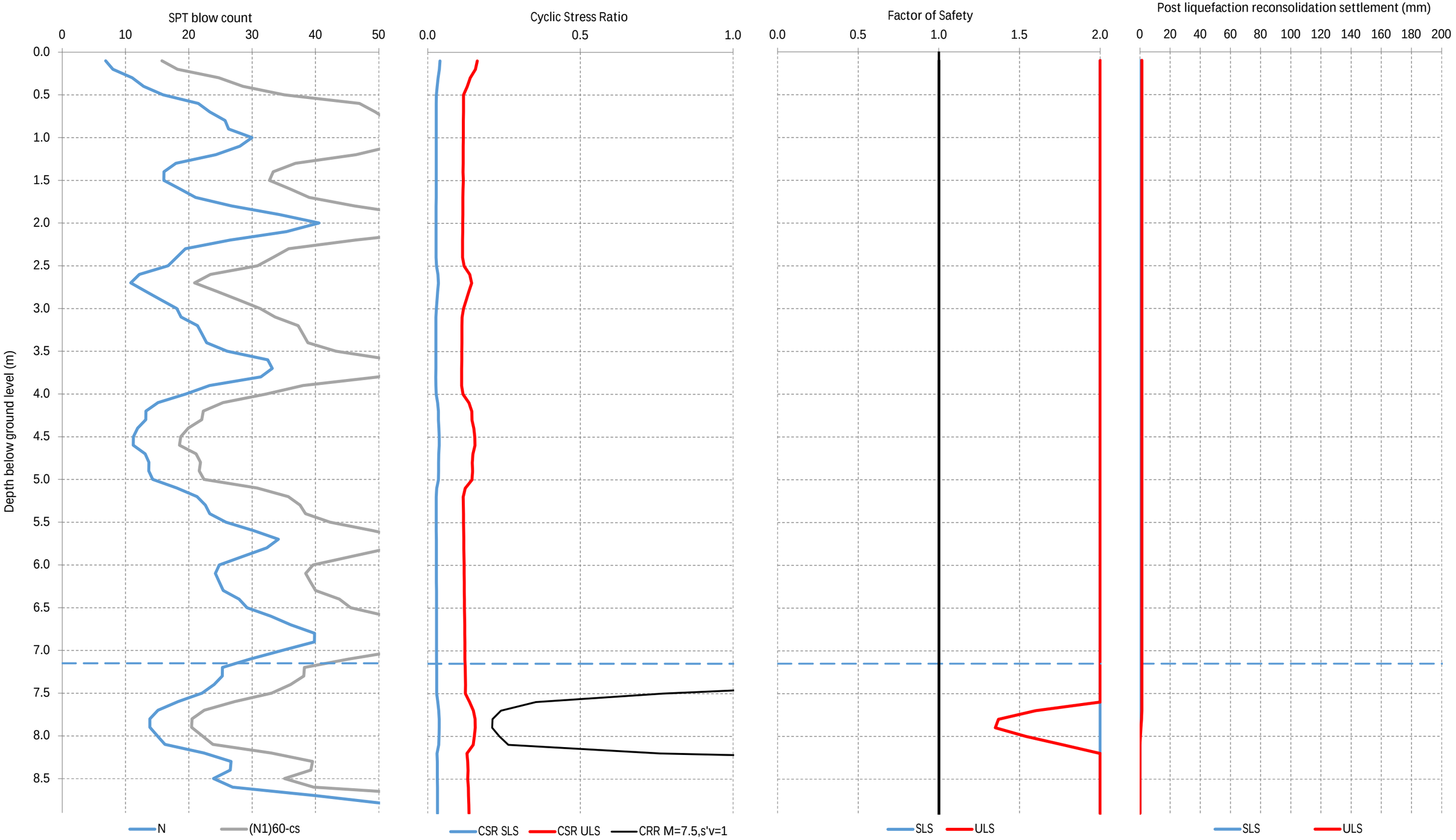
Soil / Rock Type	Description	Graphic Log	Depth (m)	Groundwater / Seepage	Scala Penetrometer
TOPSOIL	Organic silty SAND with trace of rootlets; dark brown. Dry; sand is fine to medium. (0m – 0.05m)		0.0		
CARDRONA ALLUVIUM	Sandy GRAVEL with some cobbles, minor boulders & rootlets; grey, bedded. Medium dense; moist; sand is fine to coarse. Gravel is fine to coarse; sub-angular to sub-rounded. (0.05m – 3m)		0.1 – 3.0	NO SEEPAGE	

Total Excavation Depth = 3.0 m

COMMENT:		LOGGED BY:	MDP
		CHECKED DATE:	3/11/20
		SHEET:	1 of 1

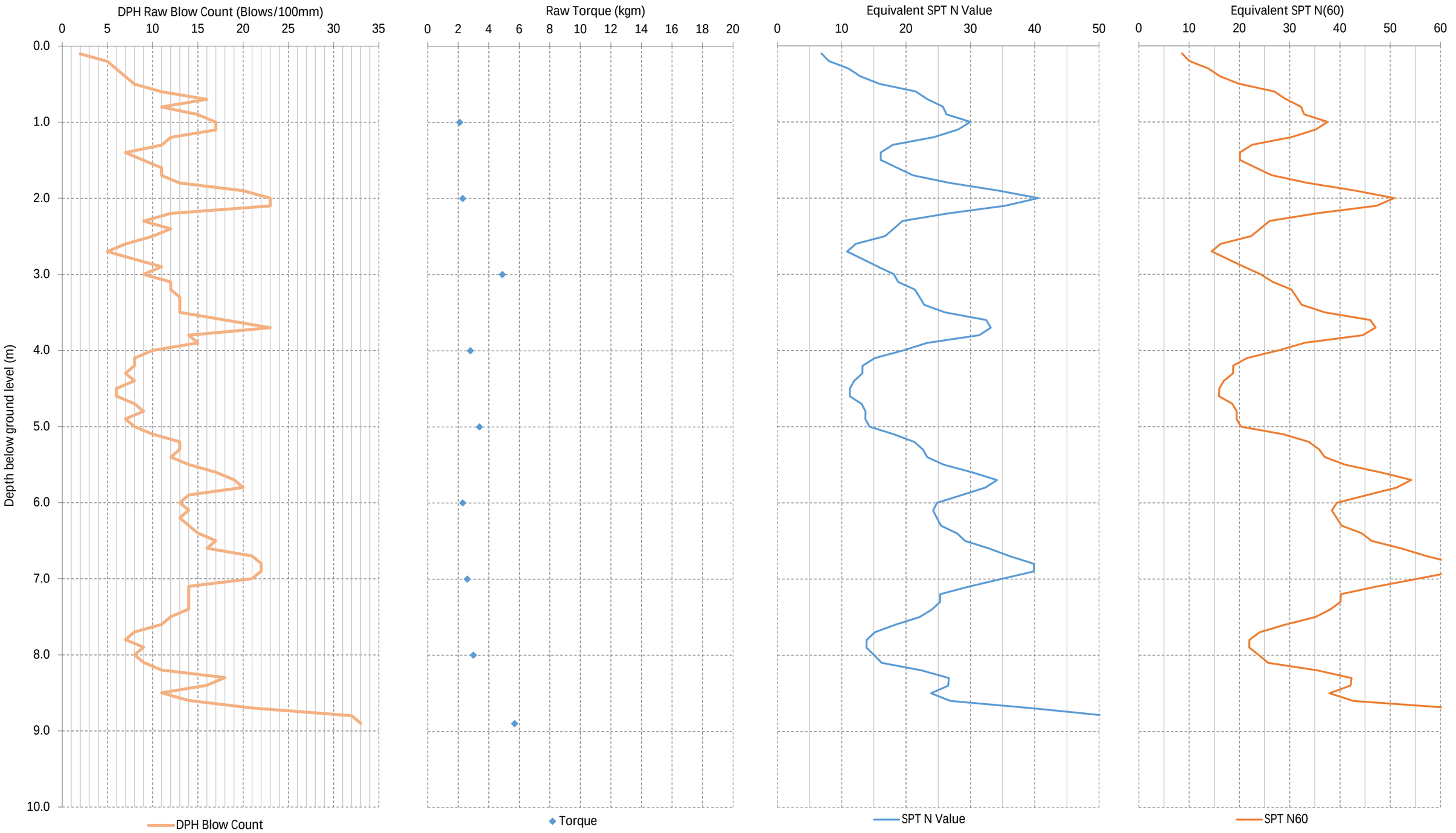
Appendix C: Liquefaction Analysis

LSN (SLS)	LSN (ULS)	Crust Thickness (SLS)	Crust Thickness (ULS)
0.0	0.2	0.0	0.0



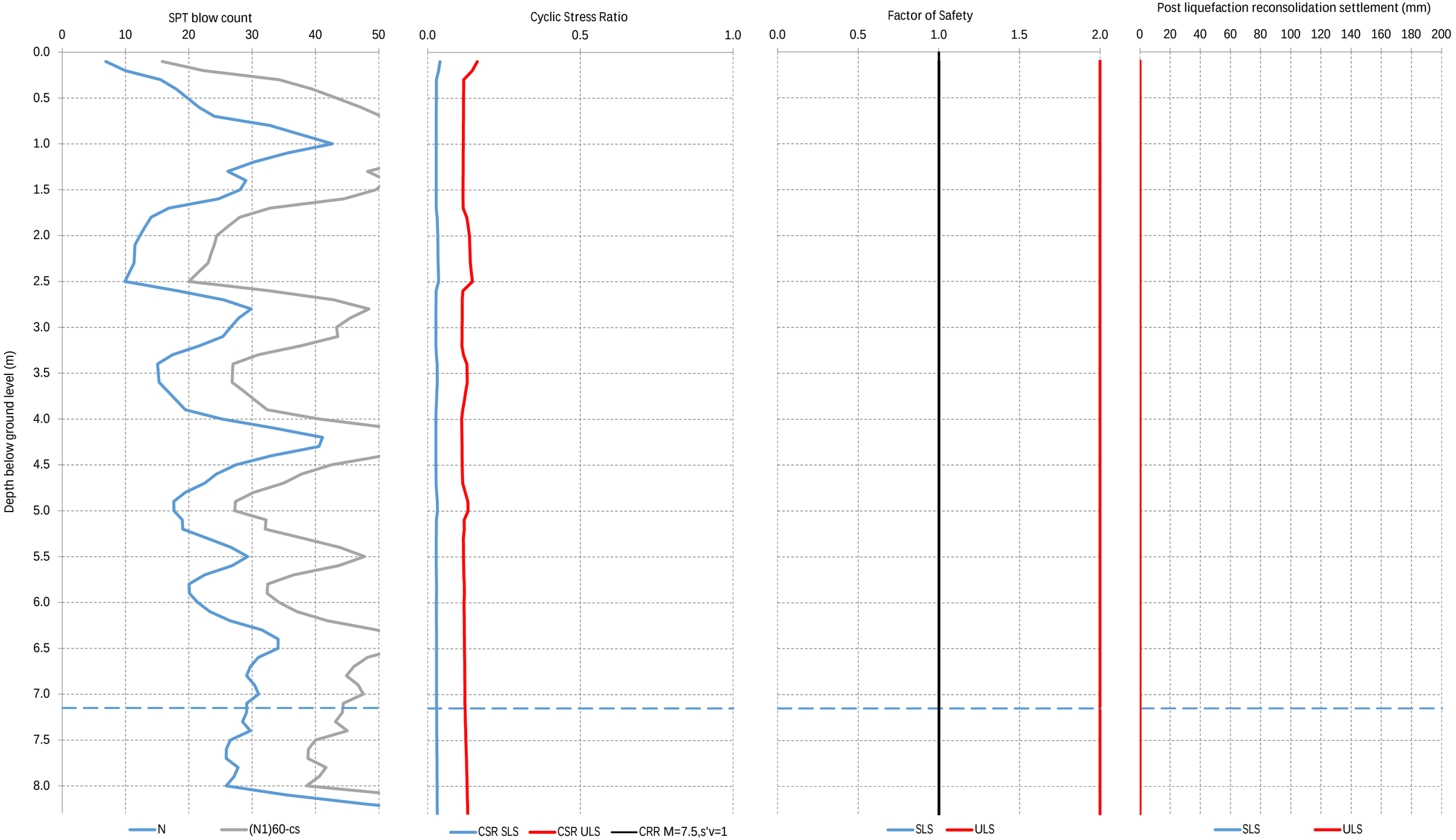
Note: Settlements as per Idriss and Boulanger (2014)

PROJECT	200536 - Lot3 DP383485 Riverbank Rd	CLIENT	Deborah & Stephen Brent
DESCRIPTION	Liquefaction Analysis	TEST NUMBER	DPH1
LOCATION	Riverbank Rd, Wanaka	DATE	14/10/2020
		LOGGED BY	RC
		ANALYSED BY	RC
		CHECKED BY	MDP



GEOSOLVE	PROJECT	200536 - Lot3 DP383485 Riverbank Rd	CLIENT: Deborah & Stephen Brent
	DESCRIPTION	Liquefaction Analysis	TEST NUMBER: DPH1
	LOCATION	Riverbank Rd, Wanaka	DATE: 14/10/2020
			LOGGED BY: RC
			ANALYSED BY: RC
			CHECKED BY: MDP

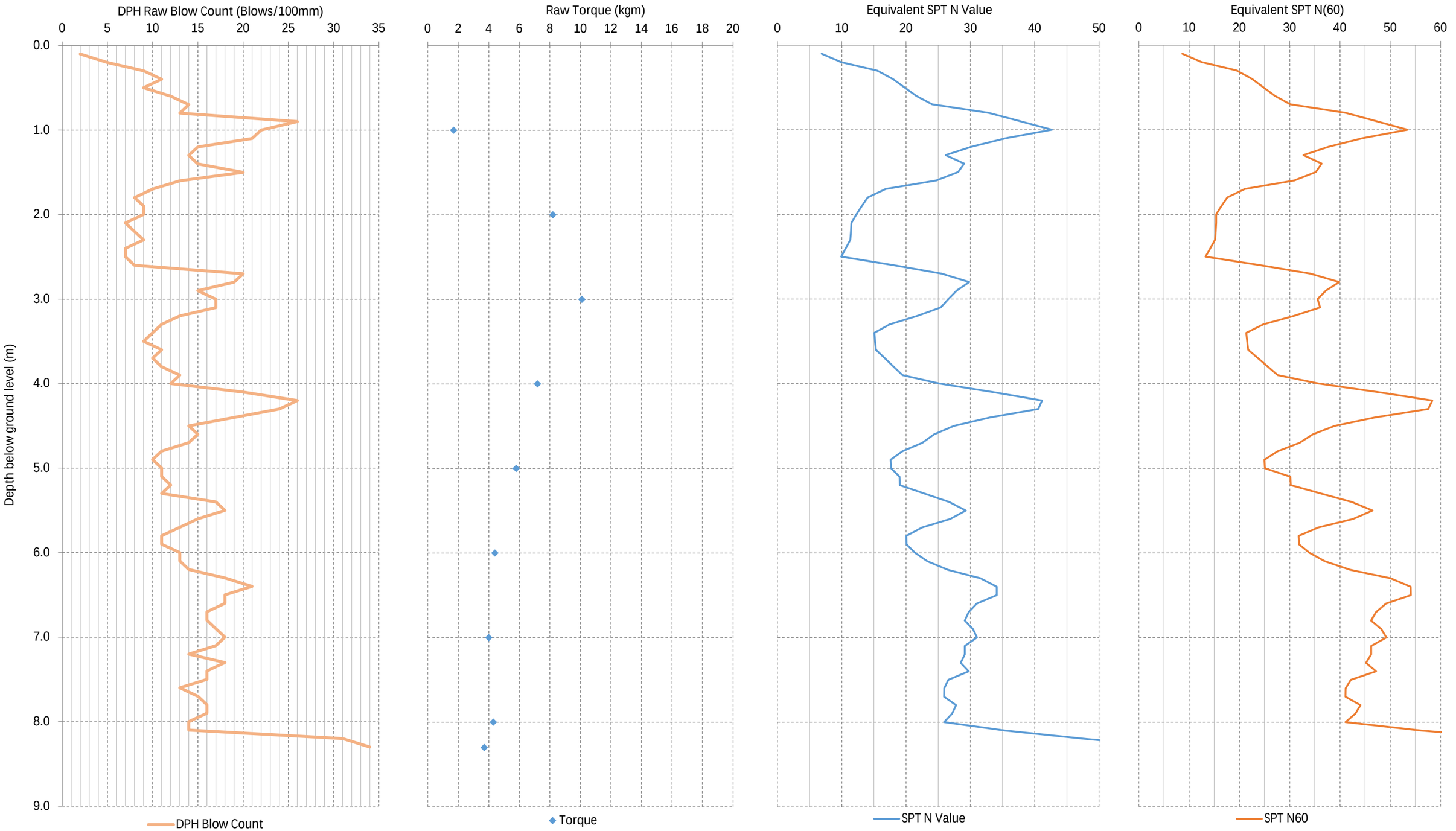
LSN (SLS)	LSN (ULS)	Crust Thickness (SLS)	Crust Thickness (ULS)
0.0	0.0	0.0	0.0



