

# 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 Schedule 4). 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

## 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](mailto:tehonosupport@fndc.govt.nz)

## 5. Applicant Details

**Name/s:**

Willowridge Developments Limited C/O Alison Devlin

**Email:**

**Phone number:**

**Postal address:**

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

## 6. Address for Correspondence

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

**Name/s:**

Olivia Stirling

**Email:**

**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:**

Willowridge Developments Limited

**Property Address/  
Location:**

Unit 6b, 1 Sir Tim Wallis Drive, Three Parks, Wanaka, South Island, New Zealand

**Postcode**

9305



## 8. Application Site Details

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

**Name/s:**

**Site Address/  
Location:**

**Postcode**

**Legal Description:**

**Val Number:**

**Certificate of title:**

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.

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
- Regional Council Consent (ref # if known)
- National Environmental Standard consent
- Other (please specify)

## 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
- Changing the use of a piece of land
- Disturbing, removing or sampling soil
- 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

## 13. Draft Conditions:

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

If yes, do you agree to extend the processing timeframe pursuant to Section 37 of the Resource Management Act by 5 working days?  Yes  No

## 14. 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)

Willowridge Developments Limited C/O Alison Devlin

**Email:**

**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.

### 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)

Olivia Stirling

**Signature:**

(signature of bill payer)

**Date** 12-Dec-2024

**MANDATORY**

## 15. 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](http://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.

## 15. Important information continued...

### Declaration

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

**Name:** (please write in full)

**Signature:**

Date

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

### Checklist (please tick if information is provided)

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- Payment (cheques payable to Far North District Council)
- 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
- Applicant / Agent / Property Owner / Bill Payer details provided
- 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
- Location and Site plans (land use) AND/OR
- 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.





# Aucks Road Management Plan Subdivision – FNDC RC

39 Aucks Road, Russell Russell / Kororāreka

Assessment of Environmental Effects and Statutory Analysis

12 December 2024

**B&A**

Urban & Environmental

Prepared for:  
Willowridge Developments Limited



B&A Reference:

25041

Status:

Final

Date:

12 December 2024

Prepared by:



**Olivia Stirling**

Senior Planner, Barker & Associates Limited

Reviewed by:



**David Badham**

Partner, Barker & Associates Limited

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### **Abbreviations used in this report:**

ADP	Accidental Discovery Protocol
AEE	Assessment of Environmental Effects
CE	Coastal Environment
CMA	Coastal Marine Area
CTMP	Construction Traffic Management Plan
Council or FNDC	Far North District Council
EMP	Ecological Management Plan
FENZ	Fire and Emergency New Zealand
FMP	Fish Management Plan
HAIL	Hazardous Activities and Industries List
HNZPT	Heritage New Zealand Pouhere Taonga
JOAL	Joint Owner Access Lots
LINZ	Land Information New Zealand
Maven	Maven Associates Limited
NPPA	National Pest Plant Accord
NPS-FM	National Policy Statement: Freshwater Management

NPS-HPL	National Policy Statement: Highly Productive Land
NPS-IB	National Policy Statement: Indigenous Biodiversity
NES CS	National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health 2011
NES-F	National Environmental Standard for Freshwater
NI	North Island
NRC	Northland Regional Council
NPPMS	Northland Plant Pest Management Strategy
NZCPS	New Zealand Coastal Policy Statement
ODP	Operative Far North District Plan
PDP	Proposed Far North District Plan
PNA	Protected Natural Area
PNRP	Proposed Northland Regional Plan
PRP	Northland Proposed Regional Plan
RPS	Operative Regional Policy Statement
RLZ	Rural Lifestyle Zone
ROW	Right of Way
RPS	Northland Regional Policy Statement
SMP	Streamworks Management Plan
The Act	Resource Management Act 1991
The Applicant	Willowridge Developments Limited

## 1.0 Applicant and Property Details

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To:	Far North District Council (“FNDC”)
Site Address:	39 Aucks Road, Russell / Kororāreka, Far North District
Applicant Name:	Willowridge Developments Limited
Address for Service:	Barker & Associates Ltd PO Box 414, Kerikeri 0230 Level 1, 62 Kerikeri Road Kerikeri 0230 Attention: Olivia Stirling
Legal Description:	Lot 1 DP 542129; Lot 2 DP 542129; Lot 1 DP 187577; Lot 3 DP 420232; and Lot 4 DP 420232; (refer to Records of Title as <b>Appendix 1</b> )
Site Area:	42.28 hectares
Site Owner:	Willowridge Developments Limited
District Plan:	Operative Far North District Plan ( <b>ODP</b> ) Proposed Far North District Plan ( <b>PDP</b> )
Zoning:	<b>ODP:</b> Coastal Living <b>PDP:</b> Rural Lifestyle
Overlays & Controls:	<b>ODP:</b> NRC Flood Susceptible Land <b>PDP:</b> Coastal Environment, Coastal Flood Zones 1-3
Designations:	<b>ODP:</b> None <b>PDP:</b> None
Locality Diagram:	Refer to <b>Figure 1</b>
Brief Description of Proposal:	<b>ODP</b> – Resource Consent is sought for a combined subdivision and land use consent to subdivide and develop land comprising 43.28ha at Aucks Road, Russell / Kororāreka. (“ <b>The proposal</b> ”) involves a management plan subdivision pursuant to Rule 13.9.2.2 of the ODP, to create 66 allotments including one allotment in shared ownership (Lot 200) which

contains the internal roading network and reserve area.

Summary of Reasons for Consent:

**Land use:** resource consent for a restricted discretionary activity to breach building footprint; exceeding earthworks standards. For a discretionary activity to discharge effluent within 20 metres of a waterbody; and for an esplanade reserve waiver; breaching traffic standards and exceeding intensity thresholds. Controlled activity land use also sought to undertake earthworks within a coastal hazard area, and locating a building 20 metres from any trees.

**Subdivision:** resource consent as a discretionary activity for a management plan subdivision which complies with allotment sizes and for not complying with the 30x30 metre building envelope.

**Other Permission:** Pursuant to Section 221(3) of the RMA, the Applicant is also applying to cancel an existing consent notice (8300644.4) on the relevant Record of Title. Pursuant to Section 221(3A) of the RMA, resource consent is required as a discretionary activity for the cancellation of the consent notice.

Overall, the proposal is assessed as a **Discretionary Activity** under the ODP.

Pursuant to Section 241(3) of the RMA a cancellation of an amalgamation condition is required.

## 2.0 Background

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Barker and Associates (“**B&A**”) have been engaged by Willowridge Developments Limited (“**the Applicant**”) to prepare a subdivision application to the Far North District Council (“**FNDC**”) on their behalf. The applicant seeks the development of the subject site, legally described as Lot 1 DP 542129, Lot 2 DP 542129, Lot 1 DP 187577, Lot 3 DP 420232 and Lot 4 DP 420232 into 65 allotments with associated dwelling sites.

This Assessment of Environmental Effects (“**AEE**”) has been prepared in accordance with the requirements of Section 88 and Schedule 4 of the Resource Management Act 1991 (“**the Act**”) and is intended to provide the information necessary for a full understanding of the activity for which consent is sought and any actual and potential effects the proposal may have on the environment.

### 2.1 Pre-Lodgement Engagement

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A schedule of the consultation undertaken to date is attached at **Appendix 2**.

#### 2.1.1 Far North District Council (FNDC)

A Concept Development Meeting was held with Far North District Council on 18 September 2024 (minutes attached at **Appendix 2**). Rinku Mishra, Nadia De La Gurre, Pravin Singh and Setha Maharaj were present from Council and provided a number of recommendations. These recommendations have been carefully considered, incorporated into this application, and are summarised as follows:

- 1) Recommendations for each platform to be provided and associated risk detailed.
  - o Comprehensive Geotech modelling and analysis has been undertaken to inform building platform locations in the Geotechnical Assessment attached at **Appendix 4**.
- 2) Suggestion to decrease the 18% gradient in the road.
  - o The Transport Assessment included in **Appendix 5** confirms that the gradients of the internal roads are suitable. Additionally, the proposed gradient meets Council standards.
- 3) The scheme plan shows land locked parcels (e.g., Lots 15,16,18,19,47-49, 23-24, 62-64), these are required to be updated prior to lodgement.
  - o As shown in the Scheme Plan at **Appendix 3** all lots obtain access via direct vehicle crossing from Lot 200 or via (“**Right of Way**”) ROW easements.
- 4) Given the size of the development, there is an expectation that roads are up to Council vesting standards.
  - o Non-compliance with Council standards is a gateway to assessment, rather than a definitive determination of what is acceptable or not. The justification and effects basis for the roading formation and legal standards are detailed in the Transport Assessment in **Appendix 5** and further discussed in Section 6.4 of this report.
- 5) A traffic assessment is required in relation to the intersection of Aucks Road and the development, demonstrating if the existing access formation is still appropriate
  - o A Transport Assessment is attached at **Appendix 5**.
- 6) Assessment of the potential requirement of lighting in Aucks Road corridor to be provided.

- The provision of lighting in the Aucks Road corridor is provided in the Infrastructure Report (refer **Appendix 6**).
- 7) Pedestrian connectivity to the surrounding network, possible grass berms.
- As detailed in the Infrastructure Report in **Appendix 6**, pedestrian access within the site will be provided via off-road formed tracks. These tracks will pass through shared (communal) land or, when crossing private land, will be protected by easements. Considering the development's nature and intended outcomes, this approach is preferred over conventional footpaths within road corridors. Furthermore, as Aucks Road does not feature any footpaths, this approach is in keeping with the existing context.
- 8) A key concern from Council will be around the roads accessing the development off Aucks Road due to the flooding mapping from Northland Regional Council (“**NRC**”).
- Consultation with NRC as outlined below did not identify any concerns regarding flooding resulting from the development. According to the Infrastructure Report, most internal roads are elevated above the future 100-year flood level, except for areas near Aucks Road where alignment with existing levels is necessary. All individual building platforms are situated outside the Coastal Flood Zone 3 extent of the 100-year ARI static water level, except for Lots 55 and 42. Specific platform designs have been provided to ensure suitable building elevations above the 100-year flood level.
- 9) Provide detail on Lot 55,58 and 59 wastewater solutions.
- Wastewater solutions are detailed in the Wastewater Feasibility Assessment attached at **Appendix 7** and the Infrastructure Report attached at **Appendix 6**.
- 10) Kiwi High Habitat normally consent requires no dogs and cats other than in exceptional circumstances.
- We have relied on expert Ecological Assessment on this matter (refer to the Ecological Assessment attached at **Appendix 8**, and based on that expert assessment have proceeded with mitigation of no cats and mustelids, with mitigation in place for dogs
- 11) Consultation with the parks and reserves team, Top Energy and Heritage New Zealand Pouhere Taonga (“**HNZPT**”) is required.
- Consultation has been undertaken with HNZPT, Top Energy and Robin Rawson of Council’s Parks Department (refer **Appendix 2**). For completeness, HNZPT did not respond to the engagement.
- 12) Hybrid staging is acceptable depending on the detail provided.
- Detail of staging is provided in Section 4 this report and in the Subdivision Drawings attached at **Appendix 3**.

### 2.1.2 Northland Regional Council (“**NRC**”)

A pre-application meeting with (“**NRC**”) was undertaken on 1 October 2024 with Katie McGuire. The minutes of this meeting are attached at **Appendix 2** and summarised as follows:

- No concerns were raised with the approach to flooding and the level of the existing roading from NRC perspective;

- Given the transfer of powers, FNDC will ultimately process the regional wastewater consent;
- It is common for NRC to receive and process applications for a reduced setback or effluent disposal area, where there is secondary and tertiary treatment. An assessment of NES-F diversion and discharge and earthworks in proximity to wetlands will need to be assessed, in particular Regulation 45C and 54.
  - An assessment against the NES-F is provided in this report.

### 2.1.3 Iwi and Hapū

During the concept development phase of the development, engagement was undertaken with representatives from Kororāreka Marae and Te Kapotai hapū onsite.

#### Kororāreka Marae

Contact was made in July 2024 with representatives from both FNDC and NRC to obtain contact details for who they considered to be the most appropriate iwi / hapū to contact. Details for Whaea Deb Rewiri were provided. Contact was made and a hui was set up with Whaea Deb and Whaea Win from Kororāreka Marae onsite on 24 September 2024. A discussion was held at the existing dwelling located centrally on the subject site, and then a general drive around the site with the most recent scheme plans. Copies of notes taken at that meeting are attached in **Appendix 2**.

One of the key matters discussed with Whaea Deb and Whaea Win on site was their recommendation for engagement with the wider community at Kororāreka marae, this is addressed further in Section 2.1.4 below.

