Te Kaunihera o Te Hiku o te Ika
Far North District Council

Office Use Only
Application Number:

Application for resource consent or fast-track resource consent

(Or Associated Consent Pursuant to the Resource Management Act 1991 (RMA)) (If applying for a Resource Consent pursuant to Section 87AAC or 88 of the RMA, this form can be used to satisfy the requirements of Form 9). Prior to, and during, completion of this application form, please refer to Resource Consent Guidance Notes and Schedule of Fees and Charges — both available on the Council's web page.

1. Pre-Lodgement Meeting

Have you met with a council Resource Consent representative to discuss this application prior to lodgement?

◯ **Yes** ✔ **No**

If yes, who have you spoken with?

2. Type of consent being applied for

(more than one circle can be ticked):

◯ **Land Use**
◯ **Fast Track Land Use***
✔ **Subdivision**
◯ **Consent under National Environmental Standard**
(e.g. Assessing and Managing Contaminants in Soil)
◯ **Other (please specify)**
◯ **Discharge**
◯ **Change of Consent Notice (s.221(3))**
◯ **Extension of time (s.125)**

**The fast track is for simple land use consents and is restricted to consents with a controlled activity status.*

3. Would you like to opt out of the fast track process?

◯ **Yes** ✔ **No**

4. Consultation

Have you consulted with Iwi/Hapū? ◯ **Yes** ✔ **No**

If yes, which groups have you consulted with?

Who else have you consulted with?

*For any questions or information regarding iwi/hapū consultation, please contact Te Hono at Far North District Council, **tehonosupport@fndc.govt.nz***

5. Applicant details

Name/s: MNM Lynn Limited (Mack Lynn)

Email: [redacted]

Phone number:

Postal address:
(or alternative method of service under section 352 of the act)

Have you been the subject of abatement notices, enforcement orders, infringement notices and/or convictions under the Resource Management Act 1991? ◯ **Yes** ◯ **No**

If yes, please provide details.

6. Address for correspondence

Name and address for service and correspondence (if using an Agent write their details here)

Name/s: Reyburn and Bryant

Email: [redacted]

Phone number:

Postal address:
(or alternative method of service under section 352 of the act)

All correspondence will be sent by email in the first instance. Please advise us if you would prefer an alternative means of communication.

7. Details of property owner/s and occupier/s

Name and Address of the owner/occupiers of the land to which this application relates (where there are multiple owners or occupiers please list on a separate sheet if required)

Name/s: Beach Road Farms 1996 Ltd - Newmont Proprietary Limited

Property address/ location: Remuera Settlement Road, Ohaeawai

Postcode

8. Application site details

Location and/or property street address of the proposed activity:

Name/s: MNM Lynn Limited (Mack Lynn)

Site address/ location: Remuera Settlement Road, Ohaeawai

Postcode

Legal description: Sections 11S&17S Te Pua Settle **Val Number:**

Certificate of title: NA1116/95 - NA57A/15

Please remember to attach a copy of your Certificate of Title to the application, along with relevant consent notices and/or easements and encumbrances (search copy must be less than 6 months old)

Site visit requirements:

Is there a locked gate or security system restricting access by Council staff? ◯ **Yes** ✔ **No**

Is there a dog on the property? ◯ **Yes** ✔ **No**

Please provide details of any other entry restrictions that Council staff should be aware of, e.g. health and safety, caretaker's details. This is important to avoid a wasted trip and having to re-arrange a second visit.

9. Description of the proposal

Please enter a brief description of the proposal here. Please refer to Chapter 4 of the *District Plan, and Guidance Notes*, for further details of information requirements.

To undertake a five-lot subdivision at Remuera Settlement Road, Ohaewai

If this is an application for a Change or Cancellation of Consent Notice conditions (s.221(3)), please quote relevant existing Resource Consents and Consent Notice identifiers and provide details of the change(s), with reasons for requesting them.

10. Would you like to request public notification?

◯ **Yes** ◯ **No**

11. Other consent required/being applied for under different legislation

(more than one circle can be ticked):

◯ **Building Consent** Enter BC ref # here (if known)

◯ **Regional Council Consent (ref # if known)** Ref # here (if known)

◯ **National Environmental Standard Consent** Consent here (if known)

◯ **Other (please specify)** Specify 'other' here

12. National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health:

The site and proposal may be subject to the above NES. In order to determine whether regard needs to be had to the NES please answer the following:

Is the piece of land currently being used or has it historically ever been used for an activity or industry on the Hazardous Industries and Activities List (HAIL)? ◯ **Yes** ✔ **No** ◯ **Don't know**

Is the proposed activity an activity covered by the NES? Please tick if any of the following apply to your proposal, as the NESCS may apply as a result? ◯ **Yes** ✔ **No** ◯ **Don't know**

- ✔ **Subdividing land**
- ◯ **Disturbing, removing or sampling soil**
- ◯ **Changing the use of a piece of land**
- ◯ **Removing or replacing a fuel storage system**

13. Assessment of environmental effects:

Every application for resource consent must be accompanied by an Assessment of Environmental Effects (AEE). This is a requirement of Schedule 4 of the Resource Management Act 1991 and an application can be rejected if an adequate AEE is not provided. The information in an AEE must be specified in sufficient detail to satisfy the purpose for which it is required. Your AEE may include additional information such as written approvals from adjoining property owners, or affected parties.

Your AEE is attached to this application ✔ **Yes**

14. Draft conditions:

Do you wish to see the draft conditions prior to the release of the resource consent decision? ◯ **Yes** ✔ **No**

If yes, please be advised that the timeframe will be suspended for 5 working days as per s107G of the RMA to enable consideration for the draft conditions.

15. Billing Details:

This identifies the person or entity that will be responsible for paying any invoices or receiving any refunds associated with processing this resource consent. Please also refer to Council's Fees and Charges Schedule.

Name/s: (please write in full)	MNM Lynn Limited (Mack Lynn)
Email:	[redacted]
Phone number:	
Postal address: (or alternative method of service under section 352 of the act)	

Fees Information

An instalment fee for processing this application is payable at the time of lodgement and must accompany your application in order for it to be lodged. Please note that if the instalment fee is insufficient to cover the actual and reasonable costs of work undertaken to process the application you will be required to pay any additional costs. Invoiced amounts are payable by the 20th of the month following invoice date. You may also be required to make additional payments if your application requires notification.

15. Billing details continued...

Declaration concerning Payment of Fees

I/we understand that the Council may charge me/us for all costs actually and reasonably incurred in processing this application. Subject to my/our rights under Sections 357B and 358 of the RMA, to object to any costs, I/we undertake to pay all and future processing costs incurred by the Council. Without limiting the Far North District Council's legal rights if any steps (including the use of debt collection agencies) are necessary to recover unpaid processing costs I/we agree to pay all costs of recovering those processing costs. If this application is made on behalf of a trust (private or family), a society (incorporated or unincorporated) or a company in signing this application I/we are binding the trust, society or company to pay all the above costs and guaranteeing to pay all the above costs in my/our personal capacity.

Name: (please write in full) Mack Lynn

Signature: [redacted] Date 09-Apr-2026

(signature of bill payer)

MANDATORY

16. Important Information:

Note to applicant

You must include all information required by this form. The information must be specified in sufficient detail to satisfy the purpose for which it is required.

You may apply for 2 or more resource consents that are needed for the same activity on the same form.

You must pay the charge payable to the consent authority for the resource consent application under the Resource Management Act 1991.

Fast-track application

Under the fast-track resource consent process, notice of the decision must be given within 10 working days after the date the application was first lodged with the authority, unless the applicant opts out of that process at the time of lodgement.

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

Privacy Information:

Once this application is lodged with the Council it becomes public information. Please advise Council if there is sensitive information in the proposal. The information you have provided on this form is required so that your application for consent pursuant to the Resource Management Act 1991 can be processed under that Act. The information will be stored on a public register and held by the Far North District Council. The details of your application may also be made available to the public on the Council's website, www.fndc.govt.nz. These details are collected to inform the general public and community groups about all consents which have been issued through the Far North District Council.

17. Declaration

The information I have supplied with this application is true and complete to the best of my knowledge.

Name (please write in full) David Johnson

Signature [redacted] Date 09-Apr-2026

A signature is not required if the application is made by electronic means

See overleaf for a checklist of your information...

Checklist

Please tick if information is provided

- [x] Payment (cheques payable to Far North District Council)
- [x] A current Certificate of Title (Search Copy not more than 6 months old)
- [ ] Details of your consultation with Iwi and hapū
- [ ] Copies of any listed encumbrances, easements and/or consent notices relevant to the application
- [x] Applicant / Agent / Property Owner / Bill Payer details provided
- [x] Location of property and description of proposal
- [ ] Assessment of Environmental Effects
- [ ] Written Approvals / correspondence from consulted parties
- [ ] Reports from technical experts (if required)
- [ ] Copies of other relevant consents associated with this application
- [x] Location and Site plans (land use) AND/OR
- [x] Location and Scheme Plan (subdivision)
- [ ] Elevations / Floor plans
- [ ] Topographical / contour plans

Please refer to Chapter 4 of the District Plan for details of the information that must be provided with an application. Please also refer to the RC Checklist available on the Council's website. This contains more helpful hints as to what information needs to be shown on plans.

Subdivision Consent Application

MNM LYNN LIMITED

Remuera Settlement Road, Ohaeawai

reyburn & bryant

PLANNERS • SURVEYORS

Subdivision Consent Application

MNM LYNN LIMITED

Remuera Settlement Road, Ohaeawai

Report prepared for:	MNM Lynn Limited
Author	David Johnson, *Planner*
Reviewed by:	Joseph Henehan, *Associate*
Consent Authority:	Far North District Council
Report reference:	18694
Report Status:	Final
Date:	April 2026

Reyburn and Bryant
P.O. Box 191
Whangarei 0140
Telephone: (09) 438 3563

FORM 9

APPLICATION FOR RESOURCE CONSENT UNDER SECTION 88 OF THE RESOURCE MANAGEMENT ACT 1991

To: Far North District Council
Memorial Avenue
Private Bag 752
Kaikohe 0440

1. **MNM Lynn Limited** applies for subdivision consent to subdivide the site into five lots.

2. The location of the proposed activity is Remuera Settlement Road, Ohaeawai.

3. The legal descriptions of the site are Sections 11S and 17S Te Pua Settlement and Sections 41S, 42S, and Part Section 54S Remuera Settlement. The title references are NA1116/95 and NA57A/15 (Licence under Section 140 of the Mining Act 1971).

4. Beach Road Farms 1996 Limited, an entity with the same director as the MNM Lynn Limited, is the owner of NA1116/95. Newmont Proprietary Limited is the owner of NA57A/15.

5. There are no other activities that are part of the proposal to which this application relates.

6. No additional resource consents or statutory approvals are needed for the proposal to which this application relates that have not yet been applied for as part of this application.

7. We attach an assessment of effects on the environment that:

   (a) includes the information required by clause 6 of Schedule 4 of the Resource Management Act 1991; and

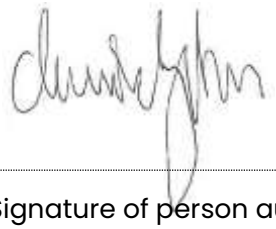
   (b) addresses the matters specified in clause 7 of Schedule 4 of the Resource Management Act 1991; and

(c) includes such detail as corresponds with the scale and significance of the effects that the activity may have on the environment.

8. We attach an assessment of the proposed activity against the matters set out in Part 2 of the Resource Management Act 1991.

9. We attach an assessment of the proposed activity against any relevant provisions of a document referred to in section 104(1)(b) of the Resource Management Act 1991, including information required by clause 2(2) of Schedule 4 of that Act.

10. No other information is required to be included in the district or regional plan(s) or regulations.



Signature of person authorised to sign on behalf of applicant

David Johnson

09 April 2026

Date

Address for service:	Reyburn and Bryant 1999 Ltd PO Box 191, Whangarei
Telephone:	(09) 438 3563
Email:	david@reyburnandbryant.co.nz
Contact person:	David Johnson

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ABBREVIATIONS

AEE	Assessment of Environmental Effects
FNDC	Far North District Council
FNDP	Far North District Plan
HAIL	Hazardous Activities and Industries List
HH	Historic Heritage Chapter
LNF	Landscape and Natural Features Chapter
LUC	Land Use Capability
NES-CS	National Environmental Standard – Contaminated Soils
NFL	Natural Features and Landscapes Chapter
NPS-HPL	National Policy Statement for Highly Productive Land

NPS-NH	National Policy Statement for Natural Hazards
OFNDP	Operative Far North District Plan
ONF	Outstanding Natural Feature
PFNDP	Proposed Far North District Plan
RMA	Resource Management Act, 1991
RPZ	Rural Production Zone
WJ	Wilton Joubert Limited

1. INTRODUCTION

1.1 Report basis

This report has been prepared for MNM Lynn Limited (the applicant) in support of an application to undertake a five-lot subdivision at Remuera Settlement Road, Ohaeawai.

The application has been prepared in accordance with Section 88 and the Fourth Schedule of the RMA. Section 88 of the RMA requires that resource consent applications be accompanied by an Assessment of Environmental Effects (AEE) in accordance with the Fourth Schedule.

The report also includes an analysis of the relevant provisions of the district, regional and national planning documents that are pertinent to the assessment and decision required under s104 of the RMA.

1.2 Property details

Applicant	MNM Lynn Limited
Landowner	Beach Road Farms 1996 Limited Newmont Proprietary Limited
Site location	Remuera Settlement Road, Ohaeawai
Legal descriptions	Sections 11S and 17S Te Pua Settlement and Sections 41S, 42S, and Part Section 54S Remuera Settlement.
Records of title	NA1116/95 NA57A/15
Site area	60.8986ha
District Plan	Far North District Plan
Operative District Plan Zone	Rural Production Zone
Operative District Plan Notations	Outstanding Natural Feature (partial)
Proposed District Plan Zone	Rural Production Zone

Proposed District Plan Notations	Outstanding Natural Feature (partial) River Flood Hazard Zones (10 Year and 100 Year ARI Event) (partial)

***Table 1**: Property details.*

1.3 Proposal summary

The applicant owns a 60ha landholding on the northern side of Remuera Settlement Road 5km northeast of Kaikohe. The main title, NA1116/95, was issued prior to 28 April 2000.[1]

The site is zoned 'Rural Production' (RPZ) under the Operative Far North District Plan (OFNDP). Part of the site contains an Outstanding Natural Feature (ONF). It also contains a recorded archaeological site, which is located within the balance farm.

The site will retain its 'Rural Production' zoning and the ONF overlay under the Proposed Far North District Plan (PFNDP). However, it will also be subject to the 10 and 100-year River Flood Hazard Zones.

The applicant proposes to subdivide the site into five lots in accordance with Rule 13.8.1(c) of the OFNDP. Rule 13.8.1(c) provides for the creation of five 2ha rural residential lots from titles created prior to 28 April 2000. Four rural residential lots are proposed on Remuera Settlement Road with sizes ranging from 2.4ha to 4ha. The remainder of the site will be contained within a single balance title.

The ONF overlay and the recorded archaeological site will remain entirely within the balance site. The balance site will have a minimum net site area of 20ha as required by Rules 13.7.2.1 (xix) and 13.7.2.5 of the OFNDP. The ONF overlay is proposed to be protected by a covenant in accordance with Rule 13.7.3.9 of the OFNDP.

The scheme plan is attached in **Appendix 1**.

[1] NA57A/15 is a licence under Section 140 of the Mining Act 1971.

Overall, resource consent is required as a **restricted discretionary activity** from the FNDC.

1.4 Resource consents sought

Operative Far North District Plan rule assessment

Resource consent is required in accordance with the following rules of the OFNDP:

- Rule 13.8.1(c) – The proposal is a **restricted discretionary activity** under Rule 13.8.1(c) as NA1116/95 and NA57A/15 were created prior to 28 April 2000, four additional titles are proposed, and the proposed lots are all larger than 2ha. Council has restricted their discretion under this rule to the following matters:
  - *Effects on the natural character of the coastal environment for proposed lots which are in the coastal environment;*
  - *Effects of the subdivision under (b) and (c) above within 500m of land administered by the Department of Conservation upon the ability of the Department to manage and administer its land;*
  - *Effects on areas of significant indigenous flora and significant habitats of indigenous fauna;*
  - *The mitigation of fire hazards for health and safety of residents.*
- Rule 13.7.2.5 – The proposal is a **controlled activity** under Rule 13.7.2.5 as the balance will contain an ONF and will have a size in excess of 20ha.

A full assessment of the OFNDP rules is attached in **Appendix 2**.

Proposed Far North District Plan rule assessment

The PFNDP was publicly notified on 27 July 2022. Submissions and further submissions have been received, and the hearings have concluded. However, the Commissioners are yet to make their recommendations, and the Council is yet to issue their decision. In accordance with s86B(3) of the RMA, the rules that would ordinarily apply to this proposal do not currently have legal effect. The proposal therefore does not require resource consent under the PFNDP.

For completeness, an assessment has been made with respect to the rules of the PFNDP, and this is attached in **Appendix 2**. If these rules were to have legal

effect, the proposal would be a **non-complying activity** due to the size of proposed Lots 1 – 4 being less than 40ha.

1.5 Relevant title memorials

NA1116/95 is legally described as Sections 11S and 17S Te Pua Settlement and Sections 41S, 42S, and Part Section 54S Remuera Settlement. It is subject to s206 of the Land Act 1924, which has no relevance to this application.

NA57A/15 is a licence under s140 of the Mining Act 1971. It provides the owners of that title with a mining licence over 981.1928ha, which includes the subject land. It does not have an effect on this application, nor is it affected by it.

The titles and associated memorials are attached in **Appendix 3**.

1.6 Over approvals required

Amalgamation condition (s220(1)(b)(ii))

It is proposed that Lot 5 hereon, Section 11S Te Pua Settlement, Section 42S Remuera Settlement, and Part Section 54S Remuera Settlement be held in the same record of title. This amalgamation is required to ensure that one title is created for the balance farmland following completion of the subdivision.

No other approvals are required to give effect to the proposal.

1.7 Processing requests

Prior to the issue of any decision for this consent, please forward the draft conditions for our review and comment.

2. THE SITE AND SURROUNDING ENVIRONMENT

2.1 Site description

Location

The site is located on the northern side of Remuera Settlement Road 5km northwest of Kaikohe. The northern boundary adjoins State Highway 15 (SH15). **Figure 1** below shows the site in red.

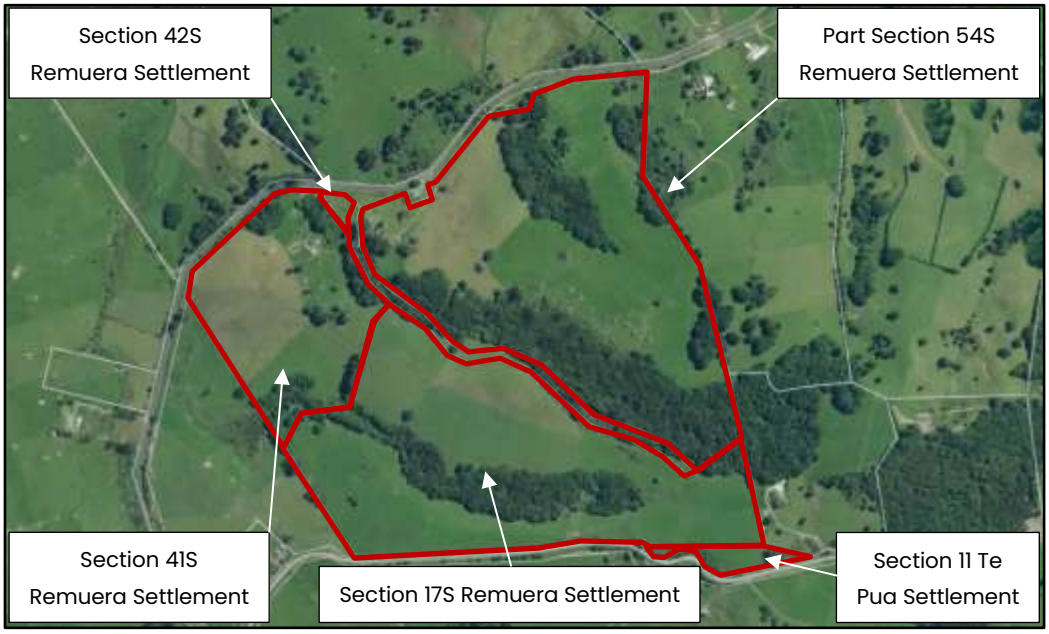

***Figure 1**: Location map (Source: Grip).*

Built development

There is an existing residential unit on Part Section 54S Remuera Settlement. There are sheds immediately surrounding the existing residential unit on Part Section 54S Remuera Settlement and Sections 41S and 42S Remuera Settlement.

The rest of the site is vacant.

Access

The site is accessed from SH15 via two vehicle crossings, one to the existing residential unit and the other to one of the sheds.

Although the site has frontage to Remuera Settlement Road, no vehicle crossing has been formed off it.

Topography

The site has an undulating topography with several ridgelines and gullies. The elevation generally increases from the northern part of the site, where flat plains adjoin Lake Omapere, toward Remuera Settlement Road on the southern boundary, which follows a ridgeline.

Southeast of the site the land descends to the Te Pua volcanic crater (see **Figure 2** below). It has an ONF overlay in the OFNDP and the PFNDP with slight variations in extent (see **Figures 3** and **4** below). Both overlays protrude into the site.

***Figure 2**: Topography southeast of the site (Source: Grip).*

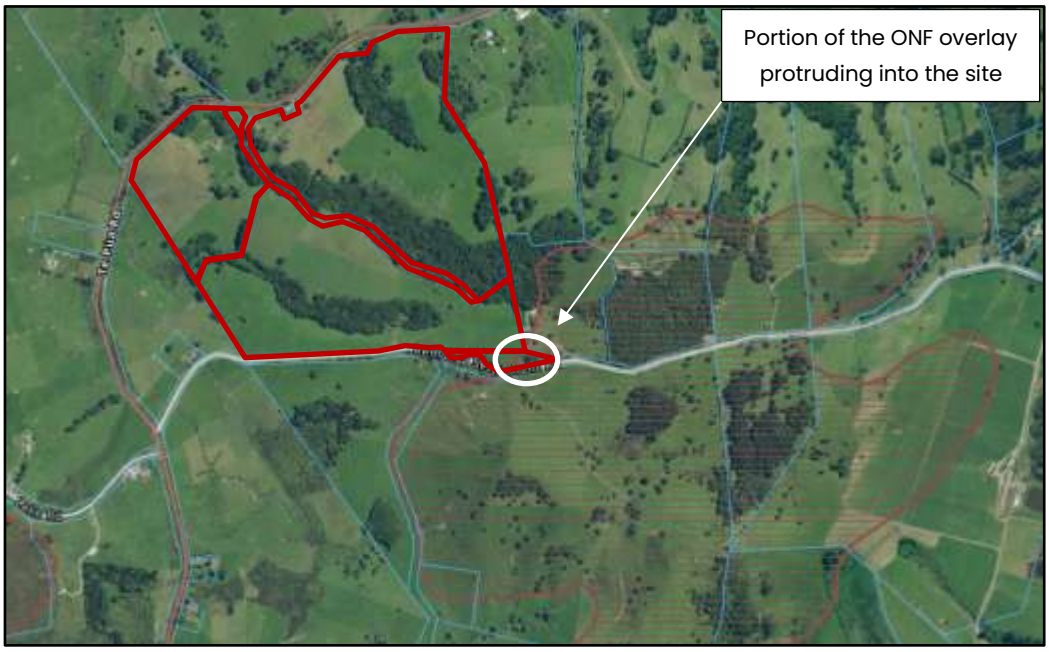

***Figure 3**: ONF overlay in the OFNDP (brown hatched area) (Source: FNDC GIS).*

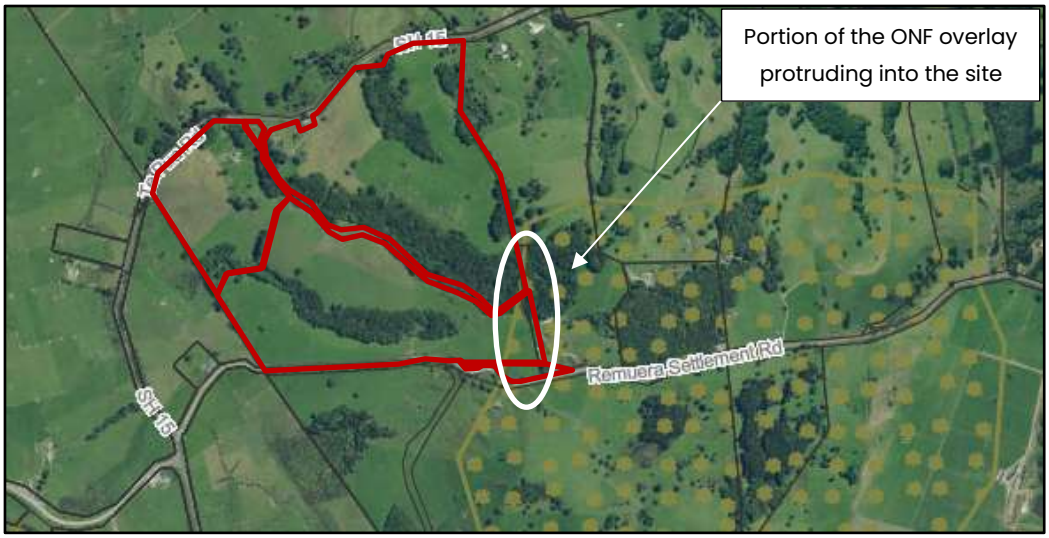

***Figure 4**: ONF overlay in the PFNDP (gold hatched area) (Source: FNDC ePlan).*

Ground cover and vegetation

The site is covered in pasture and stands of indigenous vegetation. The pasture covers the majority of the property, particularly the flat land and the ridgelines. The indigenous vegetation is concentrated in the gullies.

Archaeological sites

There is an archaeological site (P05/323) in the northern part of the site 200m from SH15 (see **Figure 5** below). There are no other recorded archaeological sites on the site.

***Figure 5**: Archaeological sites (Source: New Zealand Archaeological Association).*

Soil composition

The soils on the sites are shown as Classes 4, and 6 in the Land Use Capability (LUC) system.[2] Class 4 and 6 soils are not considered highly productive land under the National Policy Statement for Highly Productive Land (NPS-HPL).

2.2 Surrounding environment

The site is located in a rural area between Kaikohe to the southwest, the rural settlement of Ohaeawai to the east, and Lake Omapere 900m to the north. The landscape is characterised by open areas of pasture, intermittent stands of indigenous vegetation, and a generally low density of residential built form. Surrounding properties are utilised for a range of general rural purposes. Landholdings typically range in size from 7.5ha through to 150ha. Nonetheless, there are some smaller rural-residential properties scattered amongst the productive titles, typically concentrated along the road corridors for ease of access and the availability of services.

[2] Manaaki Whenua Landcare Research

3. THE PROPOSAL

3.1 General

The proposal is to subdivide the site into five lots.

Proposed Lots 1 – 4 will be the rural residential lots. They will be created on Remuera Settlement Road.

Proposed Lot 5 will be amalgamated with Section 11S Te Pua Settlement, Section 42S Remuera Settlement, and Part Section 54S Remuera Settlement to form the balance site. It will contain the mapped ONF and the recorded archaeological site.

The proposed lot configuration is depicted on the scheme plan attached in **Appendix 1**, and is summarised in **Table 2** below:

***Table 2**: Proposed allotment detail.*

Lots	Area[3]
Lot 1	3.1450ha
Lot 2	2.9635ha
Lot 3	3.9835ha
Lot 4	2.4400ha
Lot 5, Section 11S Te Pua Settlement, Section 42S Remuera Settlement, and Part Section 54S Remuera Settlement (amalgamated)	48.1831ha

3.2 Site suitability

Wilton Joubert Limited (WJ) has prepared a site assessment report in support of the proposed subdivision (see **Appendix 4**). It identifies suitable building platforms on proposed Lots 1 – 4, noting that the balance site contains an

[3] These areas are approximate and subject to survey.

existing residential unit. WJ makes several recommendations for development on the proposed lots, particularly for earthworks, foundations, and services.

Subject to compliance with the recommendations in their report, WJ concludes that the proposed lots are suitable for residential development pursuant to s106 of the RMA.

3.3 Access

Access to the proposed lots will be via existing and new vehicle crossings constructed at the building consent stage.

Proposed Lots 1 – 4 will be accessed from Remuera Settlement Road via new vehicle crossings. They will be constructed in accordance with the requirements of the FNDC ES at the building consent stage according to the location and orientation of future residential units. Each of the sites contain potential crossing locations (shown on the scheme plan attached in **Appendix 1**) that are able to achieve compliant sight distances in both directions.

The balance site will gain access over the existing vehicle crossings associated with the existing residential unit. No additional users or changes in use are proposed, and therefore no upgrades are required.

3.4 Wastewater

There is no public reticulated wastewater infrastructure available in this location.

No changes are proposed to the existing on-site wastewater management arrangements for the existing residential unit on the balance site.

On-site wastewater treatment and disposal systems will be required for proposed Lots 1 – 4. WJ recommends that these systems are designed by an engineer at the building consent stage.

It is anticipated that the recommendations of the WJ report will be encapsulated in a consent notice required as a condition of consent.

3.5 Stormwater

There is no public reticulated stormwater infrastructure available in this location.