Note: Settlements as per Idriss and Boulanger (2014)

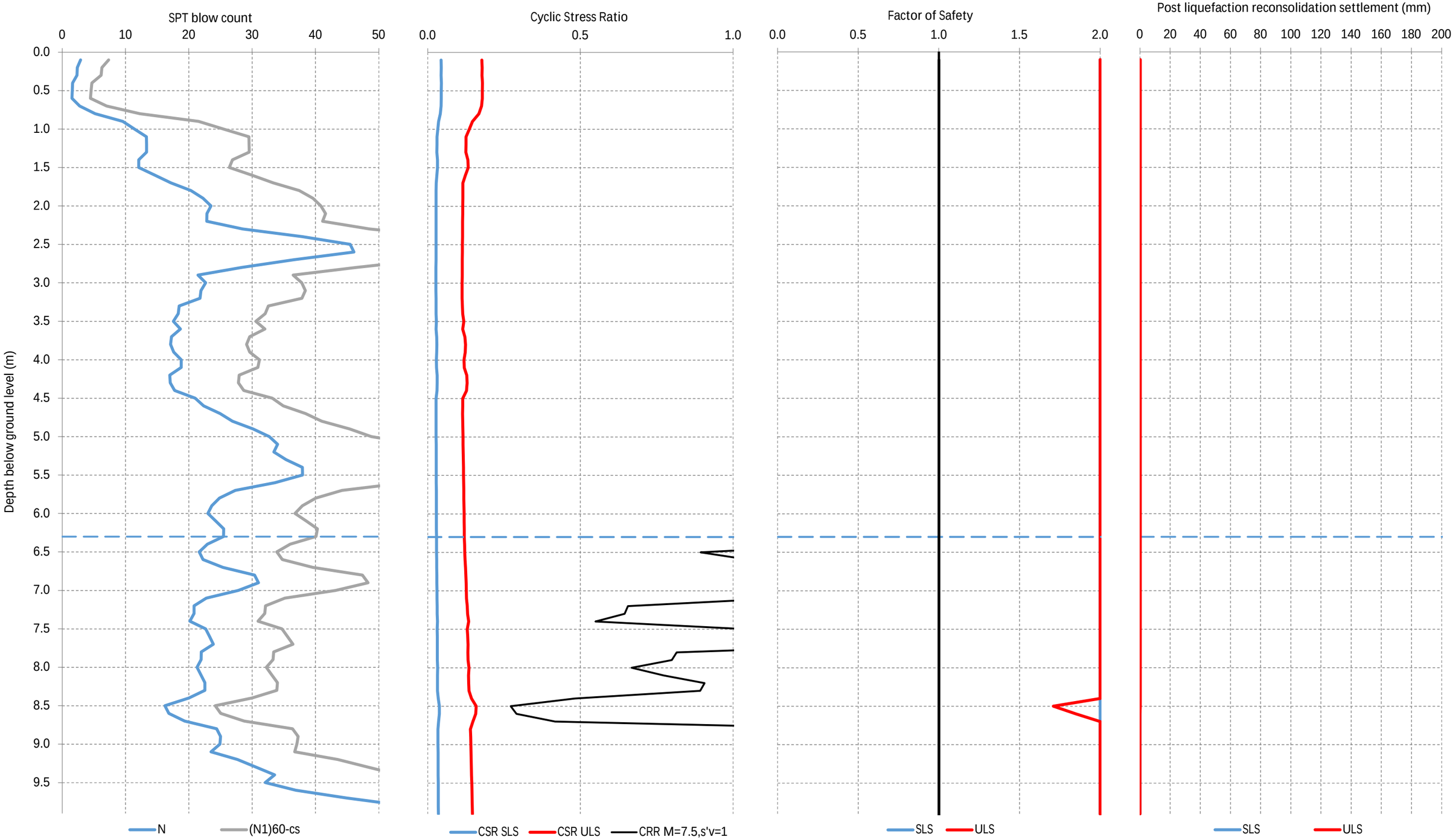
GEOSOLVE

PROJECT	200536 - Lot 3 DP383485 Riverbank Rd
DESCRIPTION	Liquefaction Analysis
LOCATION	Riverbank Rd, Wanaka
CLIENT	Deborah & Stephen Brent
TEST NUMBER	DPH2
DATE	14/10/2020
LOGGED BY	RC
ANALYSED BY	RC
CHECKED BY	MDP



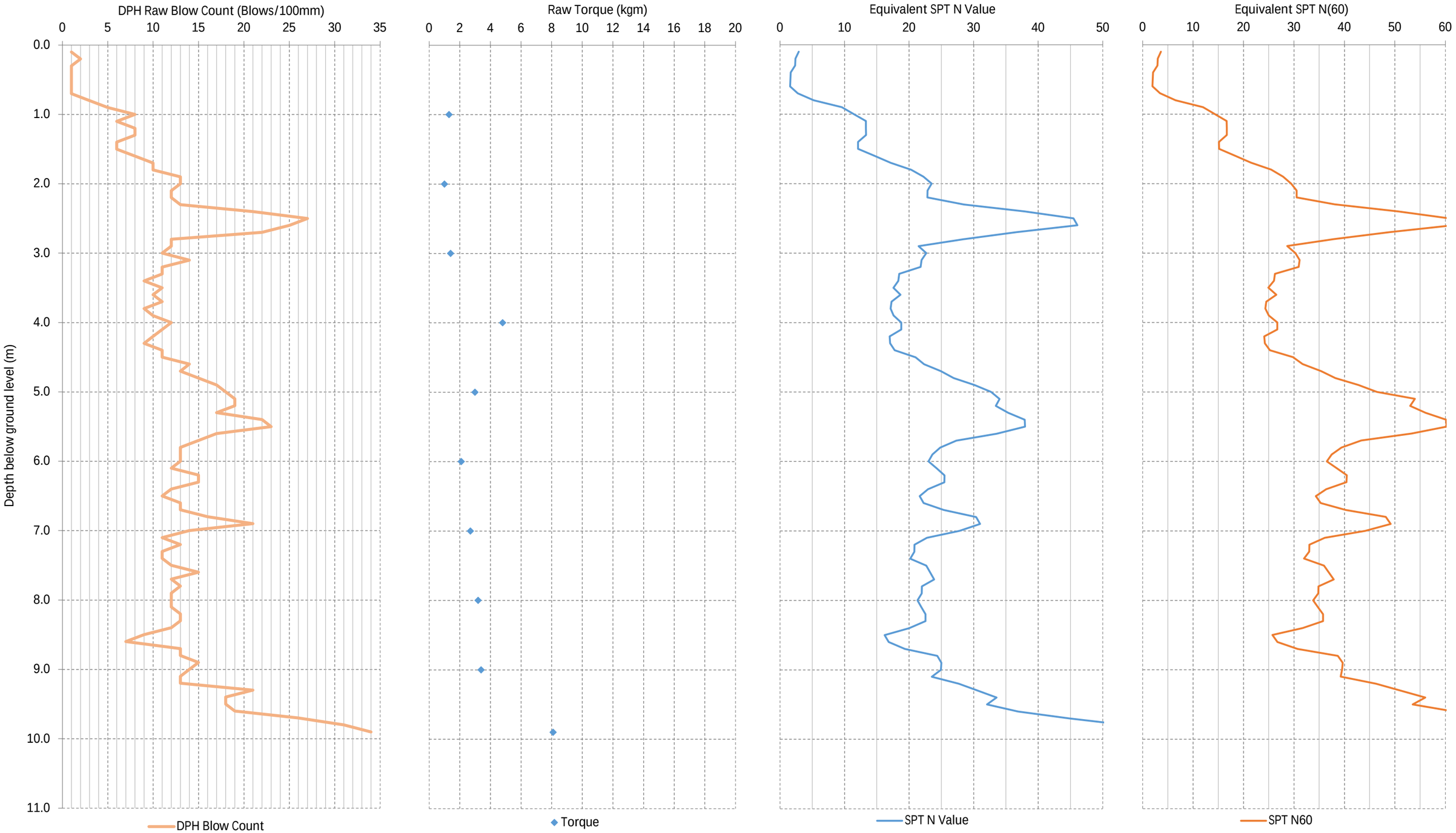
PROJECT	200536 - Lot 3 DP383485 Riverbank Rd	CLIENT	Deborah & Stephen Brent
DESCRIPTION	Liquefaction Analysis	TEST NUMBER	DPH2
LOCATION	Riverbank Rd, Wanaka	DATE	14/10/2020
		LOGGED BY	RC
		ANALYSED BY	RC
		CHECKED BY	MDP

LSN (SLS)	LSN (ULS)	Crust Thickness (SLS)	Crust Thickness (ULS)
0.0	0.0	0.0	0.0



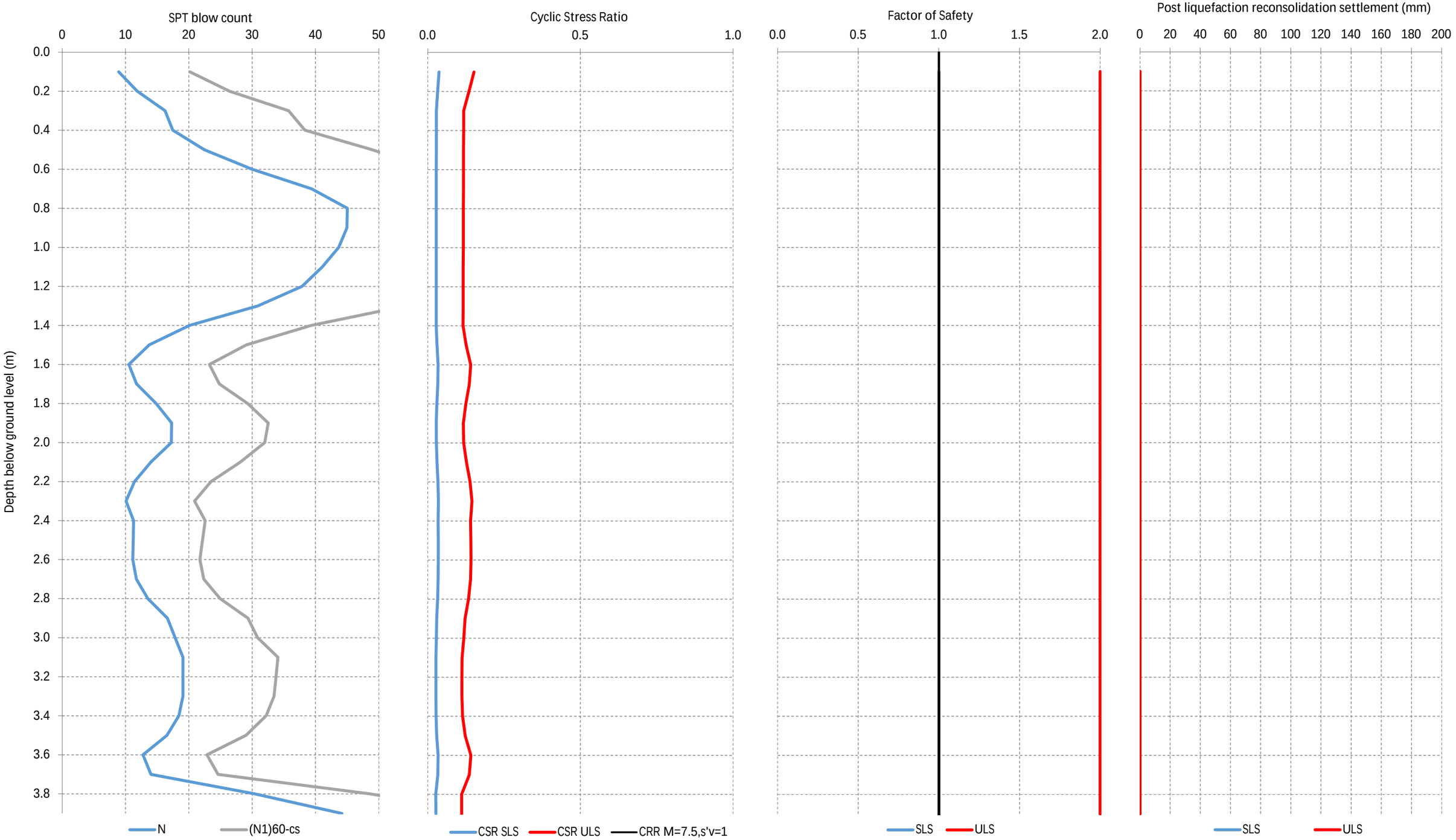
Note: Settlements as per Idriss and Boulanger (2014)

PROJECT	200536 - Lot 3 DP 383485 Riverbank Rd	CLIENT	Deborah & Stephen Brent
DESCRIPTION	Liquefaction Analysis	TEST NUMBER	DPH3
LOCATION	Riverbank Rd, Wanaka	DATE	14/10/2020
		LOGGED BY	RC
		ANALYSED BY	RC
		CHECKED BY	MDP



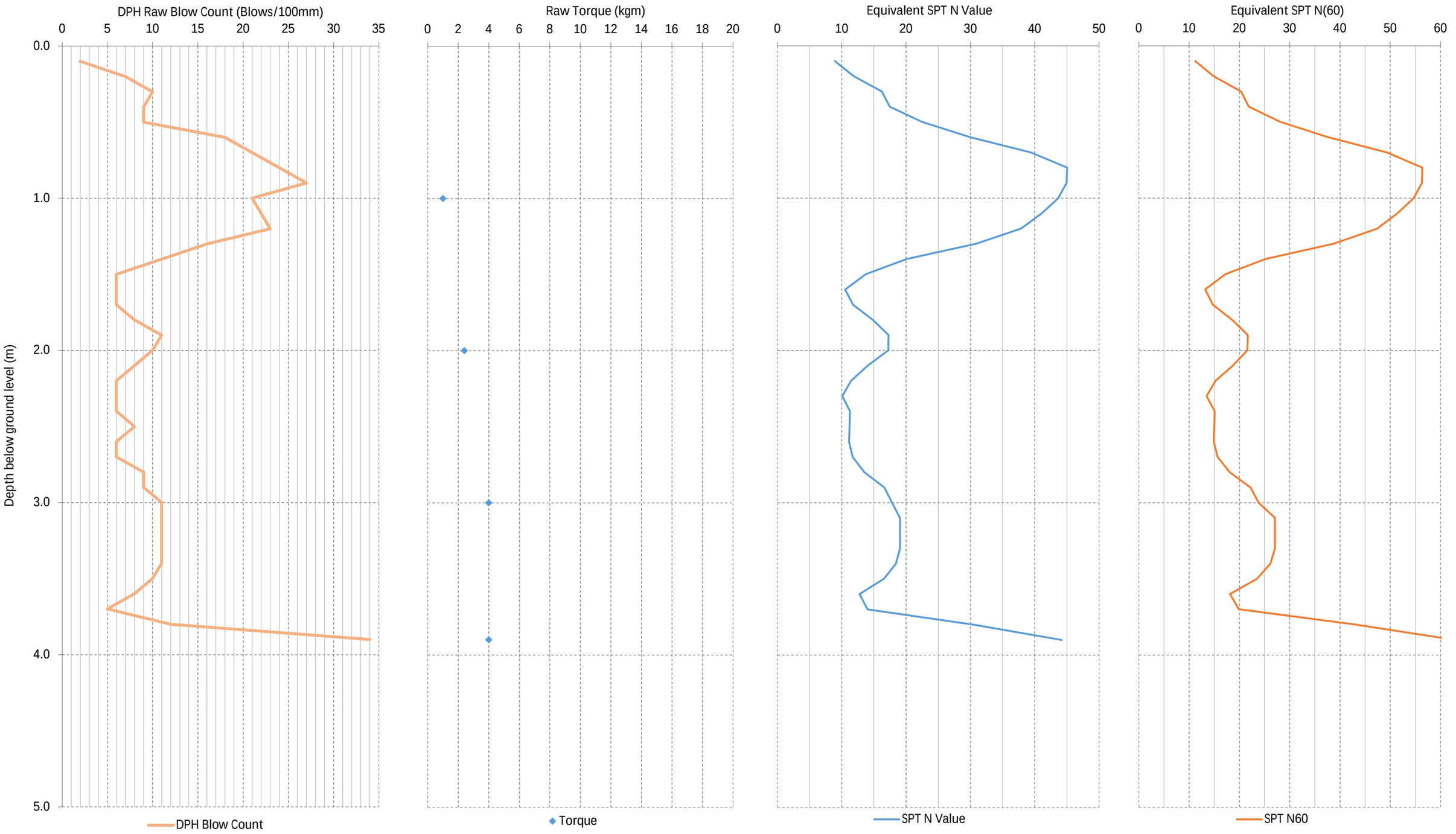
PROJECT	200536 - Lot 3 DP 383485 Riverbank Rd	CLIENT	Deborah & Stephen Brent
DESCRIPTION	Liquefaction Analysis	TEST NUMBER	DPH3
LOCATION	Riverbank Rd, Wanaka	DATE	14/10/2020
		LOGGED BY	RC
		ANALYSED BY	RC
		CHECKED BY	MDP