#### Te Kapotai

Following contact with Kororāreka Marae, a representative from Te Kapotai, Kara George got in touch to express an interest in the application and the subject site. A hui was held on site with Kara and Vicky on 4 November 2024. The application was discussed, along with the latest plans for the proposed subdivision. Copies of notes taken at that meeting are attached in **Appendix 2**.

### 2.1.4 Community Engagement

At the recommendation of representatives from Kororāreka Marae, two community sessions held at Kororāreka Marae. Feedback from the key discussion points from these sessions is summarised and addressed below, with detailed meeting notes and minutes available at **Appendix 2**.

- Ecology - Meeting participants from both Kororāreka Marae and Te Kapotai hapū were supportive of positive ecological outcomes associated with the development. These outcomes are detailed in the Ecological Assessment at **Appendix 8**. An opportunities and constraints mapping exercise was completed prior to the design phase of the development to enhance ecological benefits through informed design decisions.
- Wastewater - Concerns were raised regarding potential impacts of wastewater discharge on Orongo Bay and local oyster farms. The proposed wastewater disposal methods are detailed in the Infrastructure Report in **Appendix 6** and the feasibility assessment attached at **Appendix 7**. Wastewater from the development will be treated to meet FNDC and NRC standards, ensuring no untreated discharge enters Orongo Bay.
- Allotment Sizes - Participants of the Kororāreka Marae meeting were supportive of the range of allotment sizes, for the purpose of providing affordable housing outcomes. While some

participants, raised that they would prefer additional smaller allotments to further provide for affordability, the allotment sizes are restrained by the District Plan average allotment size across the development, and maintenance of ecological enhancement areas;

- Landscape – Meeting participants questioned the potential landscape impact of the development. Response was provided in the meeting and is reflected in the Landscape Assessment attached at **Appendix 9**. The development masterplan has been created with significant input from Mike Farrow, as detailed in the Landscape Assessment attached at **Appendix 9**. Landscape and ecological enhancement were key design priorities for this development. The design ensures that the development integrates well with the surrounding environment and the use of building controls as proposed as part of this application will further integrate the development into the surroundings.
- Traffic – Traffic generation as a result of the development was raised as a concern by meeting participants, and it was requested that a ride share be considered for the development. Taking into account the feedback from Commute in the Transport Assessment attached at **Appendix 5**, it is considered that the existing transport network can accommodate the projected traffic from the development, therefore, the inclusion of bus transport as part of this application is not considered to be necessary in this instance.
- Contribution to addressing wider issues in Russell / Kororāreka – concerns were raised about various issues in Russell / Kororāreka township, in particular concerns regarding a lack of parking. The subject site is approximately 5km away from the township, and there is nothing that this development can immediately do to solve concerns regarding car parking within it. However, it is noted that the subdivision as it is completed overtime, will contribute to an increased rating base with FNDC can use to invest in various initiatives, including potentially increasing public parking in the township.

## 2.2 Consenting History

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Various resource consents have been approved on the subject site. The particularly relevant resource consents have been summarised as follows with the decisions attached at **Appendix 15**:

- **RC2010379** approved the subdivision of Lot 2 DP 187577 into 19 allotments and one allotment to vest in road. RC2010379 was subsequently varied to create 12 allotments. Section 223 was completed in 2001 for this subdivision and while Section 224(c) was never applied for, subdivision works were completed, including the establishment of the access through the site, electricity to boundaries and the formation of building platforms.
- **RC 2170042-RMASUB** approved the subdivision of Lot 2 DP 187577 in 2016 into two allotments to create the subject site (Lot 1 DP 542129 [38.17 ha] and Lot 2 DP 542129 [1.47 ha]).
- **RC2020315** approved the formation of an accessway through Lot 7 DP 208629 which enabled the excavation of up to 5,000m<sup>3</sup> of earth to form an access from Aucks Road through approved Lot 7 in association with subdivision consent RC2010379.



## 3.0 Site Context

### 3.1 Site Description

the site comprises five parcels of land (Lot 1 Deposited Plan 187577 and Lot 3-4 Deposited Plan 420232; Lot 3 DP 420232, Lot 4 DP 420232, Lot 1 DP 187577, Lot 1 DP 542129 and Lot 2 DP 542129), held within three records of title (RT 912226, RT 476989 and RT 912227) and encompasses a total area of 43.28 hectares.

The site is located on the southern side of Aucks Road and also has frontage to Russell Whakapara Road to the east, and Lane Road to the south-east. The lower lying land can be described as having rolling topography which rises into steep terrain. The site contains an artificial pond system, and scattered indigenous and exotic vegetation. Various wetlands have been identified on the site which are feed by a myriad of overland flow paths and intermittent streams and flow into the man-made water bodies.

A number of improvements have been made to the site, including the establishment of an existing dwelling, outbuildings and a shed. Additionally, roading infrastructure, vehicle crossings, levelled building platforms, and electricity connections were developed under the previously granted subdivision consent (RC2010379). The formed and sealed internal access road aligns with the layout approved in subdivision consent RC2010379.



**Figure 1: Locality plan.**

The allotments are all zoned as Coastal Living under the Operative Far North District Plan (“ODP”) as shown in **Figure 2**. Part of the site is identified as subject to a Coastal Flood Hazard by the Northland Regional Council, as shown in **Figure 4** below. the site is also situated in the Rural Lifestyle Zone with Coastal Environment and Coastal Flood overlays under the Proposed Far North District Plan (“PDP”) – see **Figure 3** below.

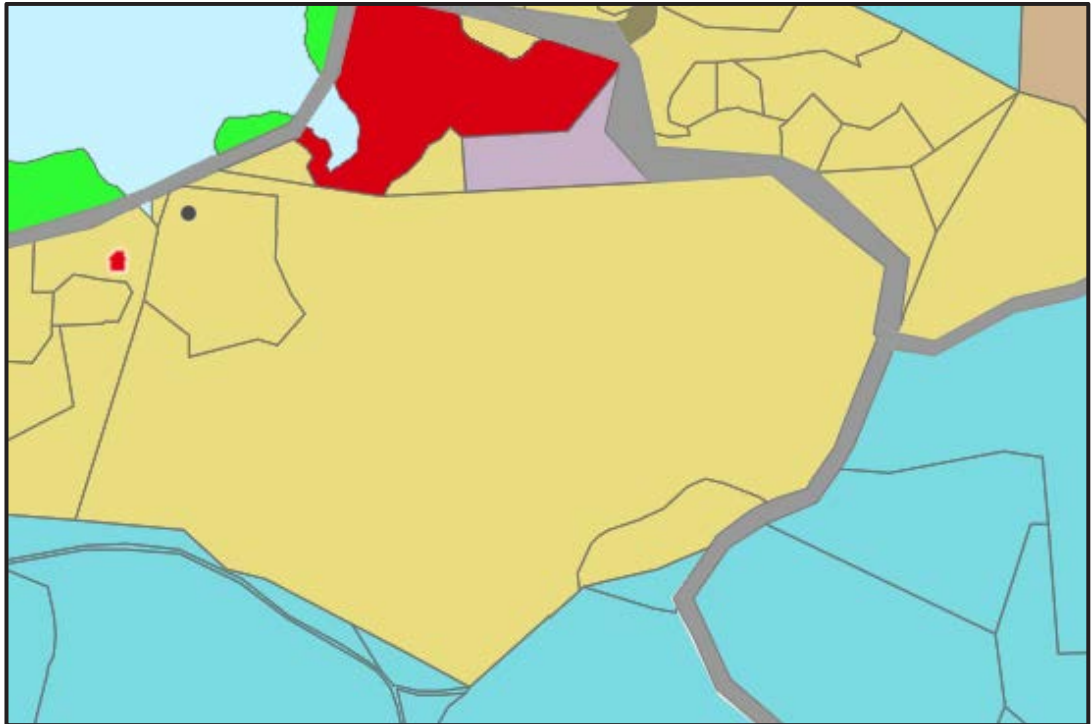


Figure 2: ODP Map. Source FNDC Emap.

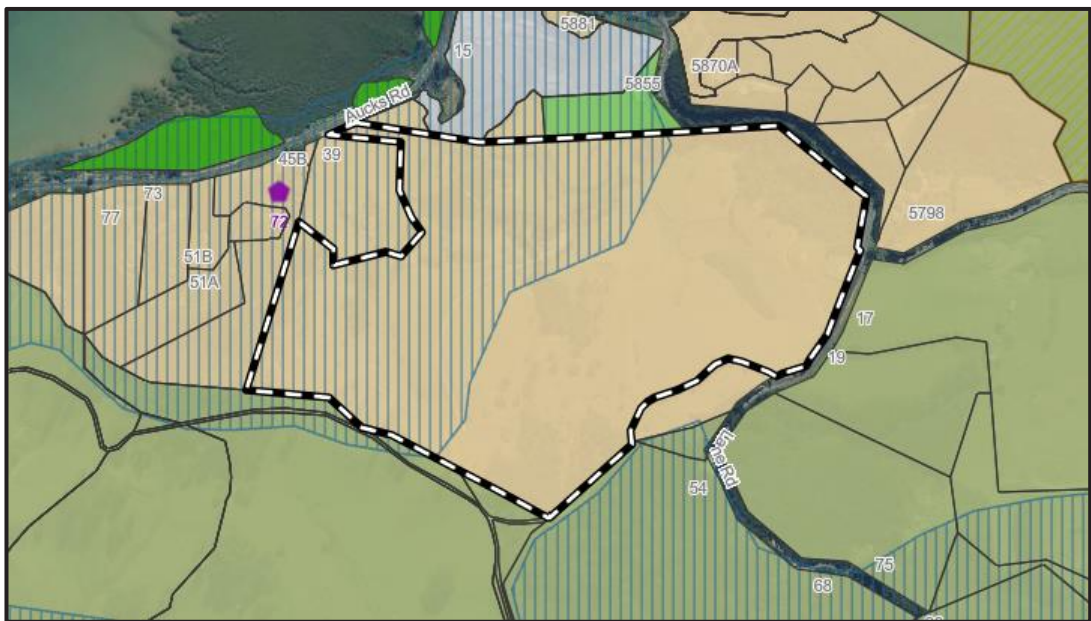


Figure 3: PDP Map. Source FNDC Emap.



**Figure 4: Image of the subject site, outlined in red showing the areas of the site subject that are flood susceptible in blue.**

The landscape context of the site is described in the Landscape Assessment, attached at **Appendix 9**. The site is part of a broader coastal terrain. Adjacent to Orongo Bay, the lower portion of the site has undergone significant alteration to its natural drainage patterns due to the creation of ponds and large drains during extensive earthworks associated with a previously approved subdivision. Historically used for grazing, these areas now appear as small depressions within grasslands, some of which are mown, or as narrow channels. Wetland species are sporadically found among the dominant exotic grasses in the dampest valley floors.

Vegetation across the site is a scattered mix, shaped by past land clearance, management practices, the development of a golf course in the lower sections, and partial subdivision development. In recent years, much of the site has been maintained intensively, with large areas regularly mown, while steeper slopes host the majority of the remaining indigenous vegetation cover.