No changes are proposed to the existing on-site stormwater management arrangements for the existing residential unit on the balance site.

WJ considered the management of stormwater on proposed Lots 1 – 4 in their report. They recommend that stormwater runoff from higher ground is intercepted and directed away from future building footprints. All stormwater from new impervious surfaces will be collected and discharged to a system designed by an engineer at the building consent stage.

It is anticipated that the recommendations of the WJ report will be encapsulated in a consent notice required as a condition of consent.

3.6 Water supply

There is no public reticulated water supply available in this location.

No changes are proposed to the existing on-site water supply arrangements for the existing residential unit on the balance site.

Future residential units on the remaining lots will be provided with on-site water supplies via water tanks. These arrangements will be established by the future owners at the time of applying for building consents.

Firefighting water supply will also be provided on-site in accordance with the Fire Fighting Water Supplies Code of Practice 4509:2008, or as otherwise agreed to by FENZ.

3.7 Electricity and telecommunications

The existing residential unit on the balance site has existing electricity and telecommunications connections.

It is not certain whether conventional electricity connections will be provided to the remaining lots. Other options such as solar panels may be utilised. No new connections are proposed as part of this subdivision. Irrespective of whether

connections are provided, all the remaining lots have direct frontage to a road ensuring that electricity connections can be established if required.

No hardwired telecommunications connections are proposed. Wireless services are available should future owners wish to establish a connection.

4. ASSESSMENT OF ENVIRONMENTAL EFFECTS

4.1 Existing environment

Section 104(1)(a) of the RMA requires a consideration of the actual and potential effects of allowing the proposed activity on the environment. The environment includes both the physical environment as it exists today and as it is reasonably anticipated to be following the implementation of existing lawful approvals.

In this case, the existing environment includes NA1116/95, the existing residential unit, and the access to the existing residential unit. It also includes the rural production activities undertaken on the site as well as the established pattern of rural and rural residential development within the surrounding environment. The existing environment is one where residential and rural activities already coexist, and where the site can be accessed from SH15 and Remuera Settlement Road.

4.2 Permitted baseline

Section 104(2) of the RMA allows a consent authority to disregard an adverse effect of an activity on the environment if a plan permits an activity with that effect. This is commonly referred to as the permitted baseline.

The permitted baseline of the site is as follows:

- Five residential units, including the establishment of one residential unit within the areas of what will be proposed Lots 1 – 4.
- Any number of farm sheds and other accessory buildings.

The effects associated with this permitted development, most notably the establishment of residential units on each of the proposed lots, form part of the permitted baseline and should be disregarded from the effects assessment. The subdivision does not give rise to new or intensified effects beyond those already enabled by the OFNDP.

4.3 Matters of discretion assessment (Rule 13.8.1(c))

The matters over which the FNDC has restricted their discretion in Rule 13.8.1(c) of the OFNDP are identified and assessed below:

Effects on the natural character of the coastal environment for proposed lots which are in the coastal environment;

Assessment – The site is not located in the coastal environment.

Effects of the subdivision under (b) and (c) above within 500m of land administered by the Department of Conservation upon the ability of the Department to manage and administer its land;

Assessment – The site adjoins Section 5 Remuera Settlement, held for conservation purposes under s62(1) of the Conservation Act 1987. It is managed by the Department of Conservation.

The rural residential lots (proposed Lots 1 – 4) are located in pasture adjacent to Remuera Settlement Road. They are at least 100m from Section 5 Remuera Settlement, separated by the balance site. They will be accessed from Remuera Settlement Road and serviced entirely on-site. The separation between Section 5 Remuera Settlement and future development on proposed Lots 1 – 4 ensures that the proposed subdivision will not affect the ability of the Department of Conservation to continue to manage and administer its land.

Effects on areas of significant indigenous flora and significant habitats of indigenous fauna;

Assessment – Although the majority of the indigenous vegetation on the site will be retained within the balance site, a small stand will be located within proposed Lots 1 – 4. However, this indigenous vegetation is located in a gully at the rear of these lots. The building sites, accesses, and services can be located within pasture. Future residential units do not require the removal of any indigenous vegetation to be constructed, accessed, or serviced. Accordingly, any effects on areas of significant indigenous flora and significant habitats of indigenous fauna will be less than minor relative to the existing environment and the permitted baseline.

The mitigation of fire hazards for health and safety of residents.

Assessment – As detailed in Section 3.6 of this report, firefighting water supplies will be provided on-site at the building consent stage in accordance with the Fire Fighting Water Supplies Code of Practice 4509:2008, or as otherwise agreed to by FENZ. No further mitigation of fire hazards is required.

4.4 Adverse effects conclusion

Overall, the adverse effects associated with this proposal will be less than minor relative to the existing environment and permitted baseline. There are no potentially adversely affected parties.

5. PLANNING ASSESSMENT

5.1 Relevant planning documents

Section 104(1) of the RMA sets out the matters that a consent authority must, subject to Part 2, have regard to when considering all applications for resource consent.

Given the hierarchical nature of planning documents under the RMA, and the requirement for lower order documents to "give effect to" higher order documents, the relevant documents that require assessment under s104(1) of the RMA are the Operative and Proposed FNDP, the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health Regulations 2011 (NES-CS), the NPS-HPL, and the National Policy Statement for Natural Hazards (NPS-NH).

5.2 Operative Far North District Plan

Given the nature of this application, this assessment considers the relevant objectives and policies in Chapter 8 'Rural Environment', Chapter 12.1 'Landscape and Natural Features' (LNF), Chapter 12.5 'Heritage', Chapter 13 'Subdivision', and Chapter 15 'Transportation'.

The relevant objectives and policies of the OFNDP are assessed below.

Chapter 8 – Rural Environment

The overarching intent of the RPZ is to enable farming and forestry activities and the continuation of a wide range of activities that are compatible with normal farming and forestry activities, including rural lifestyle and rural residential activities. The RPZ objectives and policies set out to achieve the stated purpose of the zone by enabling rural production activities and protecting them from inappropriate subdivision, use, and development,[4] protecting significant natural

[4] Objectives 8.3.2, 8.3.9, 8.3.10, 8.6.3.8, and 8.6.3.9, Policies 8.4.2, 8.6.4.1, and 8.6.4.8.

features and landscapes,[5] avoiding conflicts between land use activities,[6] maintaining and enhancing amenity values,[7] and avoiding, remedying, or mitigating adverse effects associated with servicing and infrastructure.[8] The proposal is assessed against these themes below.

Regarding the provisions that seek to enable rural production activities and protect them from inappropriate subdivision, use and development, the majority of the site will be retained within the balance site. It will have an area of approximately 48ha, sufficient to support ongoing rural production activities. The rural residential lots are located on the frontage of Remuera Settlement Road at the opposite end of the site from the farming related accessory buildings to avoid internal fragmentation of the farm.

Regarding the provisions that seek to protect significant natural features and landscapes, the proposed boundaries have been positioned so that the mapped ONF will be contained entirely within the balance site. The landform associated with the ONF will be retained and protected by a covenant, and no further development of the ONF is facilitated through the proposed subdivision. Furthermore, the proposal does not require the removal of any vegetation. All existing stands of vegetation will remain unaffected by the subdivision.

Regarding the provisions that seek to avoid conflicts between land use activities, the rural residential lots are adjacent to Remuera Settlement Road. This separates them from the rural production activities undertaken on the balance site, which are accessed from SH15. No new incompatible activities will be introduced as the permitted baseline already enables the establishment of residential units across what will be proposed Lots 1 – 4.

Regarding the provisions that seek to maintain and enhance amenity values, the proposal facilitates five 2ha lots in accordance with Rule 13.8.1(c) of the

[5] Objectives 8.3.4, 8.3.5 and 8.6.3.4, Policies 8.4.3, 8.4.4, and 8.4.8.

[6] Objectives 8.3.6 and 8.6.3.6, Policies 8.4.5, 8.6.4.7, 8.6.4.8 and 8.6.4.9.

[7] Objectives 8.3.7 and 8.6.3.3, Policies 8.4.4 and 8.6.4.4.

[8] Objectives 8.3.3 and 8.6.3.7, Policies 8.4.7, 8.4.8, 8.6.4.2, and 8.6.4.3.

OFNDP. The rural residential lots will be consistent with the amenity values of the surrounding environment as they will be located on Remuera Settlement Road in proximity to existing residential development. This reflects the anticipated pattern of rural residential development along existing road frontages in the RPZ rather than a departure from rural character. The retention of the remainder of the site in a large productive balance title ensure that the productive farmland surrounding the rural residential development will be retained.

Regarding the provisions that seek to avoid, remedy or mitigate adverse effects associated with servicing the subdivision, the proposed lots are capable of being serviced on-site in accordance with the recommendations of the WJ report. These arrangements will be established at the building consent stage.

When considered overall, the proposed subdivision is consistent with the objectives and policies of the RPZ by enabling an anticipated form of rural residential development while maintaining rural character and the capacity for rural production activities. It creates four additional rural residential lots in general accordance with Rule 13.8.1(c) without affecting the open pastoral character of the balance site or its ability to be used for productive purposes.

Chapter 12.1 – Landscape and Natural Features

The overarching intent of the LNF Chapter is to manage changes to ONFs to ensure that they retain the character of that particular feature. The objectives and policies set out to achieve the stated purpose by directing the protection of ONFs from inappropriate development[9] and avoiding, remedying or mitigating adverse effects.[10] This assessment considers whether the subdivision gives rise to any change within the ONF that would be inconsistent with that intent.

In this case the subdivision does not affect the mapped ONF relative to the existing situation. The proposed boundaries have been positioned so that the mapped ONF will be contained entirely within the balance site. The landform associated with the ONF will be retained and protected by a covenant, and no

[9] Objective 12.1.3.1, Policies 12.1.4.1 and 12.1.4.2

[10] Objective 12.1.3.4, Policies 12.1.4.4 and 12.1.4.6

further development of the ONF is facilitated through the proposed subdivision. The subdivision itself does not undermine the objectives or policies of the LNF Chapter as it does not introduce any change or development pressure within the ONF.

Overall, the proposal is consistent with the objectives and policies of the LNF Chapter as it avoids subdivision related effects on the ONF and maintains its existing character, landform, and extent.

Chapter 12.5 – Heritage

The overarching intention of the Heritage Chapter is to protect the heritage values of the Far North District. It includes eight objectives and fourteen policies which are designed to support this overarching intention. The relevant objectives and policies[11] require heritage values of resources, including archaeological sites, to be protected from inappropriate subdivision, use, and development. Adverse effects on archaeological sites are to be avoided or minimised. This assessment considers whether the proposed subdivision gives rise to any effects on the archaeological site that would be inconsistent with that intention.

The proposed subdivision has been designed to ensure that there are no effects on the archaeological site relative to the existing situation despite it being located within the subject site. The archaeological site will be contained entirely within the balance site, which will continue to be used for productive purposes. No physical works or changes in use of the balance site are proposed as part of this application. The only physical works that will be facilitated are confined to proposed Lots 1 – 4, which are separated from the recorded archaeological site. The subdivision itself does not authorise any land disturbance or development within the balance site.

[11] Objectives 12.3.1, 12.5.3.5, and 12.5.3.7, Policy 12.5.4.7.

Overall, the subdivision avoids or minimises effects on the archaeological site relative to the existing situation, consistent with the intent of the Heritage Chapter.

Chapter 13 – Subdivision

The objectives and policies of the Subdivision Chapter require subdivisions to be consistent with the purpose of the underlying zone,[12] serviced appropriately,[13] provided with electricity supplies appropriate to the activities undertaken on the lot,[14] and accessed in a safe and efficient manner.[15]

The proposed lots are consistent with the purpose, objectives, and policies of the RPZ as addressed above.

Regarding the provisions that require new lots to be serviced appropriately, the proposed lots are capable of being serviced on-site in accordance with the recommendations of the WJ report. These arrangements will be established at the building consent stage.

Regarding the provisions that require appropriate electricity supplies, it is not certain whether conventional electricity connections will be provided to the proposed lots. Other options such as solar panels may be utilised. Regardless, electricity connections can be established if future owners wish to install them as all the proposed lots have direct frontage to a road.

Regarding the provisions that require lots to be accessed in a safe and efficient manner, the proposed lots have existing vehicle crossings or will be provided with them at the building consent stage in accordance with the OFNDP and the FNDC ES. Further assessment of the objectives and policies of Transportation Chapter is provided below.

[12] Objective 13.3.1, Policy 13.4.1

[13] Objectives 13.3.2 and 13.3.5, Policy 13.4.8

[14] Objective 13.3.8

[15] Objective 13.3.2, Policies 13.4.2 and 13.4.5

Overall, the proposal is consistent with the objectives and policies of the Subdivision Chapter.

Chapter 15 – Transportation

The overarching intent of the Transportation Chapter is to provide parking, access, and public transportation facilities in a safe, efficient, and effective manner. Many of the objectives and policies are not relevant as they relate to parking and public transportation facilities which are more appropriately assessed when the proposed lots are developed. The relevant objectives and policies require the adverse traffic effects to be evaluated and minimised,[16] and require the provision of appropriate, safe, and efficient accesses.[17]

Access to the proposed lots will be from existing and new vehicle crossings. The existing vehicle crossings will continue to be associated with the existing residential unit and the productive farmland. No changes in use are proposed. The new vehicle crossings will be constructed at the building consent stage to comply with the requirements of the Transportation Chapter and the FNDC Engineering Standards. Accordingly, the vehicle crossings will be appropriate, safe, and efficient.

Overall, the proposal is consistent with the objectives and policies of the Transportation Chapter.

Conclusion

Overall, the proposal is consistent with the objectives and policies of the OFNDP.

5.3 Proposed Far North District Plan

Context

The PFNDP was publicly notified on 27 July 2022. Submissions and further submissions have been received, and the hearings have concluded. However, the Commissioners are yet to make their recommendations, and the Council is

[16] Objective 15.1.3.1, Policy 15.1.4.1

[17] Objectives 15.1.3.4 and 15.1.3.5, Policy 15.1.4.6

yet to issue their decision. In accordance with s86B(3) of the RMA, the rules that would ordinarily apply to this proposal do not currently have legal effect. Nevertheless, an assessment to determine the activity status that this proposal would have under the PFNDP provisions has been made in Section 1.4 of this report. While the majority of the rules do not have legal effect, the objectives and policies are a relevant consideration under s104(1)(b)(vi) of the RMA.

Weighting

With regards to weighting, the Commissioners are yet to make their recommendations. Those recommendations will then still be subject to the Council decision and the appeal process. Little weight should therefore be applied to the PFNDP when considering the application. Nonetheless, an assessment of the objectives and policies is provided below for completeness.

Assessment

The objectives and policies of the RPZ are relevant to the proposal as the site is proposed to be rezoned RPZ under the PFNDP. The district wide Subdivision, Transport, Natural Features and Landscapes (NFL), and Historic Heritage (HH) Chapters are also relevant.

Generally, the objectives and policies of the RPZ provide for subdivision where it maintains rural character and amenity without compromising the use of the land for primary production activities.[18] In this case, the rural residential lots have been positioned on Remuera Settlement Road. This is deliberate as it is on the edge of the site away from the farming related accessory buildings to avoid affecting the rural production activities that will continue on the balance site. The rural residential lots are also in proximity to existing residential development on Remuera Settlement Road, Lake Road and SH15. Accordingly, the proposed subdivision is not contrary to the objectives and policies of the RPZ Chapter of the PFNDP.

[18] RPZ-O3, O4, P4, P6 and P7.

The objectives and policies of the Subdivision Chapter seek to ensure subdivisions are in accordance with the provisions of the underlying zone, are appropriately serviced and integrated with the surrounding environment, and protect significant natural and cultural features, including ONFs and archaeological sites.[19] The proposed lots are consistent with the purpose of the RPZ as addressed above, and will be appropriately accessed and serviced as detailed Sections 3.2 – 3.7 of this report and in the WJ report. The mapped ONF will not be affected by the subdivision is it will be protected by a covenant, contained within the balance, and no new development will be facilitated within it. The archaeological site will also be retained within the balance site and separated from proposed Lots 1 – 4 where the physical works will take place at the building consent stage after the subdivision is completed.

The objectives and policies of the Transport Chapter seek to ensure that all new lots created through a subdivision have suitable access.[20] In this regard, the proposed lots will continue to use existing vehicle crossings (the balance site) or will be provided with new ones at the building consent stage in accordance with the FNDC ES. Accordingly, the proposed subdivision does not adversely affect the safety or efficiency of the transport network.

The relevant objectives and policies of the NFL Chapter are focused on ensuring land use and subdivision of an ONF is consistent with and does not compromise the characteristics and qualities of that feature.[21] In this regard, the proposed boundaries have been positioned so that the mapped ONF will be contained entirely within the balance site. The landform associated with the ONF will be retained and protected by a covenant, and no further development of the ONF is facilitated through the proposed subdivision.

The relevant objectives and policies of the HH Chapter are focused on ensuring that land use and subdivision protect archaeological sites.[22] The proposed

[19] SUB-O1, O2, O3, O4, P3 – P6, P10 and P11.

[20] TRAN-O5 and P8

[21] NFL-O2, P3, P8.

[22] HH-O2, P11, and P15.

subdivision protects the archaeological site as it will be contained entirely within the balance site, which itself will continue to be used for productive purposes. No physical works or changes in use of the balance site are proposed as part of this application.

Given the specific characteristics of the site, the proposed subdivision is not contrary to the objectives and policies of the PFNDP.

5.4 National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health Regulations 2011

All applications that involve subdivision, an activity that changes the use of a piece of land, or earthworks are subject to the provisions of the NES-CS. The regulation sets out the requirements for considering the potential for soil contamination, based on the HAIL[23] and the risk that this may pose to human health as a result of the proposed subdivision.

A review of aerial photographs and the Northland Regional Council 'selected land-use sites' database was undertaken, which confirmed that no HAIL activities are present or have ever taken place on the subject 'piece of land' - refer to the map attached in **Appendix 5**. Accordingly, the NES-CS does not apply to this application.

5.5 National Policy Statement for Highly Productive Land

As per Section 2.1 of this report, the site has Class 4 and 6 soils. These are not considered highly productive land under the NPS-HPL. Therefore, the NPS-HPL is not applicable to this application.

5.6 National Policy Statement for Natural Hazards

The NPS-NH came into effect on 15 January 2025. The overarching objective of the document (Objective 2.1) is to manage natural hazard risk to people and

[23] Hazardous Activities and Industries List

property associated with subdivision, use, and development using a risk-based proportionate approach.

The WJ report (**Appendix 4**) identifies building platforms on the vacant lots, noting that the balance site contains an existing residential unit. They do not identify the building platforms or their accesses as being subject to any of the natural hazards specified in Clause 1.3(1).[24]

Given none of the natural hazards identified in Clause 1.3(1) apply to the building platforms or their accesses, the NPS-NH is not relevant to this application.

5.7 Part 2 assessment

A detailed assessment of Part 2 matters is not required unless there are issues of invalidity, incomplete coverage, or uncertainty in the planning provisions.[25] That is not the case here, and therefore no assessment of the application is required under Part 2. However, for completeness, the proposal accords with the purpose of the RMA for the following reasons:

1. The proposal enables the efficient use and development of land by subdividing the property in a manner that is anticipated by the FNDP.
2. The proposal retains rural character and amenity values as it concentrates the rural residential lots on Remuera Settlement Road in proximity to existing residential development whilst preserving the balance site as a productive balance site.
3. Rural production values are maintained as the rural residential lots are located on the edge of the site to avoid fragmentation of the farm.
4. Any adverse effects will be less than minor, and are appropriately avoided, remedied, or mitigated.
5. The subdivision will not increase natural hazard risk to people or property.

[24] Flooding, landslips, coastal erosion, coastal inundation, active faults, liquefaction, and tsunami.

[25] *R J Davidson Family Trust the Marlborough District Council* [2018] NZCA 316

6. There are no risks to human health associated with the subdivision.

The proposal does not offend any matters of national importance in Section 6, or any of the other matters set out in Section 7 and 8 of the RMA.

6. NOTIFICATION

Sections 95A – 95F of the RMA require an assessment of whether an application should be publicly or limited notified.

The adverse effects of the proposal are assessed in Section 4 of this report. It concludes that any adverse effects will be no more than minor, particularly when assessed against the existing environment and permitted baseline, which includes the establishment of a residential unit on each of the rural residential lots.

The proposed subdivision does not give rise to any new or intensified adverse effects on the surrounding environment beyond those already anticipated by the planning framework. The density and sizes of the proposed lots is consistent with Rule 13.8.1(c) of the OFNDP. The mapped ONF and the recorded archaeological site will be contained entirely in the balance site, and will not be affected by future development on proposed Lots 1 – 4.

No persons are adversely affected, there are no special circumstances, the applicant has not requested notification, and there are no relevant plan rules or national environmental standards requiring notification.

Having considered the above, the proposal can proceed on a **non-notified** basis.

7. CONCLUSION

This application seeks to undertake a five-lot subdivision at Remuera Settlement Road, Ohaeawai.

The proposed lots are consistent with Rule 13.8.1(c) of the OFNDP as four additional lots are proposed, and the proposed lots have sizes in excess of 2ha. The future residential units on the vacant lots align with the permitted baseline for NA1116/95.

The mapped ONF and the recorded archaeological site will not be affected by the proposed subdivision as they will be located within the balance site, separated from the rural residential lots. The ONF overlay will be protected by a covenant in accordance with Rule 13.7.3.9 of the OFNDP. No new development is facilitated within the ONF overlay or in close proximity to the recorded archaeological site.

The environmental effects associated with the proposal have been assessed in Section 4 of this report and have been determined to be less than minor, having regard to the existing environment and the permitted baseline, in accordance with s104(1)(a) of the RMA.

Section 5 of this report considers the proposal in the context of the OFNDP and the PFNDP. Section 5.2 confirms that the proposal is consistent with the RPZ and the district wide LNF, Heritage, Subdivision, and Transportation Chapters of the OFNDP. Section 5.3 confirms that it is not contrary to the objectives and policies of the RPZ or the district wide Subdivision, Transport, NFL, and HH Chapters of the PFNDP. Sections 5.4 – 5.6 confirm that the NES-CS, NPS-HPL, and the NPS-NH are not relevant to this application. Accordingly, appropriate regard has been given to s104(1)(b)(i), s104(1)(b)(iii) and s104(1)(b)(vi) of the RMA.

Having regard to the relevant matters in s104(1) and s104B of the RMA, the proposal can be approved subject to the appropriate conditions of consent.

APPENDIX 1

SCHEME PLAN

100 0 100
METRES - 1:5000

N

Section 42S Remuera SETT
RT: NA1116/95 & RT: NA57A/15(m)

SEALED, IRREG WIDTH
STATE HIGHWAY 15

Lot 1
DP 41201

Part Section 57S
Remuera SETT

Section 41S
Remuera SETT
RT: NA1116/95 &
RT: NA57A/15(m)

Part Section 54S Remuera SETT
RT: NA1116/95 & RT: NA57A/15(m)

LOT 5
19.9655Ha

Section 5 Remuera SETT
(FOR CONSERVATION COVENANTS)

Section 17S Remuera SETT
RT: NA1116/95 &
RT: NA57A/15(m)

LOT 1
3.1450Ha

LOT 2
2.9635Ha

LOT 3
3.9835Ha

LOT 4
2.4400Ha

Lot 1
DP 146682

Part Omapere-
Taraire E Block

224.2 (562.9) 47.2 129.6 94.7 66.7 46.4 62.3 178.1 85.2 118.7 338.7 201.6 202.9 124.9 96.0 6.0 66.4 14.6 28.7 110.0 185.0 55.6 16.5 71.9 142.6 RT RT RT

REMUERA SETTLEMENT ROAD
METALLED, IRREG WIDTH

Section 11S Te Pua SETT
RT: NA1116/95 & RT: NA57A/15(m)

Date Plotted: 9/04/2026 File Path: P:\18000 - 18999\18694 - MNM Lynn Ltd\Drawings\Scheme Plan\S18694 - MNM Lynn Ltd - B.dwg

LOCAL AUTHORITY: FAR NORTH DISTRICT COUNCIL

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PROPOSED AMALGAMATION CONDITION

PURSUANT TO SECTION 220 (1)(b)(ii) OF THE RMA 1991 THAT LOT 5 HEREON, SECTION 42S REMUERA SETT, PART SECTION 54S REMUERA SETT (RT: NA1116/95 & RT: NA57A/15) & SECTION 11S TE PUA SETT (RT: NA1116/95 & RT: NA57A/15) BE HELD IN THE SAME RECORD OF TITLE.

PROPOSED LAND COVENANTS

OUTSTANDING NATURAL FEATURE

SHOWN	UNDERLYING PARCEL	AREA
A	LOT 5 HEREON	215m²
B	SECTION 11S TE PUA SETT	3008m²

OVERHEAD POWER LINE

BUILDING PLATFORMS

TOTAL TITLE AREA: 60.8986Ha
SUBD'N AREA: 29.4011Ha
COMPRISED IN: RST NA1116/95(Pt) & NA57A/15(m)

THIS SITE IS ZONED ' RURAL PRODUCTION ' AND THE BUILDING SETBACKS ARE THUS: 10m FROM ALL BOUNDARIES.

REV	DATE	DESCRIPTION
B	09.04.26	ADDING A COVENANT - DJ/KM
A	13.02.26	FIRST ISSUE - JBH/AA

REF. DATA:

reyburn & bryant
Ph: 09 438 3563 PO Box 191, Whangarei 0140
7 Selwyn Ave, Whangarei www.reyburnandbryant.co.nz

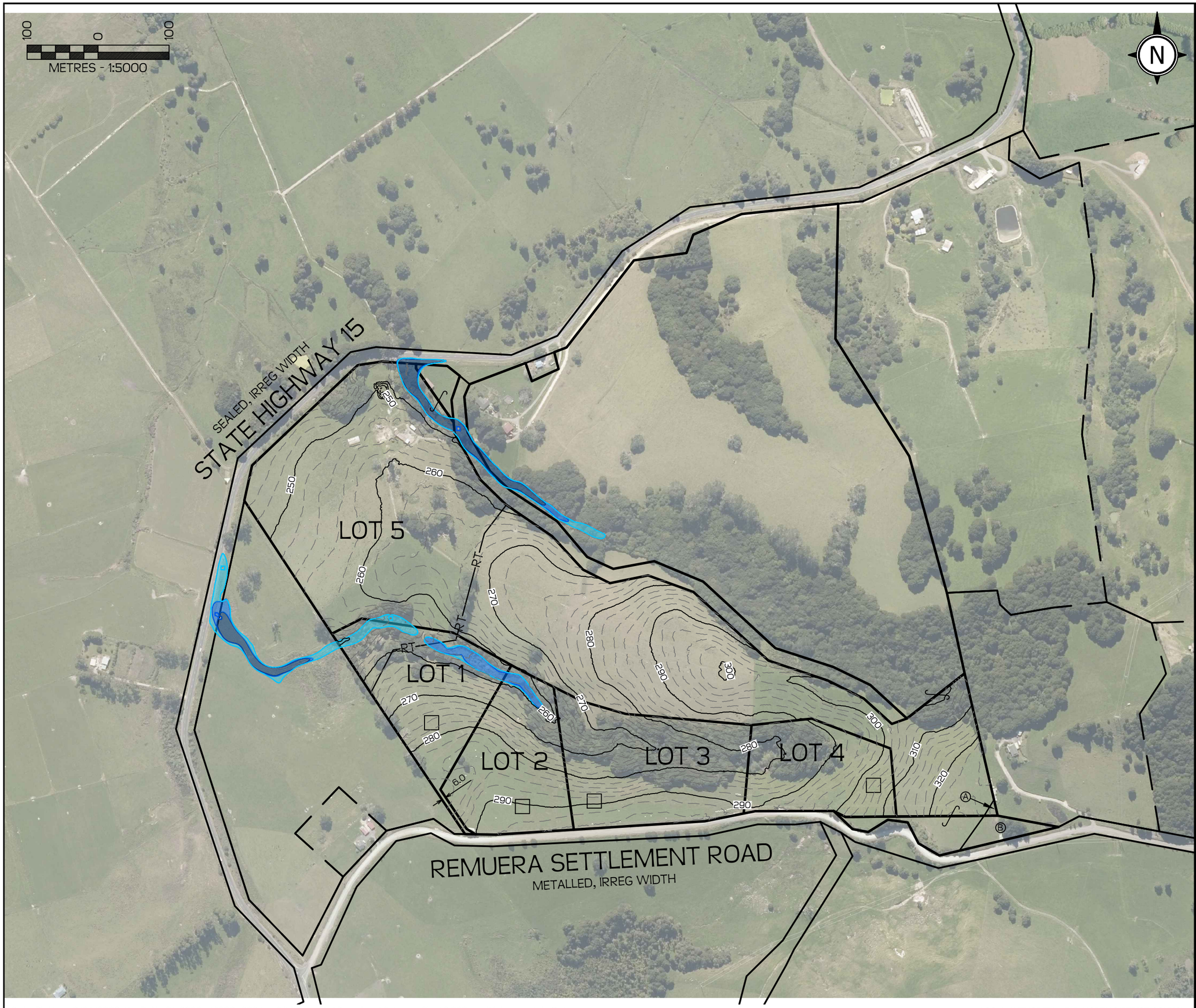
CLIENT

MNM LYNN LTD
REMUERA SETTLEMENT ROAD
OHAEAWAI

TITLE

PROPOSED SUBDIVISION OF Section 11S Te Pua SETT, Sections 41S & 42S Remuera SETT & Pt Section 54S Remuera SETT

DATE	SCALE	DRAWING REF.	SHEET	REV
APRIL 2026	1:5000 @A3	S18694	01 OF 02	B



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9. 2018-2020 1m LIDAR CONTOUR INFORMATION CAPTURED BY RPS.
10. BOUNDARIES SOURCED FROM GRIP. COORDINATES IN TERMS OF MOUNT EDEN 2000.