LSN (SLS)	LSN (ULS)	Crust Thickness (SLS)	Crust Thickness (ULS)
0.0	0.0	0.0	0.0



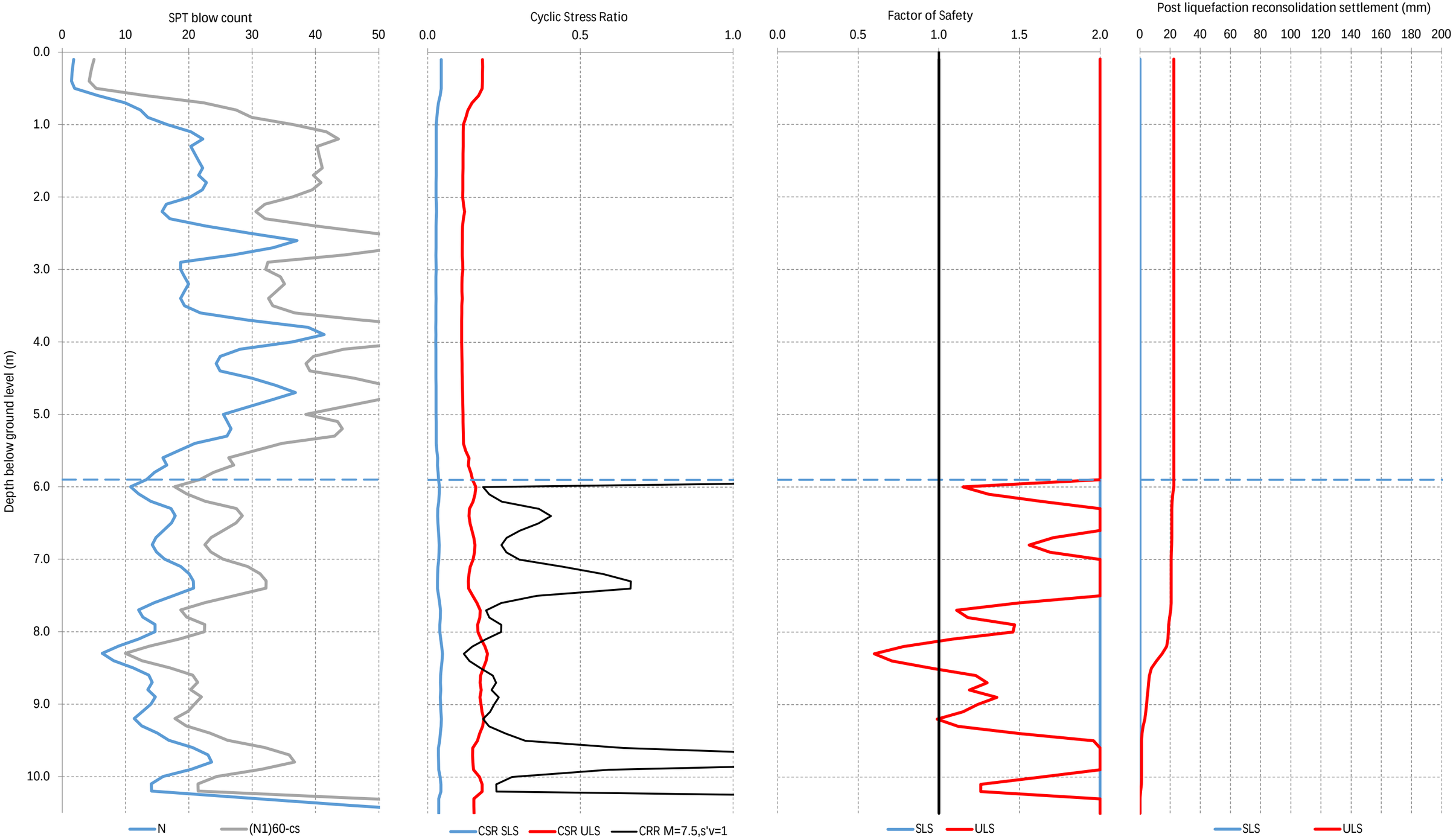
Note: Settlements as per Idriss and Boulanger (2014)

PROJECT	200536 - Lot 3 DP 383485 Riverbank Rd	CLIENT	Deborah & Stephen Brent
DESCRIPTION	Liquefaction Analysis	TEST NUMBER	DPH4
LOCATION	Riverbank Rd, Wanaka	DATE	14/10/2020
		LOGGED BY	RC
		ANALYSED BY	RC
		CHECKED BY	MDP



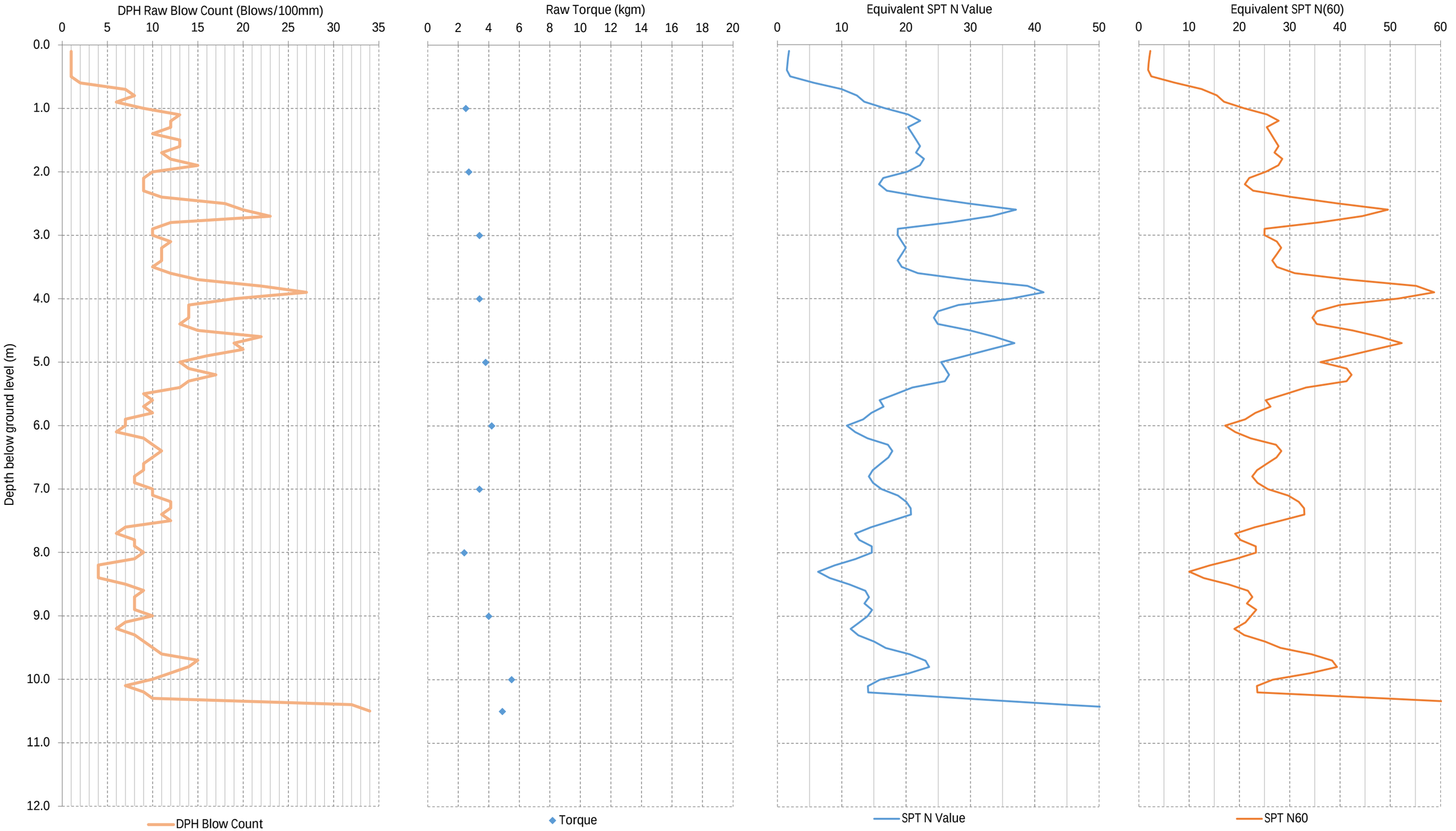
PROJECT	200536 - Lot 3 DP 383485 Riverbank Rd	CLIENT	Deborah & Stephen Brent
DESCRIPTION	Liquefaction Analysis	TEST NUMBER	DPH4
LOCATION	Riverbank Rd, Wanaka	DATE	14/10/2020
		LOGGED BY	RC
		ANALYSED BY	RC
		CHECKED BY	MDP

LSN (SLS)	LSN (ULS)	Crust Thickness (SLS)	Crust Thickness (ULS)
0.0	2.7	0.0	8.1



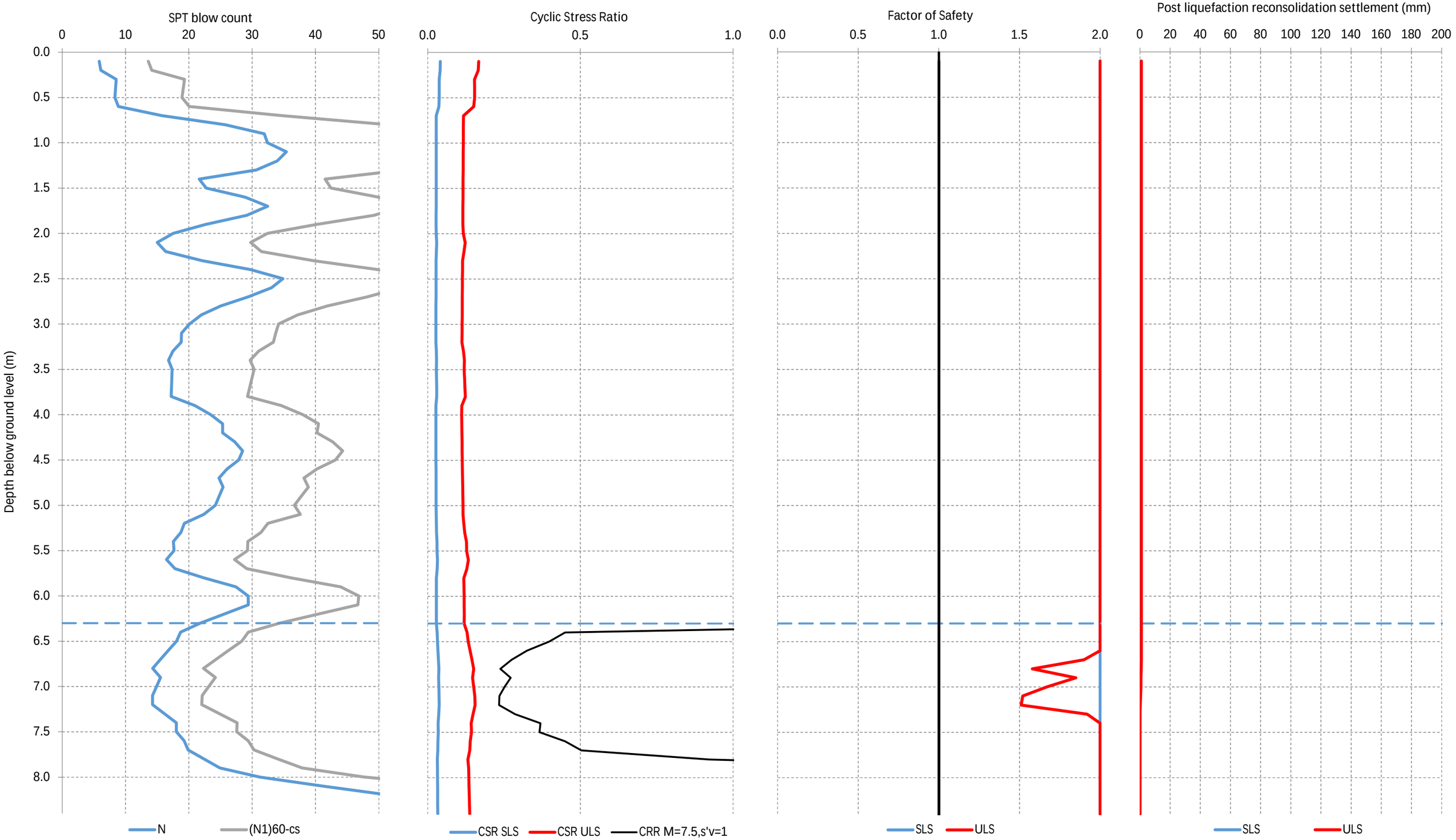
Note: Settlements as per Idriss and Boulanger (2014)

PROJECT	200536 - Lot 3 DP 383485 Riverbank Rd	CLIENT	Deborah & Stephen Brent
DESCRIPTION	Liquefaction Analysis	TEST NUMBER	DPH5
LOCATION	Riverbank Rd, Wanaka	DATE	14/10/2020
		LOGGED BY	RC
		ANALYSED BY	RC
		CHECKED BY	FAW



GEOSOLVE	PROJECT	200536 - Lot 3 DP 383485 Riverbank Rd	CLIENT: Deborah & Stephen Brent
	DESCRIPTION	Liquefaction Analysis	TEST NUMBER: DPH5
	LOCATION	Riverbank Rd, Wanaka	DATE: 14/10/2020
			LOGGED BY: RC
			ANALYSED BY: RC
			CHECKED BY: FAW

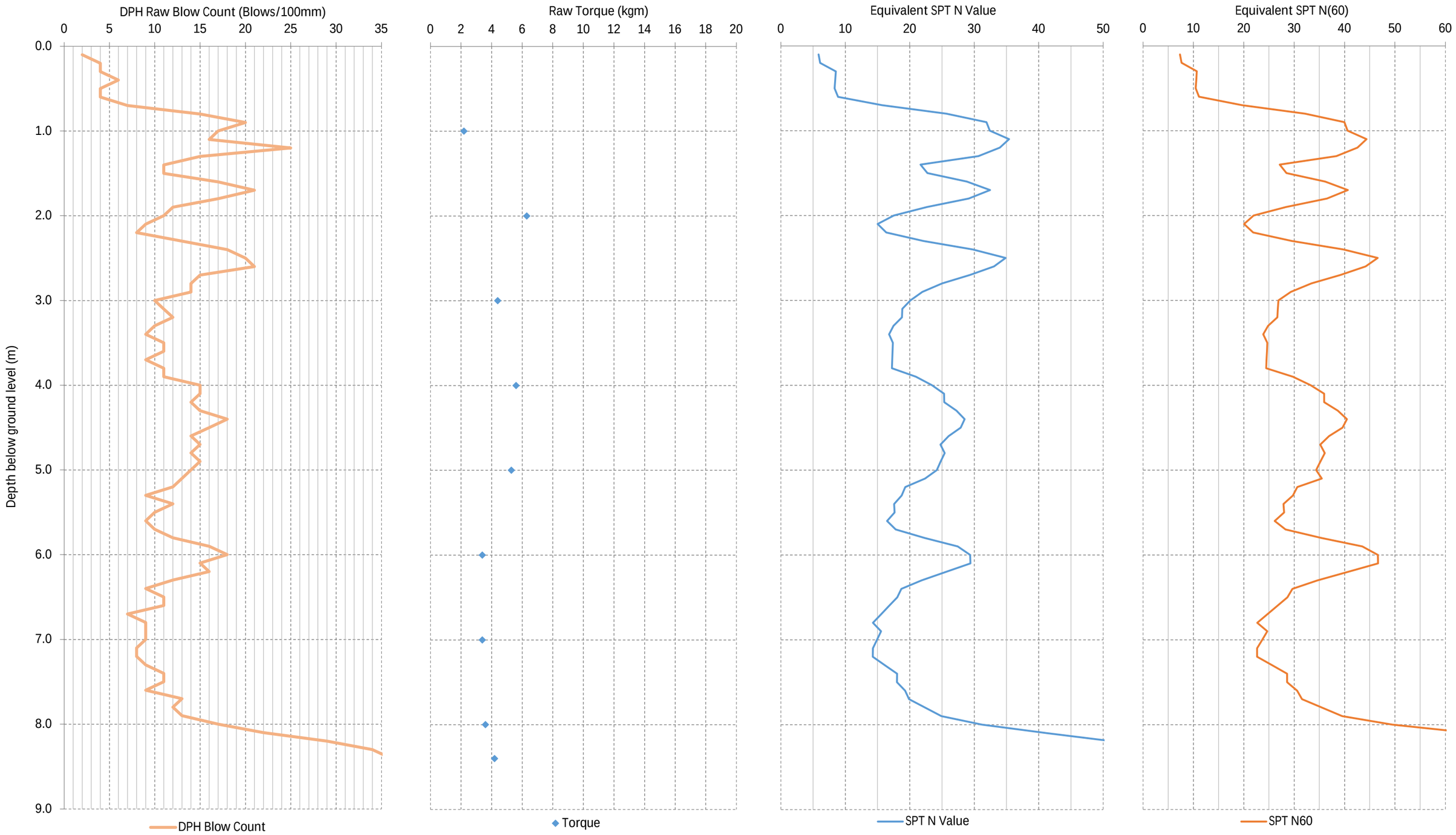
LSN (SLS)	LSN (ULS)	Crust Thickness (SLS)	Crust Thickness (ULS)
0.0	0.1	0.0	0.0