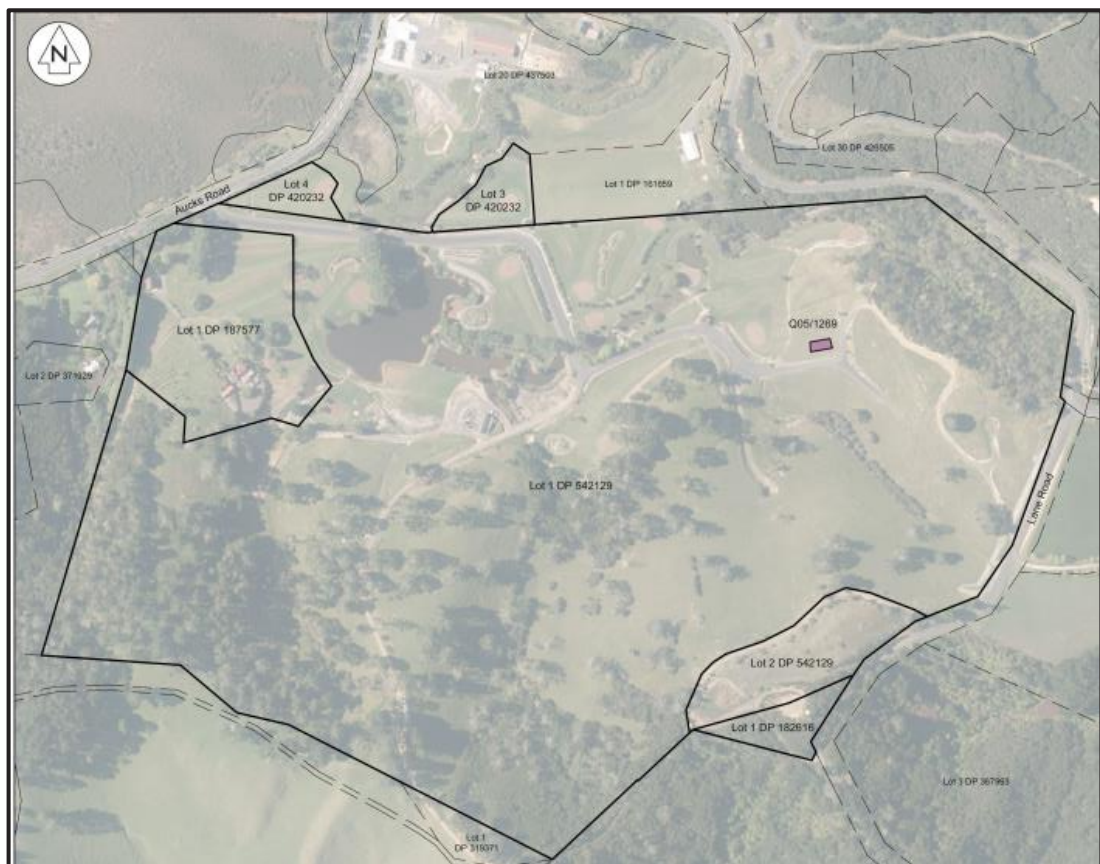
The Ecological Assessment attached at **Appendix 8** provides a detailed assessment of the site and its ecological context. As described in the Landscape Assessment, this report also identifies that current vegetation on the site has been significantly degraded due to past land use activities, primarily through extensive land drainage and conversion into pastoral land and more recently for intensified lifestyle development. Historically, the site would have featured Kauri, podocarp, and broadleaved forests, however, only small patches of modified vegetation types are present on the site and its immediate surroundings. Exotic pines and weedy pest plants have been controlled onsite sometime between May 2024 and July 2024 in preparation for the site wide ecological restoration effort.

The site supports a number of 'At Risk' flora and fauna including, but not limited to North Island ("NI") brown kiwi, pateke, NI weka, grey duck, NI fernbird, banded rail, long-fin eel, banded kokopu, inanga, giant bully.



The Ecological Assessment highlights the critical importance of protecting and enhancing the ecological structure and functionality of the site. This is especially significant due to the site's proximity to the inner Orongo Bay as a sensitive transitional ecotone.

In terms of historic heritage, an archaeological investigation submitted as part of the application for RC2010379 and RC2020315, identified two archaeological sites (Q05/1269 and Q05/1270) on the lower slopes of Lot 1 DP 542129, near the gorse and bush along the Russell Whakapara Road boundary. The archaeologist recommended in the context of RC2010379, that an accidental discovery protocol be followed and that the two identified sites be protected by a protective covenant. A recent Archaeological Assessment provided in **Appendix 10**, has determined that the only archaeological site within the application area is the terrace features at site Q05/1269, while site Q05/1270 no longer exists (see **Figure 5** below).



**Figure 5: Image of the subject site, showing the surveyed location of Q05/1269. Source: Archaeological Assessment (Appendix 10).**

### 3.2 Surrounding Locality

The immediate environment of Orongo Bay is distinctly coastal, characterised by lifestyle properties, scattered residential activities, and some commercial and recreational uses to the east. The broader locality to the north-west and east is also zoned as Coastal Living in the (“ODP”) and features several relatively small allotments with existing dwellings or approval residential building platforms. The site adjoins various zones, including the Orongo Bay Special Purpose Zone, Recreational Activities Zone, CMA, and General Coastal Zone, as illustrated in **Figure 6** below. Lot sizes within the immediate Coastal Living Zone range from 7,124m<sup>2</sup> to 5.07 hectares.

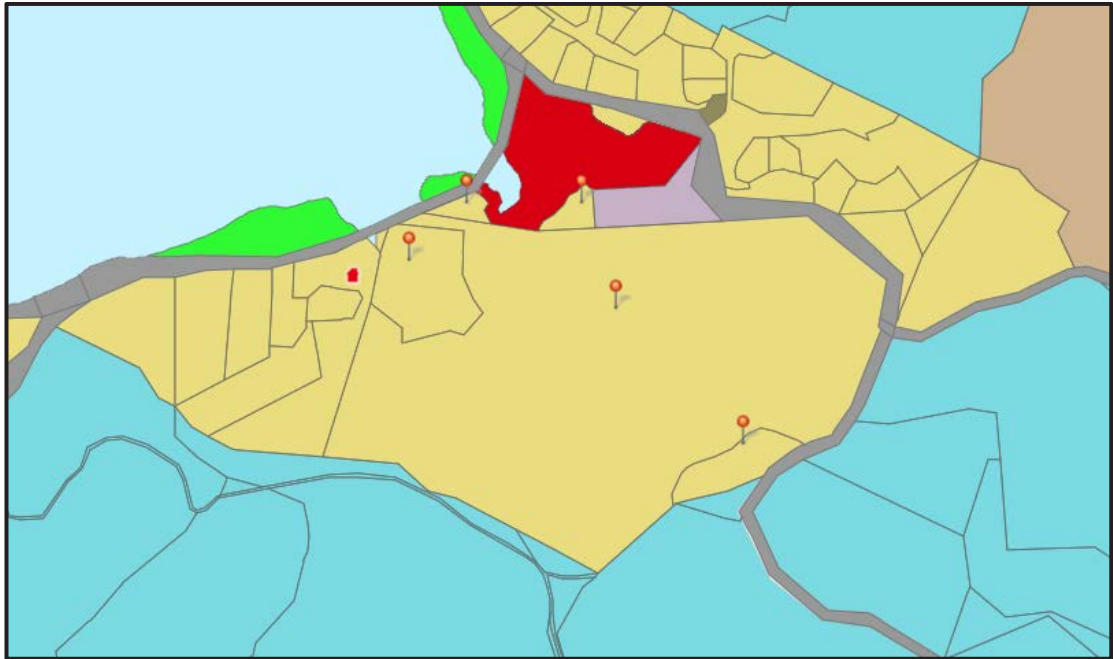


Figure 6: Image of the subject site and surrounding zoning with the site shown pinpointed. The different zones are colour coded as follows: yellow represents the Coastal Living Zone, blue indicates the General Coastal Zone, purple designates the Recreational Activities Zone, red highlights the Orongo Bay Special Purpose Zone, and light blue corresponds to the CMA.

Immediately adjacent to the north of the site at 15 Aucks Road, a recent resource consent (RC2240282) approved a 13-lot subdivision for 7 commercial lots ranging in size from 1,425m<sup>2</sup> to 5.7 hectares, 3 common lots, an esplanade reserve lot and 2 utility lots. This site contains an existing gas station and a number of containers, buildings, and storage units.

Overall, the site has been significantly influenced through the varying characterises within the surrounding / receiving environment.

### 3.3 Record of Title

the site comprises three Record of Titles (RT 912226, RT 476989 and RT 912227). The legal description, title details and interests are set out in **Table 1** below. A copy of the Records of Title and described interests are attached at **Appendix 1**.

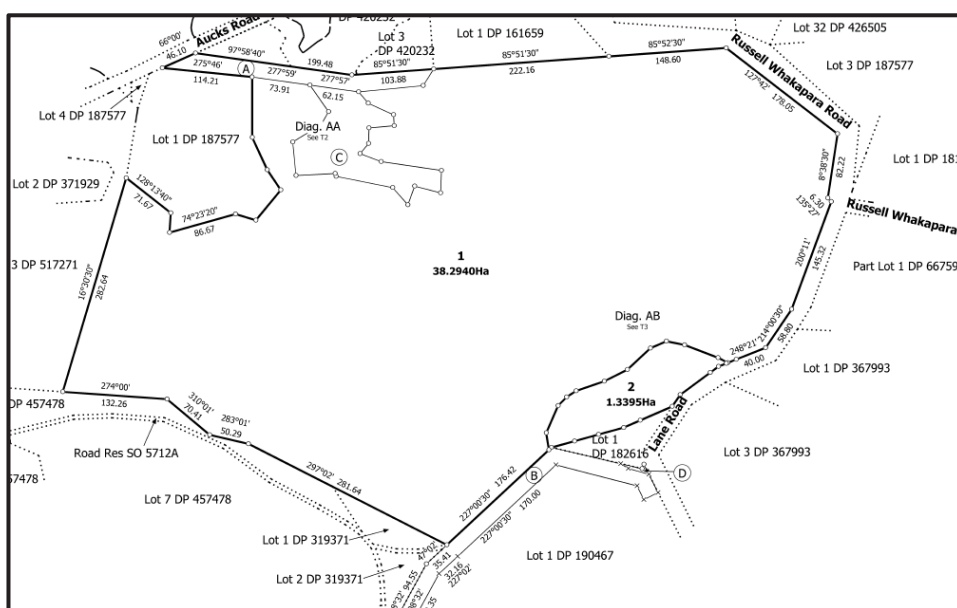
Legal description	Interests
Lot 1 Deposited Plan 542129, Lot 1 Deposited Plan 187577 and Lot 3-4 Deposited Plan 420232	Subject to a right of way and a right to convey electricity, telecommunications and computer media over part marked A on DP 542129 created by Easement Instrument 8300644.5.
Lot 1 Deposited Plan 542129, Lot 2 Deposited Plan 542129 and Lot 1 Deposited Plan 187577 and Lot 3-4 Deposited Plan 420232.	Land Covenant in Covenant Instrument 12682951.1

Lot 2 Deposited Plan 542129	D574444.3 Conservation Covenant pursuant to Section 77 Reserves Act 1977.
Lot 2 Deposited Plan 542129	11735593.2 Consent Notice pursuant to Section 221 Resource Management Act 1991
Lot 2 Deposited Plan 542129	Land Covenant in Covenant Instrument 12682951.1
Lot 1 Deposited Plan 187577 and Lot 3-4 Deposited Plan 420232	Appurtenant to Lots 3 and 4 DP 420232 herein are rights of way specified in Easement Certificate D314934.9.
Lot 3-4 Deposited Plan 420232	8300644.4 Consent Notice pursuant to Section 221 Resource Management Act 1991.
Lot 1 Deposited Plan 187577 and Lot 3-4 Deposited Plan 420232	Subject to Section 241(2) and Sections 242(1) and (2) Resource Management Act 1991.

**Table 1: Titles and interests**

Land Covenant (12682951.1) was registered in 2023 and is a no objections covenant for the land contained in RT NA118B/623 and RT 76318 with the benefited land being RT 912226, RT 912227, RT 476989 and RT NA113D/111. This will carry on down to the relevant titles under the proposal.

Conservation Covenant D574444.3 was registered in 2000 and applies to ‘Area C’ within Lot 2 DP 542129 being the existing manmade pond area shown in **Figure 7**. This covenant is between Department of Conservation and the landowner. As the land contains a habitat for wildlife including but not limited to Brown Teal the covenant requires the land to be managed to preserve its natural environment, landscape, amenity, wildlife and freshwater and to protect wildlife and their habitats. The covenant does not restrict the proposal from proceeding as the proposal will not interfere with the covenant area.



**Figure 7: Screenshot of RT 912227 showing Covenant Area ‘C’.**



The consent notice (11735593\_2) was registered on 19 December 2019. This consent notice was registered as a result of a previous subdivision creating the underlying title. This consent notice relates to wastewater treatment and effluent disposal, water supply and firefighting supply, and the number of dogs and cats permitted on each lot. The consent notice does not restrict the proposal from proceeding; however, it is proposed to update the consent notice to the current standards, and to reflect the application as proposed.

Consent Notice 8300644.4 states that no dwelling or habitable building is permitted to be established on Lots 3&4 without the prior consent of the Council. This is because Lots 3, 4 & Lot 1 DP 187577 are held together in a single Certificate of Title. This condition will be required to be cancelled to enable the establishment of dwellings within the resulting allotments.

Lot 1 Deposited Plan 187577 and Lot 3-4 Deposited Plan 420232 are all held within Record of Title 476989 and are subject to an amalgamation condition pursuant to Section 241 of the Act. This condition will be required to be cancelled to enable this subdivision.

## 4.0 Proposal

### 4.1 Overall Proposal Details

Resource consent is sought for a combined subdivision and land use consent to develop land comprising 43.28ha at Aucks Road, Russell / Kororāreka. the proposal involves a subdivision to create 66 allotments including one allotment in shared ownership (Lot 200) which contains the internal roading network and reserve area as shown in **Figure 8** below. The development is proposed to be completed in five stages.