BUILDING PLATFORMS

10YR | 100YR FLOODING HAZARD

MAJOR CONTOUR INTERVALS @ 5.0m
MINOR CONTOUR INTERVALS @ 2.0m

TOTAL TITLE AREA: 60.8986Ha
SUBD'N AREA: 29.4011Ha
COMPRISED IN: RST NA1116/95(Pt) & NA57A/15(m)

THIS SITE IS ZONED ' RURAL PRODUCTION ' AND THE BUILDING SETBACKS ARE THUS: 10m FROM ALL BOUNDARIES.

REV	DATE	DESCRIPTION
B	09.04.26	ADDING A COVENANT - DJ/KM
A	13.02.26	FIRST ISSUE - JBH/AA

REF. DATA:

reyburn & bryant
Ph: 09 438 3563
7 Selwyn Ave, Whangarei
PO Box 191, Whangarei 0140
www.reyburnandbryant.co.nz

CLIENT

MNM LYNN LTD
REMUERA SETTLEMENT ROAD
OHAEAWAI

TITLE

PROPOSED SUBDIVISION OF Section 11S Te Pua SETT, Sections 41S & 42S Remuera SETT & Pt Section 54S Remuera SETT

DATE	SCALE	DRAWING REF.	SHEET	REV
APRIL 2026	1:5000 @A3	S18694	02 OF 02	B

LOCAL AUTHORITY: FAR NORTH DISTRICT COUNCIL

100 0 100
METRES - 1:5000

N

Section 42S Remuera SETT
RT: NA1116/95 & RT: NA57A/15(m)

SEALED, IRREG WIDTH
STATE HIGHWAY 15

Lot 1
DP 41201

Part Section 57S
Remuera SETT

Section 41S
Remuera SETT
RT: NA1116/95 &
RT: NA57A/15(m)

Part Section 54S Remuera SETT
RT: NA1116/95 & RT: NA57A/15(m)

LOT 5
19.9655Ha

Section 5 Remuera SETT
(FOR CONSERVATION COVENANTS)

Section 17S Remuera SETT
RT: NA1116/95 &
RT: NA57A/15(m)

LOT 1
3.1450Ha

LOT 2
2.9635Ha

LOT 3
3.9835Ha

LOT 4
2.4400Ha

Part Omapere-
Taraire E Block

Lot 1
DP 146682

REMUERA SETTLEMENT ROAD
METALLED, IRREG WIDTH

Section 11S Te Pua SETT
RT: NA1116/95 & RT: NA57A/15(m)

224.2 47.2 129.6 94.7 66.7 46.4 62.3 178.1 85.2 118.7 96.0 142.6 71.9 16.5 55.6 185.0 110.0 14.6 28.7 66.4 6.0 201.6 338.7 (562.9) 202.9 124.9

RT

A B

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9. 2018-2020 1m LIDAR CONTOUR INFORMATION CAPTURED BY RPS.
10. BOUNDARIES SOURCED FROM GRIP. COORDINATES IN TERMS OF MOUNT EDEN 2000.

PROPOSED AMALGAMATION CONDITION

PURSUANT TO SECTION 220 (1)(b)(ii) OF THE RMA 1991 THAT LOT 5 HEREON, SECTION 42S REMUERA SETT, PART SECTION 54S REMUERA SETT (RT: NA1116/95 & RT: NA57A/15) & SECTION 11S TE PUA SETT (RT: NA1116/95 & RT: NA57A/15) BE HELD IN THE SAME RECORD OF TITLE.

PROPOSED LAND COVENANTS

OUTSTANDING NATURAL FEATURE

SHOWN	UNDERLYING PARCEL	AREA
A	LOT 5 HEREON	215m²
B	SECTION 11S TE PUA SETT	3008m²

OVERHEAD POWER LINE

BUILDING PLATFORMS

TOTAL TITLE AREA: 60.8986Ha
SUBD'N AREA: 29.4011Ha
COMPRISED IN: RST NA1116/95(Pt) & NA57A/15(m)

THIS SITE IS ZONED ' RURAL PRODUCTION ' AND THE BUILDING SETBACKS ARE THUS: 10m FROM ALL BOUNDARIES.

REV	DATE	DESCRIPTION
B	09.04.26	ADDING A COVENANT - DJ/KM
A	13.02.26	FIRST ISSUE - JBH/AA

REF. DATA:

reyburn & bryant
Ph: 09 438 3563 PO Box 191, Whangarei 0140
7 Selwyn Ave, Whangarei www.reyburnandbryant.co.nz

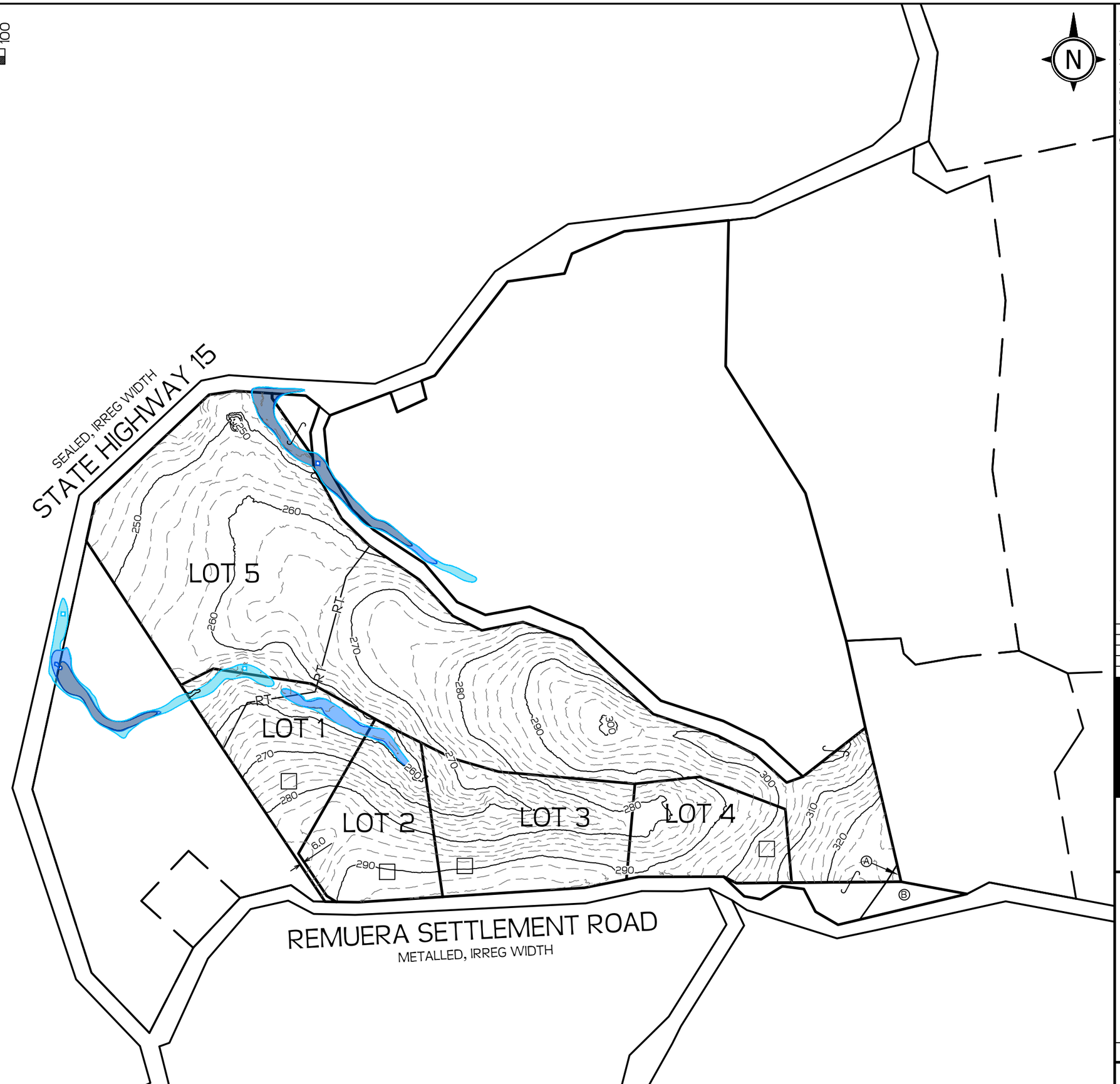
CLIENT
MNM LYNN LTD
REMUERA SETTLEMENT ROAD
OHAEAWAI

TITLE
PROPOSED SUBDIVISION OF Section 11S Te Pua SETT, Sections 41S & 42S Remuera SETT & Pt Section 54S Remuera SETT

DATE	SCALE	DRAWING REF.	SHEET	REV
APRIL 2026	1:5000 @A3	S18694	01 OF 02	B

LOCAL AUTHORITY: FAR NORTH DISTRICT COUNCIL

100 0 100
METRES - 1:5000



CAUTION:

1. THIS DRAWING SHOULD NOT BE AMENDED MANUALLY.
2. AREAS & DIMENSIONS ARE APPROXIMATE ONLY AND ARE SUBJECT TO FINAL SURVEY.
3. THE VENDOR & PURCHASER MUST CONTACT THE SURVEYOR IF SALE & PURCHASE AGREEMENTS ARE ENTERED INTO USING THIS PLAN.
4. SERVICES MUST NOT BE POSITIONED USING THIS PLAN.
5. DO NOT SCALE OFF DRAWINGS.
6. THIS PLAN IS COPYRIGHT TO REYBURN & BRYANT (1999) LIMITED.
7. DESIGNED BY REYBURN & BRYANT - WHANGAREI - NEW ZEALAND
8. 04m 2014-2016 RURAL AERIAL SOURCED FROM AERIAL SURVEYS LTD INFORMATION AVAILABLE ON LINZ DATA SERVICE.
9. 2018-2020 1m LIDAR CONTOUR INFORMATION CAPTURED BY RPS.
10. BOUNDARIES SOURCED FROM GRIP. COORDINATES IN TERMS OF MOUNT EDEN 2000.

BUILDING PLATFORMS

10YR | 100YR FLOODING HAZARD

MAJOR CONTOUR INTERVALS @ 5.0m
MINOR CONTOUR INTERVALS @ 2.0m

TOTAL TITLE AREA: 60.8986Ha
SUBD'N AREA: 29.4011Ha
COMPRISED IN: RST NA1116/95(Pt) & NA57A/15(m)

THIS SITE IS ZONED ' RURAL PRODUCTION ' AND THE BUILDING SETBACKS ARE THUS: 10m FROM ALL BOUNDARIES.

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DATE	SCALE	DRAWING REF.	SHEET	REV
APRIL 2026	1:5000 @A3	S18694	02 OF 02	B

Date Plotted: 9/04/2026 File Path: P:\18000 - 18999\18694 - MNM Lynn Ltd\Drawings\Scheme Plan\S18694 - MNM Lynn Ltd - B.dwg

LOCAL AUTHORITY: FAR NORTH DISTRICT COUNCIL

APPENDIX 2

RULE ASSESSMENT

Operative District Plan Provisions

Section 13 Subdivision		
Rule	**Status**	**Comment**
13.7 Controlled (Subdivision) Activities		
13.7.1 – Boundary Adjustments: All Zones except the Recreational Activities and Conservation Zones	N/A	Consent is not sought under this rule as additional lots are proposed.
13.7.2.1 – Minimum Area for Vacant New Lots and New Lots which already accommodate Structures	**Restricted discretionary**	Five lots are proposed, each with a minimum size of 2ha. NA1116/95 and NA47A/15 were created prior to 28 April 2000. The balance site which contains the ONF overlay has a size larger than 20ha.
13.7.2.2 – Allotment dimensions	**Controlled**	The proposed lots can contain a shape with a dimension of 30m x 30m.
13.7.2.3 – Amalgamation of Land in a Rural Zone with land in an Urban or Coastal Zone	N/A	Not proposed.
13.7.2.4 – Lots divided by Zone boundaries	N/A	Not proposed.
13.7.2.5 – Sites divided by an Outstanding Landscape, Outstanding Landscape Feature or Outstanding Natural Feature	**Controlled**	The balance site which contains the ONF overlay has a size larger than 20ha.
13.7.2.6 – Access, Utilities, Roads, Reserves	N/A	Not proposed.
13.7.2.7 – Savings as to Previous Approvals	N/A	Not proposed.
13.7.2.8 – Proximity to Top Energy Transmission Lines	N/A	Not proposed.
13.7.2.9 – Proximity to the National Grid	N/A	Not proposed.
13.7.3.1 – Property Access	**Controlled**	The proposed subdivision complies with Rules 15.1.6C.1.1 – 15.1.6C.1.11. Refer to assessments from Chapter 15 below.
13.7.3.2 – Natural and Other Hazards	N/A	The building sites identified in the WJ site assessment report (**Appendix 4**) are not subject to any of the identified natural hazards.
13.7.3.3 – Water Supply	**Controlled**	The proposed lots will be supplied with water on-site.

13.7.3.4 – Stormwater Disposal	**Controlled**	The proposed lots will dispose of stormwater on-site.
13.7.3.5 – Sanitary Sewage Disposal	**Controlled**	The proposed lots will dispose of wastewater on-site.
13.7.3.6 – Energy Supply	N/A	The sites are not within any of the identified zones.
13.7.3.7 – Telecommunications	N/A	The sites are not within any of the identified zones.
13.7.3.8 – Easements for any purpose	**Controlled**	Any necessary easements are shown on the scheme plan or will be provided as required.
13.7.3.9 – Preservation of Heritage Resources, Vegetation, Fauna and Landscape, and Land set aside for Conservation purposes.	**Controlled**	The ONF overlay is proposed to be formally protected as part of the subdivision.
13.7.3.10 – Access to Reserves and Waterways	N/A	There are no public reserves, waterways or esplanade reserves on or adjoining the sites.
13.7.3.11 – Land Use Compatibility	N/A	No new land uses are proposed.
13.7.3.12 – Proximity to Airports	N/A	The sites are not located in close proximity to an airport.
13.7.4 – Subdivision within the National Grid Corridor for all zones	N/A	The sites are not within the National Grid Corridor
13.8 Restricted Discretionary Activities		
13.8.1 – Subdivision within the Rural Production Zone	**Restricted discretionary**	a. Not proposed b. Not proposed. c. NA1116/95 and NA57A/15 were created prior to 28 April 2000. Four additional titles are proposed. The proposed lots are all larger than 2ha.
13.8.2 – Subdivision within 100m of Minerals Zone	N/A	Not proposed.
13.8.3 – Subdivision in the Golf Living Sub-Zone (Kauri Cliffs Zone)	N/A	Not proposed.
13.8.4 – Subdivision in the General Coastal Zone	N/A	Not proposed.
13.8.5 – Subdivision in the Coastal Living and South Kerikeri Inlet Zones	N/A	Not proposed.
13.9 Discretionary Activities		
13.9 – Discretionary Activities	**Discretionary**	The subdivision does not comply with Rule 13.7.9 as outlined above.

13.9.1 – Minimum net area for vacant new lots and new lots which already accommodate structures.	N/A	The proposed lot sizes comply with Rule 13.8.1(c).
13.9.2 – Management Plans	N/A	Not proposed.
13.9.3 – Development Bonus	N/A	No protection of the identified features is proposed.
Overall Status	**Restricted discretionary**	

Section 15.1.6 Traffic		
Rule	**Status**	**Comment**
15.1.6C Access		
15.1.6C.1.1 – Private accessway in all zones	Permitted	a. Any new accesses will be constructed in accordance with Appendix 3B-1 of the OFNDP. b. The sites are not within an urban zone. c. No shared accesses are proposed. d. No more than 8 H.E.s will use the vehicle crossings. e. Accesses are not proposed within identified areas.
15.1.6C.1.2 – Private accessways in urban zones	N/A	Not an urban zone
15.1.6C.1.3 – Passing bays on private accessways in all zones	Permitted	a. The vehicle crossings will have compliant widths. Passing bays are not required. b. Passing bays are not required. c. No shared accesses are proposed.
15.1.6C.1.4 – Access over footpaths	Permitted	a. Each of the proposed lots will have a single vehicle crossing. b. The maximum width of the vehicle crossings will be 6m.
15.1.6C.1.5 – Vehicle crossing standards in rural and coastal zones	Permitted	a. Any new vehicle crossings will be constructed in accordance with the FNDC ES. b. Any new vehicle crossings will be sealed. c. Any new vehicle crossings will each serve one property.
15.1.6C.1.6 – Vehicle crossing standards in urban zones.	N/A	The sites are not in an urban zone.
15.1.6C.1.7 – General access standards	Permitted	a. There will be sufficient room to manoeuvre on-site. b. Any bends will allow for the passage of a Heavy Rigid Vehicle. c. Any excess area will be grassed.

		d. The vehicle crossings will manage runoff to reduce the volume and rate of stormwater runoff and contaminant loads where practical.
15.1.6C.1.8 – Frontage to existing roads	Permitted	If the carriageway encroaches into the lot boundaries it will be vested as road. This will be confirmed at the survey stage.
15.1.6C.1.9 – New roads	N/A	No new roads are to be vested.
15.1.6C.1.10 – Service lanes, cycle and pedestrian accessways	N/A	No new service lanes, cycle or pedestrian accesses are proposed.
15.1.6C.1.11 – Road designations	N/A	The sites do not front an existing road which is subject to a designation for road acquisition and widening purposes.
Overall Status	**Permitted**	

Proposed District Plan Provisions

Subdivision Chapter (SUB)		
Rule	**Status**	**Comment**
SUB-R1 – Boundary adjustments	N/A	Consent is not sought under this rule as additional lots are proposed.
SUB-R2 – Subdivision of land solely to create an allotment that is for the purpose of public works, infrastructure reserves or access	N/A	Not proposed
SUB-R3 – Subdivision of land to create a new allotment	**Non-complying**	1. The subdivision complies with SUB-S2 – S7. 2. The subdivision does not comply with SUB-S1 as proposed Lots 1 – 4 are smaller than 8ha.
SUB-R4 – R10	N/A	Not proposed.
SUB-R11 – Subdivision of a site within flood hazard areas	**Restricted discretionary**	The balance site contains the mapped 10 and 100-year flood hazard areas. The existing residential unit on the balance site is located outside of the flood plain. The access to it does not need to pass through the flood waters.
SUB-R12 – R17	N/A	Not proposed.
SUB-R18 – Subdivision of a site within an Outstanding Natural Landscape and Outstanding Natural Feature	**Discretionary**	The balance site contains the mapped ONF overlay.
SUB-R19 – R21	N/A	Not proposed.
SUB-S1 – Minimum allotment sizes	**Non-complying**	Proposed Lots 1 – 4 are smaller than 8ha.
SUB-S2 – Requirements for building platforms for each allotment	**Controlled**	There is sufficient space within the proposed lots for 30m x 30m building platforms.
SUB-S3– Water supply	**Controlled**	The proposed lots will be supplied with water on-site.
SUB-S4 – Stormwater management	**Controlled**	The proposed lots will dispose of stormwater on-site.
SUB-S5 – Wastewater disposal	**Controlled**	The proposed lots will dispose of wastewater on-site.
SUB-S6 – Telecommunications and power supply	N/A	The site is not within any of the identified zones.
SUB-S7 – Easements for any purpose	N/A	Any necessary easements are shown on the scheme plan or will be provided as required.
SUB-S8 – Esplanades	N/A	Proposed Lots 1 – 4 do not adjoin the Mean High Water Springs, the bank of a river, or a lake.

Overall Status	**Non-complying**

Transport Chapter (TRAN)		
Rule	**Status**	**Comment**
TRAN-R1 – Parking	Permitted	Sufficient parking spaces will be provided for the proposed lots in accordance with TRAN-S1.
TRAN-R2 – Vehicle crossings and access, including private accessways	Permitted	1. The accesses will serve no more than 8 H.E. 2. Any new vehicle crossings will provide sufficient access for fire appliances. 3. The new vehicle crossing will not be off a State Highway or a road classified arterial or higher. 4. There will be no unused vehicle crossings. 5. The private accessways will comply with TRAN-Table 9. 6. Any new vehicle crossings will comply with TRAN-S2 and TRAN-S3 as outlined below.
TRAN-R3 – Maintenance or upgrading of existing transport infrastructure within the existing road corridor	N/A	No maintenance or upgrading of existing transport infrastructure is proposed within the road corridor.
TRAN-R4 – Electric vehicle charging stations	N/A	Does not propose an electric charging station.
TRAN-R5 – Trip generation	Permitted	Less than 20 residential units are proposed.
TRAN-R6 – R10	N/A	Not proposed.
TRAN-S1 – Requirements for parking	Permitted	1. The minimum number of on-site car parks will be provided at building consent stage. 2. Accessible car parking spaces will be provided if they are required. 3. No loading spaces are required. 4. No end of trip facilities are required. 5. Any on-site car parks will have sufficient manoeuvring dimensions. 6. The activity is represented in TRAN-Table 1.
TRAN-S2 – Requirements for vehicle crossings	Permitted	1. There will be only one vehicle crossing per site. 2. There are no pedestrian crossing facilities in the vicinity of the site. 3. The sites where new vehicle crossings are proposed only have frontage to one road. 4. The vehicle crossings will be sufficient separated from intersections. 5. The vehicle crossings meet the minimum sight distances for the operating speed limit.

TRAN-S3 – Requirements for passing bays	N/A	Passing bays are not required as shared accesses are not proposed.
Overall Status	**Permitted**	

APPENDIX 3

RECORDS OF TITLE AND ASSOCIATED MEMORIALS

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017

Search Copy

R.W. Muir
Registrar-General
of Land

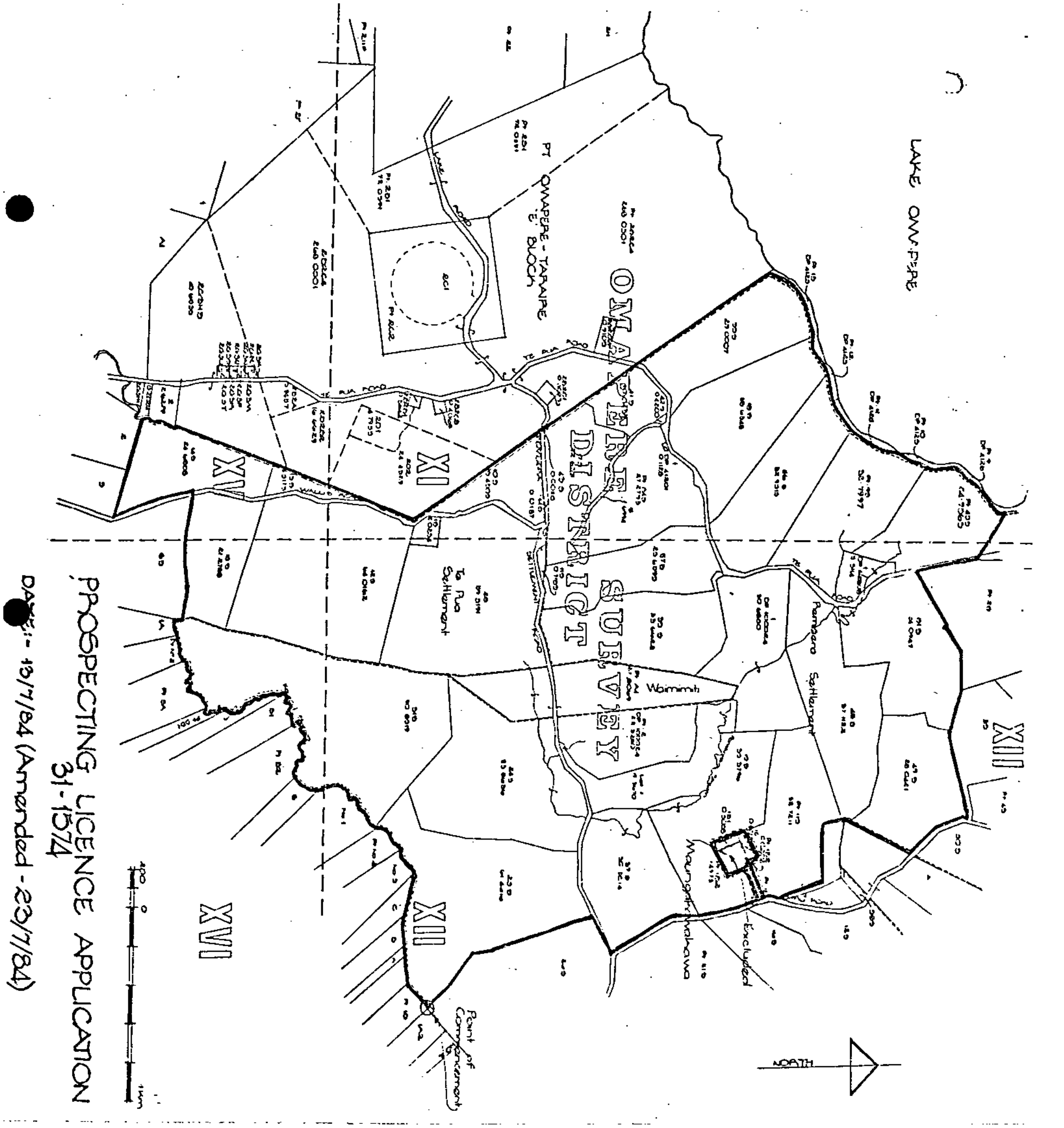
Identifier	**NA57A/15**
Land Registration District	**North Auckland**
Date Registered	28 April 1986 12:22 pm

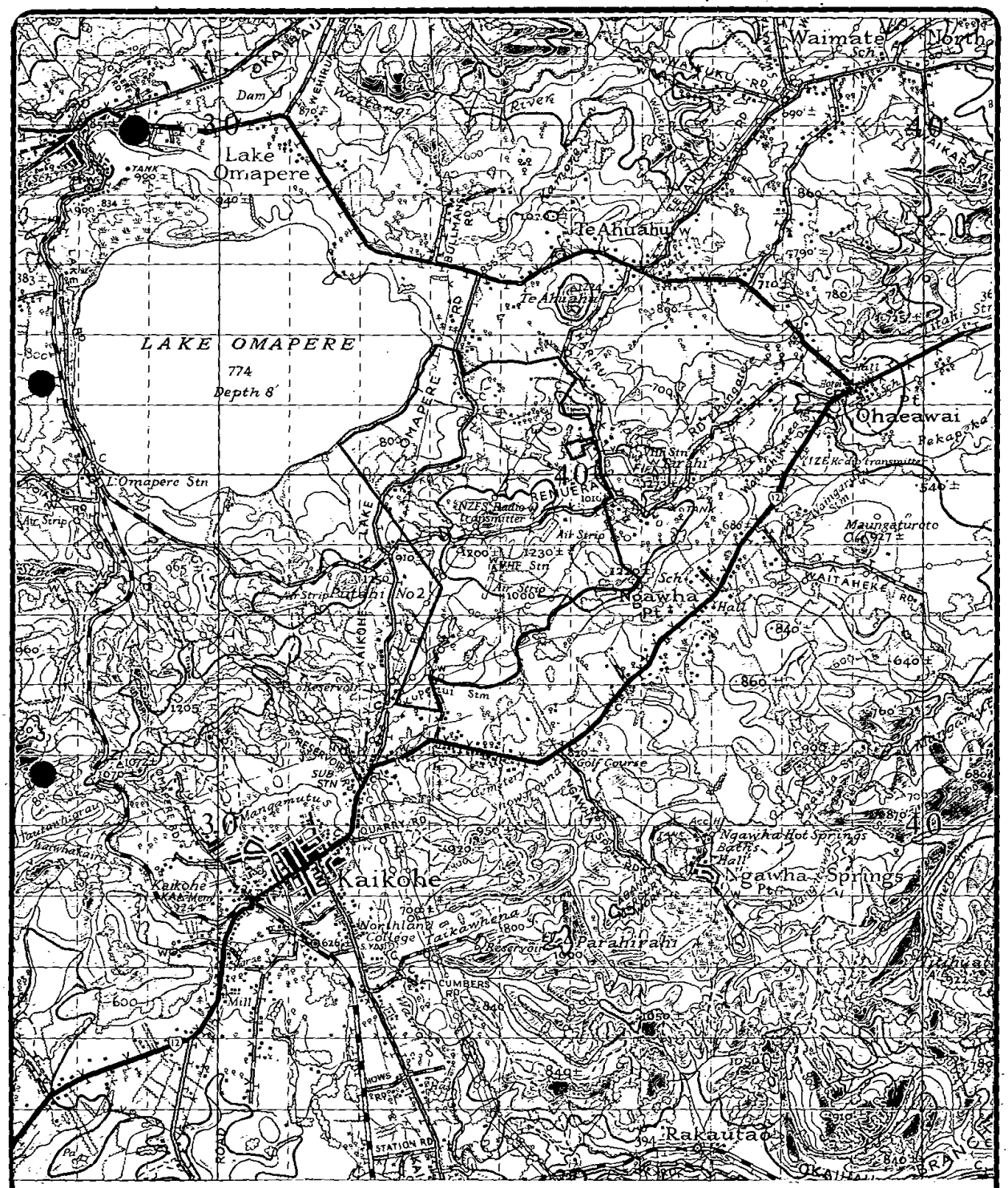
Type	Licence under s140 Mining Act 1971
Area	981.1928 hectares more or less
Legal Description	See Legal Description on Attached Image