Note: Settlements as per Idriss and Boulanger (2014)

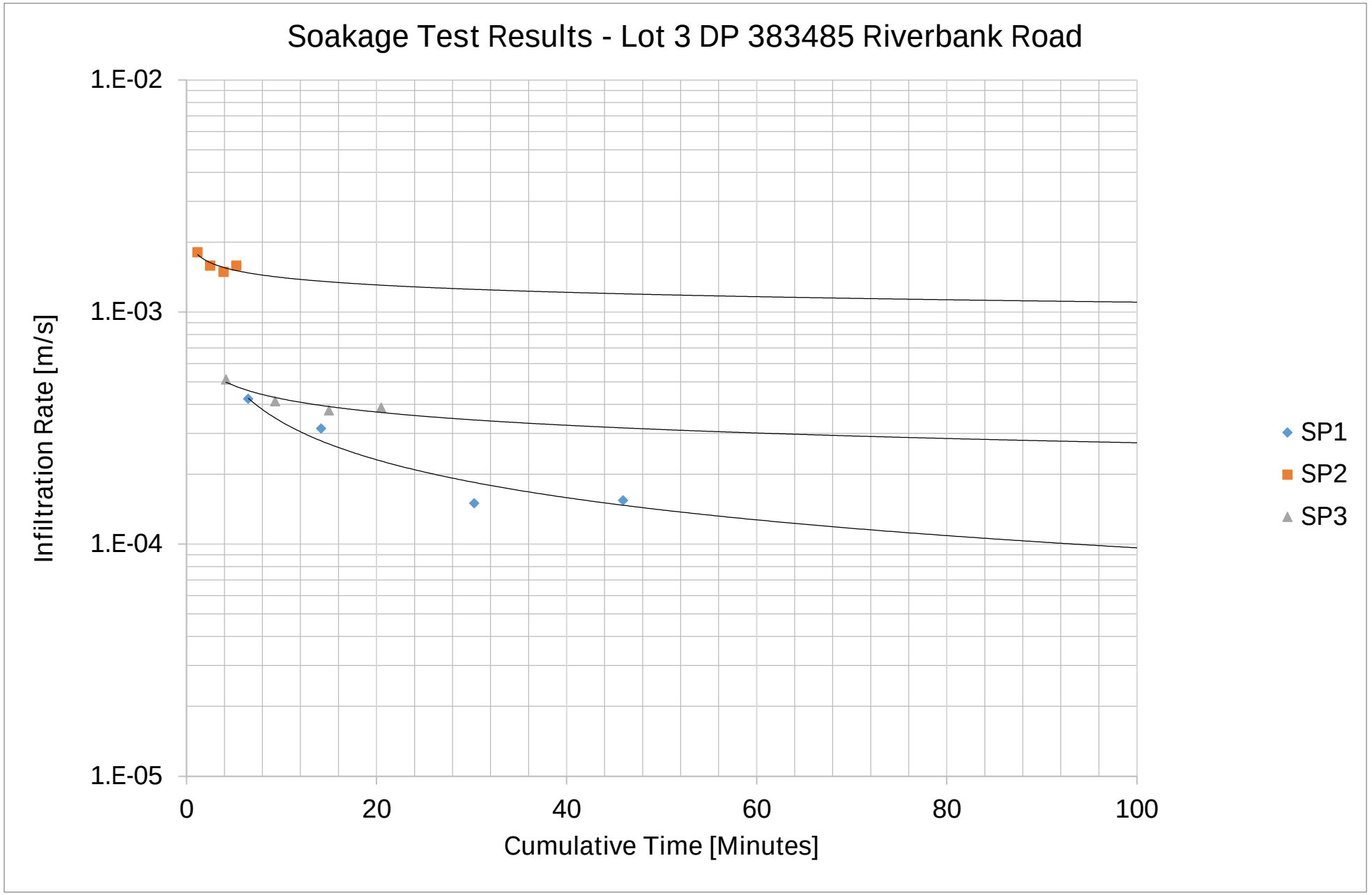
GEOSOLVE

PROJECT	200536 - Lot 3 DP 383485 Riverbank Rd
DESCRIPTION	Liquefaction Analysis
LOCATION	Riverbank Rd, Wanaka
CLIENT	Deborah & Stephen Brent
TEST NUMBER	DPH6
DATE	14/10/2020
LOGGED BY	RC
ANALYSED BY	RC
CHECKED BY	MDP



GEOSOLVE	PROJECT	200536 - Lot 3 DP 383485 Riverbank Rd	CLIENT: Deborah & Stephen Brent
	DESCRIPTION	Liquefaction Analysis	TEST NUMBER: DPH6
	LOCATION	Riverbank Rd, Wanaka	DATE: 14/10/2020
			LOGGED BY: RC
			ANALYSED BY: RC
			CHECKED BY: MDP

Appendix D: Soakage Calculations and QLDC Site and Soils Assessment



Document Set ID: 6741742
Version: 1, Version Date: 25/01/2021

Onsite Wastewater Disposal Site & Soils Assessment

QUEENSTOWN LAKES DISTRICT COUNCIL

Use for Subdivision or Land Use Resource Consent

The design standard for waste water treatment and effluent disposal systems is AS/NZS 1547:2012. All references in this form relate to this standard.

Applications should provide sufficient information to demonstrate that all lots will be capable of accommodating an on-site system.

Site Description

Property Owner: Deborah and Tony Brent

Location Address: Riverbank Road

Legal Description (eg Lot3 DP1234) : Lot 3 DP 383485

List any existing consents related to waste disposal on the site: N/A

General description of development / source of waste water: Subdivision to create 3 lots. Wastewater from future residential dwellings.

The number and size of the lots being created: 3 Lots - Lots 1 and 2 2Ha, Lot 3 44.56Ha.

Site Assessment (refer to Tables R1 & R2 for setback distances to site features)

Land use: Rural General

Topography: Sub-horizontal

Slope angle: 0-5°

Aspect: N/A

Vegetation cover: Grass and Removed Pine Forest.

Areas of potential ponding: No.

Ephemeral streams: No

Drainage patterns and overland paths: No

Flood potential (show with return period on site plan): See attached plan. Minimum floor level approximately 1.2->1.9m above existing levels to satisfy 1/100 year event.

Distance to nearest water body: ~450m

Water bores with 50m (reference ORC Maps): No.

Other Site Features: N/A. Existing level approx. 1/50 return period.

Slope stability assessment details – summarise any areas unsuitable for waste water irrigation. (Attach report if applicable): Not required. If wastewater is pumped to the upper terrace. Disposal fields should be constructed a minimum of 10m from the crest of the slope.

(Highest potential) Depth to ground water:

Summer 5.9 – 7.1 m

Winter 5.9 – 7.1 m

Information Source Piezometer installation during investigations

What is the potential for waste water to short circuit through permeable soils to surface and / or ground water? No risk.

Soil Investigation (Appendix C)

Field investigation date: 14/10/20

Number of test pit bores (C3.5.4): 3

Soil investigation addendum to be attached that includes a plan showing test pit or bore location, log results and photos of the site profile.

If fill material was encountered during the soil investigation state how this will impact on the waste water system: No fill material encountered.

Average depth of topsoil: 0-0.2 m

Indicative permeability (Appendix G) : 1×10^{-4} m/s

Percolation test method (refer to B6 for applicability) : open pit falling head test (attach report if applicable)

Soil Category *(Table 5.1)*	Soil Texture *(Appendix E)*	Drainage	Tick One
1	Gravel and sands	Rapid	✓
2	Sandy loams	Free	
3	Loams	Good	
4	Clay loams	Moderate	
5	Light clays	Moderate to slow	
6	Medium to heavy clays	Slow	

Reasons for placing in stated category:

Soakage testing confirms infiltration rate of at least 1×10^{-4} m/s which meets requirements for Soil category 1.

Loading rate, DLR (Table L1):

Explanation for proposed loading rate:

Recommendations from site and soils assessment

Specify any design constraints
Specify any areas unsuitable for location of the disposal field
Specify any unsuitable treatment and/or disposal systems
Propose suitable mitigation to enable successful effluent treatment

Existing ground level equates to an approximately 1/50 year flood. The wastewater disposal should consider the flooding risk at the site and if not considered suitable wastewater will be required to be pumped out of any flood potential area (above terrace to the west of the proposed building platforms.

Groundwater was measured at 5.9 - 7.1 m bgl. This should be considered by the designer.

Attachments Checklist

- [✓] Copy of existing consents
- [✓] Soil investigation addendum
- [✓] To scale site plan, the following must be included on the plan:
  - Buildings
  - Boundaries
  - Retaining Walls
  - Embankments
  - Water bodies
  - Flood potential
  - Other septic tanks / treatment systems
  - Water bores
  - Existing and proposed trees and shrubs
  - Direction of ground water flow
  - North arrow

Note that an Otago Regional Council (ORC) consent may also be required to discharge domestic waste water to land if any of the following apply:

- Daily discharge volume exceeds 2,000 litres per day
- Discharge will occur in a groundwater protection zone
- Discharge will occur within 50 metres of a surface water body (natural or manmade)
- Discharge will occur within 50 metres of an existing bore/well
- Discharge will result in a direct discharge into a drain/water ace/ground water
- Discharge may runoff onto another persons' property

If any of these apply then we recommend that you correspond with the ORC;

Otago Regional Council
"The Station" (upstairs)
Cnr. Camp and Shotover Streets
P O Box 958
Queenstown 9300

Tel: 03 442 5681

I believe to the best of my knowledge that the information provided in this assessment is true and complete. I have the necessary experience and qualifications as defined in Section 3.3 AS/NZS 1547:2012 to undertake this assessment in accordance with the requirements of AS/NZS 1547:2012:

Company: Geosolve

Email: mplunbet@geosolve.co.nz

Phone number: 027371 0803

Name: Mike Plunbet

Signature: M Plunbet

Date: 6/11/20.

Queenstown Lakes District Council
Private Bag 50072
10 Gorge Road
QUEENSTOWN 9348

Phone: 03 441 0499
Fax: 03 442 4778
Email: services@qldc.govt.nz
Website: www.qldc.govt.nz

GEOSOLVE

GEOTECHNICAL

WATER RESOURCES

PAVEMENTS

Flood Hazard Assessment

Lot 3 DP 383485

Riverbank Road,

Wanaka

Report prepared for:

Deborah and Stephen Brent

Report prepared by:

GeoSolve Limited

Distribution:

Deborah and Stephen Brent
IP Solutions

GeoSolve Limited (File)

September 2020

GeoSolve Ref: 200536

Revision	Issue Date	Purpose	Author	Reviewed
1		Client issue	HS	DJH

GEOTECHNICAL WATER RESOURCES PAVEMENTS

Table of Contents

1 Introduction

It is proposed to subdivide and establish three residential building platforms at Lot 3 DP 383485 Riverbank Road, Wanaka, as shown (Figure 1 and Figure 2). The site lies within the QLDC/ORC mapped flood hazard zone; therefore, a site-specific flood hazard assessment is appropriate.

The proposed building platforms are located at the distal edge of the Cardrona River geomorphic floodplain, and paleochannels are evident across the site vicinity. It is expected that mitigation measures will be required to address flood hazard.

Figure 1: Site location

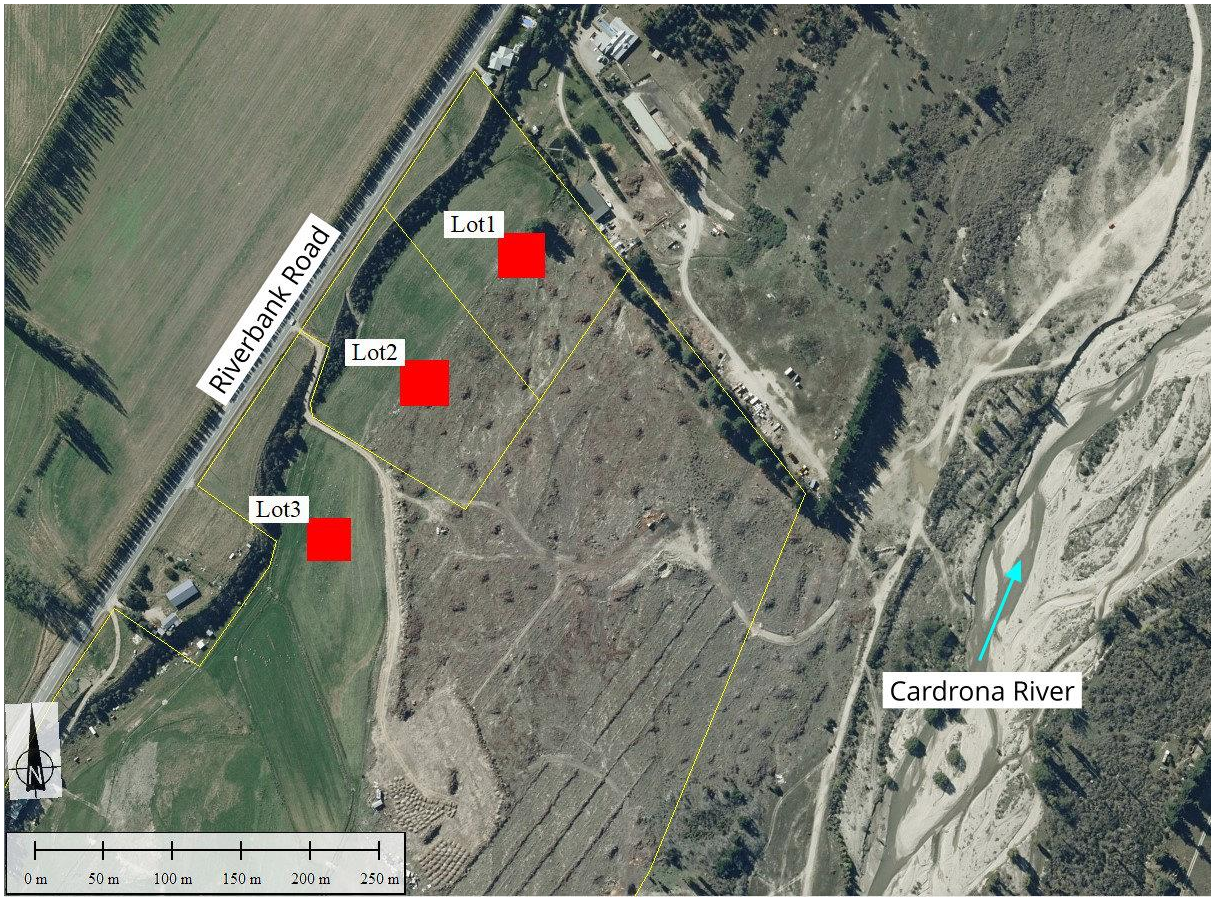


Figure 2: Development plan

2 Flood levels

2.1 1999 flood event

A major flood in November 1999 provides a useful reference event, having an ARI (average recurrence interval) on the lower Cardrona River variously estimated at 50 to 100 years.

Fortuitously, measurements of the peak 1999 water level were recorded by ORC at a location close to the proposed Lot 1 (RL 321.84 m DVD58 datum, estimated from debris marks) and at the Ballantyne Road bridge about 1 km downstream (RL 313.77). These recorded flood levels are consistent with eyewitness accounts and anecdotal reports of flooding extents in this locality in the 1999 event.

These measurements indicate a peak flood level gradient of 0.00740 in this reach of the Cardrona River.

Extrapolating from the nearby recorded measurement yields estimated 1999 peak flood levels at the proposed building platforms on Lots 1, 2, & 3 of RL 322.58, 323.43 & 324.43 respectively. Calculations are appended (Table 2).