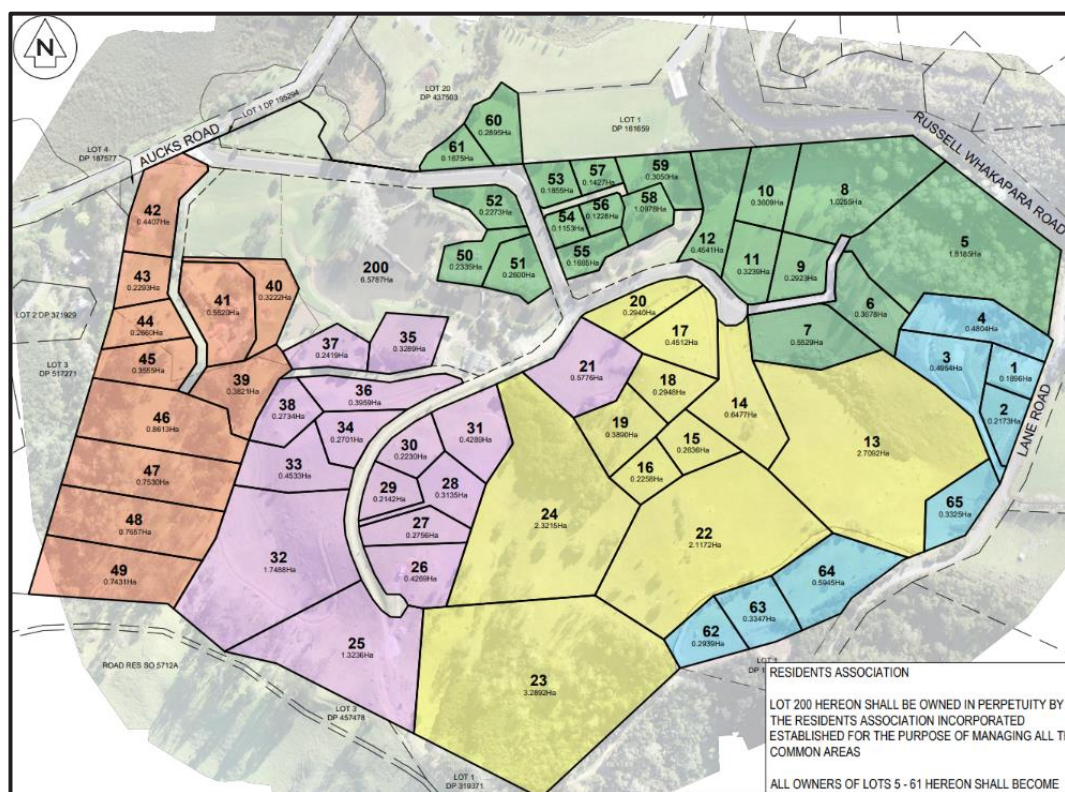


Figure 8: Application scheme plan with indicative stages, colours. Source: Staging Drawing attached at Appendix 3.

The applicant is proposing a management plan approach to the development of the site, and specific site characteristics including wetlands, biodiversity, coastal character and archaeological sites have been recognised and provided for through the development. A comprehensive and integrated design approach for the subdivision has been undertaken, and feedback as a result of consultation as detailed in Section 2 of this report, has been taken into account as a result of consultation with iwi and hapū (as outlined in **Appendix 2**), the community and NRC and FNDC.

The proposed development has been designed through input from various expert assessments, including habitat classification and delineation by Wild Ecology, comprehensive landscape design by Littoralis Landscape Architecture, archaeological survey by Northern Archaeological Research Ltd, geotechnical investigation by Haigh Workman Limited, traffic assessment by Commute, and civil engineering input by Maven Associates Limited (“**Maven**”). The built development is planned to be situated as far as practicable from sensitive receiving environments to minimise impact. Enhancement opportunities have been recognised and provided for through the development.

A summary of the key elements of the proposal are set out below. More detailed descriptions on particular aspects of the proposal are set out in the specialist reports and plans accompanying the application:

- **Subdivision:** It is proposed to carry out freehold subdivision to create 65 residential allotments. In addition, it is proposed to create a Jointly Owned Access Lot (“**JOAL**”) for the accessways, parking areas and common areas (Lot 200). The subdivision will result in an average allotment size of 5,645m<sup>2</sup> which is exclusive of Lot 200. This subdivision is intended to occur over five stages as follows:
  - Stage 1 - to create 10 lots;
  - Stage 2 - to create 19 lots;
  - Stage 3 – to create 10 lots;
  - Stage 4 - to create 10 lots;
  - Stage 5 - to create 16 lots;

These indicative stages are shown on the staging plan attached at **Appendix 3** and shown in **Figure 8** above. To reflect the proposed staging, the following condition is proposed:

*“The subdivision may be staged in general accordance with the staging plan attached to this decision at Appendix X.”*

- **Building Platforms:** The scheme plan in **Appendix 3** identifies building platforms on the proposed allotments. While most platforms are indicative to allow flexibility for future landowners, platforms above 15 meters in elevation are fixed based on the recommendations of Mr Farrow from LLA, as outlined in the Landscape Assessment (see **Appendix 9**). These fixed platforms apply to the following lots:
  - Lots 1–6, Lots 8–9, Lots 13–19, Lots 22–23, Lots 25–34, Lots 44–49, and Lots 62–65.

A consent notice condition is proposed, requiring any future residential dwellings on these identified lots over 15 metres in elevation to be constructed within the identified building platforms.



- Design controls are also proposed for any residential development as per the recommendations in the Landscape Assessment attached at **Appendix 9**.
- **Site Suitability:** As outlined in the Geotechnical Assessment (**Appendix 4**), site-specific testing has been undertaken within each platform to ensure the feasibility of a future dwelling within the resulting allotment. A number of recommendations are provided in Section 9 of the report which form part of this proposal. The recommendations relate to:
  - Site-specific geotechnical investigations and foundation design;
  - Building line restrictions for development on Lots 4,5,18,19,26,27,28,30,33,34,62 and 63;
  - Confirmation of the site reactivity class is to be conducted within the geotechnical completion report;
  - Foundation designs;
  - Mitigation for fill induced settlement (i.e. Pre-loading) otherwise deep pile foundations would be required;
  - Earthworks involving fills of 1 metre that is placed beneath building platforms must be endorsed by a suitable design undertaken by a chartered professional engineer;
  - All earthworks to be carried out to the requirements of NZS 4404:2010 'Land Development and Subdivision Infrastructure' and NZS 4431:2022 'Engineered Fill Construction for Lightweight Structures' and in accordance with any recommendations outlined in Section 8 of the geotechnical report;
  - That no fill be placed within, or nearby any historic slip features identified on drawing SP01 to SP05. Filling on sloping ground (i.e. sidling fills) should be avoided unless further investigations and slope stability analyses is undertaken to demonstrate that it is safe to do so;
  - Cuts up to 1.2 metres depth can be formed at gradients no steeper than 1V:3H or otherwise retained. Cuts greater than 1.2 metres depth should be formed at gradients no steeper than 1V:3H, or otherwise retained. Fill batters up to 1m in height should be formed at gradients no steeper than 1V:3H;
  - That pavement design is ("**CBR**") of 3% for the elevated roads/ Joint Owner Access Lots (**JOAL's**), for the low-lying JOAL's, a design CBR of 2% should be adopted;
  - Concentrated stormwater flows from all impermeable areas must be collected, carried in sealed pipes and discharged in a manner that will not affect the stability of the ground; and
  - If unfavourable ground conditions are encountered during earthworks that design assistance be sought.
- **Access and Parking:** Access to the proposed allotments will be via a network of privately owned JOAL's, and by private right of ways ("**ROW's**"). There are also the further following details:
  - Vehicle crossings are proposed to each allotment;
  - While there is a communal area within Lot 200 that can be used for car and boat parking, there is ample room within each allotment for onsite carparking;

- Pedestrian access will be provided through the development, by way tracks. While these tracks are only indicative at this stage, their general location is shown in the Subdivision Drawings attached at **Appendix 3**. The final design and location of these tracks will comply with the applicable setback requirements of the National Environment Standard for Freshwater (“NES-F”); and
- It is proposed to provide a pole-mounted light on the western side of Aucks Road to improve safety of the road users.

Further detail on the road layout is provided in the Transport Assessment prepared by Commute which is attached at **Appendix 5**.

- **Servicing:** The servicing strategy for the proposed development is set out in the report and accompanying drawings by Maven, included at **Appendix 6**. In summary, it is concluded that all allotments can be appropriately serviced in terms of stormwater, wastewater, water supply, power and telecommunications. In particular:
  - Wastewater servicing will be treated and disposed of to ground within the development. A wastewater feasibility assessment has been undertaken as attached at **Appendix 7**. The wastewater report concludes that with the exception of lot 55, 58, and 59 all lots are capable of being developed to treat and dispose of wastewater on-site so that the separation distances to site features such as boundaries and overland flow paths. In terms of lots 55, 58, and 59, a higher level of treatment (tertiary) for disposal fields within 15 metres of the manmade ponds onsite is proposed.
  - Lots will be provided with power and telecommunications either by connection or via wireless technology. Power and telecommunication services will be constructed from the closest connection point to the site. Consultation has commenced, and confirmation of supply for power is provided by Top Energy (refer **Appendix 2**). It is proposed that a condition of consent be imposed requiring either confirmation of telecommunication supply prior to Section 224(c) certification or the inclusion of a consent notice, stating that the resulting allotments are not serviced by telecommunication infrastructure and that future landowners will be responsible for establishing connections to these services or arranging wireless connectivity at the time of building;
  - Water supply will be supplied by roof caught water;
  - In terms of firefighting supply, discussions with Fire and Emergency New Zealand (“FENZ”), have confirmed that they will accept a minimum of 10,000L storage volume per lot; and
  - A consent notice condition is offered to ensure each lot maintains a storage capacity of 10,000L. This will be achieved by positioning the inlet for the dwelling supply above the required 10,000L firefighting reserve within the tank. Buried tanks are acceptable to FENZ, provided the lids remain accessible and are not buried or obstructed by structures. Detailed specifications will be provided as necessary during the building consent stage.
- **Earthworks:** A total of 30,700m<sup>3</sup> of earthworks are proposed across an area of 55,400m<sup>2</sup>. Earthworks are required for the construction of roading, driveways, drainage, retaining walls and the formation of private driveways and building platforms. Earthworks will be staged within the development and the management of earthworks will be undertaken on a lot-by-

lot basis. Proposed silt and sediment controls are outlined in the Engineering Drawings attached at **Appendix 6**.

- **Stream works/pondworks:** It is proposed to partially infill a manmade waterbody on the site to facilitate the development. As detailed in the Infrastructure Report attached at **Appendix 6** a Streamworks Management Plan and a Fish Management Plan are offered as a condition of consent to mitigate downstream effects.

## 4.2 Management Plan & Mitigation Measures

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In accordance with the requirements of Rule 13.9.2.2 of the ODP, a draft Management Plan has been prepared and is included in **Appendix 12**.

The applicant proposes a number of mitigation measures as part of the proposed development. These are outlined below with further detail contained within the:

- Infrastructure Report attached at **Appendix 6**;
- Wastewater Feasibility Report attached at **Appendix 7**;
- Ecological Assessment contained in **Appendix 8**;
- Landscape Assessment contained in **Appendix 9**; and
- Archaeological Assessment attached at **Appendix 10**.

The draft Management Plan is proposed to be enforced by a number of mechanisms including covenants, consent notices and the proposed Residents' Association.

### 4.2.1 Ecology

The development will proceed in general accordance with the proposed recommendations by Wild Ecology, contained in Section 8 of the Ecological Assessment dated December 2024, which includes:

- A site-specific Ecological Management Plan ("**EMP**") is prepared for the site (required as a consent condition) to ensure the ecological enhancement areas in Section 5 of the ecological deliver an Ecological Environmental Benefit. The EMP should as a minimum contain detail regarding site preparation for planting, management of biosecurity and plant diseases, ongoing maintenance and monitoring, pest weed control, and pest animal control for 5 years from initial ecological works implementation. The EMP will also include covenant demarcation and stock exclusion measures;
- The consent holder shall provide an Ecological Works Completion Report from a suitably qualified ecologist following the implementation of physical ecological works completion (covenant demarcation/fencing, planting, first round of pest weed, and pest animal control implemented) to be submitted to Council, and the Council will undertake inspections as required to confirm compliance;
- That a no-stock covenant is imposed on the proposed development boundaries and that stock-proof fencing is established along the external boundary of each development site, where such fencing typology does not already exist;

- That internal boundaries of the proposed ecological management areas are physically demarcated using demarcation posts. The demarcations posts must be no less diameter wooden posts than No. 3 posts installed with a minimum height of 800mm above the ground and at a maximum separation distance of 10 metres and at each change in direction of the boundary;
- That keeping of pet cats, mustelids, exotic fish, birds, rodents and turtles on site following subdivision is prohibited;
- Any dog kept on site shall be secured/contained to ensure that they cannot roam within the wider area. Secured containment may be in the form of a dog run or electronic pet containment fence. Any pet dog(s) will require to undergo avian awareness training, with a completion certificate provided to Council prior to the keeping of the dog on site;
- The new lot owners will be required to comply with the Northland Plant Pest Management Strategy (“NPPMS”) and the National Pest Plant Accord (“NPPA”) and in so doing exclude, and where necessary, control all known plant pest species (in any category) that occur on the site. This includes avoiding planting any pest species on the property as part of the landscaping, which could become future threats to the covenant area as ‘garden escapees’;
- Ongoing flammable weed management (e.g., gorse) within a 20m setback of all dwellings is recommended to ensure fire risk is minimised; and
- That regular ongoing maintenance and monitoring of the ecological management areas takes place at minimum annually for a total period of 5-years following the approval of Ecological Completion of Works Report.