Registered Owners

Newmont Proprietary Limited

Interests


LAKE OMAPERE
PT OMAPERE - TARAIRE 'E' BLOCK
OMAPERE SURVEY DISTRICT
XI
XII
XIII
XVI
Te Rua Settlement
Pamaoro Settlement
Excluded
Point of Commencement
NORTH
PROSPECTING LICENCE APPLICATION
31-1574
DATE:- 19/7/84 (Amended - 23/7/84)



LOCALITY MAP PROSPECTING LICENCE 311574

LAND DISTRICT NORTH AUCKLAND

LOCAL AUTHORITY BAY OF ISLANDS COUNTY

SCALE: 1 : 63 360

PREPARED BY LHC	FILE 19/311574
CHECKED BY SB	DATE 10/4/1984

Map Reference
NZMS 1
Sheet N 15

L & S N47

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD

Search Copy

R.W. Muir
Registrar-General
of Land

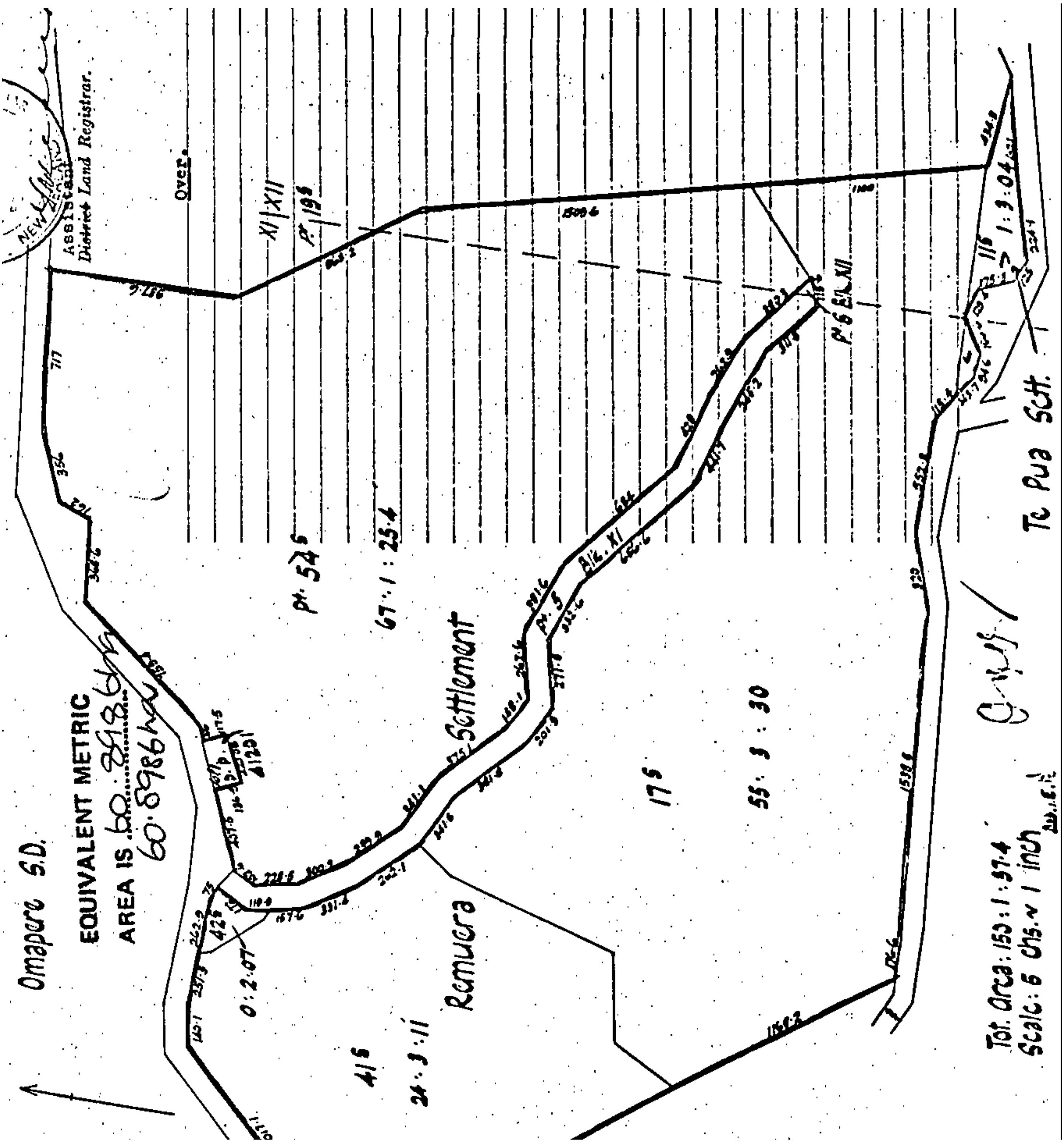
Identifier	**NA1116/95**
Land Registration District	**North Auckland**
Date Issued	09 July 1954

Prior References
NA1090/267

Estate	Fee Simple
Area	60.8986 hectares more or less
Legal Description	Section 11S Te Pua Settlement and Section 17S, Section 41S, Section 42S and Part Section 54S Remuera Settlement

Registered Owners
Beach Road Farms 1996 Limited

Interests
Subject to Section 206 Land Act 1924


Assistant District Land Registrar.
Over.
Omapere S.D.
EQUIVALENT METRIC AREA IS 60.8986ha
Settlement
Remuera
Te Pua Sett.
Tot. area: 153:1:37.4
Scale: 6 chs. = 1 inch

APPENDIX 4

WILTON JOUBERT LIMITED SITE

ASSESSMENT REPORT

Wilton Joubert Limited
185 Waipapa Road,
Kerikeri 0230
Tel: (09) 527 0196

SITES	**Two Properties of Remuera Settlement Road, Ōhaeawai**
LEGAL DESCRIPTIONS	**Section 41S Remuera SETT & Section 17S Remuera SETT**
PROJECT	**Proposed 5-Lot Subdivision**
CLIENT	**Mack Lynn**
REFERENCE NO.	**145312**
DOCUMENT	**Site Assessment Report**
STATUS/REVISION NO.	**FINAL – Issued for Resource (Subdivision) Consent**
DATE OF ISSUE	**12 March 2026**

Report Prepared For	Attention	Email
Mack Lynn	**Joseph Henehan**	wakelinsstation@gmail.com joseph@reyburnandbryant.co.nz

Authored by	**S. Page**	Engineering Technician	shaun@wjl.co.nz	
Reviewed by	**A. Brooke** *NZDE (Civil)*	Engineering Technician	aidan@wjl.co.nz	
Approved by	**C. Hegedus** *BETech (Geotech) CPEng, CMEngNZ*	Senior Geotechnical Engineer	csaba@wjl.co.nz	

1. EXECUTIVE SUMMARY

The following table is intended to be a concise summary which must be read in conjunction with the relevant report sections as referenced herein.

Development Type:	5-Lot subdivision (proposed Lots 1-4 for assessment).
Development Proposals Supplied:	Yes – Two Subdivision Scheme Plans.
NZS3604:2011 Type Structure(s):	Future structures are assumed to be.
Geology Encountered:	Kerikeri Volcanic Group Late Miocene Andesite of Kaikohe – Bay of Islands Volcanic Field.
Surficial Topsoil Encountered:	Yes – Surficial layers of topsoil were encountered to depths ranging between 0.15m and 0.35m below present ground level.
Overall Site Gradient in Proximity to Designated Building Platforms:	**Lots 1, 2 and 4:** Gently to moderately inclined (averaging less than 12°). **Lot 3:** Gently to steeply inclined (between 6° to 30°).
Site Stability Risk:	Low risk of global, deep-seated instability at each designated building platform (DBP) on all four proposed Lots, provided the proposed Lot 3 DBP is setback a further 20m to the south, as depicted on our appended Site Plan (Drawing No. 145312-G600).
Liquefaction Risk:	Negligible risk of liquefaction susceptibility.
Preliminary Foundation Recommendations:	Shallow foundations, such as a reinforced, stiffened raft slab foundation system, slab-on-grade with deepened perimeter strip footings, or timber subfloor suspended on bored timber piles/poles, will likely be suitable to support future dwellings within the DBPs at proposed Lots 1-4, provided they are designed to accommodate vertical movement of soil associated with Soil Reactivity **Class H – Highly Reactive**.
Soil Bearing Capacity:	The available Geotechnical Ultimate Bearing Capacity for future foundation design purposes at proposed Lots 1 and 4 should be confirmed via site-specific Geotechnical investigations and assessments undertaken during the Building Consent stage. For preliminary soil bearing capacity, refer to Section 9.1.1 below.
NZBC B1 Expansive Soil Classification:	Class H – Highly Expansive (ys = 78mm).
NZS1170.5:2004 Site Subsoil Classification:	Class C – Shallow soil stratigraphy.

Earthworks:	Due to the variable soils encountered across the DBPs, we recommend no earthworks are undertaken until site-specific proposals have been geotechnically investigated and assessed during the Building Consent stage. Such assessments will need to provide appropriate cut-fill parameters and limits that are geotechnically appropriate for the subsoils encountered across future development locations.
Consent Application Report Suitable for:	**Resource Consent**: No geotechnical hazards were identified as listed in the Resource Management Act (RMA) Section 106 that is considered a constraint to the proposed subdivision and cannot be addressed by typical engineering design and construction. This report is not intended to support any Building Consent application. Future development proposals at proposed Lots 1-4 will need to be subject to site-specific investigations and assessments during the Building Consent stage.

2. INTRODUCTION

2.1. SCOPE OF WORK

Wilton Joubert Limited (WJL) was engaged by **Mack Lynn** (the Client) to undertake a geotechnical assessment of the above site, where we understand, it is proposed to subdivide two existing properties into five individual allotments.

The primary purpose of this report is to provide Geotechnical assessments, along with preliminary design recommendations, pertaining to future residential developments within four new vacant Lots, being proposed Lots 1-4. The remaining area and existing farm buildings at the northwestern portion of the properties will be contained within proposed Lot 5.

It is our understanding that this report will be submitted to support a Resource Consent application for the proposed subdivision development.

2.2. SUPPLIED INFORMATION

At the time of preparing this report, we were supplied with two Subdivision Scheme Plans depicting the proposed subdivision development, dated February 2026 (Ref: S18694), prepared by Reyburn & Bryant Limited.

Any revision of the Subdivision Scheme Plans supplied with geotechnical implications should be referred back to us for review.

3. SITE DESCRIPTION

The proposed subdivision will be established within the following properties, which are located off the northern side of Remuera Settlement Road, Ōhaeawai, and accessed 350m northeast of the Te Pua Road intersection as indicated on our appended Site Plan (Drawing No. 145312-G600) and in Figure 1 below:

- Legally described as Section 41S Remuera SETT and Section 17S Remuera SETT

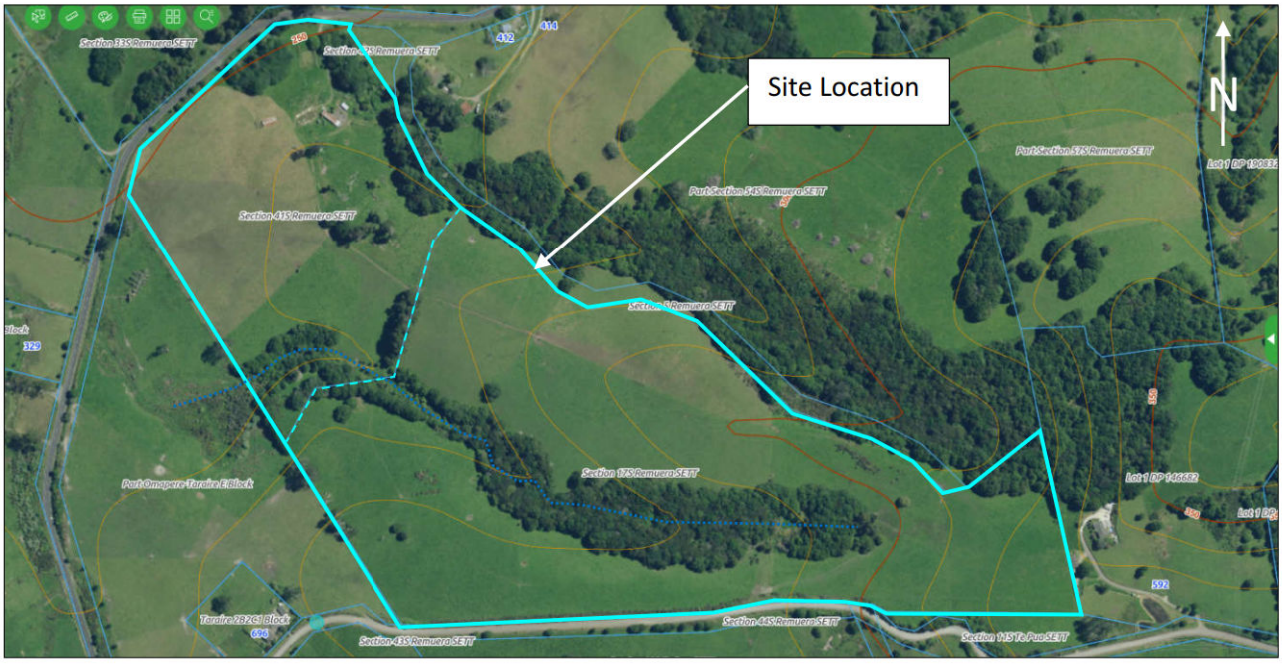


Figure 1: Aerial view with the subject properties highlighted in cyan. (From Far North Atlas / Kohinga Mahere on-line GIS database)

The surface area of the subject properties (the site) is approximately 60.1ha and is accessed at the southwestern boundary corner via an existing farm gate. A secondary gate entrance is present towards the southeastern end of the road frontage boundary.

Built development on-site comprises existing farm buildings at the northwestern portion of the site, along with boundary and internal fences. Vegetation comprises mainly pasture, with a bush covered protected natural area and stream running at the base that traverses east to west through the middle of the site, as indicated in Figure 1 above. A similar bush covered area also bounds the northern boundary of the site. Large surficial rocks and boulders were intermittently present across the site.

Broadly speaking, the site is largely set around an east to west trending ridgeline crest that traverses centrally along the southern boundary. Moderate to steeply sloping side flanks fall from the crest down to the north towards the central bush covered protected natural area. A gently sloping spur flank falls to the northwest from the western edge of the ridgeline crest. The eastern portion is covered by a northwest facing, moderately inclined flank that falls from the land upslope of the southeastern boundary corner down to the central bush covered protected natural area.

The Far North District Council (FNDC) on-line GIS Water Services Map indicates that public underground service connections are not available to the property. Overhead powerline traverse near the road frontage boundary.

4. DEVELOPMENT PROPOSALS

Based on our review of the two Subdivision Scheme Plans supplied, it is our understanding that the Client intends to subdivide the existing properties into five individual allotments, as shown in Figure 1 below and indicated on our appended Site Plan.

Figure 2: Subdivision Scheme Plan (from Reyburn & Bryant Limited).

Proposed Lots 1-4 are to be established across the southern portion of the site, above the central bush covered protected natural area, and will encompass areas ranging between approximately 2.4ha to 4.0ha across the southern portion of the site for new residential development.

Proposed Lot 5 will encompass the remaining northern area of approximately 20ha and contain the existing farm buildings at the northwestern portion of the site. There is no residential housing development proposed on this lot; therefore, it is excluded from our assessments.

The provided plans are overlaid with 2.0m contour data and Northland Regional Council (NRC) 50-year and 100-year + Climate Change River Flood Hazard Zone extents as indicated in Figure 2 above.

Reyburn & Bryant Limited have identified 20m x 20m (400m²) designated building platforms (DBP) for future residential development within proposed Lots 1-4 as depicted on our appended Site Plan and in Figure 2 above.

At this preliminary stage, we have assumed any future dwelling at proposed Lots 1-4 will be designed and constructed to apply loads generally in keeping with the requirements of NZS3604:2011.

A brief description of proposed Lots 1-4 and the DBP location at each lot is summarised below:

PROPOSED LOT 1

Lot 1 is located on a broad, northwest facing spur flank. The DBP is positioned towards the southern corner of the site and is set on gently inclined ground, averaging less than 9° over a considerable distance.

Figure 3: Site photograph looking southwest towards the proposed Lot 1 DBP.

PROPOSED LOT 2

Lot 2 comprises of a broad, ridgeline crest across the southern portion, eventually transitioning into a long, north facing, moderately to steeply sloping side flank that falls to the central flow path. The DBP is positioned on the southern crest land, falling at gentle inclinations averaging less than 8° over a considerable distance.

Figure 4: Site photograph looking southeast towards the proposed Lot 2 DBP.

PROPOSED LOT 3

Lot 3 initially comprises of a broad, ridgeline crest across the southern portion, which transitioning into a long, north facing, moderately to steeply sloping side flank that falls to the central bush covered protected natural area. The DBP is positioned on the southern crest land, near the transition slope, and falls at gentle to moderate inclinations averaging 6° to 14°, before increasing to grades between 14° to 30° below.

Figure 5a: Site photograph looking west towards the proposed Lot 3 DBP.

Figure 5b: Site photograph looking east towards the side flank below the proposed Lot 3 DBP.

PROPOSED LOT 4

Lot 4 comprises of a northwest facing flank that falls from the land upslope of the southeastern boundary corner down to the central bush covered protected natural area. The DBP is positioned towards the southeastern corner of the site and is set on moderately inclined ground, averaging 11° to 12° over a considerable distance.

Figure 6: Site photograph looking northwest towards the proposed Lot 4 DBP.

As a result, the principal objectives were to investigate and assess the suitability of foundation options for the site subsoils, not only primarily in terms of bearing capacity, but also for slope stability and differential foundation movement.

5. DESKTOP STUDY

5.1. PUBLISHED GEOLOGY

Local geology across proposed Lots 1-4 and the wider surrounding influential land is noted on the GNS Science New Zealand Geology Web Map, Scale 1:250,000, as; **Kerikeri Volcanic Group Late Miocene Andesite of Kaikohe – Bay of Islands Volcanic Field**. These deposits are approximately 11.2 to 2.6 million years in age and described as; "*Basaltic andesite*' (Ref: GNS Science Website).

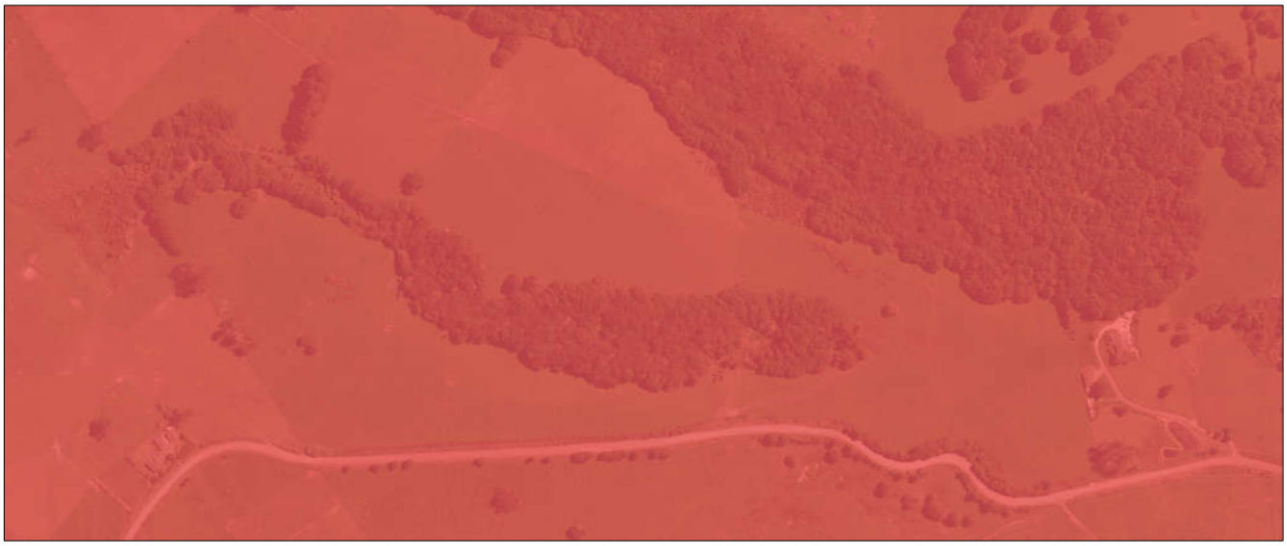


Figure 7: Screenshot from the New Zealand Geology Web Map hosted by GNS Science.

5.2. HISTORICAL AERIAL PHOTOGRAPHY REVIEW

A historical aerial photography review was undertaken to evaluate any slope instability features or changes in landform at the property. Aerial images from 1957 have been reviewed and compared to the present-day conditions.

The site has essentially maintained the same ground coverage since at least 1957 and has been used for farming purposes.

There were no visible significant geomorphological changes in the landscape or obvious features consistent with major recent ground instability, indicating a period of stable ground conditions between 1957 and 2026, as depicted in Figures 8 and 9 below.

Figure 8: Historical aerial photo from 1957 (source: https://retrolens.co.nz).

Figure 9: Historical aerial photo from April 2003 (source: Google Earth Pro).

6. GEOTECHNICAL INVESTIGATION

Our fieldwork, as depicted on our appended Site Plan, was undertaken on the 3rd March 2026 and involved:

- Drilling 9 (no.) 50mm diameter hand auger boreholes (HA01 to HA09 inclusive) to depths ranging between 2.7m and 3.7m below present ground level (bpgl),
- Undertaking Dynamic Cone Penetrometer (DCP-Scala) tests from the base of HA05 to HA09 to depths ranging between 5.9m and 7.9m bpgl, and
- Drawing 4 (no.) appended Cross Sections A-A', B-B', C-C' and D-D' (Drawing Nos. 145312-G610, 145312-G611, 145312-G612 and 145312-G613, respectively), using 1.0m LiDAR contours sourced from the Land Information New Zealand (LINZ) database, to represent of the topography of each of the proposed Lots 1-4 DBPs and surrounding influential land.

7. GEOTECHNICAL FINDINGS

The soil sample arisings from the HAs were logged in accordance with the "*Field Description of Soil and Rock*", New Zealand Geotechnical Society (NZGS), December 2005.

The following is a summary of the ground conditions encountered in our investigations. Please refer to the appended logs for greater detail.

7.1. TOPSOIL

Surficial topsoil was encountered in all boreholes to depths ranging between 0.15m to 0.35m bpgl.

7.2. NATURAL GROUND

The underlying natural deposits encountered were consistent with our expectations of Kerikeri Volcanic Group Late Miocene Andesite of Kaikohe – Bay of Islands Volcanic Field deposits, essentially comprising of a deep residual layers of stiff to very stiff, silty CLAY, clayey SILT, and SILT with some to minor clay.

Measured in-situ BS1377 adjusted peak Vane Shear Strengths generally ranged between 56kPa and greater than 195kPa and/or 197kPa, the latter two being where soil strength was in excess of the shear vane capacity, or the vane could not penetrate the soil (UTP). An isolated low of 47kPa was measured at a depth of 1.6m bpgl in HA08.

DCP-Scala testing below the base of HA05 to HA09 returned blow counts that ranged from 2 to 19 blows per 100mm penetration, initially indicating loose to medium dense stratum, before becoming dense to very dense at depth.

The ratio of peak to remoulded Shear Vane Strength values measured within the boreholes ranged between 1.7 and 8.0, generally indicating the underlying subsoils are 'Moderately Sensitive to Sensitive' subgrade. Sensitive soil sites require to protect the subgrade from rain, wind, etc., and to avoid (or minimise) construction traffic and vibrating plants.

7.3. GROUNDWATER

Groundwater was not encountered in any of the boreholes on the day of our investigation.

7.4. SUMMARY TABLE

The following table summarises our inferred stratigraphic profiling:

Table 1: Stratigraphic Summary Table

Investigation Hole ID	Termination Depth (m)	Depth to Base of Surficial Topsoil (m)	Vane Shear Strength Range within Natural Ground (kPa)	DCP-Scala Termination Depth (m) Below Borehole Base	DCP-Scala Blow Count Range Per 100mm Penetration	Standing Groundwater Depth (m)
HA01	2.7 (1)	0.35	121 – 197+ / UTP	NT	NT	NE
HA02	3.0	0.20	81 - 167	NT	NT	NE
HA03	3.0	0.20	56 – 195+	NT	NT	NE
HA04	3.0	0.25	104 – 197+	NT	NT	NE
HA05	3.7 (2)	0.15	99 – 197+	7.9	2 - 10	NE
HA06	3.1 (2)	0.20	86 – 195+	6.9	2 - 13	NE
HA07	3.6 (2)	0.20	56 – 195+ / UTP	7.9	2 - 19	NE
HA08	3.0	0.30	47 - 189	5.9	2 - 19	NE
HA09	3.0	0.20	76 – 197+	5.9	3 - 18	NE

Table Note: (1) Too hard to auger, (2) Poor recovery due to borehole squeezing, NT= Not tested, NE= Not encountered

7.5. EXPANSIVE SOILS

Naturally occurring, seasonal moisture variations are a strong characteristic of most Upper North Island soils, typically resulting in plastic soil masses swelling during winter months and then shrinking during summer months. Such volumetric changes in foundation soils (broadly termed 'Expansive Soils') vary according to clay mineralogy and geology and are a significant risk to buildings.

In this instance, in the absence of laboratory testing, but instead adopting the visual-tactile method as per AS2870, considering the high clay content of the deep residual soil layer that overlies the site, we have adopted a conservative primary classification estimate of the soils underlying the site as follows:

- NZBC B1 Expansive Soil Class H
- Upper Limit of Characteristic surface movement (y_s) 78mm

Effects of expansive soils for future Building Consent proposals will require mitigation by way of specific engineering design (SED) foundation systems.

8. GEOTECHNICAL ASSESSMENTS

As appropriate to the site conditions, we have carried out the following geotechnical analyses for the proposed Lots 1-4 DBPs:

- Qualitative slope stability for proposed Lots 1,2 and 4,
- Quantitative slope stability for proposed Lot 3, and
- Liquefaction susceptibility for proposed Lots 1-4.

8.1. QUALITATIVE SLOPE STABILITY (PROPOSED LOTS 1, 2 & 4)

The DBP of Lot 1 is positioned towards the southern corner of the site and is set on gently inclined ground, averaging less than 9° over a considerable distance.

The DBP of Lot 2 is positioned on the southern crest land, falling at gentle inclinations averaging less than 8° over a considerable distance.

The DBP of Lot 4 is positioned towards the southeastern corner of the site and is set on moderately inclined ground, averaging 11° to 12° over a considerable distance.

Our assessment has also considered the following:

- Essentially, stiff to very stiff soils of the Kerikeri Volcanic Group Late Miocene Andesite of Kaikohe – Bay of Islands Volcanic Field encountered during our investigations,
- DCP-Scala testing below the base of the HA08 and HA09, at the proposed Lot 4 DBP, initially indicating loose to medium dense stratum, before becoming dense to very dense at depth,
- Groundwater was not encountered in any of the boreholes on the day of our investigation,
- The DBPs are positioned on elevated crests and flanks, with good water-shedding characteristics down to a central bush covered protected natural area,
- There are no known active faults traversing through or close to the site, and
- No visual signs of global instability were observed at the time of our investigation; however, some very minor surficial soil creep was evident upslope of the proposed Lot 4 DBP. A review of historical aerial photography also confirms the absence of any obvious global instability.

8.2. QUANTITATIVE SLOPE STABILITY (PROPOSED LOT 3)

The DBP of Lot 3 is positioned on the southern crest land, near the transition slope, and falls at gentle to moderate inclinations averaging 6° to 14°, before increasing in grade immediately below. The downslope land displays clear evidence of surficial soil creep.

Slope stability analyses were undertaken on appended Cross-section C-C', using computer program Slide 2 by Rocscience Limited. Theoretical non-circular (composite) surfaces were assessed using the Spencer and GLE / Morgenstern-Price methods.

An assumed Uniformly Distributed Load (UDL) of 10kPa was applied to represent the surcharge load of a future dwelling within the DBP.

The stability analyses have been undertaken for existing conditions (moderate groundwater), worst-case ground conditions (elevated groundwater) and extreme scenarios (seismic loading).

A Peak Ground Acceleration (PGA) value of 0.19g (ULS) was used for the 500-year seismic event, along with an effective earthquake magnitude of 6.5, as recommended by the NZGS (Earthquake Geotechnical Engineering Practice Module 1, dated: November 2021).

Back Analysis:

Using Cross-section C-C' and assuming a groundwater level at ground surface (i.e., fully saturated ground conditions), we carried out back analyses based on our experience of the geology, measured soil and estimated rock strengths within our test locations, to determine the minimum effective stress parameters to achieve a safety factor of ≈1.0.

Table 2: Stability Analysis Results – Back Analysis

Section	Design Conditions	Factor of Safety (FoS)	
		Targeted	Calculated
C-C'	Inferred original ground surface, groundwater at ground surface	~1.0	1.03

Undrained soil strength parameters (no friction angle) were used to model the extreme conditions of a seismic event.