2.2 GHD study

A comprehensive hydrological/hydraulic model study was undertaken for ORC by GHD[1] in 2010 to quantitatively investigate potential flooding along the Cardrona River and develop flood hazard mapping. This study produced modelled peak flood levels for a number of scenarios including 50-, 100-, 200-, and 500- year ARI (return period) floods with various depths of riverbed aggradation.

The GHD study made no provision for future climate change, which is now expected to potentially increase high intensity rainfall rates and hence flood flows by substantial increments. The potential effect of climate change can be expressed as a shortening of the ARI of a given flood flow. In a flood hazard assessment prepared for a nearby site on the Cardrona River, Hamilton[2] (2015) recommends adopting the GHD 500-year flow scenario as a suitable basis for assessing the effects of a 100-year flood following climate change. Therefore a suitably conservative basis for the purposes of the present assessment is considered to be the current 500-year flood level with 1.0 m of bed aggradation, as modelled by GHD (Table 32).

Interpolating the appropriate GHD results between modelled cross section locations yields predicted flood levels on Lots 1, 2, & 3 of 323.21, 324.20, & 325.26 respectively. As expected given the base parameters, these modelled levels are slightly higher than those derived in Section 2.1 for the 1999 flood and thus serve to support the Section 2.1 analysis.

[1] Report for Cardrona River Floodplain Flood Hazard Study, GHD (for ORC), May 2010
[2] Alpine Connexions Flood Hazard Report, Hamilton D., February 2015

3 Mitigation

3.1 Flood Inundation

The actual observed 1999 flood levels are considered a more reliable basis than the modelled levels for establishing mitigation measures. The modelled levels are regarded as providing a satisfactory cross-check on the extrapolation process applied to the observed 1999 levels to derive site-specific design flood levels.

It is recommended to set minimum finished floor levels at 1.5 m above the estimated 1999 flood levels. This will provide substantial freeboard with adequate provision for potential future climate change and riverbed aggradation. The floodplain in this vicinity is some 700 m wide, and it is not considered credible that floodwater could rise to more than 1 m above the 1999 level except in a catastrophic flood event of extremely low probability.

The recommended minimum finished floor levels are summarised in Table 1 below.

Existing ground levels at the proposed building locations are generally around 1.0 – 1.5 m below the recommended finished floor levels. Therefore, the habitable building floors will need to be elevated by piling or platform filling.

Based on the expected depth of flow through the sites in the 1% Annual Exceedance Probability event including allowance for climate change, the minimum floor levels proposed are at least 0.7 m above the flood water levels. This would comply with the QLDC Land Development and Subdivision Code of Practice Clause 4.3.5.2. that requires a freeboard to the underside of floor joists or concrete pad to be 0.5 m for the 1% AEP flood event.

Bunding could also be considered but may not be effective and may involve greater consenting issues, and therefore is not recommended.

3.2 Erosion

Erosion is not considered to be a significant issue, as the site is located at the lower reach of the Cardrona River, where its gradient is quite flat (flood gradient about 0.74%) and flow velocities consequently are low. Initial erosion protection measures are considered unnecessary.

GHD assessed erosion potential as part of their study and assigned a “Low” erosion hazard classification to this locality.

The site should be monitored post development following flood events. Any residual erosion development is expected to be minor and localised and if necessary, could be readily mitigated by a range of standard solutions including rock riprap, gabion baskets, or suitable vegetation.

3.3 Floodplain encroachment

Filling to raise ground levels within a floodplain may intrude into the waterway cross section and hence reduce active flow area and/or storage volume, with potential adverse effects on flood levels in the vicinity.

However, in this case platform filling or piling required to achieve the recommended floor levels will be insignificant in the context of the extensive floodplain. Any adverse effects potentially created by floodplain encroachment and restriction of flood waterway will be imperceptible.

The proposed development will not exacerbate any existing flood hazard.

4 Conclusions and Recommendations

The building platform locations may be vulnerable to minor flood inundation in future events of about 100-year ARI.

The flood hazard can be mitigated by elevating building floors to provide adequate freeboard above extreme flood levels, either by filling to raise the ground surface or by piling floors. The recommended minimum finished floor levels (FFL) are summarised in Table 1 and will achieve compliance with the QLDC Land Development and Subdivision Code of Practice Cl. 4.3.5.2.

Table 1: Recommended minimum finished floor levels

Lot no.	Min. FFL (DVD58)
1	324.08
2	324.93
3	325.93

Erosion within the site is not expected to be a significant issue but should be monitored and can be readily mitigated if necessary.

Platform filling or piling to achieve the recommended floor levels will be insignificant in the context of the extensive wider floodplain. The proposed development will not exacerbate any existing flood hazard.

5 Applicability

This report has been prepared for the benefit of Deborah and Stephen Brent 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. Our endorsement of any aspect of the proposed development and any hazard mitigation measures does not suggest there will be no future risk, but rather that any residual risk will be within acceptable levels.

Report prepared by:

.....

Hank Stocker
Senior Engineer - Water

Reviewed for GeoSolve Ltd by:

.....

David Hamilton
Senior Water Resources Engineer

6 Appendix: Flood and floor level calculations

Table 2: Flood and floor level calculations

	Lot 1	Lot 2	Lot 3	Gradient	B. Rd. bridge	u/s mark
Dist. u/s B. Rd. bridge (m)	1190	1305	1440		0	1090
GL typical	322.75	323.75	324.75			
99 WSE (ORC, extrapolated**)**	322.58	323.43	324.43	0.00740	**313.77**	**321.84**
			FFL above '99 flood level (m)	1.50		
Adopt FFL	**324.08**	**324.93**	**325.93**			
Fill to FFL (typical)	1.33	1.18	1.18			

Subject: Chorus WNK61439 Riverbank Road, Wanaka
Date: Thursday, 3 December 2020 at 3:56:22 PM New Zealand Daylight Time
From: Chorus Property Developments
To: Nicole Malpass
Attachments: image001.png

Hello Nicole,

Our scoper (Neville) has asked us to send you the below information

Thank you for providing an indication of your development plans in this area. I can confirm that we have infrastructure in the general land area that you are proposing to develop. Chorus will be able to extend our network to provide connection availability. However, please note that this undertaking would of course be subject to Chorus understanding the final total property connections that we would be providing, roll-out of property releases/dates and what investment may or may not be required from yourselves and Chorus to deliver the infrastructure to and throughout the site in as seamless and practical way as possible.

Please note:

- *Chorus New Zealand Ltd can offer a fixed line connection to this development that is under a broadband connection speed of 5Mbps, therefore this will only likely provide a telephony voice solution. This will be stipulated on the sign off letter you receive from Chorus New Zealand Ltd*

The cost involved would be a minimum of our current standard fee of $1600 per lot excluding GST. This cost can only be finalised at the time that you are ready to proceed.

Chorus is happy to work with you on this project as the network infrastructure provider of choice. What this ultimately means is that the end customers (business and home owners) will have their choice of any retail service providers to take their end use services from once we work with you to provide the physical infrastructure.

Please reapply with a detailed site plan when you are ready to proceed.

Thanks

Neville

Shaun Hoult
Property Development Coordinator
T 0800 782 386 (Option 1)
E develop@chorus.co.nz

PO Box 9405
Hamilton
www.chorus.co.nz

AURORA ENERGY LIMITED
PO Box 5140, Dunedin 9058
PH 0800 22 00 05
WEB www.auroraenergy.co.nz

23 November 2020

Nicole Malpass
IP Solutions

Sent via email only: nicole@ipsolutions.nz

Dear Nicole,

ELECTRICITY SUPPLY AVAILABILITY FOR A PROPOSED THREE LOT SUBDIVISION. RIVERBANK ROAD, WANAKA. LOTS 3 DP 383485.

Thank you for your inquiry outlining the above proposed development.

Subject to technical, legal and commercial requirements, Aurora Energy can make a Point of Supply[1] (PoS) available for this development.

Disclaimer

This letter confirms that a PoS **can** be made available. This letter **does not** imply that a PoS is available now, or that Aurora Energy will make a PoS available at its cost.

Next Steps

To arrange an electricity connection to the Aurora Energy network, a connection application will be required. General and technical requirements for electricity connections are contained in Aurora Energy's Network Connection Standard. Connection application forms and the Network Connection Standard are available from www.auroraenergy.co.nz.

Yours sincerely

Niel Frear
CUSTOMER INITIATED WORKS MANAGER

[1] Point of Supply is defined in section 2(3) of the Electricity Act 1993.

MEASURED
LAND SURVEYS

Proposed Memorandum of Easements

Purpose	Shown	Burdened Land	Benefited Land
Right of way	(A)	Lot 3	Lot 1 & 2
	(B)	Lot 2	Lot 1

(B) 6.0m wide ROW over Lot 2 in favour of Lot 1

(A) 10.0m wide ROW over Lot 3 in favour of Lots 1 & 2

Lot 1 DP 305404

Lot 2 DP 305404

Lot 1 2.00Ha

Lot 2 2.00Ha

Riverbank Road

existing access down to site

Lot 1 DP 22737

proposed building platforms x3
31.62m x 31.62m
(see GeoSolve report 200536 for min. FFLs)

ex. farm shed

existing access down to site

Lot 3
44.56Ha

8m high terrace

Lot 3
DP 383485
48.5587Ha
333154

Lot 2 DP 23797

Crown Land
Block III Lower Wanaka SD

Lot 2 DP 383485

existing bore F40/0273
(approx. location)

Lot 3 DP 23793

Cardrona River

Lot 1 DP 322326

Lot 226 DP 453060

iP solutions

Lots 1 - 3 being a proposed Subdivision of Lot 3 DP 383485

(Riverbank Road, Wanaka)

Client: Brent

Scale: 1 : 4,000 @ A3

Surveyed:

Drawn: ST 28/10/20

CSNZ THE CONSULTING SURVEYORS OF NEW ZEALAND
A DIVISION OF THE NEW ZEALAND INSTITUTE OF SURVEYORS

Datum: Lindis Peak 2000

Sheet: 1 of 1

Job #: 19126_S1

Rev: B

Rev	Description	Date
A	ORIGINAL	28/10/20
B	SHEET 2 - EW	30/11/20

MEASURED
LAND SURVEYS

Proposed Memorandum of Easements

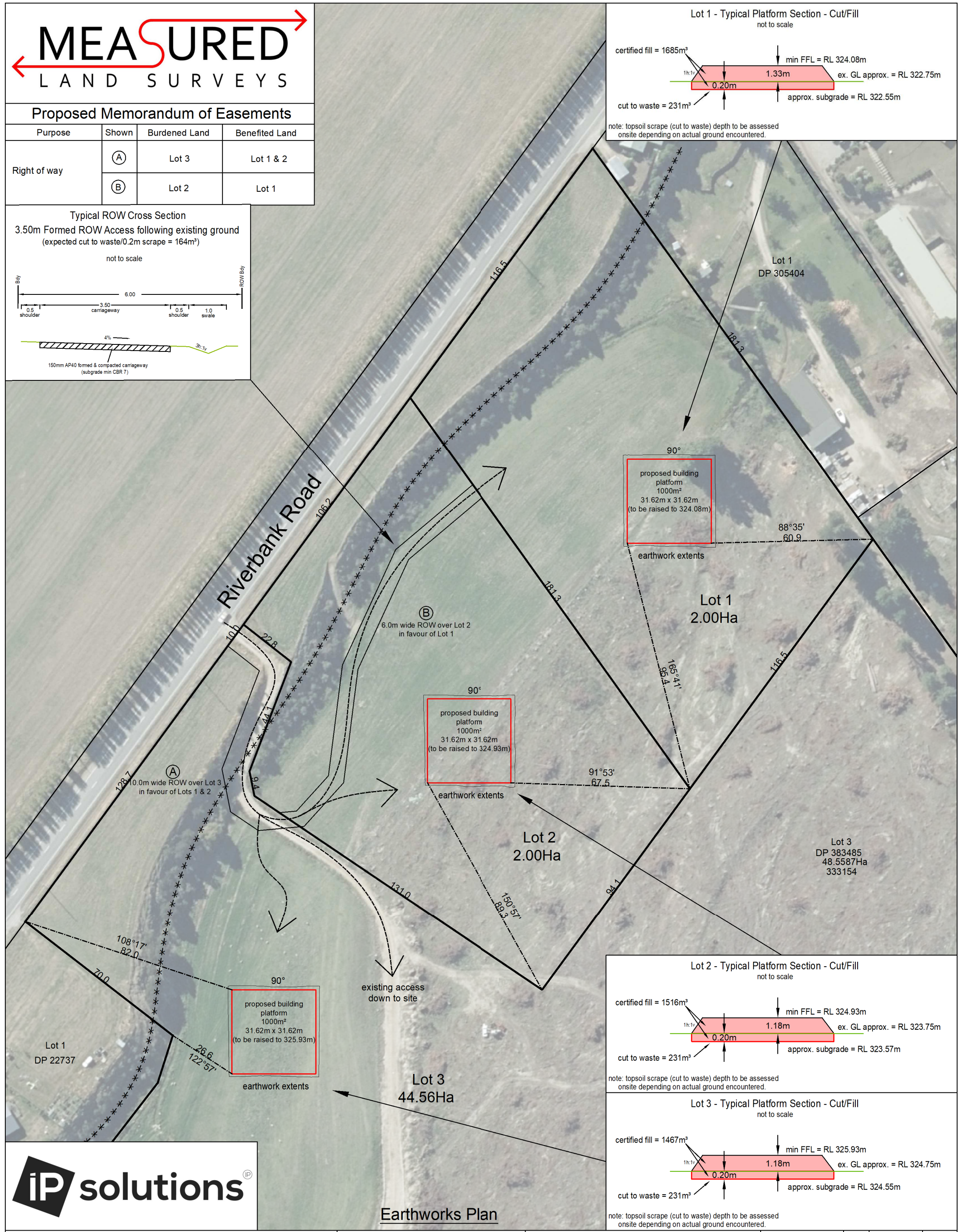
Purpose	Shown	Burdened Land	Benefited Land
Right of way	(A)	Lot 3	Lot 1 & 2
	(B)	Lot 2	Lot 1

Typical ROW Cross Section
3.50m Formed ROW Access following existing ground
(expected cut to waste/0.2m scrape = 164m³)

not to scale

Lot 1 - Typical Platform Section - Cut/Fill
not to scale

note: topsoil scrape (cut to waste) depth to be assessed onsite depending on actual ground encountered.



Lot 2 - Typical Platform Section - Cut/Fill
not to scale

note: topsoil scrape (cut to waste) depth to be assessed onsite depending on actual ground encountered.

Lot 3 - Typical Platform Section - Cut/Fill
not to scale

note: topsoil scrape (cut to waste) depth to be assessed onsite depending on actual ground encountered.

iP solutions

Earthworks Plan

Lots 1 - 3 being a proposed Subdivision of Lot 3 DP 383485

(Riverbank Road, Wanaka)

Client: Brent

Scale: 1 : 1,250 @ A3

Surveyed:

Drawn: ST 28/10/20

CSNZ THE CONSULTING SURVEYORS OF NEW ZEALAND
A DIVISION OF THE NEW ZEALAND INSTITUTE OF SURVEYORS

Datum: Lindis Peak 2000

Sheet: 1 of 1

Job #: 19126_S1

Rev: B

Rev	Description	Date
A	ORIGINAL	28/10/20
B	SHEET 2 - EW	30/11/20

Hill Laboratories
TRIED, TESTED AND TRUSTED

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

T 0508 HILL LAB (44 555 22)
T +64 7 858 2000
E mail@hill-labs.co.nz
W www.hill-laboratories.com

Certificate of Analysis

Client:	IP Solutions Limited	**Lab No:**	2505409	DWAPv1
Contact:	Nicole Malpass C/- IP Solutions Limited 15 Cliff Wilson Street Wanaka 9305	**Date Received:** **Date Reported:** **Quote No:** **Order No:** **Client Reference:** **Submitted By:**	12-Jan-2021 15-Jan-2021 BRENT IP Solutions Ltd Nicole Malpass	

Sample Type: Aqueous

		Sample Name:	Riverbank Road 11-Jan-2021 1:00 pm	**Guideline Value**	**Maximum Acceptable Values (MAV)**
		Lab Number:	2505409.1		
Routine Water Profile					
Turbidity	NTU		0.07	< 2.5	-
pH	pH Units		7.5	7.0 - 8.5	-
Total Alkalinity	g/m³ as $CaCO_3$		44	-	-
Free Carbon Dioxide	g/m³ at 25°C		2.8	-	-
Total Hardness	g/m³ as $CaCO_3$		43	< 200	-
Electrical Conductivity (EC)	mS/m		10.3	-	-
Electrical Conductivity (EC)	µS/cm		103	-	-
Approx Total Dissolved Salts	g/m³		69	< 1000	-
Total Arsenic	g/m³		< 0.0011	-	0.01
Total Boron	g/m³		< 0.0053	-	1.4
Total Calcium	g/m³		14.5	-	-
Total Copper	g/m³		0.0081	< 1	2
Total Iron	g/m³		< 0.021	< 0.2	-
Total Lead	g/m³		0.00036	-	0.01
Total Magnesium	g/m³		1.76	-	-
Total Manganese	g/m³		< 0.00053	< 0.04 (Staining) < 0.10 (Taste)	0.4
Total Potassium	g/m³		1.13	-	-
Total Sodium	g/m³		2.6	< 200	-
Total Zinc	g/m³		0.0087	< 1.5	-
Chloride	g/m³		0.7	< 250	-
Nitrate-N	g/m³		0.33	-	11.3
Sulphate	g/m³		3.3	< 250	-

Note: The Guideline Values and Maximum Acceptable Values (MAV) are taken from the publication 'Drinking-water Standards for New Zealand 2005 (Revised 2018)', Ministry of Health. Copies of this publication are available from https://www.health.govt.nz/publication/drinking-water-standards-new-zealand-2005-revised-2018

The Maximum Acceptable Values (MAVs) have been defined by the Ministry of Health for parameters of health significance and should not be exceeded. The Guideline Values are the limits for aesthetic determinands that, if exceeded, may render the water unattractive to consumers.