Overall, the subdivision shall be carried out in accordance with the recommended mitigation measures in accordance with Section 9 of the Wild Ecology Ecological Assessment.

#### 4.2.2 Ecological Enhancement and Landscape Amenity Planting

Landscaping amenity planting is proposed throughout the site as illustrated on the plans prepared by LLA included as **Appendix 9** and ecological enhancement planting areas are shown in the Ecological Assessment attached at **Appendix 8**.

A planting plan will be required to be signed off at s223 stage, with the planting required to be undertaken and certified at s224(c) stage. Consent notices will also be placed on the relevant titles to ensure that the planting plan is implemented and landscaping is maintained in perpetuity.

#### 4.2.3 Other Landscape Mitigation Measures

A number other mitigation and enhancement recommendations are stated in the Landscape Assessment attached at **Appendix 9** and detailed as follows:

- On Lots 1-6, Lot 8-9, Lots 13-19, Lots 22-34, Lots 44-49, and Lots 62-65:
  - The maximum height of building shall be 5m above finished ground level or natural ground level (whichever is the lesser) based upon the centre-point of the building area, established by the common junction point achieved by projecting a symmetrical inward line from each of the corners of the defined building area. Buildings are to be of single storey format;

- Applied finishes of buildings must have a maximum Light Reflectance Value (“LRV”) of 30%, or utilise dark, recessive natural materials with a comparable (“LRV”). Mirrored glazing is prohibited. This provision does not apply to minor architectural elements such as flues and aerials;
- Blinds, curtains and other window coverings are to be moderately dark with an LRV of no more than 40%;
- Hedges, shelterbelts, and other linear or geometric planting patterns are not permitted. Any planting within 20 meters of a building or accessway must consist of low flammability species;
- Exterior lighting must be subdued, with fittings designed to prevent the light source from being visible beyond the allotment on which the building is located (e.g., using downlights in soffits instead of wall-mounted lighting and avoiding landscape lighting). Floodlighting and spotlights are prohibited;
- Retaining walls must adhere to the same regulations proposed for the road corridors.
- On all lots:
  - Boundary fences are to be avoided, other than visually permeable pool fences and privacy screens that are connected to or very closely related to buildings.

#### 4.2.4 Archaeological

As detailed above in this report, two archaeological sites were previously identified on the site through a previous subdivision (Q05/1269 and Q05/1270). The sites had originally been recorded by Northern Archaeological Research Ltd in 2000 (Johnson & Middleton 2000) as part of a subdivision proposal. As detailed in **Appendix 10**, Northern Archaeological Research Ltd undertook a site visit to relocate and mark out the previously identified archaeological sites. While the terrace features at site Q05/1269 were evident, Q05/1270 could not be definitively relocated.

The archaeological assessment undertaken by Northern Archaeological Research Ltd in the context of the previous subdivision attached at **Appendix 11** and further assessment provided in the context of this application (refer **Appendix 10**) provide recommendations to ensure the ongoing protection of the archaeological site including the following:

- That the site Q05/1269 location be surveyed on to the proposed subdivision plan;
- In the first instance, to avoid the site (Q05/1269) while in the planning phase of the subdivision and again during the planning for potential house sites, access and services and/or any planting proposal; and
- If the site cannot be avoided for any reason as part of the subdivision proposal, then an application for an Authority under Section 47 of the HNZPT Act would be required to modify or damage the site in any way.

As a result of this assessment, the site has been surveyed, and the development has been designed to ensure the archaeological site (Q05/1269) is avoided.

While HNZPT have not provided comment specific to this proposal despite contact being made prior to lodgement, they provided comment in the context of an earlier decision (RC2170042)

recommending the standard Accidental Discovery Protocol (“ADP”) be attached as an advice note to the decision.

#### 4.2.5 Hazard Risk

Any revegetation planting within 20m setback of all dwellings is proposed to be native low-flammability species only. This is intended to form a buffer between the dwellings and the existing more flammable kanuka dominated habitats. Ongoing management of flammable weeds (e.g., gorse) within the 20-metre setback will also be implemented to minimise fire risk.

#### 4.2.6 Cultural

Careful consideration has been given to the concerns raised during pre-application engagement with iwi and hapū, as outlined in section 2.2 of this report. This includes addressing issues related to landscape, wastewater disposal, and the ecological impacts of the development. These matters have been addressed in the respective expert reports appended to this application.

It is understood that representatives of Kororāreka Marae and Te Kapotai hapū Marae that visited the site were largely supportive of the proposal, and the positive ecological, landscape and community outcomes as a result of the proposal.

## 5.0 Reasons for Consent

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A rules assessment against the provisions of the ODP is attached at **Appendix 13** the site is located within the Coastal Living Zone, with a flood hazard overlay. The proposal requires consent for the matters outlined below.

### 5.1 Far North ODP

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#### 5.1.1 Chapter 10 - Coastal Environment

- Standard 10.7.5.1.1 provides for a new habitable building in the Coastal Living Zone, subject to not exceeding 50m<sup>2</sup>. While there are no new buildings proposed by way of this application, it is proposed to enable the establishment of a residential dwelling on each allotment as a result of this development, in accordance with the design controls specified in the Landscape Assessment attached at **Appendix 9**. A breach of this standard is a **restricted discretionary** activity pursuant to Rule 10.7.5.3.

### 5.2 Chapter 12 Natural and Physical Resources

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- Standard 12.3.6.1.2 provides for excavation and/or filling on any site within the Coastal Living Zone up to 300m<sup>2</sup> in any 12-month period or a cut or filled face exceeding 1.5m in height. This proposal will result in a volume of 30,700m<sup>3</sup> across an area of 55,400m<sup>2</sup> with a maximum cut of 3.2 metres. A breach of Rule 12.3.6.1.2 is sought as a **restricted discretionary** activity pursuant to Rule 12.3.6.2.
- Standard 12.4.6.1.1 requires earthworks to only be undertaken within Coastal Hazard 2 Areas in particular circumstances. The internal roads are for the most part elevated above the

future 100-yr flood level, except for the immediate area near Aucks Road which has to tie into existing levels. Consent is required as a **controlled activity** pursuant to Standard 12.4.6.2.

- Standard 12.4.6.1.2 requires that residential units shall be located at least 20m away from the drip line of any trees in a naturally occurring or deliberately planted area of scrub or shrubland, woodlot or forest. A number of dwellings may be located within a 20m setback of the existing onsite kanuka scrub/forest or the proposed revegetation plantings. A breach to this standard is a **controlled activity** pursuant to Standard 12.4.6.2.
- Standard 12.7.6.1.4 states that land use activities which produce human sewage effluent (including grey water) are permitted provided that:
  - a. the effluent discharges to a lawfully established reticulated sewerage system; or
  - b. the effluent is treated and disposed of on-site such that each site has its own treatment and disposal system no part of which shall be located closer than 30m from the boundary of any river, lake, wetland or the boundary of the CMA. Note: The discharge may also require consent under the Regional Water and Soil Plan.

In this instance the discharge will not comply with the required 30 metre setback from the boundary of the man-made water bodies (lake) onsite, therefore consent is required as a **discretionary activity** pursuant to Standard 12.7.6.3.

### 5.2.1 Subdivision Chapter

The subdivision chapter (Chapter 13) of the ODP is a district wide chapter which provides for a management plan subdivision in the Coastal Living Zone and the General Coastal Zone.

- Standard 13.9.2.2 provides for a management plan subdivision as a **discretionary activity** subject an average allotment area of 5,000m<sup>2</sup> being maintained in the Coastal Living Zone (The average size of all lots in the management plan subdivision, excluding lots used solely for access, utilities, roads and reserves).
- Standard 13.7.2.2 stated that any allotment created in terms of these rules must be able to accommodate a square building envelope of the minimum dimensions specified below; which does not encroach into the permitted activity boundary setbacks for the relevant zones: *Coastal living 30x30m*. In this instance only the following platforms are able to meet the 30x30m building envelope are: 10, 11, 38, 42, 43, 45, 51, 60, all other platforms do not comply. Consent is required as a **discretionary activity** pursuant to Rule 13.9.

### 5.3 Chapter 14 Financial Contributions

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- Standard 14.6.1 provides for the Council, upon application and at its discretion, reduce or waive any required financial contribution, esplanade reserve or strip as a **discretionary activity**.

### 5.4 Chapter 15 Transportation

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- A **discretionary activity** pursuant to Rule 15.1.6A.5.1 for exceeding the traffic intensity thresholds in Table 15.1.6A.1 in the Coastal Living zone.
- A **discretionary activity** pursuant to Rule 15.1.6C.2 as there are no vesting of roads proposed. The Infrastructure Report attached at **Appendix 6** states that, “*all accessways are to be maintained as private JOAL’s or ROW’s, which will be owned and managed by the Residents*”

*Association, of which all lot owners will be members of. Whilst we note this does not comply with Section 3.2.28 (Private Accessways) this is considered a suitable outcome, and one which finds balance between formed widths, traffic volumes, design outcomes and ongoing maintenance costs”.*

- A **discretionary activity** pursuant to Rule 15.1.6C.2, for a breach to Standard 15.1.6C.1.7 as the legal width of the private accessways, do not comply with Section 3.2.28.

## 5.5 Far North Proposed District Plan (PDP)

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The site has been mapped in the Proposed District Plan as Rural Lifestyle Zone (“RLZ”), with Coastal Environment (“CE”) and Coastal Flood (Zones 1 to 3) overlays.

Submissions for the PDP have closed, the hearing of submissions is pending. Therefore, only limited weight can be attributed to the PDP provisions at this stage, and no application is required under the majority of the rules until a decision has been made. An assessment of the rules that are operative are included in **Appendix 14**. There are no operative PDP rules that are relevant to this proposal in terms of triggering resource consent.

## 5.6 Proposed Northland Regional Plan (PRP)

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FNDC sets out design and construction standards for wastewater and requires all land development projects to be provided with a suitable means of wastewater disposal. As per the agreement between Northland Regional Council (“NRC”) and FNDC, the assessment of the wastewater discharge will be undertaken by FNDC. Accordingly, the proposal requires consent for the following rule of the PRP:

- Rule C.6.1.3 proposed for on-site treated domestic wastewater discharge as a permitted activity provided 1-13 in the rule are complied with. In this instance, the proposal does not comply with the relevant exclusion areas and setbacks in Table 9 of the Proposed Regional Plan. The discharge on lots 55, 58, and 59 is not complaint with setbacks from the man-made waterbodies on site. This application therefore, requires consent as a **discretionary activity** pursuant to Rule C.6.1.5.

Other resource consents are also triggered under the following rules of the PRP:

- Rule C8.3.1 states that Earthworks outside the bed of a river, lake, wetland, inanga spawning site and the CMA, and any associated damming and diversion of stormwater and discharge of stormwater onto or into land where it may enter water, are permitted activities provided the area and volume of earthworks at a particular location or associated with a project complies with the thresholds in Table 15: Permitted activity earthworks thresholds. In this instance the earthworks for this proposal do not comply with those outlined in Table 15, as:
  - 50m<sup>3</sup> of moved or placed earth in a 12-month period will be undertaken within a high-risk flood hazard area;
  - 100 m<sup>3</sup> of moved or placed earth will be undertaken in a flood risk area in a 12-month period; and,
  - 5,000m<sup>2</sup> of exposed earth will be will be exceeded.

Consent is required as a **discretionary activity** pursuant to Rule C.8.3.4.



- The placement of an obstruction (including a structure) in a flood hazard area (including a high-risk flood hazard area), an overland flow path, a river or an artificial watercourse that will, or is likely to, divert water onto other property, is a **discretionary activity** pursuant to Rule C.3.1.9. In this instance, the proposal will result in an obstruction within the artificial pond onsite, which flows through to the adjacent property located at 15 Aucks Road.