The soil strength parameters used in the stability assessment are shown in the following table:

Table 3: Effective Shear Stress (Shear Strength) Parameters

Soil Parameters	Kerikeri Volcanic Group Soils	Less Weathered Kerikeri Volcanic Group Soils
Unit Weight, γ (kN/m3)	18	18
Effective Cohesion c' (kPa)	4	5
Friction Angle, ϕ' (°)	30	32
Undrained (no ϕ') Su	70	175

We have adopted the following scenarios:

1. **Moderate Groundwater Level**: Long-term stability when modelling the existing ground conditions and assumed a groundwater level at a depth of approximately 4.0m bpgl.

   Factor of Safety (FoS) required >1.5.

2. **Elevated Groundwater Level**: Transient (medium-term) stability when modelling the worst-case scenario and assumed a raised groundwater level at a depth of approximately 1.0m bpgl.

   FoS required >1.3.

It is important to consider that the construction of a future dwelling along with sealed surfaces is expected to intercept and redirect stormwater in a controlled fashion, such that ponding of rainwater and infiltration into the ground that would otherwise create extremely elevated groundwater conditions is highly unlikely.

As a result, it is anticipated that groundwater level is likely to remain deeper than modelled, hence the elevated groundwater scenario represents a 'sensitivity' check.

3. **Seismic Loading:** Short-term stability when modelling extreme ground conditions under a 500-year seismic event and assuming a moderate groundwater level at a depth of approximately 4.0m bpgl.

   FoS required >1.1.

A summary of the calculated minimum FoS against failure across the DBP for each of the above scenarios is shown in the following table:

Table 4: Stability Analysis Results – Proposed

Section	Design Conditions	FoS within the DBP		Compliance
		Required	Calculated	
C-C'	Moderate Groundwater, plus Surcharge Load	≥1.5	>1.5	Yes
	Elevated Groundwater, plus Surcharge Load	≥1.3	1.23	No
	Moderate Groundwater, plus Surcharge Load, plus Seismic Load	≥1.1	>1.1	Yes

We have modified our slope stability model by offsetting the DBP a further 20m upslope to the south, until a satisfactory FoS within the DBP was calculated as per the following table:

Table 5: Stability Analysis Results – 20m Setback Adopted

Section	Design Conditions	FoS within the DBP		Compliance
		Required	Calculated	
A-A'	Moderate Groundwater, plus Surcharge Load	≥1.5	>1.5	Yes
	Elevated Groundwater, plus Surcharge Load	≥1.3	>1.3	Yes*
	Moderate Groundwater, plus Surcharge Load, plus Seismic Load	≥1.1	>1.1	Yes

**An unsatisfactory FoS is present on the northern flank below the DBP; however, failures do not encroach within 5.0m of the northern edge of the DBP.*

8.3. SHALLOW SOIL MOVEMENT (SOIL CREEP)

Soil Creep is the slow downslope movement of upper soil horizons, usually confined to the uppermost 1.0m 2.0m of soil likely to be operating on slopes steeper than 1V:4H (14°). This soil movement generally in the order of millimetres per year and the rate and depth are a product of the combination of the following conditions:

- Slope length,
- Slope angle,
- Stormwater runoff,
- Groundwater fluctuations,
- Soil expansivity,
- Vegetation,
- Surcharge loads,
- Cut/fill earthworks (if not retained).

Generally speaking, soil creep becomes mobilised on slopes steeper than 1V:4H (14°) largely as a cyclical phenomenon arising out of seasonal variations in moisture content of surficial soils, generally resulting in soil shrinkage during the dry summer months and swelling during wet winter months. It is generally considered that in the dry seasons, the soils shrink, and tension cracks are formed, sometimes with some minor down-slope movement. When it rains, those cracks fill with water, which not only softens the adjacent soils, but also exerts hydrostatic lateral pressures on the sides of the cracks. As the desiccated soils absorb this free water, they swell and exert further lateral pressures on the adjacent block of soil. This cyclic action leads to the formation of "minor slump terracettes".

8.4. SLOPE STABILITY ASSESSMENT CONCLUSION

Based on our qualitative and quantitative assessments, global land instability is not considered to be a constraint or risk to the proposed DBP of Lots 1-4, provided the proposed DBP of Lot 2 is setback a further 20m to the south, as depicted on our appended Site Plan (Drawing No 145312-G600).

Localised instability may occur within cut and/or fill batters during the formation of building platforms during the residential housing development stage and soil creep may also be present as discussed above. We recommend that slope stability being reassessed at the Building Consent stage when residential development plans are available. Depending on the future development proposals, the assessment could range from drawing review and desktop assessment to further comprehensive slope stability analysis and may include additional geotechnical investigations.

Our slope stability analysis outputs are appended to this report and preliminary design recommendations for future residential construction are provided in Section 9 below.

8.5. LIQUEFACTION SUSCEPTIBILITY

Liquefaction is the loss of effective strength of a cohesionless soil (typically sand) due to pore-water pressures generated during a seismic event (earthquake). The partial or complete loss of effective strength of loose, saturated soils can result in vertical settlement and/or horizontal movement (lateral spreading) of the ground.

A commonly accepted definition is: 'Areas susceptible to liquefaction generally correspond with geologically young deposits (less than 10,000 years) located in relatively flat areas close to active or abandoned waterways, in coastal or estuarine areas, and/or areas of uncompacted or poorly compacted fill.' None of these characteristics apply to the site.

We have carried out liquefaction susceptibility assessments in order to identify the risk of ground damage during a seismic event, based on the following items:

- The FNDC online GIS Hazard Map categorises the DBP's as '*Unlikely*' Liquefaction Vulnerability areas,
- Essentially, stiff to very stiff soils of the Kerikeri Volcanic Group Late Miocene Andesite of Kaikohe – Bay of Islands Volcanic Field encountered during our investigations,
- DCP-Scala testing below the base of HA05 to HA09, at the proposed Lot 3 and 4 DBP's, initially indicating loose to medium dense stratum, before becoming dense to very dense at depth,
- Groundwater was not encountered in any of the boreholes on the day of our investigation,
- The DBP's are positioned on elevated crests and flanks, set no less than approximately RL275m New Zealand Vertical Datum (NZVD), with good water-shedding characteristics down to a central bush covered protected natural area,
- There are no known active faults traversing through or close to the site, and
- Soils of the Kerikeri Volcanic Group Late Miocene Andesite of Kaikohe – Bay of Islands Volcanic Field underlie the site (geological age +2.6My).

8.6. LIQUEFACTION ASSESSMENT CONCLUSION

Based on our susceptibility assessment, we conclude that the soils at the site have a negligible risk of liquefaction susceptibility, and liquefaction induced ground damage is therefore consequently unlikely.

9. CONCLUSIONS AND RECOMMENDATIONS

Based on our observations, site survey, record research, hand auger borehole investigation and in-situ testing as described herein, we consider on reasonable grounds that this report can be submitted to the Territorial Authority in support of a Resource Consent application for subdividing the subject site, substantiating that in terms of section 106 of the Resource Management Act and its current amendments, either

a) No land in respect of which the consent is sought, nor any structure on that land, is, nor is likely to be subject to material damage by erosion, falling debris, subsidence, or slippage from any source, or

b) No subsequent use that is likely to be made of the land is likely to accelerate, worsen, or result in material damage to that land, other land, or structure, by erosion, falling debris, subsidence, or slippage from any source.

Therefore, we are satisfied that the DBPs at proposed Lots 1-4 should be generally suitable for future residential construction in terms of NZS3604:2011, provided future development proposals are subject to site-specific Geotechnical investigations and assessments undertaken during the Building Consent stage.

9.1 PRELIMINARY FOUNDATION DESIGN

Shallow foundations, such as a reinforced, stiffened raft slab foundation system, slab-on-grade with deepened perimeter strip footings, or timber subfloor suspended on bored timber piles/poles, will likely be suitable to support future dwellings within the DBPs at proposed Lots 1-4, provided they are designed to accommodate vertical movement of soil associated with Soil Reactivity **Class H – Highly Reactive**.

9.1.1. PRELIMINARY SHALLOW FOUNDATION BEARING CAPACITY

We generally envisage that a Geotechnical Ultimate Bearing Capacity of 300kPa will be available for shallow foundation design purposes within the DBPs of Lots 1 and 3.

Due to the firm to stiff layers encountered beneath the DBPs of Lot 2 and 4, we generally envisage that the Geotechnical Ultimate Bearing Capacity available could range between 150kPa and 300kPa, depending on the location of a future dwelling. The available Geotechnical Ultimate Bearing Capacity for future foundation design purposes at proposed Lots 2 and 4 should be confirmed via site-specific Geotechnical investigations and assessments undertaken during the Building Consent stage.

When finalising the development proposals, it should be checked that all foundations lie outside 45° envelopes rising from 0.50m below the invert of service trenches, unless such foundation details are found by SED to be satisfactory. Deeper foundation embedment or piles may be required for any surcharging foundations.

9.1.2. SHALLOW FOUNDATIONS ON EXPANSIVE SOILS

As described earlier in this report, we have estimated the classification of the site subsoils as follows:

- NZBC B1 Expansive Soil Class H
- Upper Limit of Characteristic surface movement (y_s) 78mm

Given that the soils are not considered to lie within the definition of "Good Ground" in accordance with NZS3604:2011, the design of shallow foundations is no longer covered by NZS3604:2011. Care must be taken to mitigate against the potential seasonal shrinkage and swelling effects of expansive foundation soils on both superstructures and floors. We therefore recommend SED should be undertaken by a qualified engineer for the design of all proposed foundations.

The Soil Reactivity classification should be confirmed or modified on a Lot-by-Lot basis during the Building Consent stage.

9.2 NZS1170.5:2004 SITE SUBSOIL CLASSIFICATION

We consider the DBPs at proposed Lots 1-4 to be underlain with a Class C – Shallow Soil stratigraphy.

9.3 SITE EARTHWORKS

At this preliminary stage, we are not aware of any future earthwork proposals for proposed Lots 1-4. Engineered cut-fill earthwork operations will be required to create level building platforms for any proposed concrete floor slab foundation.

Due to the variable soils encountered across the DBPs, we recommend no earthworks are undertaken until site-specific proposals have been Geotechnically investigated and assessed during the Building Consent stage. Such assessments will need to provide appropriate cut-fill parameters and limits that are Geotechnically appropriate for the subsoils encountered across future development locations.

All earthworks should be undertaken in accordance with the following standards:

- NZS4431:2022 "Code of Practice for Earth Fill Residential Development" &
- Section 2 "Earthworks & Geotechnical Requirements" of NZS4404:2010 "Land Development and Subdivision Infrastructure" &
- Chapter 2: Site development suitability (geotechnical and natural hazards) of the Whangārei District Council's Engineering Standards (Version 0.4, dated 27 June 2022).

9.4 GENERAL SITE WORKS

We stress that all work should be undertaken in a careful and safe manner so that Health and Safety is not compromised, and that suitable Erosion and Sediment control measures should be put in place. Any stockpiles placed should be done so in an appropriate manner so that land stability and/or adjacent structures are not compromised.

Furthermore:

- All works must be undertaken in accordance with the Health and Safety at Work Act 2015,
- Any open excavations should be fenced off or covered, and/or access restricted as appropriate,
- Crests above steeply sloping ground should be isolated, and heavy plant should be kept away from these areas,
- The location of all services should be verified at the site prior to the commencement of construction,
- The Contractor is responsible at all times for ensuring that all necessary precautions are taken to protect all aspects of the works, as well as adjacent properties, buildings and services, and
- Should the contractor require any site-specific assistance with safe construction methodologies, please contact WJL for further assistance.

9.5 LONG-TERM FOUNDATION CARE & MAINTENANCE

The recommendations given above to mitigate the risk of expansive soils do not necessarily remove the risk of external influences affecting the moisture in the subgrade supporting the foundations.

All owners should also be aware of the detrimental effects that significant trees can have on building foundation soils, viz:

- Their presence can induce differential consolidation settlements beneath foundations through localised soil water deprivation, or conversely, and
- Foundation construction too soon after their removal can result in soil swelling and raising foundations as the soil rehydrates.

To this end, care should be taken to avoid:

- Having significant trees positioned where their roots could migrate beneath the house foundations, and
- Constructing foundations on soils that have been differentially excessively desiccated by nearby trees, whether still existing, or recently removed.

We recommend that homeowners make themselves familiar with the appended Homeowners' Guide published by CSIRO, with particular emphasis on maintenance of drains, water pipes, gutters, and downpipes.

10. STORMWATER & SURFACE WATER CONTROL

Uncontrolled stormwater flows must not be allowed to run onto or over site slopes, or to saturate the ground, so as to adversely affect slope stability or foundation conditions.

Overland flows and similar runoff such as from any higher ground should be intercepted by means of shallow surface drains and/or small bunds and be directed away from future building footprints to protect building platforms from both saturation and erosion. Water collected in interceptor drains should be diverted away from the building site to an appropriate disposal point. All stormwater runoff from new roof and paved areas should be collected in sealed pipes and be discharged to a FNDC approved stormwater system.

Under no circumstances should concentrated overflows from any source discharge into or onto the ground in an uncontrolled fashion, especially directly to moderate to steeply sloping ground that bounds the DBP's downslope.

11. ON-SITE WASTEWATER DISPOSAL

No reticulated sanitary sewer is available for the subdivision; therefore, on-site wastewater treatment and disposal systems will be required to service future developments.

We recommend that all designs for future on-site wastewater systems should be carried out by an Engineer experienced in on-site wastewater disposal.

12. OVERHEAD POWERLINES & UNDERGROUND SERVICES

Overhead powerlines and underground services, public or private, mapped, or unmapped, of any type may be present.

A thorough service-search should be carried out prior to commencement of any excavations to locate the exact locations of the underground services.

13. EARTHWORKS MONITORING AND COMPLETION REPORT

Earthworks monitoring and reporting may be required if subdivisional earthworks will be conducted to prepare building platforms and/or accessways as part of the Resource (Subdivisional) Consent process.

It is usual practice for the FNDC to require a Geotechnical/Earthworks Completion Report (GCR/ECR) to be submitted by the Geotechnical Engineer at the completion of the subdivisional earthworks (if any), which will contain a 'Statement of Professional Opinion' (SOPO) to support RMA Section 224C processing.

Preliminary recommendations regarding soil characteristics and stability recommendations provided in this report will be confirmed or modified as appropriate within the GCR/ECR and SOPO which may result in 'tags' being placed on some or all titles, indicating future geotechnical assessments at Building Consent stage.

Because soil is not a homogeneous, manufactured building component, there always exists a level of risk that inferences about soil conditions across the greater site, which have been drawn from isolated 'pinprick' locations and may be subject to localized variations. Therefore, the foregoing statements are Professional Opinion, based on a limited collection of information, some of which is factual, and some of which is inferred. For these reasons, it must be appreciated that the investigation is not deemed complete until the construction works enable confirmation of design assumptions.

14. LIMITATIONS

We anticipate that this report is to be submitted to FNDC in support of a Resource Consent application.

This report has been commissioned solely for the benefit of our Client, **Mack Lynn**, in relation to the project described herein, and to the limits of our engagement, with the exception that the local Territorial Authority may rely on it to the extent of its appropriateness, conditions and limitations, when issuing the subject consent. Any variations from the development proposals described herein as forming the basis of our appraisal should be referred to us for further evaluation. Copyright of Intellectual Property remains with WJL, and this report may NOT be used by any other entity, or for any other proposals, without our written consent. Therefore, no liability is accepted by this firm or any of its directors, servants, or agents, in respect of any other geotechnical aspects of this site, nor for its use by any other person or entity, and any other person or entity who relies upon any information contained herein does so entirely at their own risk. Where other parties may wish to rely on it, whether for the same or different proposals, this permission may be extended, subject to our satisfactory review of their interpretation of the report.

The recommendations provided in this Geotechnical Report are in accordance with the findings from our shallow investigation. However, it is important to acknowledge that additional refinement of the investigation and analysis may be necessary to meet the specific requirements set by the local council.

Although this report may be submitted to a local authority in connection with an application for a consent, permission, approval, or pursuant to any other requirement of law, this disclaimer shall still apply and require all other parties to use due diligence where necessary and does not remove the necessity for the normal inspection of site conditions and the design of foundations as would be made under all normal circumstances.

Thank you for the opportunity to provide our service on this project, and if we can be of further assistance, please do not hesitate to contact us.

Yours faithfully,

WILTON JOUBERT LIMITED

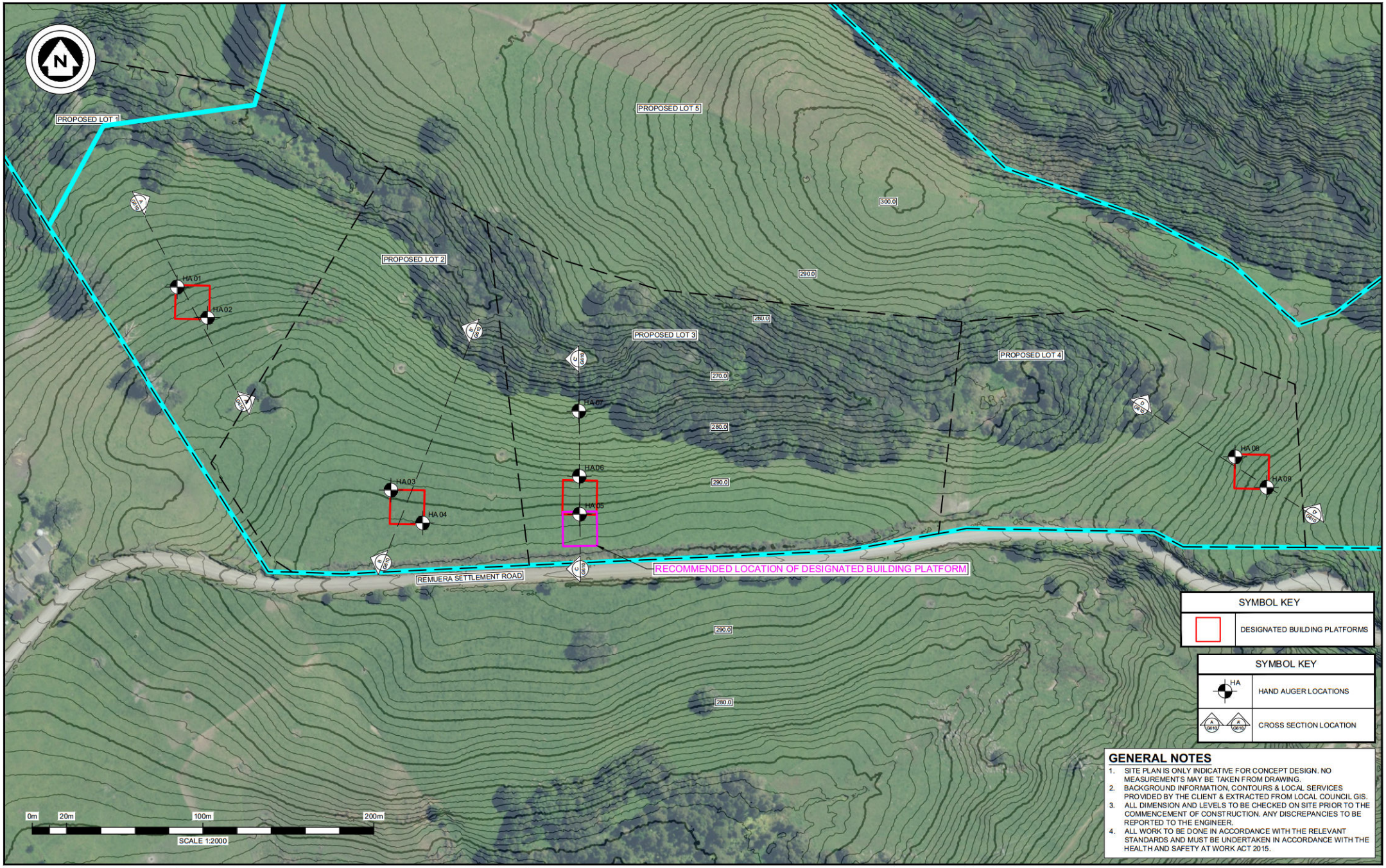
Appendices:

Site Plan & Cross Sections A-A', B-B', C-C' and D-D' (5 sheets)

Hand Auger Boreholes Records (9 sheets)

Slope Stability Analysis Outputs (7 sheets)

'*Foundation Maintenance and Footing Performance*' homeowner's guide, published by CSIRO (4 sheets)



SYMBOL KEY	
	DESIGNATED BUILDING PLATFORMS

SYMBOL KEY	
HA	HAND AUGER LOCATIONS
	CROSS SECTION LOCATION

GENERAL NOTES

1. SITE PLAN IS ONLY INDICATIVE FOR CONCEPT DESIGN. NO MEASUREMENTS MAY BE TAKEN FROM DRAWING.
2. BACKGROUND INFORMATION, CONTOURS & LOCAL SERVICES PROVIDED BY THE CLIENT & EXTRACTED FROM LOCAL COUNCIL GIS.
3. ALL DIMENSION AND LEVELS TO BE CHECKED ON SITE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. ANY DISCREPANCIES TO BE REPORTED TO THE ENGINEER.
4. ALL WORK TO BE DONE IN ACCORDANCE WITH THE RELEVANT STANDARDS AND MUST BE UNDERTAKEN IN ACCORDANCE WITH THE HEALTH AND SAFETY AT WORK ACT 2015.

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ISSUE / REVISION			
No.	DATE	BY	DESCRIPTION
A	MARCH 2026	A.B	ISSUED WITH GEOTECHNICAL REPORT

DESIGNED BY:
DRAWN BY: A.B
CHECKED BY:
SURVEYED BY:

SERVICES NOTE
WHERE EXISTING SERVICES ARE SHOWN, THEY ARE INDICATIVE ONLY AND MAY NOT INCLUDE ALL SITE SERVICES. WILTON JOUBERT LTD DOES NOT WARRANT THAT ALL, OR INDEED ANY SERVICES ARE SHOWN. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE AND PROTECT ALL EXISTING SERVICES PRIOR TO AND FOR THE DURATION OF THE CONTRACT WORKS.

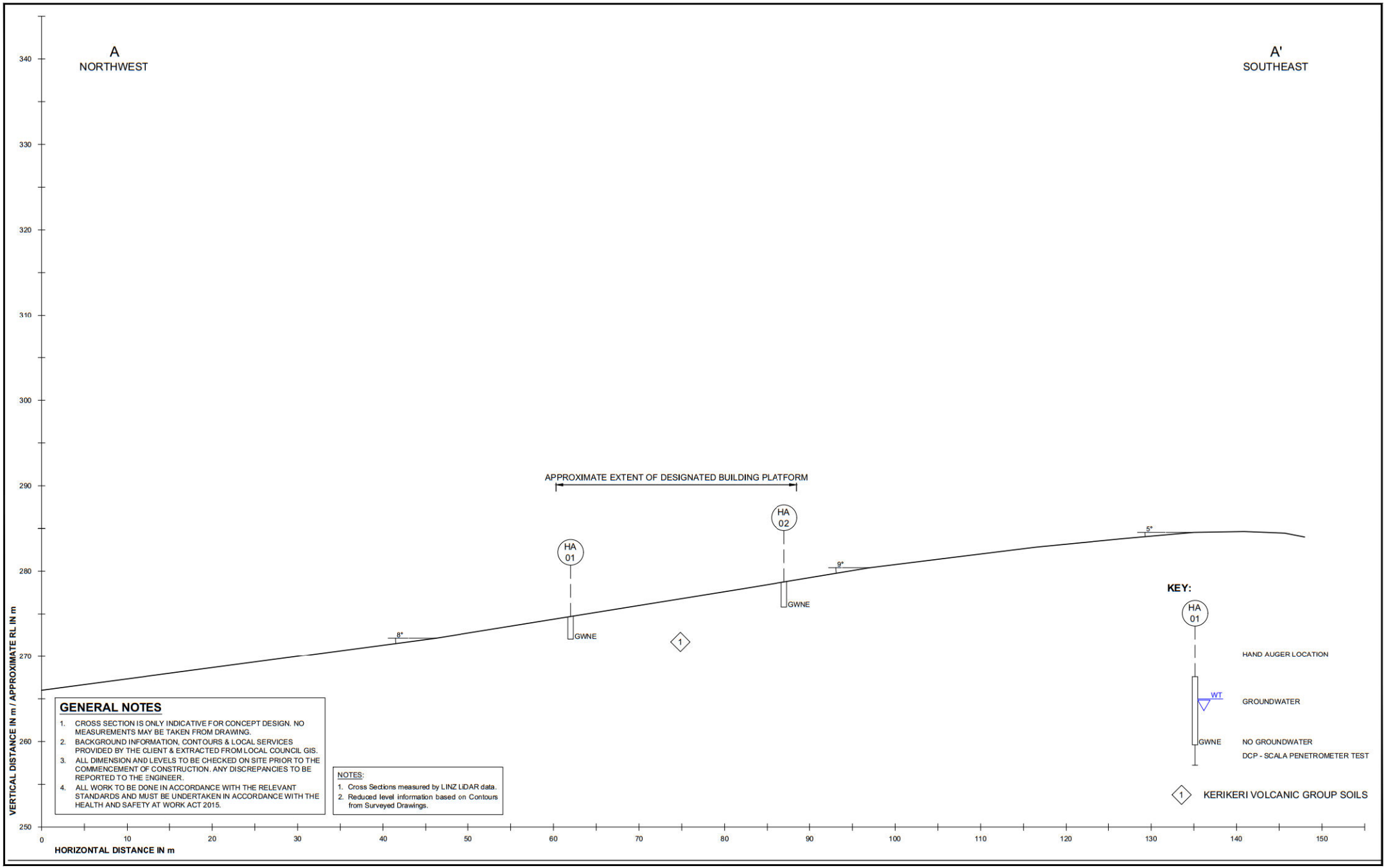
GEOTECHNICAL
DESIGN / DRAWING SUBJECT TO ENGINEER'S APPROVAL

DRAWING TITLE: **SITE PLAN**

PROJECT DESCRIPTION: **PROPOSED SUBDIVISION**

PROJECT TITLE: **SECTION 17S & 41S REMUERA SETT, REMUERA SETTLEMENT ROAD, OHAEAWAI, NORTHLAND**

ORIGINAL DRAWING SIZE:	OFFICE:
A3	WHANGAREI
DRAWING SCALE: 1:2000	CO-ORDINATE SYSTEM: NOT COORDINATED
DRAWING NUMBER: 145312-G600	ISSUE: A



GENERAL NOTES

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4. ALL WORK TO BE DONE IN ACCORDANCE WITH THE RELEVANT STANDARDS AND MUST BE UNDERTAKEN IN ACCORDANCE WITH THE HEALTH AND SAFETY AT WORK ACT 2015.

NOTES:

1. Cross Sections measured by LINZ LiDAR data.
2. Reduced level information based on Contours from Surveyed Drawings.

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ISSUE / REVISION

No.	DATE	BY	DESCRIPTION
A	MARCH 2026	A.B	ISSUED WITH GEOTECHNICAL REPORT

DESIGNED BY:
DRAWN BY: A.B
CHECKED BY:
SURVEYED BY:

SERVICES NOTE
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GEOTECHNICAL
DESIGN / DRAWING SUBJECT TO ENGINEER'S APPROVAL

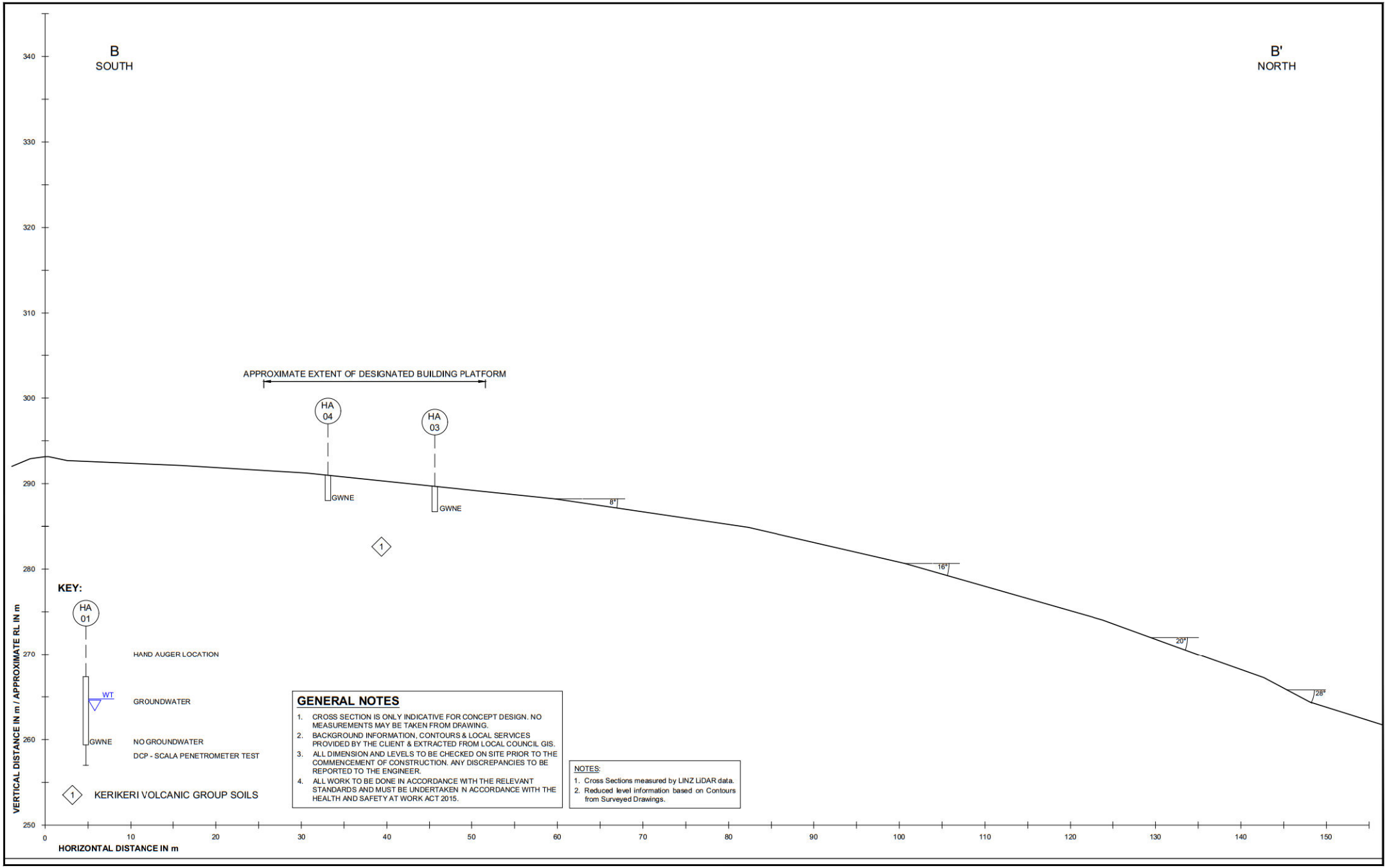
DRAWING TITLE: CROSS SECTION A - A'

PROJECT DESCRIPTION: PROPOSED SUBDIVISION

PROJECT TITLE: SECTION 17S & 41S REMUERA SETT, REMUERA SETTLEMENT ROAD, OHAEAWAI, NORTHLAND

ORIGINAL DRAWING SIZE:	OFFICE:
A3	WHANGAREI
DRAWING SCALE: 1:400	CO-ORDINATE SYSTEM: NOT COORDINATED

DRAWING NUMBER: 145312-G610 ISSUE: A



GENERAL NOTES

1. CROSS SECTION IS ONLY INDICATIVE FOR CONCEPT DESIGN. NO MEASUREMENTS MAY BE TAKEN FROM DRAWING.
2. BACKGROUND INFORMATION, CONTOURS & LOCAL SERVICES PROVIDED BY THE CLIENT & EXTRACTED FROM LOCAL COUNCIL GIS.
3. ALL DIMENSION AND LEVELS TO BE CHECKED ON SITE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. ANY DISCREPANCIES TO BE REPORTED TO THE ENGINEER.
4. ALL WORK TO BE DONE IN ACCORDANCE WITH THE RELEVANT STANDARDS AND MUST BE UNDERTAKEN N ACCORDANCE WITH THE HEALTH AND SAFETY AT WORK ACT 2015.