Note that the units g/m³ are the same as mg/L and ppm.

Routine Water Assessment for Sample No 2505409.1 - Riverbank Road 11-Jan-2021 1:00

pH/Alkalinity and Corrosiveness Assessment
The pH of a water sample is a measure of its acidity or basicity. Waters with a low pH can be corrosive and those with a high pH can promote scale formation in pipes and hot water cylinders.
The guideline level for pH in drinking water is 7.0-8.5. Below this range the water will be corrosive and may cause problems with disinfection if such treatment is used.

The alkalinity of a water is a measure of its acid neutralising capacity and is usually related to the concentration of carbonate, bicarbonate and hydroxide. Low alkalinities (25 g/m^3) promote corrosion and high alkalinities can cause problems with scale formation in metal pipes and tanks.

The pH of this water is within the NZ Drinking Water Guidelines, the ideal range being 7.0 to 8.0.
With the pH and alkalinity levels found, it is unlikely this water will be corrosive towards metal piping and fixtures.

Hardness/Total Dissolved Salts Assessment
The water contains a very low amount of dissolved solids and would be regarded as being soft.

Nitrate Assessment
Nitrate-nitrogen at elevated levels is considered undesirable in natural waters as this element can cause a health disorder called methaemaglobinaemia. Very young infants (less than six months old) are especially vulnerable. The Drinking-water Standards for New Zealand 2005 (Revised 2018) suggests a maximum permissible level of 11.3 g/m^3 as Nitrate-nitrogen (50 g/m^3 as Nitrate).

Nitrate-nitrogen was detected in this water but at such a low level to not be of concern.

For household use, it is important that the water is not contaminated with human or animal wastes (e.g. from septic tanks or effluent ponds). Bacteriological analyses may be required if such contamination could exist. For further details, please contact this laboratory.

Boron Assessment
Boron may be present in natural waters and if present at high concentrations can be toxic to plants.
Boron was not detected in this water.

Metals Assessment
Iron and manganese are two problem elements that commonly occur in natural waters. These elements may cause unsightly stains and produce a brown/black precipitate. Iron is not toxic but manganese, at concentrations above 0.5 g/m^3, may adversely affect health. At concentrations below this it may cause stains on clothing and sanitary ware.

Neither element was detected in this water, which is a pleasing feature.
Treatment to remove iron and/or manganese should not be necessary.

Final Assessment
All parameters tested for meet the guidelines laid down in the publication 'Drinking-water Standards for New Zealand 2005 (Revised 2018)' published by the Ministry of Health for water which is suitable for drinking purposes.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Aqueous

Test	Method Description	Default Detection Limit	Sample No
Routine Water Profile		-	1
Filtration, Unpreserved	Sample filtration through 0.45µm membrane filter. Performed at Hill Laboratories - Chemistry; 101c Waterloo Road, Christchurch.	-	1
Total Digestion	Nitric acid digestion. APHA 3030 E (modified) 23rd ed. 2017.	-	1
Turbidity	Analysis using a Hach 2100 Turbidity meter. Analysed at Hill Laboratories - Chemistry; 101c Waterloo Road, Christchurch. APHA 2130 B 23rd ed. 2017 (modified).	0.05 NTU	1
pH	pH meter. Analysed at Hill Laboratories - Chemistry; 101c Waterloo Road, Christchurch. APHA 4500-H^+ B 23rd ed. 2017. Note: It is not possible to achieve the APHA Maximum Storage Recommendation for this test (15 min) when samples are analysed upon receipt at the laboratory, and not in the field. Samples and Standards are analysed at an equivalent laboratory temperature (typically 18 to 22 °C). Temperature compensation is used.	0.1 pH Units	1
Total Alkalinity	Titration to pH 4.5 (M-alkalinity), autotitrator. Analysed at Hill Laboratories - Chemistry; 101c Waterloo Road, Christchurch. APHA 2320 B (modified for Alkalinity <20) 23rd ed. 2017.	1.0 g/m^3 as $CaCO_3$	1
Free Carbon Dioxide	Calculation: from alkalinity and pH, valid where TDS is not >500 mg/L and alkalinity is almost entirely due to hydroxides, carbonates or bicarbonates. APHA 4500-CO_2 D 23rd ed. 2017.	1.0 g/m^3 at 25°C	1
Total Hardness	Calculation from Calcium and Magnesium. APHA 2340 B 23rd ed. 2017.	1.0 g/m^3 as $CaCO_3$	1
Electrical Conductivity (EC)	Conductivity meter, 25°C. Analysed at Hill Laboratories - Chemistry; 101c Waterloo Road, Christchurch. APHA 2510 B 23rd ed. 2017.	0.1 mS/m	1
Electrical Conductivity (EC)	Conductivity meter, 25°C. APHA 2510 B 23rd ed. 2017.	1 µS/cm	1
Approx Total Dissolved Salts	Calculation: from Electrical Conductivity.	2 g/m^3	1
Total Arsenic	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017 / US EPA 200.8.	0.0011 g/m^3	1
Total Boron	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.	0.0053 g/m^3	1
Total Calcium	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.	0.053 g/m^3	1
Total Copper	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017 / US EPA 200.8.	0.00053 g/m^3	1
Total Iron	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.	0.021 g/m^3	1
Total Lead	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017 / US EPA 200.8.	0.00011 g/m^3	1
Total Magnesium	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.	0.021 g/m^3	1
Total Manganese	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017 / US EPA 200.8.	0.00053 g/m^3	1
Total Potassium	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.	0.053 g/m^3	1
Total Sodium	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.	0.021 g/m^3	1
Total Zinc	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017 / US EPA 200.8.	0.0011 g/m^3	1
Chloride	Filtered sample from Christchurch. Ion Chromatography. APHA 4110 B (modified) 23rd ed. 2017.	0.5 g/m^3	1
Nitrate-N	Filtered sample from Christchurch. Ion Chromatography. APHA 4110 B (modified) 23rd ed. 2017.	0.05 g/m^3	1
Sulphate	Filtered sample from Christchurch. Ion Chromatography. APHA 4110 B (modified) 23rd ed. 2017.	0.5 g/m^3	1

Document Set ID: 6741723
Version: 1, Version Date: 25/01/2021

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 13-Jan-2021 and 15-Jan-2021. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.

Carole Rodgers-Carroll BA, NZCS
Client Services Manager - Environmental

From: "Nicole Malpass" <Nicole@ipsolutions.nz>
Sent: Mon, 1 Mar 2021 16:22:14 +1300
To: "Erin Stagg" <Erin.Stagg@qldc.govt.nz>
Subject: Re: Request for Further Information RM210037 Brent
Attachments: 7001014_5 Easement.pdf, Updated Scheme Plan.pdf, Access Upgrade Plans.pdf, Geosolve Wastewater Recommendations.pdf, ORC Correspondence.pdf

Hi Erin,

Thank you for sending through that S92(1) request. I have answered the RFI queries in red below and attached the relevant supporting documents to this email.

Please let me know whether the information supplied satisfies the S92(1) request.

Give me a call with any queries.

Thank you,
Nicole

Nicole Malpass
Planning Consultant

15 Cliff Wilson St, Wanaka 9305, New Zealand
P / +64 21 080 60084 | **E /** nicole@ipsolutions.nz
W / www.ipsolutions.nz

From: Erin Stagg <Erin.Stagg@qldc.govt.nz>
Date: Friday, 5 February 2021 at 1:06 PM
To: Nicole Malpass <Nicole@ipsolutions.nz>
Subject: Request for Further Information RM210037 Brent

Hi Nicole,

Please see the below request for further information. Give me a ring if you have any questions.

RESOURCE CONSENT APPLICATION RM210037 - REQUEST FOR FURTHER INFORMATION

To enable a full assessment of your application and to better understand the proposal and its potential effects on the environment, further information is requested under section 92(1) of the Resource Management Act 1991 (RMA).

Requested Information

1. Please confirm if there will be any cut on site to form the building platforms. If so please include details. This is not proposed as part of this application. If this application were to be approved, this suitability of onsite cut will be assessed and if necessary, an additional resource consent will be sought.
2. Please provide an earthworks drawing for proposed access upgrades, heights of cut and fill etc. Please see attached Plan, this has led to some minor note changes on the original scheme plan which has also been updated.
3. Please identify grade of proposed beech tree planting. These are proposed to be 2.5Ltr pots meaning that the tree should be between 50-120cm in height.
4. Please confirm if accesses to the platforms be raised to platform heights. If so please include details. This is not proposed within this application. Access will be provided to the sites but not specifically to the platform. Access to and from platform height are likely to qualify as a permitted earthworks activity and will be directly informed by the design/configuration of future residential development. This will ensure that the most appropriate and efficient form of access will be provided to future land use. It is likely however, that the most logical accesses will be from the northwest or northeast of each platform as indicated on the Landscape Plan.
5. Please provide details on easement 7001014.5. Easements details attached.
6. The proposed raising of the building platforms is likely to require resource consent from the Otago Regional Council as a defence against water. Please either provide the necessary ORC resource consents, or provide written confirmation from the ORC that no resource consent is required. I have been in touch with ORC regarding consenting requirements for a defence against water. In this respect, ORC are agreeable to the following condition;

   Prior to certification pursuant to section 224(c) of the Resource Management Act 1991, the consent holder shall complete the following:

   In order to account for the building up of platforms as recommended by the Geosolve Flooding Report dated September 2020, the consent holder will provide the relevant consent approvals from Otago Regional Council to construct a defence against water as defined under the Regional Plan: Water for Otago (RPW) (rule 14.3.2.1) and to divert water (rule 12.3.4.1).

7. The geotechnical report provided suggests that installing wastewater disposal fields within the flood plain may not be appropriate. Please provide either:
   a. Details from a suitably qualified engineer based on best practice on-site wastewater design demonstrating that installing disposal fields at the existing ground level is appropriate and will not result in adverse effects on water quality in the event that the disposal area is flooded;

b. Details prepared by a suitably qualified geotechnical professional demonstrating that wastewater disposal within the certified fill areas for raising the ground level will be appropriate; or
c. Details prepared by a suitably qualified engineer of an alternative wastewater disposal solution.

Please see the attached recommendations from Geosolve. If this consent were to be approved, the following consent condition is volunteered;

Prior to the construction of a residential unit, the wastewater disposal system details shall be provided to council for approval and shall sufficiently cater for the effects of the potential flooding. The system shall contain/achieve one, or a combination of the following:

- *A disposal field above the flood level. Site specific testing of the fill will be required to determine the applicable loading rate for the disposal system within fill material;*
- *A wastewater disposal system that has additional storage within the tank for in the case of a flood event the dispersal unit can be turned off until floodwaters have lowered. The final solution shall ensure automated shut-off in the event of flood;*
- *Pumping wastewater to non flood prone ground (higher ground).*

8. Please provide bore logs demonstrating that the existing bore within the site can produce at least 6,300 litres of water per day. As per the easement instrument, the subject site does not have the rights to that bore. If this application were to be approved, a new bore will be applied for and the approval will be provided to Council prior to 224 certification, as noted in the AEE. It is not efficient allocation of the water resource for ORC to grant new ground water bore/takes for domestic use where there is no approved demand. However, as this bore will take from the same aquifer as the existing bore on site, water tests have been undertaken and provided to demonstrate the suitability of the aquifer water.

In addition to the above, when on site it was noted that while poles were up, the top 1m was not coloured a hi-vis red, yellow, orange or pink. Can this please be completed before the landscape architect undertakes a site visit? Poles re-erected where they were blown own and the top 1m re-sprayed with dazzle.

Responding to this request

What are your options? You may:

a. Provide the information requested within 15 working days s92A(1)(a) of this letter [5/2/2021], or;
b. Tell us in writing the date you will be providing the information, if you need longer than 15 working days (section 92A(1)(b). If you chose this option the date will need to be agreed with the writer. Or;
c. Tell us in writing that you refuse to provide this information (section 92A(1)(c)).

What happens then?

Option 1

If you decide to provide the information under option (a) or (b) above, your application will be placed on hold until the information is received (section 88c(2)(b)). After that it will be taken off hold and the processing of the application will continue.

Option 2
If you chose option (c) above and refuse to provide the information, or;

If you agree to provide the information by an agreed date and then do not do so without obtained agreement of an alternative date with the writer, or;

You do not respond at all;

Section 95C of the RMA requires that the application must be publicly notified. We therefore suggest that you choose options (a) and (b) above to avoid the notification of the application based on insufficient information.

Please feel free to call or email me if you have any queries or require clarification of any of the matters raised.

Ngā Mihi | Kind regards,
Erin

Erin Stagg MPLAN | Senior Planner | Planning & Development
Queenstown Lakes District Council
DD: +64 3 450 0331 | P: +64 3 441 0499
E: erin.stagg@qldc.govt.nz

PROUD TO BE QLDC
QUEENSTOWN LAKES DISTRICT COUNCIL
www.qldc.govt.nz

Please be aware I work part time. My hours are Monday-Wednesday 8-3, Friday 8-5. I do not work Thursdays

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

Sections 90A and 90F, Land Transfer Act 1952

2003/6180EF
Approved
Registrar-General of Land

EI 7001014.5 Easement I
Cpy – 01/01, Pgs – 006, 23/08/06, 09:59
DocID: 110797774

Land registration district

OTAGO

Grantor *Surname(s) must be underlined or in CAPITALS.*

William Thomas COONEY, Deborah Elizabeth STUDHOLME and Alan Bevin MCKAY

Grantee *Surname(s) must be underlined or in CAPITALS.*

William Thomas COONEY, Deborah Elizabeth STUDHOLME and Alan Bevin MCKAY

Grant* of easement or *profit à prendre* or creation or 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).

DATED this 1st day of August 2006

Attestation

Signature [Common Seal] of Grantor	**Signed in my presence by the Grantor** Signature of Witness Witness to complete in BLOCK letters (unless legibly printed) **Witness name:** B A Greenwood **Occupation:** Legal Assistant to **Address:** Checketts McKay Solicitors ALEXANDRA
Signature [Common Seal] of Grantee	**Signed in my presence by the Grantee** Signature of Witness Witness to complete in BLOCK letters (unless legibly printed) **Witness name:** **Occupation:** B A Greenwood Legal Assistant to **Address:** Checketts McKay Solicitors ALEXANDRA

Certified correct for the purposes of the Land Transfer Act 1952

J.E. Mac

[Solicitor for] the Grantee

* If the consent of any person is required for the grant, the specified consent form must be used.

Annexure Schedule 1

2003/6180EF
Approved
Registrar-General of Land

Easement instrument | Dated |

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

Purpose (nature and extent) of easement, *profit*, or covenant	Shown (plan reference)	Servient tenement (Identifier/CT)	Dominant tenement (Identifier/CT *or* in gross)
Refer to Annexure Schedule 2 attached			

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

Delete phrases in [ ] and insert memorandum number as required.

Continue in additional Annexure Schedule if required.

Unless otherwise provided below, the rights and powers provided in specific classes of easement are those prescribed by the Land Transfer Regulations 2002 and/or the Ninth Schedule of the Property Law Act 1952.

The implied rights and powers are varied by deleting the words

~~The implied rights and powers are [varied] [negatived] [added to] or [substituted] by:~~

"in common with the grantor and other persons to whom the grantor

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

may grant similar rights" from Clauses 3(1) and 7(1) of

~~[The provisions set out in Annexure Schedule 2].~~

Schedule 4 of the Land Transfer Regulations 2002, and added to by the provisions set out in Annexure Schedule 2.