A separate application has been made to NRC for the infringements of these PRP rules, and this is not bundled with the determination of this resource consent application to FNDC.

## 5.7 Other Permissions under the Resource Management Act 1991

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### 5.7.1 Cancellation of Consent Notice – Section 221

Consent pursuant to 87B in accordance with Section 221 of the RMA is sought as a change or cancellation of a consent notice is required to be processed in accordance with Sections 88 to 121 and 127(4) to 132 of the RMA as a **discretionary activity**. It is proposed to cancel Consent Notice 8300644.4 and 11735593.2 as they relate to servicing requirements, cat and dog restrictions, and the approval from Council to establish a residential dwelling Lot 3-4 Deposited Plan 420232. These consent notices were imposed through previous subdivision consents of the site, and contradict the current district plan servicing requirements, the restrictive provision of keeping of animals as proposed by way of this application and the establishment of residential dwellings on the resulting lots.

### 5.7.2 Cancellation of Amalgamation Condition – Section 241

The amalgamation condition on Lot 1 Deposited Plan 187577 and Lot 3-4 Deposited Plan 420232 held within Record of Title 476989 pursuant to Section 241 of the RMA will be required to be cancelled pursuant to 241(3) of the RMA. This cancellation is necessary for LINZ to be able to issue new titles in respect of the subdivision proposed.

## 5.8 National Environmental Standards for Freshwater

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Resource Management (National Environmental Standards for Freshwater) Regulations 2020 (“**NES-F**”) sets the standards for regulating activities that pose risks to the health of freshwater and freshwater ecosystems.

The Ecological Assessment by Wild Ecology (see **Appendix 8**) provides an assessment of the proposal against the NES-F and confirms that consent is not required under the NES-F.

## 5.9 National Environmental Standards for Contaminated Soils (“**NES CS**”)

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These regulations came into force on 1 January 2012 and apply when a person wants to undertake an activity described in regulation 5(2) to 5(6) on a piece of land described in regulation 5(7) or 5(8).

On the subject land, no Hazardous Activities and Industries List (“**HAIL**”) activities are being, have been, or are more likely than not to have been, undertaken on that land. No HAIL uses were identified in the subdivision that created the site (RC2170042). The owner of the site confirms that the use of the site has not changed since the underlying subdivision. There are no identified land uses or site contamination information for the subject site or any neighbouring sites on the NRC’s

“Selected Land uses Register”. Therefore, on the balance of probabilities, the site is not a HAIL site, and should be considered as a Permitted Activity under the NEC CS.

## 5.10 Activity Status

Overall, this application is for a **discretionary activity**.

## 6.0 Public Notification Assessment (Sections 95A, 95C and 95D)

Section 95A specifies the steps the council is to follow to determine whether an application is to be publicly notified. These are addressed in statutory order below.

### 6.1.1 Step 1: Mandatory public notification is required in certain circumstances

Step 1 requires public notification where this is requested by the Applicant; or the application is made jointly with an application to exchange of recreation reserved land under section 15AA of the Reserves Act 1977.

The above does not apply to the proposal.

### 6.1.2 Step 2: If not required by step 1, public notification precluded in certain circumstances.

Step 2 describes that public notification is precluded where all applicable rules and national environmental standards preclude public notification; or where the application is for a controlled activity; or a restricted discretionary, discretionary or non-complying boundary activity.

In this case, the applicable rules do not preclude public notification, and the proposal is not a controlled activity or boundary activity. Therefore, public notification is not precluded.

### 6.1.3 Step 3: If not required by step 2, public notification required in certain circumstances.

Step 3 describes that where public notification is not precluded by step 2, it is required if the applicable rules or national environmental standards require public notification, or if the activity is likely to have adverse effects on the environment that are more than minor.

As noted under step 2 above, public notification is not precluded, and an assessment in accordance with section 95A is required, which is set out in the sections below. As described below, it is considered that any adverse effects will be minor.

### 6.1.4 Step 4: Public notification in special circumstances

If an application is not required to be publicly notified as a result of any of the previous steps, then the council is required to determine whether special circumstances exist that warrant it being publicly notified.

Special circumstances are those that are:

- Exceptional or unusual, but something less than extraordinary; or

- Outside of the common run of applications of this nature; or
- Circumstances which make notification desirable, notwithstanding the conclusion that the adverse effects will be no more than minor.

It is considered that there is nothing noteworthy about the proposal. It is for a management plan subdivision which complies with the management plan density standards and the outcomes anticipated by the plan, including providing for superior outcomes including the protection, enhancement and restoration of areas and features which have particular value or may have been compromised by past land management practices. Therefore, it is considered that the application cannot be described as being out of the ordinary or giving rise to special circumstances.

## 6.2 Section 95D Statutory Matters

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In determining whether to publicly notify an application, section 95D specifies a council must decide whether an activity will have, or is likely to have, adverse effects on the environment that are more than minor.

In determining whether adverse effects are more than minor:

- Adverse effects on persons who own or occupy the land within which the activity will occur, or any land adjacent to that land, must be disregarded.

The land to be excluded from the assessment is listed in section 6.3 below.

- Adverse effects permitted by a rule in a plan or national environmental standard (the ‘permitted baseline’) may be disregarded.

In this case any subdivision in the ODP requires resource consent. However, resource consent RC2010379 authorised 19 allotments including one allotment to vest in road and was subsequently varied to create 11 allotments. While Section 224(c) was never sought or approved for the subdivision, extensive works had been undertaken on the site to give effect to this consent. It also demonstrates, in accordance with the ODP zoning of the subject site, that further subdivision and development is anticipated on this site. Notwithstanding this existing resource consent, it is considered that the permitted baseline is of limited relevance to the consideration and determination of this resource consent application, which is for a discretionary activity, therefore all actual and potential effects of the proposal are subject to scrutiny.

- Trade competition must be disregarded.

This is not considered to be a relevant matter in this case.

- The adverse effects on those persons who have provided their written approval must be disregarded.

No persons have provided their written approval for this proposal.

The sections below set out an assessment in accordance with section 95D, including identification of adjacent properties, and an assessment of adverse effects.

### 6.3 Land Excluded from the Assessment

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In terms of the tests for public notification (but not for the purposes of limited notification or service of notice), the adjacent properties to be excluded from the assessment are shown in **Figure 9** below, and include:

- 15, 17, 19, 45, 54, 75 Aucks Road
- 5855, 5798 Old Russell Road
- Lot 1 Deposited Plan 542129
- Lot 1 Deposited Plan 182616
- Lot 3 Deposited Plan 187577
- Lot 32 Deposited Plan 426505
- Lot 34 Deposited Plan 426505
- Lot 31 Deposited Plan 426505
- Lot 30 Deposited Plan 426505

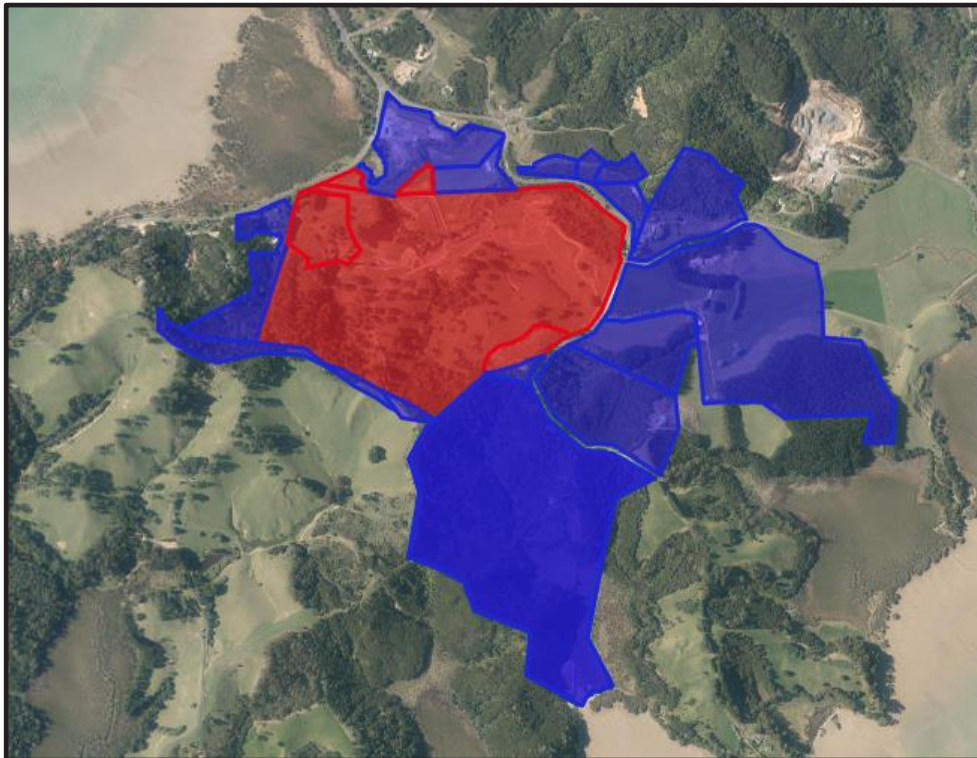


Figure 9: Screenshot of adjacent sites.

## 6.4 Assessment of Effects on the Environment

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The purpose of this Section is to provide an overview of the effects of the proposal as a precursor to the assessment of those effects against the relevant planning instruments that follows. It is considered that effects in relation to the following matters are relevant:

- Existing Environment;
- Construction Activities;
- Ecological Effects;
- Landscape and Amenity Effects;
- Traffic Safety and Efficiency Effects;
- Servicing Effects;
- Hazard Effects;
- Reverse Sensitivity Effects;
- Archaeological Effects;
- Cultural Effects;
- Esplanade Reserve Waiver;
- Cumulative Effects; and
- Cancellation of Consent Notice

These matters are set out and discussed below.

### 6.4.1 Existing Environment

In addressing the environmental effects, it is important to take into account the existing environment. The existing environment concept has been subject to extensive consideration by the Courts and case law has confirmed that the environment includes the environment as it may be modified by permitted activities and the implementation of resource consents which have been granted and which have or are likely to be implemented. This is a particularly important starting point for the assessment of this application as there are a number of effects already impacting upon the receiving environment as a result of the works undertaken as part of approved subdivision and land use consents. It is considered that the following aspects form part of the receiving environment:

- Established roading infrastructure, building platforms, and power and telecommunication services corresponding with the boundaries of allotments created under subdivision consent RC2010379. This consent (RC2010379) initially approved 18 allotments and one access allotment, and was amended to 11 allotments and one access allotment. Consequently, the site's appearance is now characterised by indications of future coastal lifestyle development;
- The established road through the site as approved by RC2020315. This consent decision was approved by FNDC on a non-notified basis. This decision acknowledged that the driveway's formation aligns with the expected level of development for the zone and is consistent with the site's character;



- The receiving environment comprises various lifestyle, residential, commercial and recreational activities. These uses are consistent with the intention of the underlying zoning. Further, the site is surrounded by lot sizes in the Coastal Living Zone that range in size from 7,124m<sup>2</sup> to 5.07ha, which are generally ‘rural – residential’ sized properties. Collectively these activities, their built form, and smaller lifestyle lot sizes form part of the existing receiving environment.

The existing, permitted, and approved activities within the site and its surrounding environment demonstrate that lifestyle use of the site is a compatible and acceptable outcome within the Coastal Living Zone.

### Construction Activities

The construction associated with this subdivision will be limited to the construction of roading, drainage, driveways, retaining walls and the formation of private driveways and building platforms, which are addressed in the Infrastructure Report and plans by Maven at **Appendix 6**. The works will be temporary in nature.

Maven recommends extensive erosion and sediment control measures as shown in the Engineering Plans. The erosion and sediment controls are in accordance with the Far North District Council code of practice (Erosion, Sediment and Dust Control 2.4.2.2) which also references Auckland Council Guideline Document GD2016/005 - Erosion and Sediment Control Guidelines for Land Disturbing Activities in the Auckland Region 2016. All sediment control measures will be checked regularly to ensure that they are performing as intended.

The proposal includes partial infilling of the existing manmade waterbodies within the site, Maven have confirmed that this backfilling will not intervene with the covenant area on site as described in **Section 2** of this report. A draft methodology is outlined in the Infrastructure Report, which will be finalised in a Streamworks Management Plan (“**SMP**”) as offered as a condition of consent. A Fish Management Plan (“**FMP**”) is also offered as a condition of consent to limit the effects on fauna.

All construction works will be undertaken in accordance with the Geotechnical Report prepared by Haigh Workman (refer to **Appendix 4**). There are no significant geotechnical constraints that would preclude the development proposed and the associated earthworks.