NOTES:

1. Cross Sections measured by LINZ LiDAR data.
2. Reduced level information based on Contours from Surveyed Drawings.

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No.	DATE	BY	DESCRIPTION
A	MARCH 2026	A.B	ISSUED WITH GEOTECHNICAL REPORT

DESIGNED BY:
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SERVICES NOTE
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GEOTECHNICAL
DESIGN / DRAWING SUBJECT TO ENGINEER'S APPROVAL

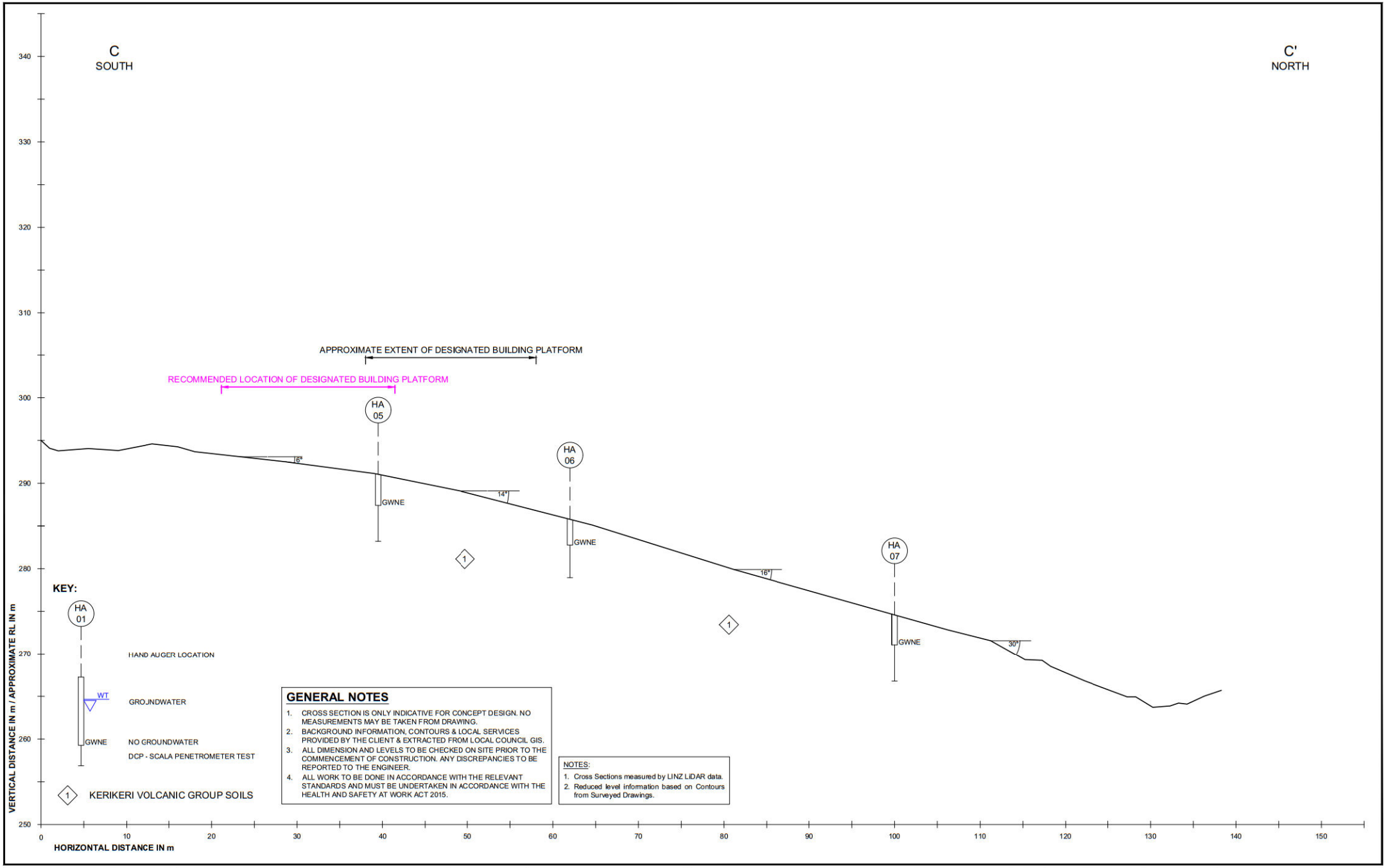
DRAWING TITLE: CROSS SECTION B - B'

PROJECT DESCRIPTION: PROPOSED SUBDIVISION

PROJECT TITLE: SECTION 17S & 41S REMUERA SETT, REMUERA SETTLEMENT ROAD, OHAEAWAI, NORTHLAND

ORIGINAL DRAWING SIZE:	OFFICE:
A3	WHANGAREI
DRAWING SCALE: 1:400	CO-ORDINATE SYSTEM: NOT COORDINATED

DRAWING NUMBER: 145312-G611 ISSUE: A



GENERAL NOTES

1. CROSS SECTION IS ONLY INDICATIVE FOR CONCEPT DESIGN. NO MEASUREMENTS MAY BE TAKEN FROM DRAWING.
2. BACKGROUND INFORMATION, CONTOURS & LOCAL SERVICES PROVIDED BY THE CLIENT & EXTRACTED FROM LOCAL COUNCIL GIS.
3. ALL DIMENSION AND LEVELS TO BE CHECKED ON SITE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. ANY DISCREPANCIES TO BE REPORTED TO THE ENGINEER.
4. ALL WORK TO BE DONE IN ACCORDANCE WITH THE RELEVANT STANDARDS AND MUST BE UNDERTAKEN IN ACCORDANCE WITH THE HEALTH AND SAFETY AT WORK ACT 2015.

NOTES:
1. Cross Sections measured by LINZ LiDAR data.
2. Reduced level information based on Contours from Surveyed Drawings.

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No.	DATE	BY	DESCRIPTION
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DRAWN BY: A.B
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SERVICES NOTE
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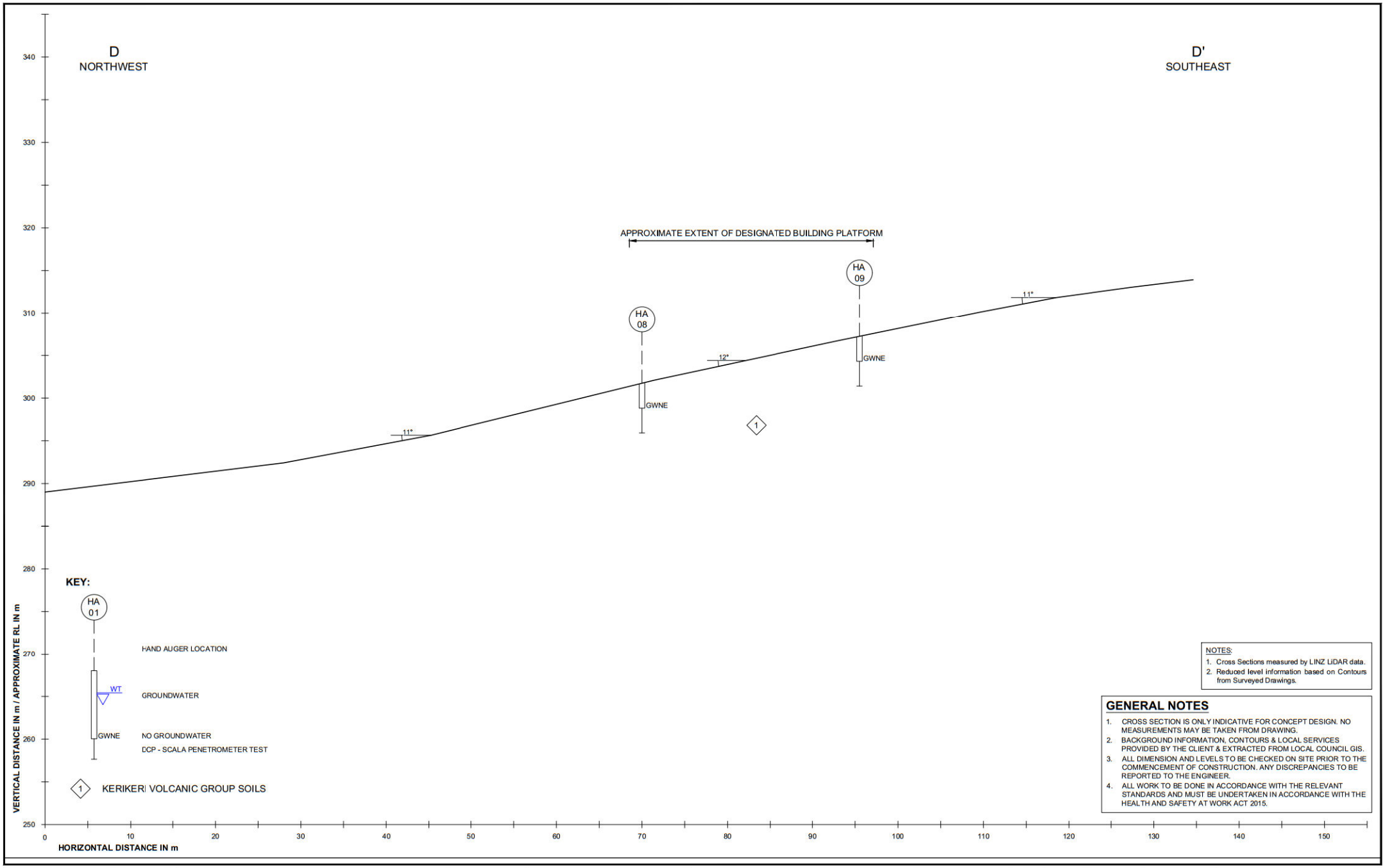
GEOTECHNICAL
DESIGN / DRAWING SUBJECT TO ENGINEER'S APPROVAL

DRAWING TITLE: CROSS SECTION C - C'

PROJECT DESCRIPTION: PROPOSED SUBDIVISION

PROJECT TITLE: SECTION 17S & 41S REMUERA SETT, REMUERA SETTLEMENT ROAD, OHAEAWAI, NORTHLAND

ORIGINAL DRAWING SIZE: A3	OFFICE: WHANGAREI
DRAWING SCALE: 1:400	CO-ORDINATE SYSTEM: NOT COORDINATED
DRAWING NUMBER: 145312-G612	ISSUE: A



NOTES:
1. Cross Sections measured by LINZ LiDAR data.
2. Reduced level information based on Contours from Surveyed Drawings.

GENERAL NOTES

1. CROSS SECTION IS ONLY INDICATIVE FOR CONCEPT DESIGN. NO MEASUREMENTS MAY BE TAKEN FROM DRAWING.
2. BACKGROUND INFORMATION, CONTOURS & LOCAL SERVICES PROVIDED BY THE CLIENT & EXTRACTED FROM LOCAL COUNCIL GIS.
3. ALL DIMENSION AND LEVELS TO BE CHECKED ON SITE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. ANY DISCREPANCIES TO BE REPORTED TO THE ENGINEER.
4. ALL WORK TO BE DONE IN ACCORDANCE WITH THE RELEVANT STANDARDS AND MUST BE UNDERTAKEN IN ACCORDANCE WITH THE HEALTH AND SAFETY AT WORK ACT 2015.

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ISSUE / REVISION			
No.	DATE	BY	DESCRIPTION
A	MARCH 2026	A.B	ISSUED WITH GEOTECHNICAL REPORT

DESIGNED BY:
DRAWN BY: A.B
CHECKED BY:
SURVEYED BY:

SERVICES NOTE
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GEOTECHNICAL
DESIGN / DRAWING SUBJECT TO ENGINEER'S APPROVAL

DRAWING TITLE: CROSS SECTION D - D'

PROJECT DESCRIPTION: PROPOSED SUBDIVISION

PROJECT TITLE: SECTION 17S & 41S REMUERA SETT, REMUERA SETTLEMENT ROAD, OHAEAWAI, NORTHLAND

ORIGINAL DRAWING SIZE:	OFFICE:
A3	WHANGAREI
DRAWING SCALE: 1:400	CO-ORDINATE SYSTEM: NOT COORDINATED
DRAWING NUMBER: 145312-G613	ISSUE: A

HAND AUGER : HA01

JOB NO.:	145312	**SHEET:**	1 OF 1
START DATE:	03/03/2026	**NORTHING:**	**GRID:**
DIAMETER:	50mm	**EASTING:**	
SV DIAL:	1994	**ELEVATION:**	Ground
FACTOR:	1.41	**DATUM:**	

CLIENT: Mack Lynn

PROJECT: 5-Lot Subdivision (Lots 1-4 for Assessment)

SITE LOCATION: Remuera Settlement Road, Ohaeawai

SOIL DESCRIPTION

TOPSOIL | CLAY | SAND | PEAT | FILL | SILT | GRAVEL | ROCK

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, dry.	TS	0.2	Groundwater Not Enountered					
Kerikeri Volcanic Group Late Miocene Andesite of Kaikohe - Bay of Islands Volcanic Field	NATURAL: SILT, some clay, orangey brown, very stiff, moist, low plasticity.		0.4		197+	-	-		
	0.5m: Light grey with orangey brown streaks.		0.6						
	0.7m: Frequent clasts.		0.8		UTP	-	-		
	1.0m: Light grey with grey mottles, no to low plasticity.		1.0						
	Clayey SILT, grey, very stiff, moist, low plasticity.		1.2		155	79	2.0		
	1.2m: Moderate plasticity.		1.4						
	1.5m: Light grey, low to moderate plasticity.		1.6		121	23	5.3		
	1.8m: Moist to wet.		1.8						
			2.0		133	23	5.8		
	2.2m: Frequent clasts, wet, no to low plasticity.		2.2						
	SILT, minor to trace clay, frequent clasts, bluish grey, very stiff, moist to wet, no plasticity.		2.4		UTP	-	-		
			2.6						
	EOH: 2.70m - Too Hard To Auger		2.8		UTP	-	-		
			3.0						
			3.2						
			3.4						
			3.6						
			3.8						
			4.0						
			4.2						
			4.4						
			4.6						
			4.8						
			5.0						
			5.2						
			5.4						
			5.6						
			5.8						
			6.0						
			6.2						
			6.4						
			6.6						
			6.8						
			7.0						
			7.2						
			7.4						
			7.6						
			7.8						

REMARKS

End of borehole @ 2.70m (Target Depth: 3.00m)

NZGS Definition of Relative Density for Coarse Grain soils: VL - Very Loose; L - Loose; MD - Medium Dense; D - Dense; VD - Very Dense

LOGGED BY: JEM

CHECKED BY: CSH

▼ Standing groundwater level

▽ GW while drilling

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HAND AUGER : HA02

JOB NO.:	145312	**SHEET:**	1 OF 1
START DATE:	03/03/2026	**NORTHING:**	**GRID:**
DIAMETER:	50mm	**EASTING:**	
SV DIAL:	DR4802	**ELEVATION:**	Ground
FACTOR:	1.39	**DATUM:**	

CLIENT: Mack Lynn

PROJECT: 5-Lot Subdivision (Lots 1-4 for Assessment)

SITE LOCATION: Remuera Settlement Road, Ohaeawai

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, dry to moist.	TS	0.0	Groundwater Not Encountered					
Kerikeri Volcanic Group Laie Miocene Andesite of Kaikohe - Bay of Islands Volcanic Field	NATURAL: Clayey SILT, greyish brown with occasional orange mottles, very stiff, dry to moist, low plasticity.		0.2						
	0.4m: Yellowish brown with brownish grey mottles.		0.4		167	47	3.6		
	Silty CLAY, yellowish grey with orange mottles, very stiff, moist, moderate plasticity.		0.6						
			0.8		120	39	3.1		
	1.0m: Whitish grey with orange and occasional red mottles.		1.0						
	1.2m: Occasional dark grey mottles, stiff.		1.2		97	56	1.7		
			1.4						
			1.6		89	28	3.2		
			1.8						
			2.0		97	47	2.1		
			2.2						
			2.4						
			2.6		81	22	3.7		
			2.8						
			3.0		128	42	3.0		
	EOH: 3.00m - Target Depth		3.2						
			3.4						
			3.6						
			3.8						
			4.0						
			4.2						
			4.4						
			4.6						
			4.8						
			5.0						
			5.2						
			5.4						
			5.6						
			5.8						
			6.0						
			6.2						
			6.4						
			6.6						
			6.8						
			7.0						
			7.2						
			7.4						
			7.6						
			7.8						

REMARKS

End of borehole @ 3.00m (Target Depth: 3.00m)

NZGS Definition of Relative Density for Coarse Grain soils: VL - Very Loose; L - Loose; MD - Medium Dense; D - Dense; VD - Very Dense

LOGGED BY: SJP

CHECKED BY: CSH

▼ Standing groundwater level

▽ GW while drilling

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HAND AUGER : HA03

JOB NO.:	145312	**SHEET:**	1 OF 1
START DATE:	03/03/2026	**NORTHING:**	**GRID:**
DIAMETER:	50mm	**EASTING:**	
SV DIAL:	DR4802	**ELEVATION:**	Ground
FACTOR:	1.39	**DATUM:**	

CLIENT: Mack Lynn

PROJECT: 5-Lot Subdivision (Lots 1-4 for Assessment)

SITE LOCATION: Remuera Settlement Road, Ohaeawai

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, dry to moist.	TS	0.2	Groundwater Not Encountered					
Keriker Volcanic Group Late Miocene Andesite of Kaikohe - Bay of Islands Volcanic Field	NATURAL: Clayey SILT, brown with occasional orange mottles, very stiff, dry to moist, low plasticity.		0.4		195+	-	-		
	Silty CLAY, yellowish brown with occasional orange mottles, very stiff, dry to moist, moderate plasticity.		0.6						
	0.9m: Occasional clasts, occasional white mottles, moist.		0.8		120	58	2.1		
	1.2m: Frequent clasts, orangey brown with yellow and white mottles, stiff.		1.0						
	1.5m: 100mm lense of brown Gravelly SILT, moist to wet.		1.2		81	47	1.7		
	1.6m: Occasional red mottles, firm.		1.4						
	1.7m: 100mm lense of brown SILT, moist to wet.		1.6						
	Clayey SILT, orangey brown, white and yellow with occasional red and purple mottles, stiff, moist, low to moderate plasticity.		1.8		56	17	3.3		
	2.0m: Moist to wet.		2.0						
	2.5m: 100mm lense of brown SILT, firm, wet.		2.2		83	33	2.5		
	2.6m: Yellow and white with orangey brown mottles, very stiff.		2.4						
			2.6		56	8	7.0		
			2.8						
	EOH: 3.00m - Target Depth		3.0		108	17	6.4		
			3.2						
			3.4						
			3.6						
			3.8						
			4.0						
			4.2						
			4.4						
			4.6						
			4.8						
			5.0						
			5.2						
			5.4						
			5.6						
			5.8						
			6.0						
			6.2						
			6.4						
			6.6						
			6.8						
			7.0						
			7.2						
			7.4						
			7.6						
			7.8						

REMARKS

End of borehole @ 3.00m (Target Depth: 3.00m)

NZGS Definition of Relative Density for Coarse Grain soils: VL - Very Loose; L - Loose; MD - Medium Dense; D - Dense; VD - Very Dense

LOGGED BY: SJP

CHECKED BY: CSH

▼ Standing groundwater level

▽ GW while drilling

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HAND AUGER : HA04

JOB NO.:	145312	**SHEET:**	1 OF 1
START DATE:	03/03/2026	**NORTHING:**	**GRID:**
DIAMETER:	50mm	**EASTING:**	
SV DIAL:	1994	**ELEVATION:**	Ground
FACTOR:	1.41	**DATUM:**	

CLIENT: Mack Lynn

PROJECT: 5-Lot Subdivision (Lots 1-4 for Assessment)

SITE LOCATION: Remuera Settlement Road, Ohaeawai

SOIL DESCRIPTION

TOPSOIL | CLAY | SAND | PEAT | FILL | SILT | GRAVEL | ROCK

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, dry.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group Late Miocene Andesite of Kaikohe - Bay of Islands Volcanic Field	NATURAL: SILT, minor clay, brown, very stiff, moist, no to low plasticity.		0.4		197+	-	-		
	0.6m: Orangey brown.		0.6						
	Clayey SILT, orangey brown, very stiff, moist, low plasticity.		0.8		118	51	2.3		
	1.0m: Occasional clasts.		1.0						
	1.1m: Frequent clasts.		1.2		104	54	1.9		
	1.5m: Occasional pockets of brown silt.		1.6		110	48	2.3		
	SILT, minor clay, frequent clasts, brown mottles orangey brown and white, very stiff, moist to wet, no to low plasticity.		1.8						
	2.0m: No plasticity.		2.0		197+	-	-		
			2.2						
			2.4		197+	-	-		
			2.6						
			2.8		197+	-	-		
	EOH: 3.00m - Target Depth		3.0						
			3.2						
			3.4						
			3.6						
			3.8						
			4.0						
			4.2						
			4.4						
			4.6						
			4.8						
			5.0						
			5.2						
			5.4						
			5.6						
			5.8						
			6.0						
			6.2						
			6.4						
			6.6						
			6.8						
			7.0						
			7.2						
			7.4						
			7.6						
			7.8						

REMARKS

End of borehole @ 3.00m (Target Depth: 3.00m)

NZGS Definition of Relative Density for Coarse Grain soils: VL - Very Loose; L - Loose; MD - Medium Dense; D - Dense; VD - Very Dense

LOGGED BY: JEM

CHECKED BY: CSH

▼ Standing groundwater level

▽ GW while drilling

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HAND AUGER : HA05

JOB NO.: 145312 **SHEET:** 1 OF 1

START DATE: 03/03/2026 **NORTHING:** **GRID:**

CLIENT: Mack Lynn **DIAMETER:** 50mm **EASTING:**

PROJECT: 5-Lot Subdivision (Lots 1-4 for Assessment) **SV DIAL:** 1994 **ELEVATION:** Ground

SITE LOCATION: Remuera Settlement Road, Ohaeawai **FACTOR:** 1.41 **DATUM:**

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE: PEAK STRENGTH (kPa)	SHEAR VANE: REMOULD STRENGTH (kPa)	SHEAR VANE: SENSITIVITY	DCP - SCALA (Blows / 100mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, dry.		0.0	Groundwater Not Encountered					
Kerikeri Volcanic Group Late Miocene Andesite of Kaikohe - Bay of Islands Volcanic Field	NATURAL: SILT, minor clay, occasional clasts, brown, very stiff, dry, no to low plasticity.								
	0.5m: Frequent orange and white clasts.		0.4		197+	-	-		
	0.9m: Moist.		0.8		197+	-	-		
			1.2		161	48	3.4		
			1.6		144	54	2.7		
	1.8m: Some clay, occasional clasts, brown with white and orange specks, low plasticity.		2.0		152	51	3.0		
			2.4		197+	-	-		
			2.8		138	28	4.9		
	3.2m: Minor clay, frequent clasts, brown, white and orangey brown, moist to wet.		3.2		107	45	2.4		
			3.6		99	39	2.5		
	EOH: 3.70m - Poor Recovery Due To Borehole Squeezing		3.8					2	
			4.0					3	
			4.2					4	
			4.4					4	
			4.6					5	
			4.8					5	
			5.0					6	
			5.2					7	
			5.4					7	
			5.6					6	
			5.8					6	
			6.0					7	
			6.2					8	
			6.4					9	
			6.6					9	
			6.8					8	
			7.0					9	
			7.2					10	
			7.4					10	
			7.6					9	
			7.8					10	
								10	
								9	

REMARKS

End of borehole @ 3.70m (Target Depth: 5.00m)

NZGS Definition of Relative Density for Coarse Grain soils: VL - Very Loose; L - Loose; MD - Medium Dense; D - Dense; VD - Very Dense

LOGGED BY: JEM

CHECKED BY: CSH

▼ Standing groundwater level

▽ GW while drilling

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HAND AUGER : HA06

JOB NO.: 145312 **SHEET:** 1 OF 1

START DATE: 03/03/2026 **NORTHING:** **GRID:**

CLIENT: Mack Lynn **DIAMETER:** 50mm **EASTING:**

PROJECT: 5-Lot Subdivision (Lots 1-4 for Assessment) **SV DIAL:** DR4802 **ELEVATION:** Ground

SITE LOCATION: Remuera Settlement Road, Ohaeawai **FACTOR:** 1.39 **DATUM:**

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE: PEAK STRENGTH (kPa)	SHEAR VANE: REMOULD STRENGTH (kPa)	SHEAR VANE: SENSITIVITY	DCP - SCALA (Blows / 100mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group Late Miocene Andesite of Kaikohe - Bay of Islands Volcanic Field	NATURAL: SILT, minor clay, occasional clasts, brown with occasional orange mottles, very stiff, dry to moist, no to low plasticity.		0.4						
	0.4m: Some clay, low plasticity.		0.6		195+	-	-		
	0.7m: Minor clay, light brown with orange mottles, no to low plasticity.		0.8						
			1.0		195+	-	-		
	1.0m: Frequent clasts, light brown with orange, yellow and white mottles.		1.2						
			1.4		195+	-	-		
	1.5m: Some clay, moist, low plasticity.		1.6						
			1.8		122	50	2.4		
	1.8m: Minor to some clay, trace to minor clasts, occasional red mottles, no to low plasticity.		2.0						
	2.0m: Moist to wet.		2.2		106	31	3.4		
			2.4						
			2.6		103	19	5.4		
	2.8m: Poor recovery (<50%), stiff.		2.8						
			3.0		86	17	5.1		
	EOH: 3.10m - Poor Recovery Due To Borehole Squeezing		3.2					2	
			3.4					2	
			3.6					2	
			3.8					3	
			4.0					3	
			4.2					3	
			4.4					4	
			4.6					4	
			4.8					5	
			5.0					5	
			5.2					5	
			5.4					4	
			5.6					5	
			5.8					10	
			6.0					13	
			6.2					8	
			6.4					8	
			6.6					13	
			6.8					13	
			7.0					10	
			7.2					8	
			7.4					8	
			7.6					8	
			7.8					8	
								9	
								10	
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								9	
								10	
								11	
								11	
								11	

REMARKS

End of borehole @ 3.10m (Target Depth: 5.00m)

NZGS Definition of Relative Density for Coarse Grain soils: VL - Very Loose; L - Loose; MD - Medium Dense; D - Dense; VD - Very Dense

LOGGED BY: SJP

CHECKED BY: CSH

▼ Standing groundwater level

▽ GW while drilling

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HAND AUGER : HA07

JOB NO.: 145312 **SHEET:** 1 OF 1

START DATE: 03/03/2026 **NORTHING:** **GRID:**

CLIENT: Mack Lynn **DIAMETER:** 50mm **EASTING:**

PROJECT: 5-Lot Subdivision (Lots 1-4 for Assessment) **SV DIAL:** DR4802 **ELEVATION:** Ground