Covenant provisions

Delete phrases in [ ] and insert memorandum number as required.

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].~~

~~[The provisions set out in Annexure Schedule 2].~~

All signing parties and either their witnesses or solicitors must sign or initial in this box.

DES SEM

DES

Annexure Schedule

Insert type of instrument
"Mortgage", "Transfer", "Lease" etc

Easement | Dated | Page 3 of 6 pages

(Continue in additional Annexure Schedule, if required.)

Annexure Schedule 2

Purpose (nature and extent) of easement, *profit*, or covenant	Shown (plan reference)	Servient tenement (Identifier/CT)	Dominant tenement (Identifier/CT *or* in gross)
Right to ~~Convey Water~~ operate and maintain bore	A DP 322326	CT 89108	CT 89106, CT 89107
Right to Convey Water and Right to Convey Electricity	B DP 322326	CT 89108	CT 89106, CT 89107
Right to Convey Water and Right to ~~Convey~~ Electricity	C DP 322326	CT 89108	CT 89107
~~Right to Convey Electricity~~	~~C LT 365313~~	~~CT 89107, CT 89108~~	~~CT 89106~~
~~Right to Convey Electricity~~	~~D LT 365313~~	~~CT 89106, CT 89107~~	~~CT 89108~~

Easement rights and powers

1. The "*Right to operate and maintain bore*" means the right for the Grantee to situate, maintain, repair, replace and use a bore, pump, pump works housing, associated pumping plant, pipes, controls, wiring, switch gear and associated fittings (together with such accessories as may be reasonably required for the purposes of the easement) (referred to as an "easement facility") and to pump, take and convey water through them at the stipulated position of the land over which the easement is granted.

2. Subject to the modifications specified in this instrument, the rights and powers set out in Schedule 4 of the Land Transfer Regulations 2002 shall apply to the easement specified in the preceding clause 1.

3. The Grantee shall have the exclusive use of the easements granted under this Instrument.

If this Annexure Schedule is used as an expansion of an instrument, all signing parties and either their witnesses or solicitors must sign or initial in this box.

Annexure Schedule 2 cont.....

Water Supply

1. The land contained in CT 89108 shall not have the right to use the pump and associated infrastructure or to take any water from the bore.

Water Supply Management Group

The following provisions shall apply to the water supply and management group:

2. The registered proprietors for the time being of Lots 1 & 2 DP 322326 (together called "The Management Group") shall comprise the Management Group for the purposes of operating and maintaining the pump, bore and associated infrastructure and carrying out the ongoing monitoring of the water supply to Lots 1 & 2 DP 322326.

3. The Management Group shall meet from time to time and as required to authorise any required maintenance, repair or replacement of the pump, bore and associated infrastructure to ensure the continuation of the supply of water from the bore to Lots 1 & 2 DP 322326. The cost of such maintenance, repair or replacement shall be met in accordance with section 11, Schedule 4 of the Land Transfer Regulations 2002.

Approved by Registrar-General of Land under No. 2002/5032

Annexure Schedule

Insert type of instrument "Mortgage", "Transfer", "Lease" etc

Easement | Dated | Page 5 of 6 pages

(Continue in additional Annexure Schedule, if required.)

Continuation of "Attestation"

Alan Bevin MCKAY Signature of or on behalf of Grantor	Signed in my presence by the Grantor Signature of Witness Witness to complete in BLOCK letters Witness name B A Greenwood Occupation Legal Assistant to Checketts McKay Solicitors Address ALEXANDRA
Alan Bevin MCKAY Signature of or on behalf of Grantee	Signed in my presence by the Grantee Signature of Witness Witness to complete in BLOCK letters Witness name B A Greenwood Occupation Legal Assistant to Checketts McKay Solicitors Address ALEXANDRA

If this Annexure Schedule is used as an expansion of an instrument, all signing parties and either their witnesses or solicitors must sign or initial in this box.

DES JEM

REF: 7025 - AUCKLAND DISTRICT LAW SOCIETY

Approved by Registrar-General of Land under No. 2002/5032

Annexure Schedule

Insert type of instrument
"Mortgage", "Transfer", "Lease" etc

Easement | Dated | Page 3 of 6 pages

(Continue in additional Annexure Schedule, if required.)

Continuation of "Attestation"

William Thomas COONEY Signature of or on behalf of Grantor	Signed in my presence by the Grantor Signature of Witness Witness to complete in BLOCK letters Witness name LYNLEY JOY CLARIDGE Occupation PRACTICE MANAGER Address ALEXANDRA
William Thomas COONEY Signature of or on behalf of Grantee	Signed in my presence by the Grantee Signature of Witness Witness to complete in BLOCK letters Witness name LYNLEY JOY CLARIDGE Occupation PRACTICE MANAGER Address ALEXANDRA

If this Annexure Schedule is used as an expansion of an instrument, all signing parties and either their witnesses or solicitors must sign or initial in this box.

REF: 7025 - AUCKLAND DISTRICT LAW SOCIETY

MEASURED
LAND SURVEYS

Proposed Memorandum of Easements

Purpose	Shown	Burdened Land	Benefited Land
Right of way	(A)	Lot 3	Lot 1 & 2
	(B)	Lot 2	Lot 1

(B) 6.0m wide ROW over Lot 2 in favour of Lot 1

(A) 10.0m wide ROW over Lot 3 in favour of Lots 1 & 2

Lot 1 DP 305404

Lot 1 2.00Ha

Lot 2 2.00Ha

Lot 2 DP 305404

Riverbank Road

existing access down to site

proposed building platforms x3
31.62m x 31.62m
(see GeoSolve report 200536 for min. FFLs)

Lot 1 DP 22737

ex. farm shed

existing access down to site

Lot 3
44.56Ha

8m high terrace

Lot 3 DP 383485
48.5587Ha
333154

Lot 2 DP 23797

Lot 2 DP 383485

Crown Land
Block III Lower Wanaka SD

existing bore F40/0273
(approx. location)

Lot 3 DP 23793

Cardrona River

Lot 1 DP 322326

Lot 226 DP 453060

Notes:
- Aerial imagery is indicative only.
- Boundary information has been sourced from DP 383485.
- Adjoining boudary information sourced from LINZ XML.
- Additional easements may be required upon further engineering design and Land Transfer Survey.
- Areas and dimensions are subject to final Land Transfer Survey.

iP solutions

Lots 1 - 3 being a proposed Subdivision of Lot 3 DP 383485

(Riverbank Road, Wanaka)

Client: Brent

Scale: 1 : 4,000 @ A3

Surveyed:

Drawn: ST 25/02/21

CSNZ THE CONSULTING SURVEYORS OF NEW ZEALAND
A DIVISION OF THE NEW ZEALAND INSTITUTE OF SURVEYORS

Datum: Lindis Peak 2000

Sheet: 1 of 2

Job #: 19126_S1

Rev: C

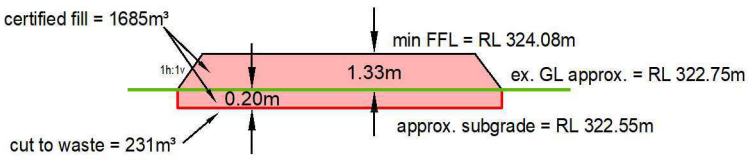
Rev	Description	Date
A	ORIGINAL	28/10/20
B	SHEET 2 - EW	30/11/20
C	ACCESS DES	25/02/21

MEASURED
LAND SURVEYS

Proposed Memorandum of Easements

Purpose	Shown	Burdened Land	Benefited Land
Right of way	(A)	Lot 3	Lot 1 & 2
	(B)	Lot 2	Lot 1

Lot 1 - Typical Platform Section - Cut/Fill
not to scale



note: topsoil scrape (cut to waste) depth to be assessed onsite depending on actual ground encountered.

see Drawing 19126_E1 for access design & earthwork details

Riverbank Road

Lot 1
DP 305404

Lot 1
2.00Ha

Lot 2
2.00Ha

Lot 3
44.56Ha

Lot 3
DP 383485
48.5587Ha
333154

Lot 1
DP 22737

(A) 10.0m wide ROW over Lot 3 in favour of Lots 1 & 2

(B) 6.0m wide ROW over Lot 2 in favour of Lot 1

proposed building platform
1000m²
31.62m x 31.62m
(to be raised to 324.08m)
earthwork extents

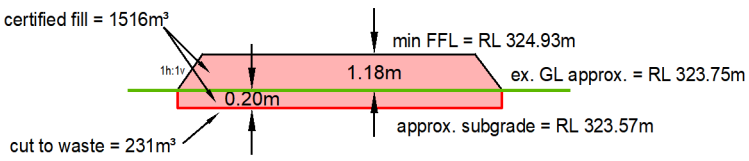
proposed building platform
1000m²
31.62m x 31.62m
(to be raised to 324.93m)
earthwork extents

proposed building platform
1000m²
31.62m x 31.62m
(to be raised to 325.93m)
earthwork extents

existing access down to site

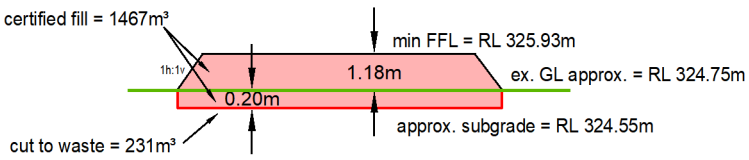
116.5
181.3
106.2
100
22.8
44.1
128.7
94
131.0
94.1
95.4
88°35'
60.9
91°53'
67.5
165°41'
89.3
150°57'
82.0
108°17'
70.0
26.6
122°57'

Lot 2 - Typical Platform Section - Cut/Fill
not to scale



note: topsoil scrape (cut to waste) depth to be assessed onsite depending on actual ground encountered.

Lot 3 - Typical Platform Section - Cut/Fill
not to scale



note: topsoil scrape (cut to waste) depth to be assessed onsite depending on actual ground encountered.

iP solutions

Lots 1 - 3 being a proposed Subdivision of Lot 3 DP 383485

(Riverbank Road, Wanaka)

Client: Brent

Scale: 1 : 1,250 @ A3

Surveyed:

Drawn: ST 25/02/21

CSNZ THE CONSULTING SURVEYORS OF NEW ZEALAND
A DIVISION OF THE NEW ZEALAND INSTITUTE OF SURVEYORS

Datum: Lindis Peak 2000

Sheet: 2 of 2

Job #: 19126_S1

Rev: C

Rev	Description	Date
A	ORIGINAL	28/10/20
B	SHEET 2 - EW	30/11/20
C	ACCESS DES	25/02/21

MEASURED
LAND SURVEYS

Lot 1
2.00Ha

Riverbank Road

Right of Way
existing access to be upgraded
to a 3.5m wide formation with passing bays
and stormwater disposal to QLDC standards
(see longsection & typical details Sheet 2)

0.0

35m

passing bay #1

5.5m

332

50.0

333

325

324

100.0

passing bay #2

5.5m

150.0

3.5m

324

200.0

223.9

323

(continue/form to Lot 1 bdy)

Lot 2
2.00Ha

proposed building platform
1000m²
31.62m x 31.62m
(to be raised to 324.93m)

Lot 3
44.56Ha

+0.4m to +0.6m (Fill)
+0.2m to +0.4m (Fill)
+0.0m to +0.2m (Fill)
0.0m to -0.2m (Cut)
-0.2m to -0.4m (Cut)
-0.4m to -0.6m (Cut)

To Finished surface
Cut Volume = 227m³
Fill Volume = 246m³
(allowing 4m wide 0.2m topsoil cut to waste,
includes subgrade material to be imported)

Depth Contour Interval = 0.2m

Notes:
- Subject to further engineering investigation & approval.

iP solutions

Access/Earthworks

Lots 1 - 3 being
a proposed Subdivision of
Lot 3 DP 383485

(Riverbank Road, Wanaka)

Client: Brent

Scale: 1 : 500 @ A3

Surveyed: ST 19/02/21

Drawn: ST 25/02/21

CSNZ THE CONSULTING SURVEYORS OF NEW ZEALAND
A DIVISION OF THE NEW ZEALAND INSTITUTE OF SURVEYORS

Datum: Lindis Peak 2000/DVD 1958

Sheet: 1 of 2

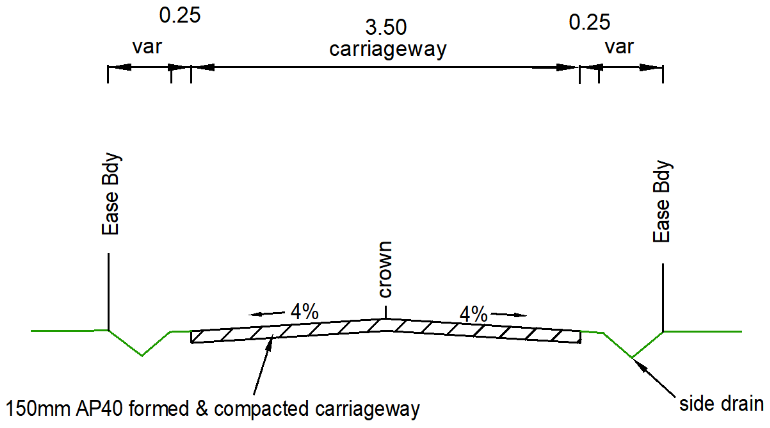
Job #: 19126_E1

Rev: A

Rev	Description	Date
A	ORIGINAL	25/02/21

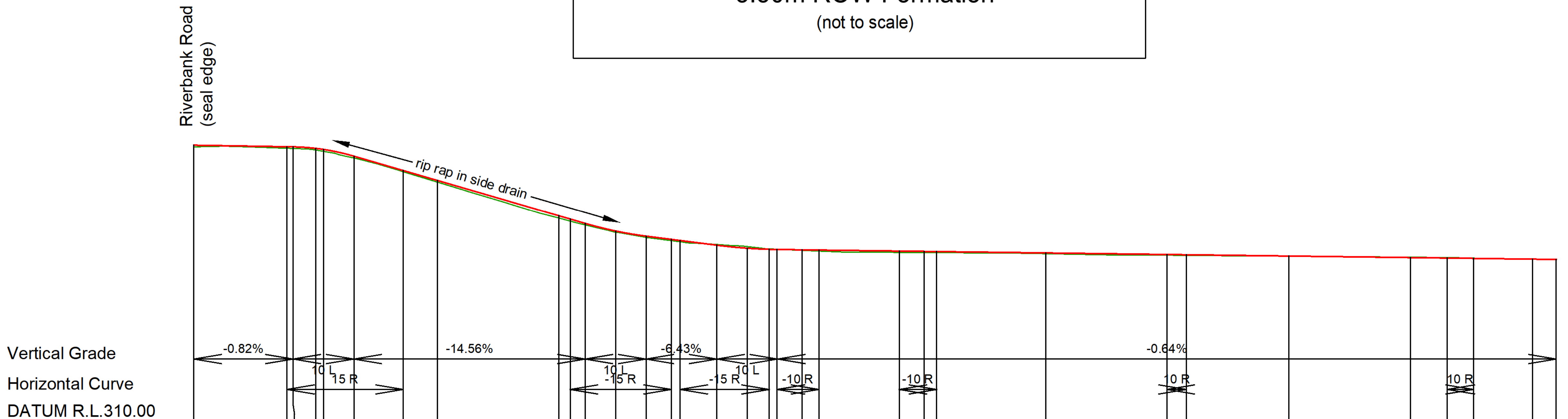
iP solutions

Notes:
- Subject to further engineering investigation & approval.