The proposal will result in some construction noise which will adhere to standard noise restrictions in the New Zealand Standard 6803:1999 for Acoustics – Construction Noise. Therefore, it is considered that the proposal will have less minor adverse noise effects as a result of construction.

It is anticipated that the proposed works will result in some temporary traffic effects, within the vicinity of the proposed earthworks area. A Construction Traffic Management Plan (“**CTMP**”) is proposed as a condition of consent which will outline how the movement of construction machinery to and from the site will be managed and what mitigation measures will be implemented to mitigate potential adverse effects.

On the basis of the above, and subject to a detailed CTMP, SMP and FMP being prepared prior to construction works, it is considered that any adverse effects associated with earthworks and construction activities will be less than minor. Furthermore, there are no significant geotechnical constraints that would preclude the type of development proposed. Based on the above, it is considered that the proposed construction activities will have less than minor and acceptable adverse construction effects on the wider environment.

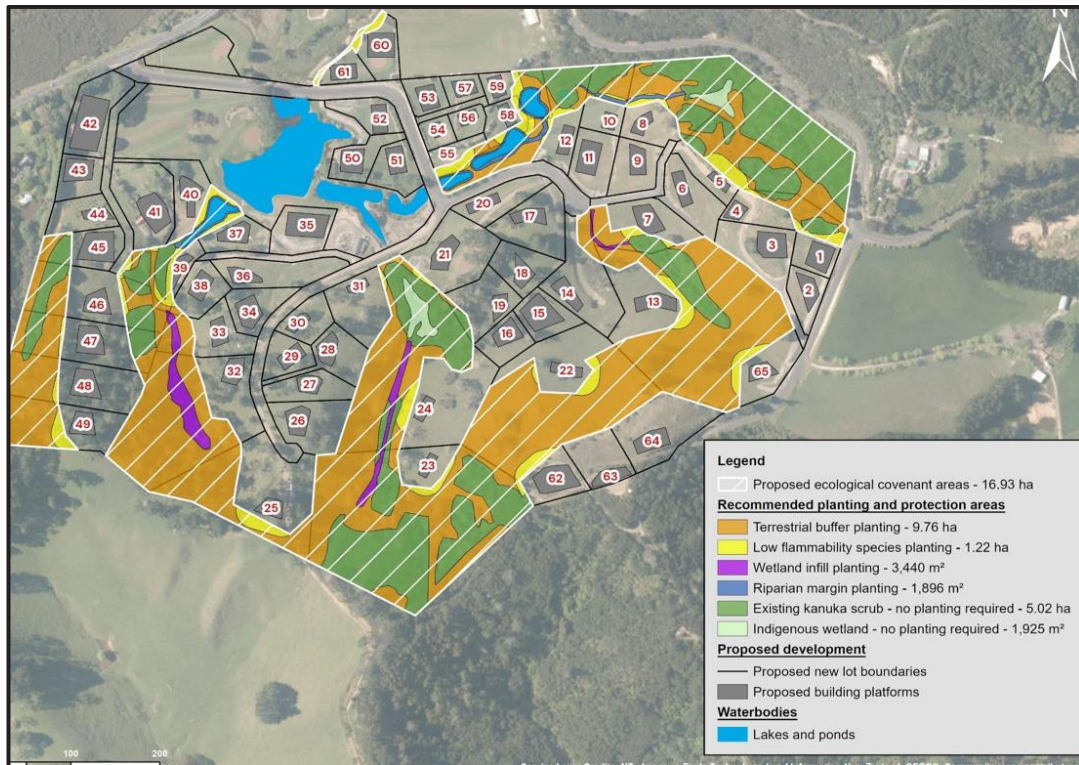
## 6.4.2 Ecological Effects

An Ecological Assessment by Wild Ecology (**Appendix 8**) supports the application, describing the existing ecological characteristics and values within the site and assessing the effects of the proposed activity on these ecological values. The site is located within the Whangaruru Ecological District. A small portion of kanuka bush along the southern boundary is designated as a Protected Natural Area (“**PNA**”), specifically the Edwards Tikitikioure Coastal Habitat (Q05/004). The Ecological Assessment describes Q05/004 as a mosaic of forest age classes, ranging from early-stage shrubland to cut-over forest and wetlands, with occasional connections to estuarine ecosystems. The site supports a number of 'At Risk' species of flora and fauna, including but not limited to the NI brown kiwi, pateke, NI weka, grey duck, NI fernbird, banded rail, longfin eel, banded kokopu, inanga, and giant bully.

The site and its surroundings have been extensively modified from their original ecosystem due to human land use practices. According to the Land Environments of New Zealand classification, most of the site and nearby areas fall within the 'Category 2 and 3 Threatened Land Environment,' where only 10%–30% of indigenous vegetation cover remains.

The Ecological Assessment notes that the site's proximity to the inner Orongo Bay provides an opportunity to enhance and protect this sensitive transitional ecotone as part of the subdivision proposal. The assessment concludes that the management actions as recommended in the report will effectively avoid or mitigate potential adverse ecological effects on habitats and species within the site and its immediate surroundings. Additionally, there are a number of positive outcomes associated with the development, as detailed in Table 8 of the report.

A site-specific EMP is proposed as a condition of consent to ensure the ongoing management of the existing indigenous terrestrial and wetland vegetation on-site, along with the proposed revegetation planting areas. The EMP will cover the areas designated as 'proposed ecological covenant areas,' as illustrated in **Figure 10**, encompassing approximately 16.93 hectares. This plan will secure the protection and enhancement of associated bush and riparian environments in perpetuity.



**Figure 10: Ecological Management Areas. Source: Ecological Assessment attached at Appendix 8.**

Additional measures include prohibiting the keeping of pet animals within the proposed lots (with the exception of dogs trained in avian awareness), implementing fencing, excluding livestock, and ensuring ongoing weed control and plant replacement.

While the Ecological Assessment identifies that onsite indigenous vegetation holds moderate to high ecological value, any actual or potential adverse effects have been addressed through development design and the implementation of mitigation measures. On the basis of the Ecological Assessment and the mitigation and offsetting measures inherent in the application, it is considered that any adverse effects on ecological values will be less than minor and there will be a number of positive outcomes as a result of the development as addressed in Section 9.1 below.

### 6.4.3 Landscape and Amenity Effects

The landscape and visual amenity of the surrounding area is determined by the zoning of the site, and the existing land uses and activities in the immediate locality which are described above in relation to the existing environment. The landscape and visual effects of this proposal are to be considered with reference to that existing environment. In this respect, lifestyle development is considered to be within character of the surrounding environment.

It must be firstly acknowledged that FNDC provides a consent pathway for higher intensity subdivision through a management plan development, which ensures protection, restoration, enhancement, or establishment of natural features, vegetation, and open space. These activities must significantly contribute to the natural environment, coastal character, and coastal living character and amenity.

While there is a number of different zones within the receiving environment, including Orongo Bay Special Purpose Zone, Recreational Activities Zone, and General Coastal Zone, the existing environment is primarily coastal-lifestyle, featuring smaller lifestyle blocks along Aucks Road. Given



the existing influence of coastal lifestyle allotments, it is considered that the proposed subdivision design and layout will align with the surrounding environment. The proposal includes the creation of 65 residential allotments ranging from 1,153m<sup>2</sup> to 3.3ha.

A Landscape Assessment by LLA (**Appendix 9**) supports the application. A summary of this assessment is detailed as follows:

- The site lies within a belt of Coastal Living zoned terrain that stretches almost unbroken from Okiato Point to Russell / Kororāreka. That zoning pattern is expressed in the landscape of this coastal hinterland through scattered housing, access provisions and related residential elements that exist as an established part of the character of this broad strip;
- The proposal emerges from a detailed, iterative and comprehensive design process that can be considered as being “ecology and landscape lead”. It has been configured around the areas of past clearance and earthworks undertaken, with these coinciding with the most practicable and low impact opportunities for achieving a vehicular access and providing for future homes; and,
- When balancing the impact of the proposed subdivision against initiatives for ecological management and restoration, landscape and natural character effects upon those values of the site itself are assessed as ultimately being *moderate-low*, but not more than minor.

The subdivision also proposes significant restoration and enhancement of the existing bush as detailed in the Ecological Assessment (**Appendix 8**). These efforts are expected to significantly enhance the coastal character and amenity of the area, as shown in **Figure 11**, in contrast to the degraded condition of the existing bush shown in **Figure 12**. The proposed enhancement areas will be managed by a residents' association, ensuring effective ongoing management of the enhancement areas across the site.



Figure 11: Image demonstrating the existing biodiversity on the site. Source: Landscape Drawings.



Figure 12: Image demonstrating the landscape integration as a result of this proposed development. Source: Landscape Drawings.

While various proposed allotments do not meet the 30x30 metre building envelope requirement, each allotment is considered to have sufficient space to accommodate a future dwelling. The proposed subdivision layout has been designed to follow both the existing physical landscape features of the site as well creating built development created as a result of previous subdivision of the site. Consequently, the building platforms have been strategically positioned to ensure that future development is sensitive to the landscape and effectively obscures future built form.

The subdivision of the site reflects the range of lot sizes within the receiving environment. Further, it must be acknowledged that effects of this subdivision are balanced through the significant ecological contribution from the protection of the bush and riparian margins as directed by the FNDP. Therefore, the coastal character and amenity effects on the wider environment resulting from this proposal will remain to be consistent with the receiving environment as expected by the FNDP, and are anticipated to be no more than minor.

#### 6.4.4 Traffic Safety and Efficiency Effects

As stated in the Infrastructure Report, transportation access has been designed within consideration of the Far North District Council Engineering Standards & Guidelines in conjunction with NZS 4404:2004. Accessways are to be maintained as private JOAL's or ROW's, which will be owned and managed by the Residents Association, of which all lot owners will be members of. Pedestrian movements through the site will be via way of off-road formed pedestrian tracks through either shared (communal land) or where in private land, will be protected by easements to allow residents to use.



A Transport Assessment in **Appendix 5** has been prepared by Commute to assess the effects of the subdivision and proposed land use activities on the existing transportation network and the internal design of the carpark and manoeuvring areas. The assessment finds that:

- Sight distances at the Aucks Road site access are considered acceptable and meets appropriate design standards;
- No additional widening is required at the Aucks Road/site access intersection based on generated traffic volumes and traffic volumes on Aucks Road;
- The existing internal roads are considered acceptable to accommodate additional traffic volumes;
- The proposed internal roads, JOAL's and driveways are detailed on the civil engineering drawings and are considered to have appropriate gradients and access widths; and
- The traffic expected to be generated by the proposed development can be accommodated within the existing road network. The effects of this generated traffic are considered negligible.

Overall, the traffic assessment concludes that the development is designed appropriately and there are no traffic engineering or transportation reasons to preclude approval of the proposed development. It is, therefore, considered that this proposal will result in a less than minor effect on the local roading network or on internal roading infrastructure.

#### 6.4.5 Servicing Effects

The provision of infrastructure to service the development has been considered and it is confirmed that the site can be adequately serviced, in particular:

- **Stormwater:** There are existing watercourses, manmade ponds and other features, and a network of culverts under both existing accessways, farm tracks and between the various manmade features contained within the intended communal land. Ultimate discharge is via a stream which feeds into the Coastal Marine Area ("**CMA**") through a bridge under Aucks Road. Stormwater control within the site will build upon the existing network of table drains, swales and culverts which direct stormwater from the formed accessways into the manmade pond and associated features. The stormwater roof runoff from the proposed dwellings will be directed to tanks, likely to be buried.

Stormwater discharge meets the requirements of the PRP. The stormwater runoff and tank overflow will be directed to the existing flow path (unless otherwise specified) via an adequate dispersal system as shown in the Engineering Drawings.

The table drains and stormwater outfalls have been sized for the 10-year AEP event as per Sections 3.2.14.3, and 4.3.11.3 of the FNDC Engineering Standards.

- **Wastewater:** Future wastewater discharge will be by way of discharge to ground, via either primary or secondary levels of treatment. The designated treatment areas are indicative and will be confirmed through the building consent process. For the most part, the indicative disposal areas comply with the setback provisions of the PRP.

Based on the information provided in the GWE Report and the Infrastructure Report (attached as **Appendix 6**), it is considered that wastewater can be feasibly disposed of in compliance with FNDC and NRC standards, except for the reduced setback from the man-made water bodies

on-site. However, any risks associated with this reduced setback can be effectively mitigated through a higher level of wastewater treatment.

- **Water Supply:** The proposal does not have access to a reticulated water network and will need to rely on rainwater capture and on-site storage to provide for drinking water and firefighting supply. It is proposed to provide on-site roof fed rainwater tanks for each lot at the building consent stage. It is anticipated that lots will provide a minimum total of 45,000L of water storage, within 2 x 22,500L tanks for water supply with a suitable pump chamber.