SITE LOCATION: Remuera Settlement Road, Ohaeawai **FACTOR:** 1.39 **DATUM:**

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / 100mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group Late Miocene Andesite of Kaikohe - Bay of Islands Volcanic Field	NATURAL: Clayey SILT, brown with occasional orange mottles and dark brown streaks, very stiff, dry to moist, low plasticity.		0.4		195+	-	-		
			0.6						
	Silty CLAY, occasional clasts, light brown with occasional orange mottles, very stiff, dry to moist, moderate plasticity.		0.8		117	64	1.8		
	1.0m: Yellowish brown with occasional orange mottles.		1.0						
	1.2m: Stiff.		1.2		64	17	3.8		
	Clayey SILT, brown with orange mottles, stiff, moist, low to moderate plasticity.		1.4						
	SILT, some clay, frequent clasts, light brown with orange, white and yellow mottles, stiff, moist, low plasticity.		1.6		64	8	8.0		
	1.8m: Occasional pockets of brown gravelly silt.		1.8						
	2.0m: Yellowish brown with white, orange and red mottles, moist to wet.		2.0		81	31	2.6		
			2.2						
	2.4m: Minor clay, brown, firm, wet, no to low plasticity.		2.4		56	8	7.0		
			2.6						
	2.8m: Trace to minor clay, white with orange mottles, very stiff, moist.		2.8		UTP	-	-		
	3.0m: Minor clay, low plasticity.		3.0						
	3.2m: Some clay, yellowish brown and white with orange mottles, occasional pockets of dark brown silt, stiff, moist to wet, poor recovery (<50%).		3.2		64	14	4.6		
			3.4						
			3.6					2	
	EOH: 3.60m - Poor Recovery Due To Borehole Squeezing		3.8					3	
			4.0					3	
			4.2					4	
			4.4					4	
			4.6					4	
			4.8					5	
			5.0					4	
			5.2					5	
			5.4					4	
			5.6					4	
			5.8					4	
			6.0					4	
			6.2					5	
			6.4					5	
			6.6					5	
			6.8					5	
			7.0					5	
			7.2					6	
			7.4					6	
			7.6					6	
			7.8					5	
								5	
								5	
								6	
								9	
								12	
								9	
								9	
								9	
								8	
								10	
								8	
								8	
								7	
								8	
								11	
								12	
								12	
								19	
								16	
								14	

REMARKS

End of borehole @ 3.60m (Target Depth: 5.00m)

NZGS Definition of Relative Density for Coarse Grain soils: VL - Very Loose; L - Loose; MD - Medium Dense; D - Dense; VD - Very Dense

LOGGED BY: SJP

CHECKED BY: CSH

▼ Standing groundwater level

▽ GW while drilling

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HAND AUGER : HA08

JOB NO.: 145312 **SHEET:** 1 OF 1

START DATE: 03/03/2026 **NORTHING:** **GRID:**

CLIENT: Mack Lynn **DIAMETER:** 50mm **EASTING:**

PROJECT: 5-Lot Subdivision (Lots 1-4 for Assessment) **SV DIAL:** DR4802 **ELEVATION:** Ground

SITE LOCATION: Remuera Settlement Road, Ohaeawai **FACTOR:** 1.39 **DATUM:**

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / 100mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, dry to moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group Lake Mitocene Andesite of Kaikohe - Bay of Islands Volcanic Field	NATURAL: Clayey SILT, brownish grey with occasional light orange streaks, very stiff, dry to moist, low plasticity.		0.4		189	47	4.0		
	Silty CLAY, grey with white mottles and occasional light orange streaks, very stiff, dry to moist, moderate plasticity.		0.6						
	0.8m: Light grey with white mottles and light orange streaks.		0.8		167	92	1.8		
	SILT, minor clay, grey with white mottles, stiff, dry to moist, no to low plasticity.		1.0						
	1.2m: White with grey mottles and occasional light orange streaks, moist, no plasticity.		1.2		86	14	6.1		
	1.6m: Firm, no to low plasticity.		1.4						
			1.6		47	8	5.9		
			1.8						
	Clayey SILT, grey and white with occasional light orange streaks, occasional pockets of brown gravelly silt, stiff, wet, low to moderate plasticity.		2.0		58	14	4.1		
			2.2						
			2.4						
			2.6		72	25	2.9		
			2.8						
			3.0						
	EOH: 3.00m - Target Depth		3.0		100	28	3.6	2	
			3.2					3	
			3.4					4	
			3.6					5	
			3.8					6	
			4.0					5	
			4.2					6	
			4.4					6	
			4.6					6	
			4.8					6	
			5.0					6	
			5.2					7	
			5.4					7	
			5.6					7	
			5.8					8	
			6.0					7	
			6.2					8	
			6.4					9	
			6.6					9	
			6.8					9	
			7.0					10	
			7.2					10	
			7.4					11	
			7.6					12	
			7.8					12	
								14	
								16	
								17	
								19	

REMARKS

End of borehole @ 3.00m (Target Depth: 3.00m)

NZGS Definition of Relative Density for Coarse Grain soils: VL - Very Loose; L - Loose; MD - Medium Dense; D - Dense; VD - Very Dense

LOGGED BY: SJP

CHECKED BY: CSH

▼ Standing groundwater level

▽ GW while drilling

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HAND AUGER : HA09

JOB NO.: 145312 **SHEET:** 1 OF 1

START DATE: 03/03/2026 **NORTHING:** **GRID:**

CLIENT: Mack Lynn **DIAMETER:** 50mm **EASTING:**

PROJECT: 5-Lot Subdivision (Lots 1-4 for Assessment) **SV DIAL:** 1994 **ELEVATION:** Ground

SITE LOCATION: Remuera Settlement Road, Ohaeawai **FACTOR:** 1.41 **DATUM:**

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE: PEAK STRENGTH (kPa)	SHEAR VANE: REMOULD STRENGTH (kPa)	SHEAR VANE: SENSITIVITY	DCP - SCALA (Blows / 100mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, dry.	TS	0.0	Groundwater Not Encountered					
Kerikeri Volcanic Group Laie Miocene Andesite of Kaikohe - Bay of Islands Volcanic Field	NATURAL: Clayey SILT, greyish brown, very stiff, moist, low plasticity.		0.2						
			0.4		197+	-	-		
	0.6m: Light grey with brown mottles.		0.6						
			0.8		172	59	2.9		
	1.0m: Low to moderate plasticity.		1.0						
			1.2		133	51	2.6		
			1.4						
			1.6		118	42	2.8		
			1.8						
	Silty CLAY, light grey, stiff, wet, moderate plasticity.		2.0		110	20	5.5		
			2.2						
			2.4		82	39	2.1		
			2.6						
			2.8		76	37	2.1		
	EOH: 3.00m - Target Depth		3.0					3	
			3.2					3	
			3.4					4	
			3.6					5	
			3.8					6	
			4.0					7	
			4.2					8	
			4.4					9	
			4.6					10	
			4.8					9	
			5.0					10	
			5.2					12	
			5.4					14	
			5.6					16	
			5.8					17	
			6.0					18	
			6.2						
			6.4						
			6.6						
			6.8						
			7.0						
			7.2						
			7.4						
			7.6						
			7.8						

REMARKS

End of borehole @ 3.00m (Target Depth: 3.00m)

NZGS Definition of Relative Density for Coarse Grain soils: VL - Very Loose; L - Loose; MD - Medium Dense; D - Dense; VD - Very Dense

LOGGED BY: JEM

CHECKED BY: CSH

▼ Standing groundwater level

▽ GW while drilling

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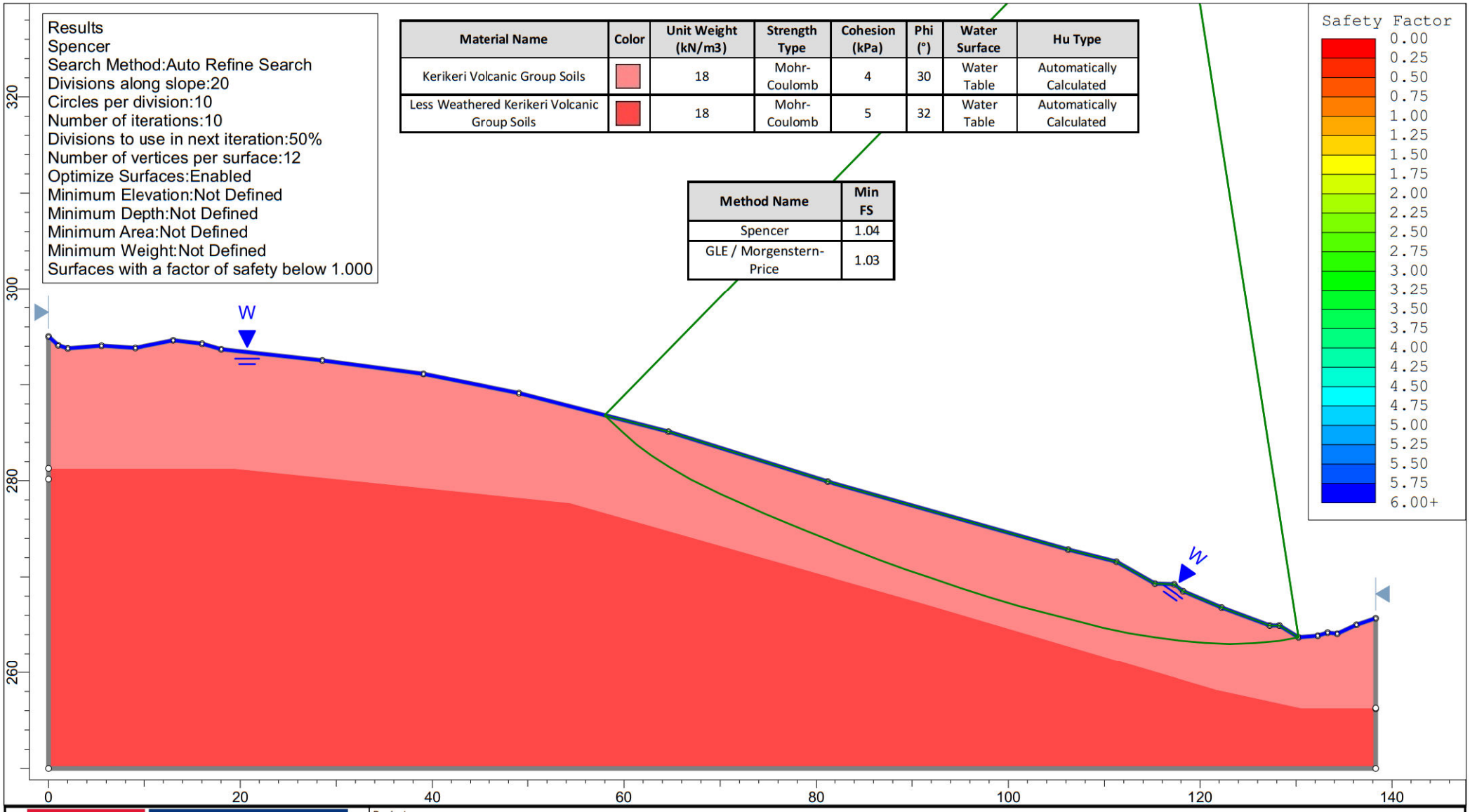
Results
Spencer
Search Method:Auto Refine Search
Divisions along slope:20
Circles per division:10
Number of iterations:10
Divisions to use in next iteration:50%
Number of vertices per surface:12
Optimize Surfaces:Enabled
Minimum Elevation:Not Defined
Minimum Depth:Not Defined
Minimum Area:Not Defined
Minimum Weight:Not Defined
Surfaces with a factor of safety below 1.000

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type
Kerikeri Volcanic Group Soils		18	Mohr-Coulomb	4	30	Water Table	Automatically Calculated
Less Weathered Kerikeri Volcanic Group Soils		18	Mohr-Coulomb	5	32	Water Table	Automatically Calculated

Method Name	Min FS
Spencer	1.04
GLE / Morgenstern-Price	1.03



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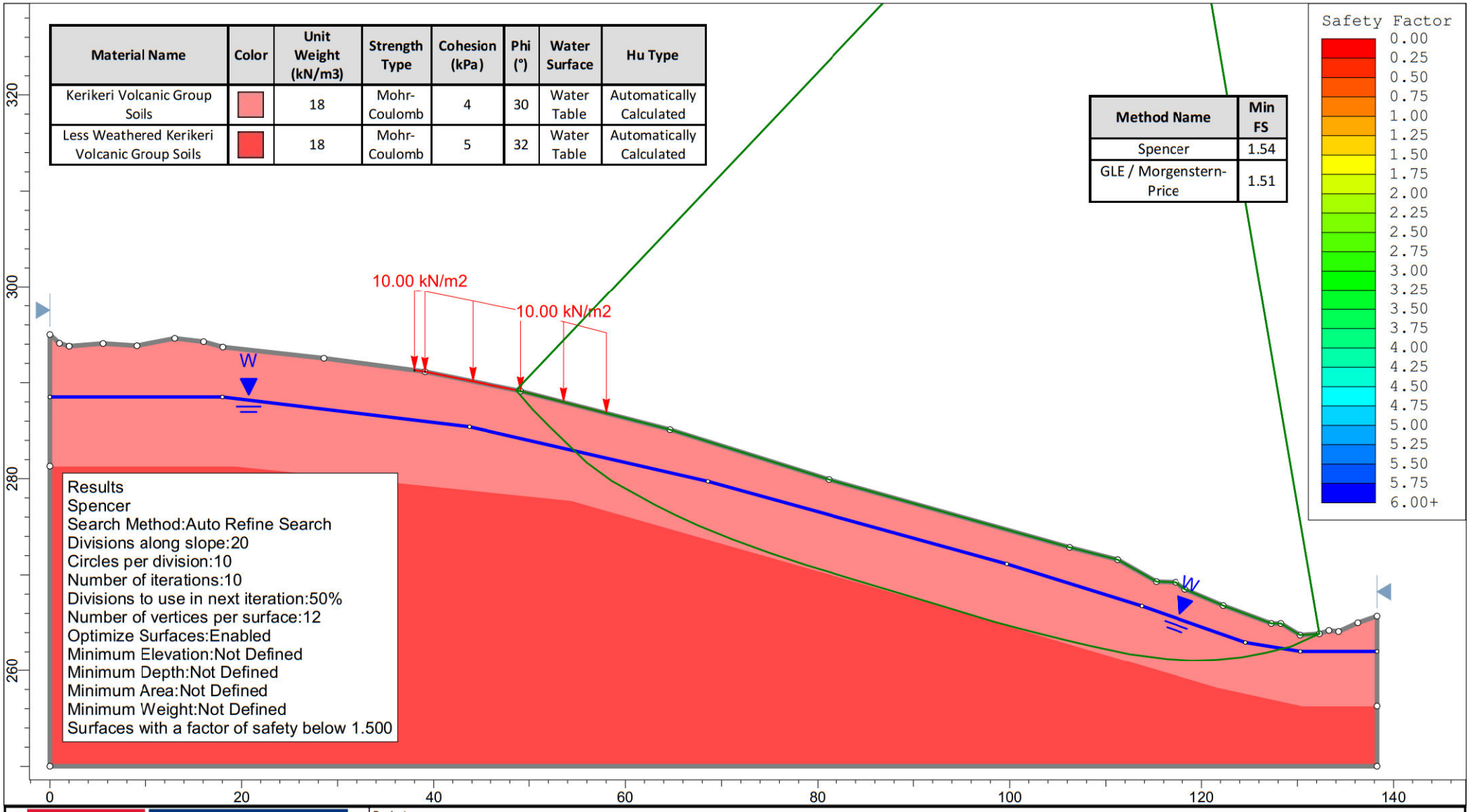
SLIDEINTERPRET 9.040

Project	145312 - Remuera Settlement Road, Ohaeawai		
Group	Cross Section C - C' - Sensitivty Analysis	Scenario	Surficial Groundwater Level
Drawn By	A.B	Company	Wilton Joubert Limited
Date	9/03/2026	File Name	145312 - CC - Sensitivty Analysis.slmd

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type
Kerikeri Volcanic Group Soils		18	Mohr-Coulomb	4	30	Water Table	Automatically Calculated
Less Weathered Kerikeri Volcanic Group Soils		18	Mohr-Coulomb	5	32	Water Table	Automatically Calculated

Method Name	Min FS
Spencer	1.54
GLE / Morgenstern-Price	1.51



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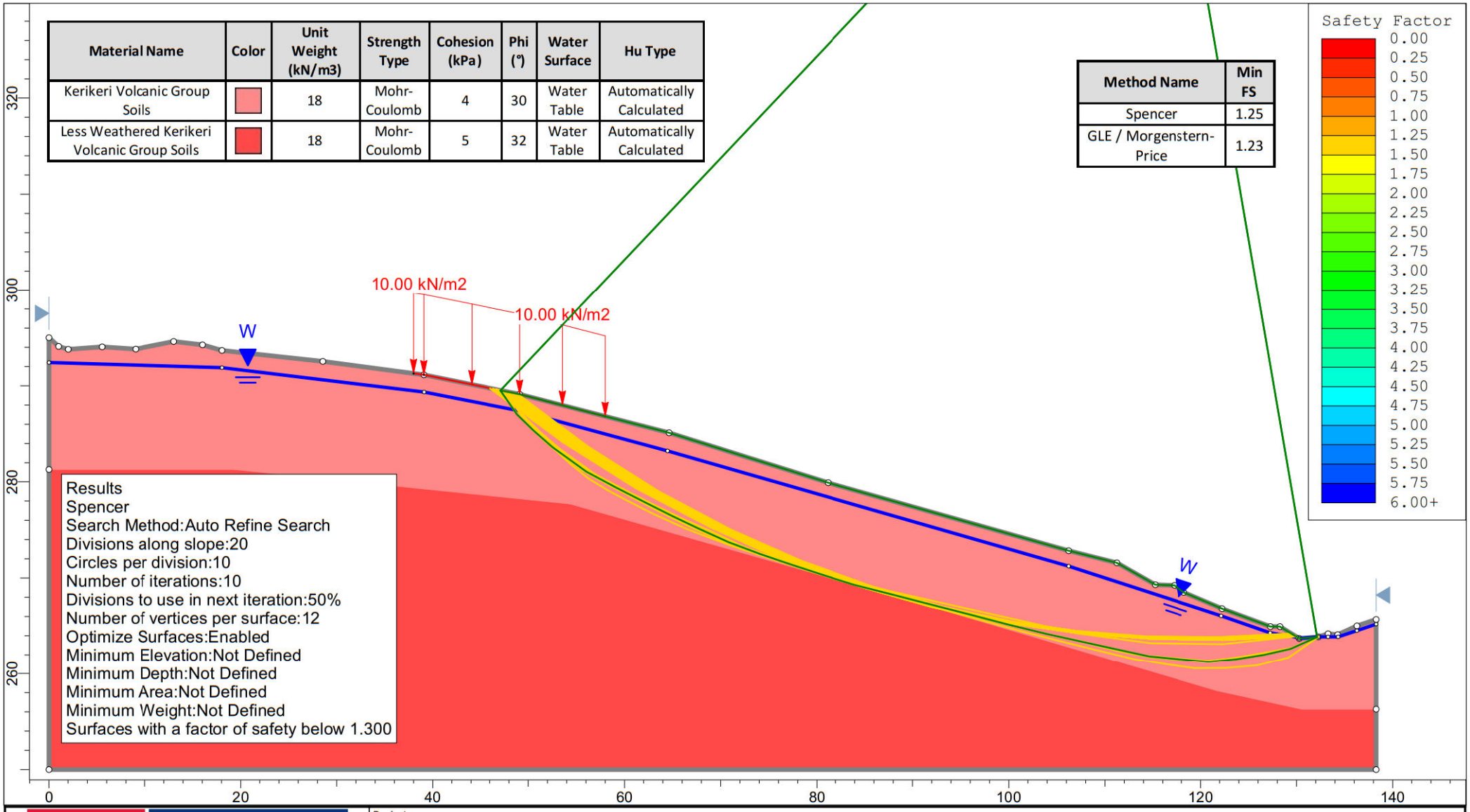
Consulting Engineers

SLIDEINTERPRET 9.040

Project	145312 - Remuera Settlement Road, Ohaeawai		
Group	Cross Section C - C' - Proposed	Scenario	Measured Groundwater Level
Drawn By	A.B	Company	Wilton Joubert Limited
Date	9/03/2026	File Name	145312 - CC - Proposed.slmd

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type
Kerikeri Volcanic Group Soils		18	Mohr-Coulomb	4	30	Water Table	Automatically Calculated
Less Weathered Kerikeri Volcanic Group Soils		18	Mohr-Coulomb	5	32	Water Table	Automatically Calculated

Method Name	Min FS
Spencer	1.25
GLE / Morgenstern-Price	1.23



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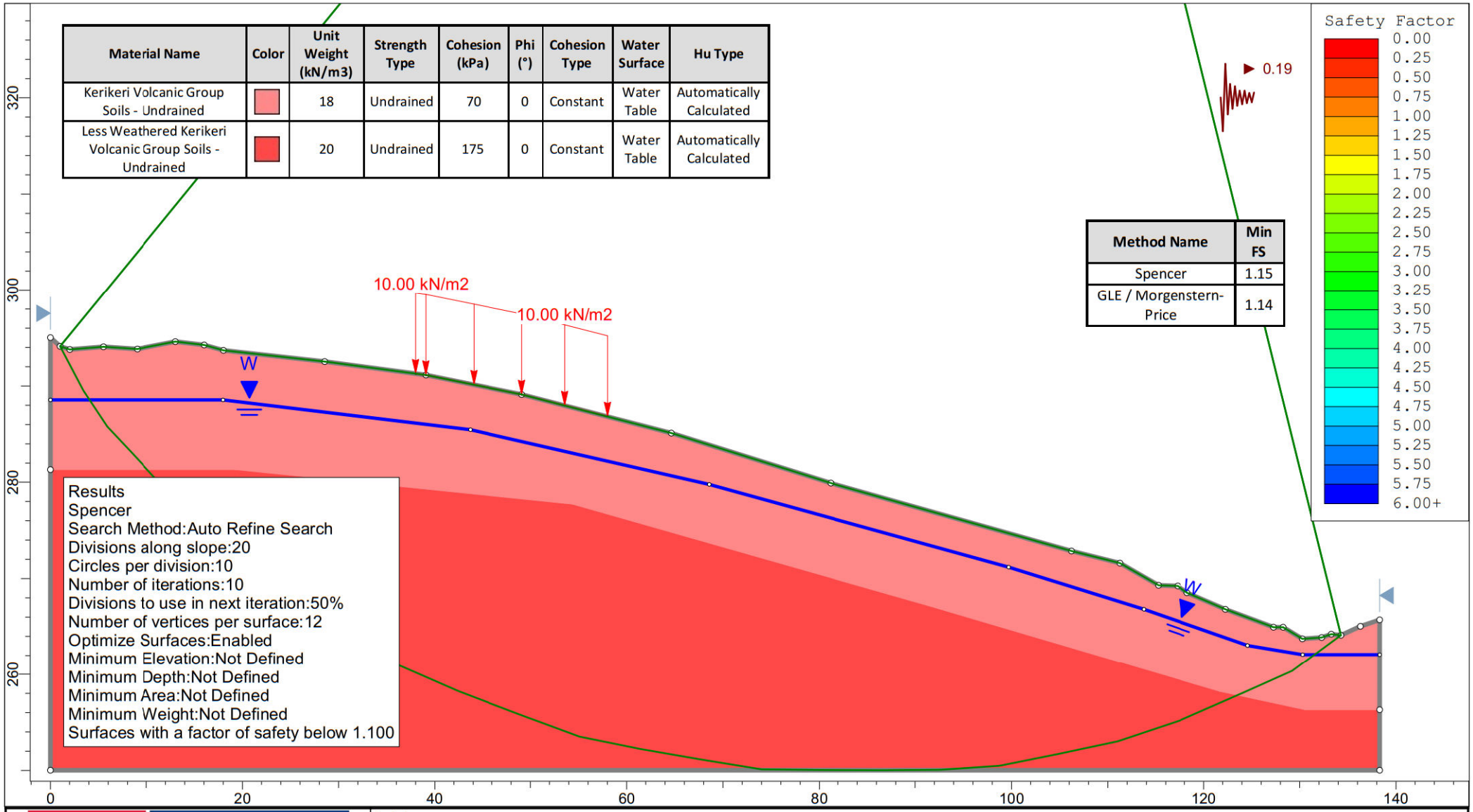
Consulting Engineers

SLIDEINTERPRET 9.040

Project	145312 - Remuera Settlement Road, Ohaeawai		
Group	Cross Section C - C' - Proposed	Scenario	Elevated Groundwater Level
Drawn By	A.B	Company	Wilton Joubert Limited
Date	9/03/2026	File Name	145312 - CC - Proposed.slmd

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Cohesion Type	Water Surface	Hu Type
Kerikeri Volcanic Group Soils - Undrained		18	Undrained	70	0	Constant	Water Table	Automatically Calculated
Less Weathered Kerikeri Volcanic Group Soils - Undrained		20	Undrained	175	0	Constant	Water Table	Automatically Calculated



Method Name	Min FS
Spencer	1.15
GLE / Morgenstern-Price	1.14

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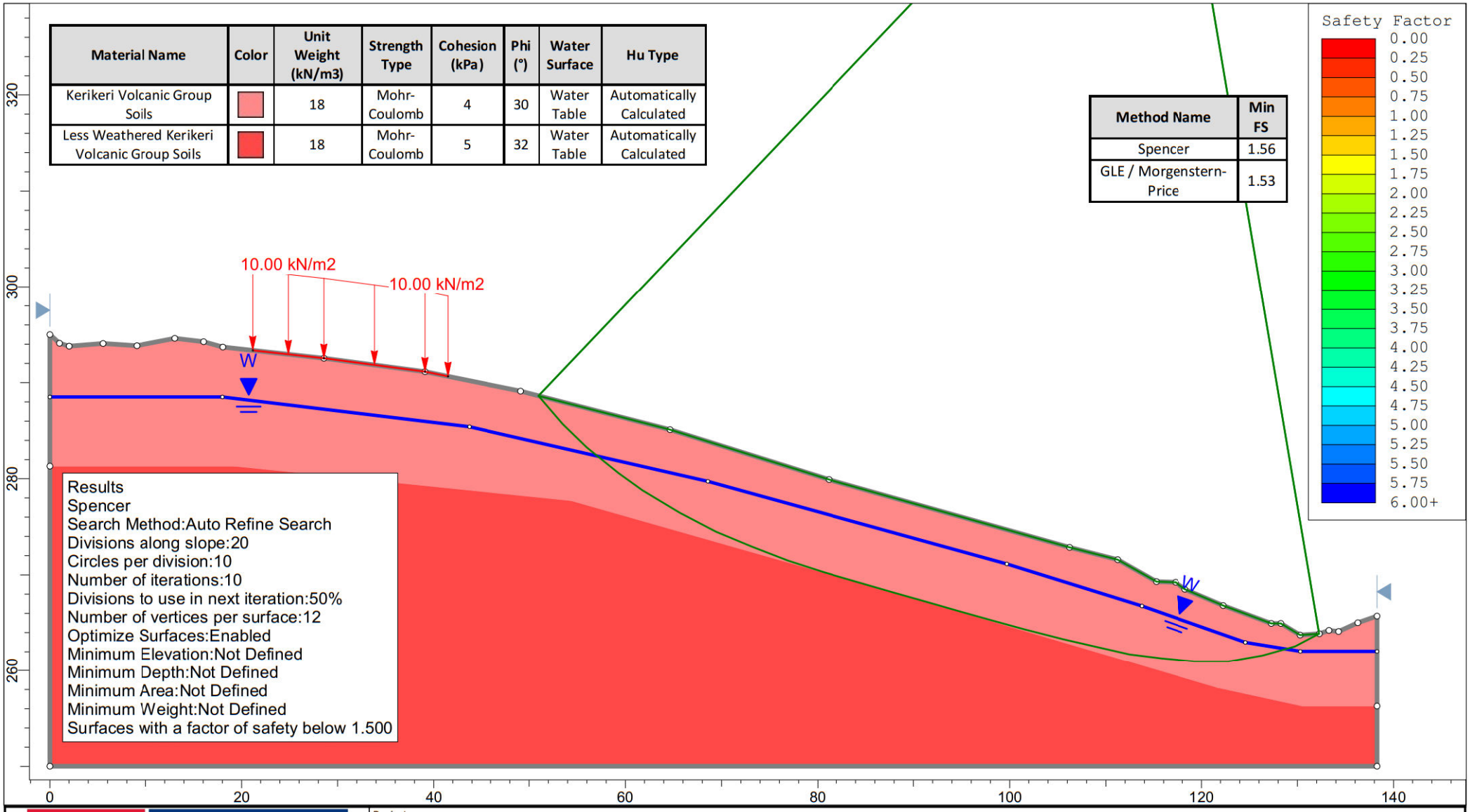
Consulting Engineers

SLIDEINTERPRET 9.040

Project	145312 - Remuera Settlement Road, Ohaeawai		
Group	Cross Section C - C' - Proposed	Scenario	Measured Groundwater Level - Seismic
Drawn By	A.B	Company	Wilton Joubert Limited
Date	9/03/2026	File Name	145312 - CC - Proposed.slmd

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type
Kerikeri Volcanic Group Soils		18	Mohr-Coulomb	4	30	Water Table	Automatically Calculated
Less Weathered Kerikeri Volcanic Group Soils		18	Mohr-Coulomb	5	32	Water Table	Automatically Calculated