(widen carriageway to 5.5m for passing bays)
(suitable culverts to be installed under carriageway in natural low areas)

Typical Cross Section
3.50m ROW Formation
(not to scale)



Chainages	Existing	Depth	Design
0.00	332.47	0.13	332.60
15.28	332.35	0.13	332.48
16.30	332.33	0.14	332.47
20.00	332.21	0.13	332.34
21.30	332.10	0.16	332.25
26.30	331.55	0.14	331.70
34.40	330.42	0.10	330.52
40.00	329.57	0.13	329.70
60.00	326.60	0.19	326.79
61.86	326.35	0.17	326.52
64.33	326.03	0.13	326.16
69.33	325.44	0.09	325.53
74.33	325.01	0.10	325.11
78.49	324.74	0.10	324.84
79.93	324.64	0.11	324.75
85.96	324.43	-0.06	324.36
90.96	324.26	-0.14	324.11
94.58	324.06	-0.03	324.02
95.88	324.03	-0.02	324.01
100.00	323.94	0.05	323.98
102.72	323.88	0.09	323.97
115.93	323.77	0.11	323.88
120.00	323.75	0.10	323.85
122.09	323.75	0.10	323.84
140.00	323.66	0.06	323.73
159.95	323.54	0.06	323.60
163.10	323.52	0.06	323.58
180.00	323.46	0.01	323.47
200.00	323.38	-0.03	323.34
206.00	323.35	-0.04	323.30
210.31	323.30	-0.02	323.28
220.00	323.21	0.00	323.22
223.91	323.19	0.00	323.19

LONGITUDINAL SECTION ROW
Horizontal Scale 1 : 1000
Vertical Scale 1 : 500

MEASURED LAND SURVEYS
www.measuredlandsurveys.co.nz info@measuredlandsurveys.co.nz

Rev	Description	Date
A	ORIGINAL	25/02/21

Access/Earthworks
Lots 1 - 3 being
a proposed Subdivision of
Lot 3 DP 383485
(Riverbank Road, Wanaka)

Client: Brent
Scale: 1 : 1000 @ A3
Surveyed: ST 19/02/21
Drawn: ST 25/02/21

CSNZ THE CONSULTING SURVEYORS OF NEW ZEALAND
A DIVISION OF THE NEW ZEALAND INSTITUTE OF SURVEYORS

Datum: Lindis Peak 2000/DVD 1958
Sheet: 2 of 2
Job #: 19126_E1
Rev: A

From: Mike Plunket <mplunket@geosolve.co.nz>
Date: Friday, 26 February 2021 at 12:31 PM
To: Nicole Malpass <Nicole@ipsolutions.nz>
Subject: RE: Riverbank Road, Brent

Hi Nicole,

Sorry about the delay on getting to this.

From my understanding it is considered suitable to construct a wastewater disposal system within a floodplain area (or within the raised platform adjacent to the dwelling above the predicted floodplain level) as long as the system is designed to cater for the effects of the potential flooding. Conceptual options for the designer are provided below for the disposal system however the final solution should be confirmed at detailed design:

1. Construct a disposal field above the flood level (within the fill platform proposed to be constructed to achieve minimum floor levels or a separate raised area on the site). Site specific testing of the fill will be required to determine the applicable loading rate for the disposal system within fill material – to be completed at detailed design;
2. Construct a wastewater disposal system that has additional storage within the tank for in the case of a flood event the dispersal unit can be turned off until floodwaters have lowered. Consideration of this solution will need to ensure that if the dwelling was to be vacant and the dispersal unit still operating there is a way to switch this off in the event of a flood. I.e. the house is occupied for a week and the wastewater system has blackwater stored and is actively dispersing the house then becomes vacant and flooding occurs while the system is still dispersing wastewater with no one onsite to turn the dispersal system off;
3. Pumping wastewater away from flood prone ground – i.e. the upper terrace adjacent to Riverbank road.

The existing site levels are located at the approximately 1/50 year flood level therefore the wastewater system would likely only need to consider flooding effects for events in excess of this return period. In all cases the final system type and arrangement should confirmed with the designer at detailed design.

Give me a call to discuss if required.

Thanks,

Mike Plunket | Geotechnical Engineer
GeoSolve Ltd - Engineering Consultants | | M: 027 371 0803 | P: 03 443 2879
25D Gordon Road, Wanaka 9305

From: Soren Olsen <Soren.Olsen@orc.govt.nz>
Date: Friday, 26 February 2021 at 2:52 PM
To: Nicole Malpass <Nicole@ipsolutions.nz>
Subject: RE: Consent enquiry - 12Feb Nicole Malpass unknown location

Hi Nicole,

The below condition is suitable for the consent holder. You may wish to take out '*as defined*' but that is up to you.

If you have any other questions, please don't hesitate to get in contact.

Kind Regards,

Soren.

Otago Regional Council

Soren Olsen
CONSENTS OFFICER PUBLIC ENQUIRIES

P 0800 474 082 | M 027 209 9939
soren.olsen@orc.govt.nz
www.orc.govt.nz

From: Nicole Malpass <Nicole@ipsolutions.nz>
Sent: Friday, 26 February 2021 10:52 a.m.
To: Soren Olsen <Soren.Olsen@orc.govt.nz>
Subject: Re: Consent enquiry - 12Feb Nicole Malpass unknown location

Hi Soren,

Thank you for your response and that example.

It is quite a different scenario to what are proposing which is an increase in floor level.

It would be great if you could let me know the suitability of the condition offered below.

Thanks,
Nicole

Nicole Malpass
Planning Consultant

15 Cliff Wilson St, Wanaka 9305, New Zealand
P / +64 21 080 60084 | **E /** nicole@ipsolutions.nz
W / www.ipsolutions.nz

From: Soren Olsen <Soren.Olsen@orc.govt.nz>
Date: Friday, 26 February 2021 at 9:01 AM
To: Nicole Malpass <Nicole@ipsolutions.nz>
Subject: RE: Consent enquiry - 12Feb Nicole Malpass unknown location

Hi Nicole,

Sorry for the delay in response.

I have had a search and was able to find an application made by Universal Developments Limited for a defence against water which was successful. Please see attached a copy of their application and consent.

Kind Regards,

Soren.

Soren Olsen
CONSENTS OFFICER PUBLIC ENQUIRIES

P 0800 474 082 | M 027 209 9939
soren.olsen@orc.govt.nz
www.orc.govt.nz

From: Nicole Malpass <Nicole@ipsolutions.nz>
Sent: Thursday, 25 February 2021 4:30 p.m.
To: Soren Olsen <Soren.Olsen@orc.govt.nz>
Subject: FW: Consent enquiry - 12Feb Nicole Malpass unknown location

Hi Soren,

Hope you're doing well.

Just wondering whether you received my below email?

Thank you,
Nicole

Nicole Malpass
Planning Consultant

15 Cliff Wilson St, Wanaka 9305, New Zealand
P / +64 21 080 60084 | **E /** nicole@ipsolutions.nz
W / www.ipsolutions.nz

From: Nicole Malpass <Nicole@ipsolutions.nz>
Date: Tuesday, 16 February 2021 at 3:54 PM
To: "Soren.Olsen@orc.govt.nz" <Soren.Olsen@orc.govt.nz>
Subject: Re: Consent enquiry - 12Feb Nicole Malpass unknown location

Hi Soren,

Thank you for your reply.

Is there any examples of this being applied for and approved within the district?

Being that this is outside of QLDC's remit, we have put together a condition to be volunteered and adopted if the subdivision and associated platforms were to be approved:

Prior to certification pursuant to section 224(c) of the Resource Management Act 1991, the consent holder shall complete the following:

- *In order to account for the building up of platforms as recommended by the Geosolve Flooding Report dated September 2020, the consent holder will provide the relevant consent approvals from Otago Regional Council to construct a defence against water as defined under the Regional Plan: Water for Otago (RPW) (rule 14.3.2.1) and to divert water (rule 12.3.4.1).*

Do you believe the above the condition achieves with clarity what is required in terms of consents from ORC?

Thank you,
Nicole

Nicole Malpass
Planning Consultant

15 Cliff Wilson St, Wanaka 9305, New Zealand
P / +64 21 080 60084 | **E /** nicole@ipsolutions.nz
W / www.ipsolutions.nz

From: Graeme Stewart <grstewart1314@gmail.com>
Date: Wednesday, 3 March 2021 at 11:56 AM
To: Nicole Malpass <Nicole@ipsolutions.nz>
Subject: Re: Bore Log and Water Confirmation

Hi Nicole

Based on the bore log presented for Tony Brent and Debbie Studholme, I would be confident that the bore would be capable of supplying an additional 25,000 litres per day. The pumping drawdown at 1.7 litres per second was minimal at 0.07 metres from a static water level at 16.70 metres.

I have no record of the installed production pump, but suspect it will be capable of around 5,000 litres per hour (a common domestic bore pump). The yield can be tested by recording the time to fill a container of known volume. The water quality result indicated a high level of iron although this could be the result of a relatively high turbidity level. There seems to be a direct relationship between these components. Another water sample following years of use would be appropriate.

Regards

Graeme Stewart
Drilling Consultant
Southdrill Ltd
0278613400

On Tue, 2 Mar 2021 at 16:54, Nicole Malpass <Nicole@ipsolutions.nz> wrote:

Hi Graeme,

I hope you're doing well!

We are currently applying for a resource consent for a subdivision at Riverbank Road, Wanaka. There is an existing bore on the site however, the applicant's do not have legal access to it (it serves two other properties).

The aim would therefore be to put another bore down however we don't want to apply to ORC for this until if/when subdivision consent has been gained.

I have found a log from the existing bore onsite when it was put down in 2003 (although seems to be dated 2005), and we'd greatly appreciate an email from you confirming there is ample water based on the bore log – for another 25,000 litres.

Feel free to give me a call with any questions.

Thank you,

Nicole

Nicole Malpass
Planning Consultant

15 Cliff Wilson St, Wanaka 9305, New Zealand
P / +64 21 080 60084 | **E /** nicole@ipsolutions.nz
W / www.ipsolutions.nz

MCNEILL DRILLING CO. LTD

WATER BORE/WELL SUMMARY FORM

CLIENTS NAME: Tony Brent / Debbie Studholme	RESOURCE CONSENT NO:
FULL ADDRESS: Riverbank Road Wanaka	BORE SIZE: 125mm
RAPID NO:	START DATE: 6.11.03
GRID REFERENCE: E2204333 N5601320	FINISH DATE: 7.11.03
DRILLER: M Simmons	
MEASURED FROM: Ground Level	MACHINE: TH60
TOTAL DEPTH BORE: 29.47	DRILL METHOD: Tubex
TOP LEADER: 28.37	
STATIC WATER LEVEL: 16.70	
SCREEN: SLOT: 2.5mm	LENGTH: 1.00
TYPE: Stainless Steel	SIZE: 100mm
PVC SLOTTED: TOP:	BASE:
SCREEN/LEADER/SUMP: 1.10	SUMP SIZE:
TOTAL CASING USED: 28.77	
AIRLIFTED/PUMPED AT: 1.7 litres per second	
TEST PUMP PERIOD: 1 hour and 30 minute	
DRAWDOWN FROM SWL: 0.07	
AIR/PUMP INTAKE: 24.40	
BACTERIAL WATER TEST: Citilab	
CHEMICAL WATER TEST: Citilab	

EXTRA NOTES:

BORE LOG:

0.00 – 0.20	Top soil
0.20 – 23.00	Silty sandy gravels
23.00 – 24.20	Sandy gravels
24.20 – 26.80	Tight silty clay bound gravels
26.80 – 29.50	Very sandy gravels

Citilab

Analysts Consultants

McNeill Drilling
Boundary Rd
P.O. Box 95
Alexandra

ATTENTION: Graeme Stewart

LABORATORY ANALYSIS REPORT

#16507

Monday, 24 November 2003

Your Order #:- D60407

LAB REF	Sample Taken	Lab Job Start	Sample Name	Testing completed:	ANALYSIS	RESULT	Analytical Method	Detection Limits
							Comments	
64651	10/11/03	11/11/03					(Click to include explanatory notes with report)	
	11:20:00	09:17:04	Tony Brent & Debbie Studholme - Bore Water					
				12/11/03 12:56:14	Acidity Requires CO2	18 mgCaCO3/L	APHA 2310, B	1 mg/L CaCO3
				17/11/03 16:14:15	Alkalinity to pH 4.5	52 mgCaCO3/L	APHA 2320, B	1 mg/L CaCO3
				17/11/03 16:14:14	Alkalinity to pH 8.3	<1 mgCaCO3/L	APHA 2320, B	1 mg/L CaCO3
>>> Referral test: Hill Laboratories, Hamilton.				21/11/03 16:38:57	Bromide (IC) Referral	<0.05 mg/L	Ion Chromatography	0.05 mg/L
>>> Referral test: Hill Laboratories, Hamilton.				21/11/03 16:39:02	Chloride (IC) Referral	0.8 mg/L	Ion Chromatography	0.5 mg/L
				13/11/03 13:44:01	Colour *	<0.5 C.P.U	Spectrophotometer	0.5 C.P.U.
				11/11/03 15:19:30	Conductivity	12 mS/m	APHA 2510, B	0.01 mS/m
>>> Referral test: Hill Laboratories, Hamilton.				21/11/03 16:39:07	Fluoride (IC) Referral	0.08 mg/L	Ion Chromatography	0.05 mg/L
				21/11/03 16:39:11	Total Hardness By Calculation	46.3 mg CaCO3/L	APHA 2340, C	2 mg/L CaCO3
				11/11/03 14:51:37	pH	6.93 @ 20°C	APHA 4500 - H+, B	0.02 pH unit
>>> Referral test: Hill Laboratories, Hamilton.				21/11/03 16:39:16	Phosphate (IC) Referral	<0.4 mg/L	Ion Chromatography	0.4 mg/L
>>> Referral test: Hill Laboratories, Hamilton.				21/11/03 16:39:25	Sulphate (IC) Referral	4.5 mg/L	Ion Chromatography	0.5 mg/L
				11/11/03 15:23:45	Turbidity - class 1	12 NTU	APHA 2130, B	0.05 NTU
>>> Referral test: Hill Laboratories, Hamilton.				21/11/03 16:39:27	Arsenic-Total Referral	<0.001 mg As/l	ICP-MS	0.001 mg/L
>>> Referral test: Hill Laboratories, Hamilton.				21/11/03 16:39:31	Calcium-Total (ICP) ICP-MS (Referral)	15.3 mg/L	ICP-MS	0.05 mg/L
>>> Referral test: Hill Laboratories, Hamilton.				21/11/03 16:39:35	Iron-Total (ICP) ICP-MS (Referral)	0.34 mg/L	ICP-MS	0.02 mg/L
>>> Referral test: Hill Laboratories, Hamilton.				21/11/03 16:39:36	Magnesium-Total (ICP) ICP-MS (Referral)	1.95 mg/L	ICP-MS	0.02 mg/L
>>> Referral test: Hill Laboratories, Hamilton.				21/11/03 16:39:40	Manganese-Total (ICP) ICP-MS (Referal)	0.0115 mg/L	ICP-MS	0.0005 mg/L
				12/11/03 16:25:12	E. coli (Quanti-Tray)	<1 MPN/100 mL	Inhouse	1.0 MPN/100 mL
>>> Referral test: Hill Laboratories, Hamilton.				21/11/03 16:39:59	Nitrate (N) Referral	1.4 mg/L	Ion Chromatography	0.02 mg/L

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Analyst's Comments:
These samples were collected by yourselves and analysed as received at the laboratory.
The detection limits given are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.

Dr. Frank Ho
Chemist
CITILAB

Citilab is accredited by International Accreditation New Zealand (IANZ).
The tests reported here have been performed in accordance with its terms of accreditation - with exception of any marked *, which are not accredited.

Richard Allan
Microbiology Technician
CITILAB

10 Tahuna Rd, P.O. Box 781, Dunedin
Telephone (03) 455 7938, Fax (03) 455 7940
Email: mail@citilab.co.nz

Citilab
Analysts
Consultants

Sample 64651 T Brent & D Studhome Batch 16507

Determinants	Results (mg/L or specified)	MAV[1] or GV[2]	Target range	Comments
Acidity	18	-	-	Ok
Alkalinity	52	-	-	Ok
Bromide	<0.05	-	Low	Ok
Chloride	0.8	250	<250	Ok
Colour	<0.5	10 (CPU)	<5 (CPU)	Colourless
Conductivity	12	-	<40, low	Ok
Fluoride	0.08	1.5	<0.75	Ok
Total hardness	46.3	200	<200	Soft
pH	6.93	7.0 to 8.0	7.0 to 8.5	Ok
Phosphate	<0.4	-	low	Ok
Sulphate	4.5	250	<125	Ok
Turbidity (1)	12	<2.5 NTU	<2.5 NTU	Turbid*
Total arsenic	<0.001	0.01	<0.005	Ok
Total calcium	15.3	-	-	Ok
Total iron	0.34	0.2	<0.2	High*
Total magnesium	1.95	-	-	Ok
Total manganese	0.0115	0.5	<0.5	Ok
E.coli	<1	<1	<1	Ok
Nitrate	1.4	50	<25	Ok

[1]MAV means Maximum Acceptable Values quoted from Drinking Water Standards for New Zealand 2000. [2]GV means Guideline Values from the same source above.
mg/L equals to g/L and is often quoted as ppm (parts per million).

Overall comment:

The water is deemed **SUITABLE** for drinking purpose with respect to the tested parameters according to the recommended values in the Drinking Water Standards for New Zealand 2000. The water was found to be turbid and there was a slightly higher than desired iron content that may cause minor staining problem with laundries and cooking utensils under certain circumstances.

Frank Ho

Dr. Frank Ho
Chemist

10 Tahuna Rd, P.O. Box 781, Dunedin
Telephone (03) 455 7938, Fax (03) 455 7940
Email: mail@citilab.co.nz