Method Name	Min FS
Spencer	1.56
GLE / Morgenstern-Price	1.53



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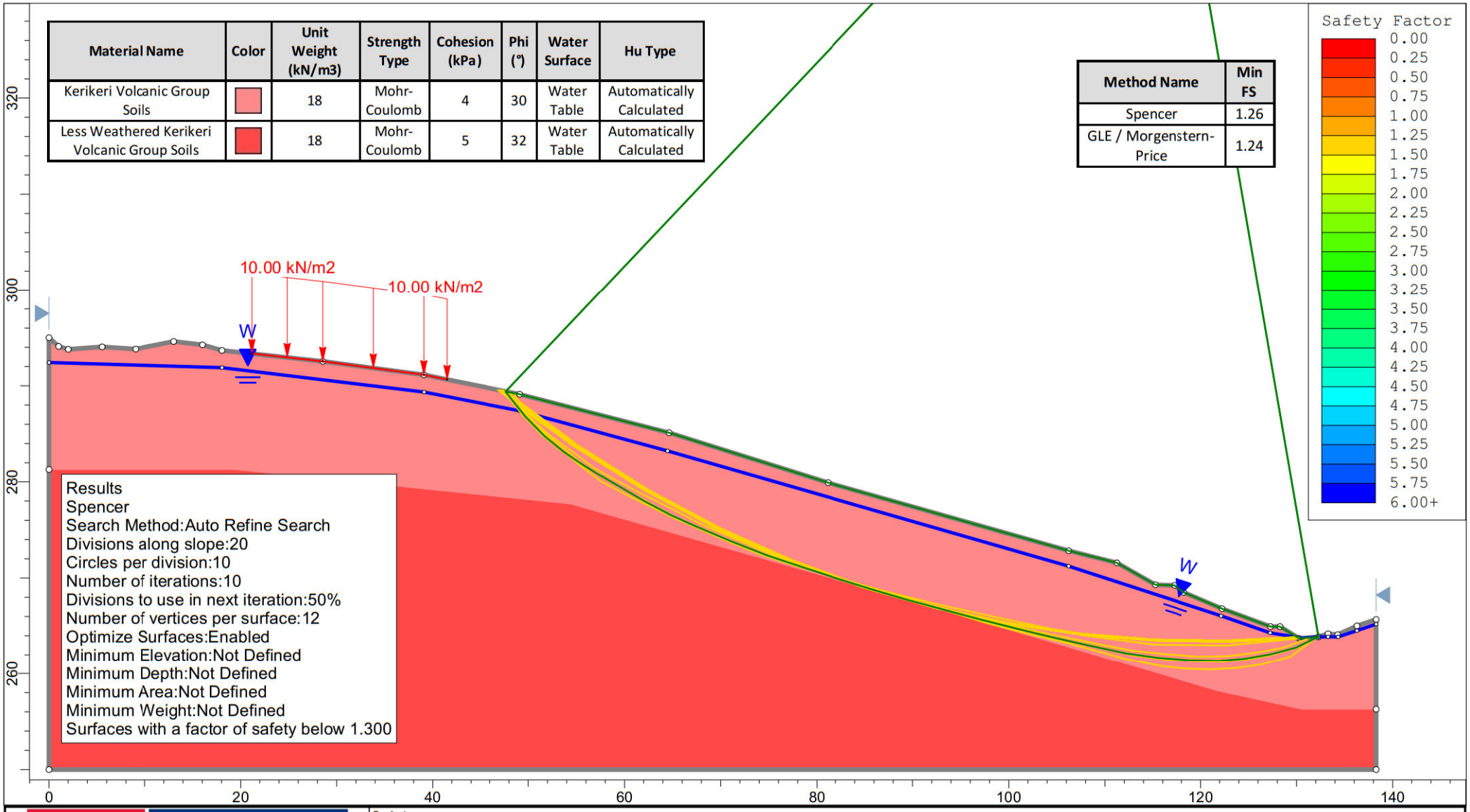
Consulting Engineers

SLIDEINTERPRET 9.040

Project	145312 - Remuera Settlement Road, Ohaeawai		
Group	Cross Section C - C' - Proposed	Scenario	Measured Groundwater Level
Drawn By	A.B	Company	Wilton Joubert Limited
Date	9/03/2026	File Name	145312 - CC - Proposed.slmd

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type
Kerikeri Volcanic Group Soils		18	Mohr-Coulomb	4	30	Water Table	Automatically Calculated
Less Weathered Kerikeri Volcanic Group Soils		18	Mohr-Coulomb	5	32	Water Table	Automatically Calculated

Method Name	Min FS
Spencer	1.26
GLE / Morgenstern-Price	1.24



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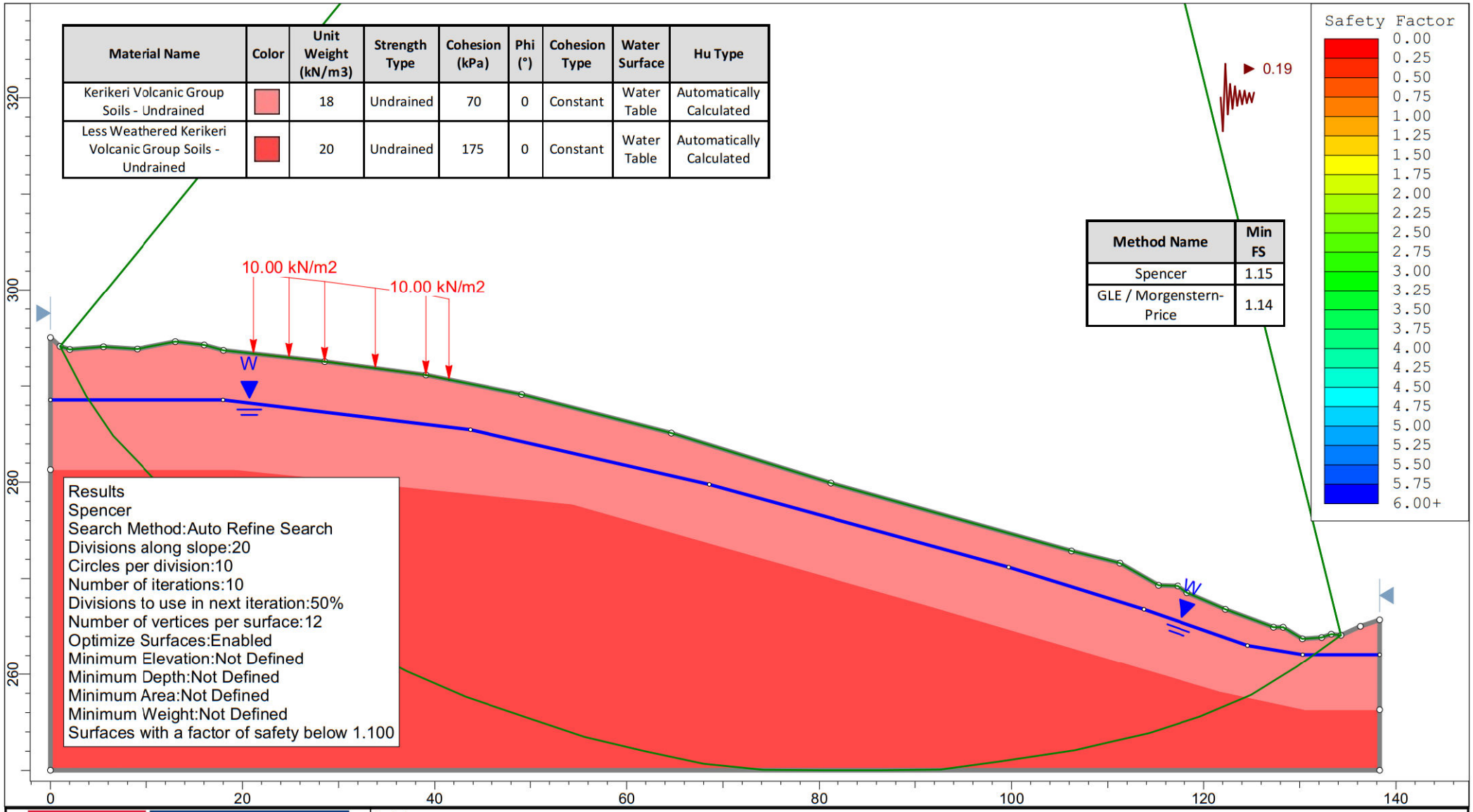
Consulting Engineers

SLIDEINTERPRET 9.040

Project	145312 - Remuera Settlement Road, Ohaeawai		
Group	Cross Section C - C' - Proposed	Scenario	Elevated Groundwater Level
Drawn By	A.B	Company	Wilton Joubert Limited
Date	9/03/2026	File Name	145312 - CC - Proposed.slmd

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Cohesion Type	Water Surface	Hu Type
Kerikeri Volcanic Group Soils - Undrained		18	Undrained	70	0	Constant	Water Table	Automatically Calculated
Less Weathered Kerikeri Volcanic Group Soils - Undrained		20	Undrained	175	0	Constant	Water Table	Automatically Calculated



Method Name	Min FS
Spencer	1.15
GLE / Morgenstern-Price	1.14

WILTON JOUBERT
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SLIDEINTERPRET 9.040

Project	145312 - Remuera Settlement Road, Ohaeawai		
Group	Cross Section C - C' - Proposed	Scenario	Measured Groundwater Level - Seismic
Drawn By	A.B	Company	Wilton Joubert Limited
Date	9/03/2026	File Name	145312 - CC - Proposed.slmd

FOUNDATION MAINTENANCE AND FOOTING PERFORMANCE

Preventing soil-related building movement

This Building Technology Resource is designed as a homeowner's guide on the causes of soil-related building movement, and suggested methods to prevent resultant cracking.

Buildings can and often do move. This movement can be up, down, lateral or rotational. The fundamental cause of movement in buildings can usually be related to one or more problems in the foundation soil. It is important for the home owner to identify the soil type in order to ascertain the measures that should be put in place in order to ensure that problems in the foundation soil can be prevented, thus protecting against building movement. Generally soil classification is provided by a geotechnical report.

SOIL TYPES

The types of soils usually present under the topsoil in land zoned for residential buildings can be split into two approximate groups – granular and clay. Quite often, foundation soil is a mixture of both types. The general problems associated with soils having granular content are usually caused by erosion. Clay soils are subject to saturation and swell/shrink problems.

As most buildings suffering movement problems are founded on clay soils, there is an emphasis on classification of soils according to the amount of swell and shrinkage they experience with variations of water content. Table 1 below is a reproduction of Table 2.1 from Australian Standard AS 2870-2011, Residential slabs and footings.

CAUSES OF MOVEMENT

SETTLEMENT DUE TO CONSTRUCTION

There are two types of settlement that occur as a result of construction:

- Immediate settlement occurs when a building is first placed on its foundation soil, as a result of compaction of the soil under the weight of the structure. The cohesive quality of clay soil mitigates against this, but granular (particularly sandy) soil is susceptible.
- Consolidation settlement is a feature of clay soil and may take place because of the expulsion of moisture from the soil or because of the soil's lack of resistance to local compressive or shear stresses. This will usually take place during the first few months after construction but has been known to take many years in exceptional cases.

These problems may be the province of the builder and should be taken into consideration as part of the preparation of the site for construction.

EROSION

All soils are prone to erosion, but sandy soil is particularly susceptible to being washed away. Even clay with a sand component of say 10% or more can suffer from erosion.

SATURATION

This is particularly a problem in clay soils. Saturation creates a bog-like suspension of the soil that causes it to lose virtually all of its bearing capacity. To a lesser degree, sand is affected by saturation because saturated sand may undergo a reduction in volume, particularly imported sand fill for bedding and blinding layers. However, this usually occurs as immediate settlement and should normally be the province of the builder.

SEASONAL SWELLING AND SHRINKAGE OF SOIL

All clays react to the presence of water by slowly absorbing it, making the soil increase in volume (see table below, from AS 2870). The degree of increase varies considerably between different clays, as does the degree of decrease during the subsequent drying out caused by fair weather periods. Because of the low absorption and expulsion rate, this phenomenon will not usually be noticeable unless there are prolonged rainy or dry periods, usually of weeks or months, depending on the land and soil characteristics.

The swelling of soil creates an upward force on the footings of the building, and shrinkage creates subsidence that takes away the support needed by the footing to retain equilibrium.

SHEAR FAILURE

This phenomenon occurs when the foundation soil does not have sufficient strength to support the weight of the footing. There are two major post-construction causes:

- Significant load increase.
- Reduction of lateral support of the soil under the footing due to erosion or excavation.

In clay soil, shear failure can be caused by saturation of the soil adjacent to or under the footing.

TREE ROOT GROWTH

Trees and shrubs that are allowed to grow in the vicinity of footings can cause foundation soil movement in two ways:

- Roots that grow under footings may increase in cross-sectional size, exerting upward pressure on footings.

TABLE 1. GENERAL DEFINITIONS OF SITE CLASSES.

Class	Foundation
A	Most sand and rock sites with little or no ground movement from moisture changes
S	Slightly reactive clay sites, which may experience only slight ground movement from moisture changes
M	Moderately reactive clay or silt sites, which may experience moderate ground movement from moisture changes
H1	Highly reactive clay sites, which may experience high ground movement from moisture changes
H2	Highly reactive clay sites, which may experience very high ground movement from moisture changes
E	Extremely reactive sites, which may experience extreme ground movement from moisture changes

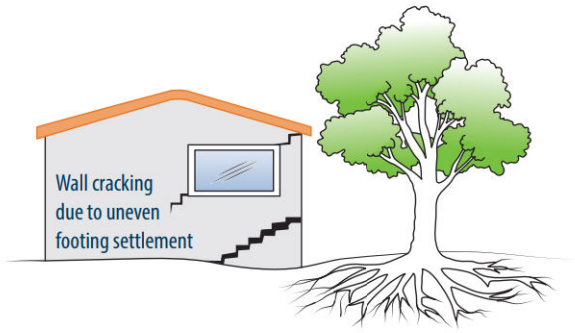

FIGURE 1 Trees can cause shrinkage and damage.

- Roots in the vicinity of footings will absorb much of the moisture in the foundation soil, causing shrinkage or subsidence.

UNEVENNESS OF MOVEMENT

The types of ground movement described above usually occur unevenly throughout the building's foundation soil. Settlement due to construction tends to be uneven because of:

- Differing compaction of foundation soil prior to construction.
- Differing moisture content of foundation soil prior to construction.

Movement due to non-construction causes is usually more uneven still. Erosion can undermine a footing that traverses the flow or can create the conditions for shear failure by eroding soil adjacent to a footing that runs in the same direction as the flow.

Saturation of clay foundation soil may occur where subfloor walls create a dam that makes water pond. It can also occur wherever there is a source of water near footings in clay soil. This leads to a severe reduction in the strength of the soil which may create local shear failure.

Seasonal swelling and shrinkage of clay soil affects the perimeter of the building first, then gradually spreads to the interior through absorption. The swelling process will usually begin at the uphill extreme of the building, or on the weather side where the land is flat. Shrinkage usually begins on the side of the building where the sun's heat is greatest.

EFFECTS OF UNEVEN SOIL MOVEMENT ON STRUCTURES

EROSION AND SATURATION

Erosion removes the support from under footings, tending to create subsidence of the part of the structure under which it occurs. Brickwork walls will resist the stress created by this removal of support by bridging the gap or cantilevering until the bricks or the mortar bedding fail. Older masonry has little resistance. Evidence of failure varies according to circumstances and symptoms may include:

- Step cracking in the mortar beds in the body of the wall or above/below openings such as doors or windows.
- Vertical cracking in the bricks (usually but not necessarily in line with the vertical beds or perpends).

Isolated piers affected by erosion or saturation of foundations will eventually lose contact with the bearers they support and may tilt or fall over. The floors that have lost this support will become bouncy, sometimes rattling ornaments etc.

SEASONAL SWELLING/SHRINKAGE IN CLAY

Swelling foundation soil due to rainy periods first lifts the most exposed extremities of the footing system, then the remainder of the perimeter footings while gradually permeating inside the building footprint to lift internal footings. This swelling first tends to create a dish effect, because the external footings are pushed higher than the internal ones.

The first noticeable symptom may be that the floor appears slightly dished. This is often accompanied by some doors binding on the floor or the door head, together with some cracking of cornice mitres. In buildings with timber flooring supported by bearers and joists, the floor can be bouncy. Externally there may be visible dishing of the hip or ridge lines.

As the moisture absorption process completes its journey to the innermost areas of the building, the internal footings will rise. If the spread of moisture is roughly even, it may be that the symptoms will temporarily disappear, but it is more likely that swelling will be uneven, creating a difference rather than a disappearance in symptoms. In buildings with timber flooring supported by bearers and joists, the isolated piers will rise more easily than the strip footings or piers under walls, creating noticeable doming of flooring.

As the weather pattern changes and the soil begins to dry out, the external footings will be first affected, beginning with the locations where the sun's effect is strongest. This has the effect of lowering the external footings. The doming is accentuated, and cracking reduces or disappears where it occurred because of dishing, but other cracks open up. The roof lines may become convex.

Doming and dishing are also affected by weather in other ways. In areas where warm, wet summers and cooler dry winters prevail, water migration tends to be toward the interior and doming will be accentuated, whereas where summers are dry, and winters are cold and wet, migration tends to be toward the exterior and the underlying propensity is toward dishing.

MOVEMENT CAUSED BY TREE ROOTS

In general, growing roots will exert an upward pressure on footings, whereas soil subject to drying because of tree or shrub roots will tend to remove support from under footings by inducing shrinkage.

COMPLICATIONS CAUSED BY THE STRUCTURE ITSELF

Most forces that the soil causes to be exerted on structures are vertical – i.e. either up or down. However, because these forces are seldom spread evenly around the footings, and because the building resists uneven movement because of its rigidity, forces are exerted from one part of the building to another. The net result of all these forces is usually rotational. This resultant force often complicates the diagnosis because the visible symptoms do not simply reflect the original cause. A common symptom is binding of doors on the vertical member of the frame.

EFFECTS ON FULL MASONRY STRUCTURES

Brickwork will resist cracking where it can. It will attempt to span areas that lose support because of subsided foundations or raised points. It is therefore usual to see cracking at weak points, such as openings for windows or doors.

In the event of construction settlement, cracking will usually remain unchanged after the process of settlement has ceased.

With local shear or erosion, cracking will usually continue to develop until the original cause has been remedied, or until the subsidence has completely neutralised the affected portion of footing and the structure has stabilised on other footings that remain effective.

In the case of swell/shrink effects, the brickwork will in some cases return to its original position after completion of a cycle, however it is more likely that the rotational effect will not be exactly reversed, and it is also usual that brickwork will settle in its new position and will resist the forces trying to return it to its original position. This means that in a case where swelling takes place after construction and cracking occurs, the cracking is likely to at least partly remain after the shrink segment of the cycle is complete. Thus, each time the cycle is repeated, the likelihood is that the cracking will become wider until the sections of brickwork become virtually independent.

With repeated cycles, once the cracking is established, if there is no other complication, it is normal for the incidence of cracking to stabilise, as the building has the articulation it needs to cope with the problem. This is by no means always the case, however, and monitoring of cracks in walls and floors should always be treated seriously.

Upheaval caused by growth of tree roots under footings is not a simple vertical shear stress. There is a tendency for the root to also

exert lateral forces that attempt to separate sections of brickwork after initial cracking has occurred.

The normal structural arrangement is that the inner leaf of brickwork in the external walls and at least some of the internal walls (depending on the roof type) comprise the load-bearing structure on which any upper floors, ceilings and the roof are supported. In these cases, it is internally visible cracking that should be the main focus of attention, however there are a few examples of dwellings whose external leaf of masonry plays some supporting role, so this should be checked if there is any doubt. In any case, externally visible cracking is important as a guide to stresses on the structure generally, and it should also be remembered that the external walls must be capable of supporting themselves.

EFFECTS ON FRAMED STRUCTURES

Timber or steel framed buildings are less likely to exhibit cracking due to swell/shrink than masonry buildings because of their flexibility. Also, the doming/dishing effects tend to be lower because of the lighter weight of walls. The main risks to framed buildings are encountered because of the isolated pier footings used under walls. Where erosion or saturation causes a footing to fall away, this can double the span which a wall must bridge. This additional stress can create cracking in wall linings, particularly where there is a weak point in the structure caused by a door or window opening. It is, however, unlikely that framed structures will be so stressed as to suffer serious damage without first exhibiting some or all of the above symptoms for a considerable period. The same warning period should apply in the case of upheaval. It should be noted, however, that where framed buildings are supported by strip footings there is only one leaf of brickwork and therefore the externally visible walls are the supporting structure for the building. In this case, the subfloor masonry walls can be expected to behave as full brickwork walls.

EFFECTS ON BRICK VENEER STRUCTURES

Because the load-bearing structure of a brick veneer building is the frame that makes up the interior leaf of the external walls plus perhaps the internal walls, depending on the type of roof, the building can be expected to behave as a framed structure, except that the external masonry will behave in a similar way to the external leaf of a full masonry structure.

WATER SERVICE AND DRAINAGE

Where a water service pipe, a sewer or stormwater drainage pipe is in the vicinity of a building, a water leak can cause erosion, swelling or saturation of susceptible soil. Even a minuscule leak can be enough to saturate a clay foundation. A leaking tap near a building can have the same effect. In addition, trenches containing pipes can become watercourses even though backfilled, particularly where broken rubble is used as fill. Water that runs along these trenches can be responsible for serious erosion, interstrata seepage into subfloor areas and saturation.

Pipe leakage and trench water flows also encourage tree and shrub roots to the source of water, complicating and exacerbating the problem. Poor roof plumbing can result in large volumes of rainwater being concentrated in a small area of soil:

- Incorrect falls in roof guttering may result in overflows, as may gutters blocked with leaves etc.
- Corroded guttering or downpipes can spill water to ground.
- Downpipes not positively connected to a proper stormwater collection system will direct a concentration of water to soil that is directly adjacent to footings, sometimes causing large-scale problems such as erosion, saturation and migration of water under the building.

SERIOUSNESS OF CRACKING

In general, most cracking found in masonry walls is a cosmetic nuisance only and can be kept in repair or even ignored. Table 2 below is a reproduction of Table C1 of AS 2870-2011.

AS 2870-2011 also publishes figures relating to cracking in concrete floors, however because wall cracking will usually reach the critical point significantly earlier than cracking in slabs, this table is not reproduced here.

PREVENTION AND CURE

PLUMBING

Where building movement is caused by water service, roof plumbing, sewer or stormwater failure, the remedy is to repair the problem. It is prudent, however, to consider also rerouting pipes away from the building where possible and relocating taps to positions where any leakage will not direct water to the building vicinity. Even where gully traps are present, there is sometimes sufficient spill to create erosion or saturation, particularly in modern installations using smaller diameter PVC fixtures. Indeed, some gully traps are not situated directly under the taps that are installed to charge them, with the result that water from the tap may enter the backfilled trench that houses the sewer piping. If the trench has been poorly backfilled, the water will either pond or flow along the bottom of the trench. As these trenches usually run alongside the footings and can be at a similar depth, it is not hard to see how any water that is thus directed into a trench can easily affect the foundation's ability to support footings or even gain entry to the subfloor area.

GROUND DRAINAGE

In all soils there is the capacity for water to travel on the surface and below it. Surface water flows can be established by inspection during and after heavy or prolonged rain. If necessary, a grated drain system connected to the stormwater collection system is usually an easy solution.

It is, however, sometimes necessary when attempting to prevent water migration that testing be carried out to establish watertable height and subsoil water flows. This subject may be regarded as an area for an expert consultant.

PROTECTION OF THE BUILDING PERIMETER

It is essential to remember that the soil that affects footings extends well beyond the actual building line. Watering of garden plants, shrubs and trees causes some of the most serious water problems.

For this reason, particularly where problems exist or are likely to occur, it is recommended that an apron of paving be installed around as much of the building perimeter as necessary. This paving should extend outwards a minimum of 900 mm (more in highly reactive soil) and should have a minimum fall away from the building of 1:60. The finished paving should be no less than 100 mm below brick vent bases.

It is prudent to relocate drainage pipes away from this paving, if possible, to avoid complications from future leakage. If this is not practical, earthenware pipes should be replaced by PVC and backfilling should be of the same soil type as the surrounding soil and compacted to the same density.

Except in areas where freezing of water is an issue, it is wise to remove taps in the building area and relocate them well away from the building – preferably not uphill.

It may be desirable to install a grated drain at the outside edge of the paving on the uphill side of the building. If subsoil drainage is needed this can be installed under the surface drain.

CONDENSATION

In buildings with a subfloor void, such as where bearers and joists support flooring, insufficient ventilation creates ideal conditions for condensation, particularly where there is little clearance between the floor and the ground. Condensation adds to the moisture already present in the subfloor and significantly slows the process of drying out. Installation of an adequate subfloor ventilation system, either natural or mechanical, is desirable.

TABLE 2. CLASSIFICATION OF DAMAGE WITH REFERENCE TO WALLS.

Description of typical damage and required repair	Approximate crack width limit	Damage category
Hairline cracks	<0.1 mm	0 – Negligible
Fine cracks which do not need repair	<1 mm	1 – Very Slight
Cracks noticeable but easily filled. Doors and windows stick slightly.	<5 mm	2 – Slight
Cracks can be repaired and possibly a small amount of wall will need to be replaced. Doors and windows stick. Service pipes can fracture. Weathertightness often impaired.	5–15 mm (or a number of cracks 3 mm or more in one group)	3 – Moderate
Extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows. Window and door frames distort. Walls lean or bulge noticeably, some loss of bearing in beams. Service pipes disrupted.	15–25 mm but also depends on number of cracks	4 – Severe

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Warning: Although this Building Technology Resource deals with cracking in buildings, it should be said that subfloor moisture can result in the development of other problems, notably:

- Water that is transmitted into masonry, metal or timber building elements causes damage and/or decay to those elements.
- High subfloor humidity and moisture content create an ideal environment for various pests, including termites and spiders, and mould.
- Where high moisture levels are transmitted to the flooring and walls, an increase in the dust mite count can ensue within the living areas. Dust mites, as well as dampness in general, can be a health hazard to inhabitants, particularly those who are abnormally susceptible to respiratory ailments.

THE GARDEN

The ideal vegetation layout is to have lawn or plants that require only light watering immediately adjacent to the drainage or paving edge, then more demanding plants, shrubs and trees spread out in that order.

Overwatering due to misuse of automatic watering systems is a common cause of saturation and water migration under footings. If it is necessary to use these systems, it is important to remove garden beds to a completely safe distance from buildings.

EXISTING TREES

Existing trees may cause problems with the upheaval of footings by their roots, or shrinkage from soil drying. If the offending roots are subsidiary and their removal will not significantly damage the tree, they should be severed and a concrete or metal barrier placed vertically in the soil to prevent future root growth in the direction of the building. Soil drying is a more complex issue and professional advice may be required before considering the removal or relocation of the tree.

INFORMATION ON TREES, PLANTS AND SHRUBS

State departments overseeing agriculture can give information regarding root patterns, volume of water needed and safe distance from buildings of most species. Botanic gardens are also sources of information.

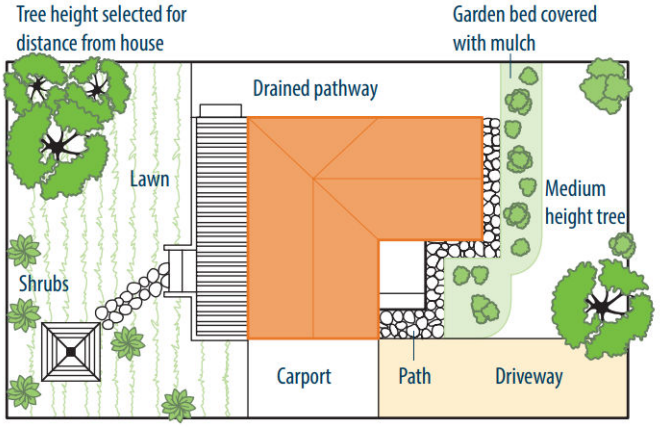

FIGURE 2 Gardens for a reactive site.

EXCAVATION

Excavation around footings must be properly engineered. Soil supporting footings can only be safely excavated at an angle that allows the soil under the footing to remain stable. This angle is called the angle of repose (or friction) and varies significantly between soil types and conditions. Removal of soil within the angle of repose will cause subsidence.

REMEDIATION

Where erosion has occurred that has washed away soil adjacent to footings, soil of the same classification should be introduced and compacted to the same density. Where footings have been undermined, augmentation or other specialist work may be required. Remediation of footings and foundations is generally the realm of a specialist consultant.

Where isolated footings rise and fall because of swell/shrink effect, the home owner may be tempted to alleviate floor bounce by filling the gap that has appeared between the bearer and the pier with blocking. The danger here is that when the next swell segment of the cycle occurs, the extra blocking will push the floor up into an accentuated dome and may also cause local shear failure in the soil. If it is necessary to use blocking, it should be by a pair of fine wedges and monitoring should be carried out fortnightly.

APPENDIX 5

NORTHLAND REGIONAL COUNCIL

SELECTED LAND-USE REGISTER

Northland REGIONAL COUNCIL

Northland Regional Council Selected Land-use Register

Projection NZTM. Datum NZTM2000.
DISCLAIMER:
The Northland Regional Council cannot guarantee that the information shown is accurate and should not be reused in any manner without proper consultation with its owner.

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March 24 2026