In terms of firefighting water supply discussions have been had with FENZ, who have confirmed that they will accept a minimum of 10,000L storage volume per lot. An alternative solution (using the existing water bodies/pond for lower lots will be discussed with FENZ, and if the final agreement differs from above, this will be detailed in support of future consent notices and building consent applications. A consent notice is offered to be registered on each resulting lot which will require 10,000L of storage volume for firefighting purposes to be retained on each lot or otherwise as approved by FENZ.

- **Power and telecommunications:** It is proposed that each lot will be provided with an electricity connection at the boundary of each lot. Telecommunications are proposed to be provided for each lot via either physical connection or wireless service.

Having regard to the above and taking into account the assessments and recommendations of Maven and GWE, it is concluded that the proposed development will result in less than minor adverse servicing effects. The development can be adequately serviced, and appropriate measures will be implemented to mitigate any potential adverse effects.

#### 6.4.6 Natural Hazards Effects

While there is a coastal flood hazard within the site, the internal roads are for the most part elevated above the future 100-yr flood level, except for the immediate area near Aucks Road which will tie into existing levels. This flooding risk and associated effects are considered in the Infrastructure Report, where it is concluded that effects as a result of the coastal flooding are negligible as the resulting lots will not be accessible from the public road.

All Individual building platforms are located away from the coastal flood zone 3 extent of 100-YEAR (“ARI”) Static Water level, except for Lot 55 and Lot 42. Specific platform design has been provided for Lot 55 and Lot 42 as to ensure suitable building platforms are above the 100-yr levels.

All dwellings will be elevated above adjacent JOAL corridors to ensure sufficient freeboard is provided from any future coastal flood hazard water level and watercourse during a storm event in accordance with NZS 4404:2004 and the New Zealand Building Code.

Based on the assessment provided in the Infrastructure Report by Maven, the development is considered to be appropriately designed with consideration of the coastal hazard area, and it is considered that the associated effects to be less than minor.

The Far North District Plan considers fire risk as a hazard where a setback of 20m for habitable structures from vegetation deemed a forest or woodlot cannot be achieved. Whilst there is no indication in terms of what is considered a ‘wood lot’ or ‘forest’ within the Far North District Plan it is assumed that the intent is that of a cluster of vegetation as opposed to individual and sparsely located trees.

The application site is surrounded in predominantly native vegetation; therefore, a number of dwellings may be located within a 20m setback of the existing onsite kanuka scrub/forest or the proposed revegetation plantings. Any vegetation established within 20 metres of a future building on the resulting lots will be low flammable species only as recommended in the landscape and Ecological Assessments. Ongoing flammable weed management (e.g. gorse) within a 20m setback of all dwellings is recommended in the Ecological Assessment to ensure fire risk is minimised.

It is considered that any additional adverse effects resulting from the proposed development on the wider environment in regards to the risk of spreading fire has been avoided by either the setback that can be achieved or the management of vegetation within 20 metres and the adequacy of water supply and the suitability of access.

#### 6.4.7 Reverse Sensitivity Effects

The surrounding area of the site is characterised by small to medium rural-residential and lifestyle lots, and includes respective residential, recreation and commercial activities. The proposed new lots are consistent with the lifestyle character observed in the area. Given the Kiwi High area in which the site is located, agricultural activities are not common in the Rural General land adjacent to the south of the site. As such there are not considered to be any reverse sensitivity effects in this location.

Given the established coastal living and residential character of the wider area and the general absence of rural production activities, no reverse sensitivity effects are anticipated as a result of the proposed development.

#### 6.4.8 Archaeological Effects

Archaeological sites were considered in an archaeological assessment in the context of a previous application on the site, and in a memorandum by Northern Archaeological Research Ltd (refer **Appendix 10**). The memorandum recognises the terrace features (Q05/1269) as the only known archaeological site within the application area and provides recommendations to avoid the site. As this proposal does not seek to amend any archaeological site, there are no adverse archaeological or heritage effects anticipated as a result of this development.

#### 6.4.9 Cultural Effects

As detailed above, engagement was undertaken with representatives from Kororāreka Marae and Te Kapotai hapū onsite at the design stage of this development. These meetings were followed by two community sessions held at Kororāreka Marae. Feedback from these sessions is summarised in Section 2 of this report.

Beyond the matters discussed and recorded in the minutes attached at **Appendix 2**, no additional cultural concerns were raised during the hui and no sites of significance have been identified.

#### 6.4.10 Esplanade Reserve Waiver

The Council requires a financial contribution of an esplanade reserve or strip where lots less than 4ha in area are created along the edge of the CMA or within 20 metres of a hydro parcel. As detailed in Section 2 of this report, consultation has been undertaken with Council's Park's and Recreation Department. In this instance it is considered that are adequate reserve parcels along the coastal walk area.

Given the location of the development, on the outskirts of Russell / Kororāreka, the establishment of an Esplanade Reserve is not considered to be necessary. This view is supported by the Council's Parks and Recreation Department attached at **Appendix 2**, due to the limited budget for such land acquisitions. It is, therefore, considered appropriate to waive the esplanade reserve requirement, resulting in less than minor effects on public access.

#### 6.4.11 Cumulative Effects

Cumulative effects are generated by incremental effects of subdivision and development over time. While the individual effects in isolation may not be noteworthy, the compounding effects resulting from the incremental change can be considered adverse. On-going and subsequent subdivision and development of land can potentially result in cumulative adverse effects as the volume and nature of development exceeds the carrying capacity of the environment to absorb these effects.

While the proposed lots do not meet the density requirements in the Coastal living Area of the ODP, they do meet the density requirements for a management plan subdivision and as such are considered to be anticipated by the ODP. The proposed lot sizes are also consistent with that found in the surrounding environment and are considered appropriate in this locality being in close proximity to Russell / Kororāreka township.

The proposal will have effects on values such as landscape, visual amenity and coastal character that are no more than minor, and the accumulation of these effects in conjunction with existing subdivision and development in the locality will not 'tip the balance' whereby cumulative effects will become significantly adverse and unacceptable. The proposed lot sizes and respective uses are considered appropriate in this location. Therefore, it is considered that the resulting development would not result in adverse cumulative effects.

#### 6.4.12 Cancellation of Consent Notice

The proposal also seeks to cancel a number of consent notice conditions relating to servicing provisions, animal controls and consultation with Council regarding future built form. Overall, for the reasons outlined below, it is considered that the cancellation of the consent notices is acceptable and will result in less than minor effects.

##### 6.4.12.1 Servicing Provisions

Consent Notice conditions i) – ii) of Consent Notice 11735593\_2 relate to servicing provisions, specifically relating to firefighting, water supply and quality, on-site wastewater treatment and disposal. A number of the standards referred to in the consent notice are out of date, and are proposed to be cancelled and replaced with the appropriate up to date standards and associated requirements. It is considered that new consent notice conditions can be imposed on the resultant titles, in accordance with the proposed wastewater, water and firefighting standards in the engineering report to replace the outdated conditions. The proposed cancellation will not result in any adverse effects, subject to the replacement conditions being imposed on the future titles.

##### 6.4.12.2 Ecology Provisions

Condition iii of Consent Notice 11735593\_2 relates to the keeping of no more than two dogs or two cats on a lot at any one time. It is proposed to remove this condition to impose more conservative requirements regarding the banning of cats and mustelids based on the expert

Ecological Assessment of Wild Ecology. This change is not considered to result in any adverse effects and will support enhanced protection of kiwi on the site.

#### 6.4.12.3 Habitable Building

Consent Notice 8300644\_4 condition “I” relates to the consultation requirement with Council for any habitable building on Lots 3, 4 & Lot 1 DP 187577, due to the intensity requirements of the District Plan. As detailed above in this assessment, this proposal is consistent with the management plan density as specified in the District Plan. The Landscape Assessment undertaken by LLA does not raise concerns relating to the intensity of the development, and this proposal provides for the provision of positive ecological and landscapes outcomes. Therefore, it is considered that this condition interferes with the sustainable purpose of the Act, and its cancellation will not result in any adverse effects not already addressed in the assessment above.

### 6.5 Summary of Effects

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Overall, it is considered that any adverse effects on the environment relating to this proposal will be no more than minor.

### 6.6 Public Notification Conclusion

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Having undertaken the section 95A public notification tests, the following conclusions are reached:

- Under step 1, public notification is not mandatory;
- Under step 2, public notification is not precluded;
- Under step 3, public notification is not required as it is considered that the activity will result in no more than minor adverse effects; and
- Under step 4, there are no special circumstances.

Therefore, based on the conclusions reached under steps 3 and 4, it is recommended that this application be processed without public notification.

## 7.0 Limited Notification Assessment (Sections 95B, 95E to 95G)

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### 7.1 Assessment of Steps 1 to 4 (Sections 95B)

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If the application is not publicly notified under section 95A, the council must follow the steps set out in section 95B to determine whether to limited notify the application. These steps are addressed in the statutory order below.

#### 7.1.1 Step 1: Certain affected protected customary rights groups must be notified

Step 1 requires limited notification where there are any affected protected customary rights groups or customary marine title groups; or affected persons under a statutory acknowledgement affecting the land.

The above does not apply to this proposal.



### 7.1.2 Step 1: Certain affected protected customary rights groups must be notified

Step 2 describes that limited notification is precluded where all applicable rules and national environmental standards preclude limited notification; or the application is for a controlled activity (other than the subdivision of land).

In this case, the applicable rules do not preclude limited notification and (“The proposal”) is not a controlled activity. Therefore, limited notification is not precluded.

### 7.1.3 Step 3: If not precluded by step 2, certain other affected persons must be notified

Step 3 requires that, where limited notification is not precluded under step 2 above, a determination must be made as to whether any of the following persons are affected persons:

- In the case of a boundary activity, an owner of an allotment with an infringed boundary;
- In the case of any other activity, a person affected in accordance with s95E.

The application is not for a boundary activity, and therefore an assessment in accordance with section 95E is required and is set out below.

Overall, it is considered that any adverse effects in relation to adjacent properties will be less than minor, and accordingly, that no persons are adversely affected.

### 7.1.4 Step 4: Further notification in special circumstances

In addition to the findings of the previous steps, the council is also required to determine whether special circumstances exist in relation to the application that warrant notification of the application to any other persons not already determined as eligible for limited notification.

In this instance, having regard to the assessment in section 6.1.4 above, it is considered that special circumstances do not apply.

## 7.2 Section 95E Statutory Matters

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If the application is not publicly notified, a council must decide if there are any affected persons and give limited notification to those persons. A person is affected if the effects of the activity on that person are minor or more than minor (but not less than minor).

In deciding who is an affected person under section 95E:

- Adverse effects permitted by a rule in a plan or national environmental standard (the ‘permitted baseline’) may be disregarded;
- Only those effects that relate to a matter of control or discretion can be considered (in the case of controlled or restricted discretionary activities); and
- The adverse effects on those persons who have provided their written approval must be disregarded.

These matters were addressed in section 6.2 above, and no written approvals have been obtained.

Having regard to the above provisions, an assessment is provided below.

## 7.3 Assessment of Effects on Persons

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Adverse effects in relation to visual amenity values, transportation and stormwater management on adjacent properties are considered below.

Wider effects, such as construction activities; ecological effects; coastal environment and amenity; traffic safety and efficiency effects; servicing effects; hazard effects; reverse sensitivity effects; archaeological sites; cultural effects and cumulative effects were considered in section 6.4 above, and are considered to less than minor. In addition to this, the following assessment is made with particular attention to key adjoining and adjacent property owners and occupiers.

### 7.3.1 Owners and occupiers at 15 Aucks Road, Russell / Kororāreka

This property is located generally north of the site and will adjoin proposed Lots 60, 61 and the common area Lot 200. A recent resource consent (RC2240282) approved a 14-lot subdivision including 7 commercial lots, 3 common lots, an area of esplanade reserve to vest and 2 utility lots on this site.

The Landscape Assessment attached at **Appendix 9** has not raised any minor or more than minor effects on the owners or occupiers of this site. This site generally located at a lower elevation to the proposed development and it will not overlook the development. The existing and proposed vegetation on the subject site is considered to provide substantial screening of the proposed subdivision from this location. Additionally, the use of 15 Aucks Road is primarily characterised by commercial land uses, which are not considered sensitive in nature.

The traffic assessment supporting this application has considered the potential impact of this proposal on adjoining uses and nearby entranceways and considers that the roading network and existing access to the subject site can adequately absorb the development.

Overall, it is considered that the adverse effects on the owners/ occupiers of the property located at 15 Aucks Road, Russell / Kororāreka will be less than minor.

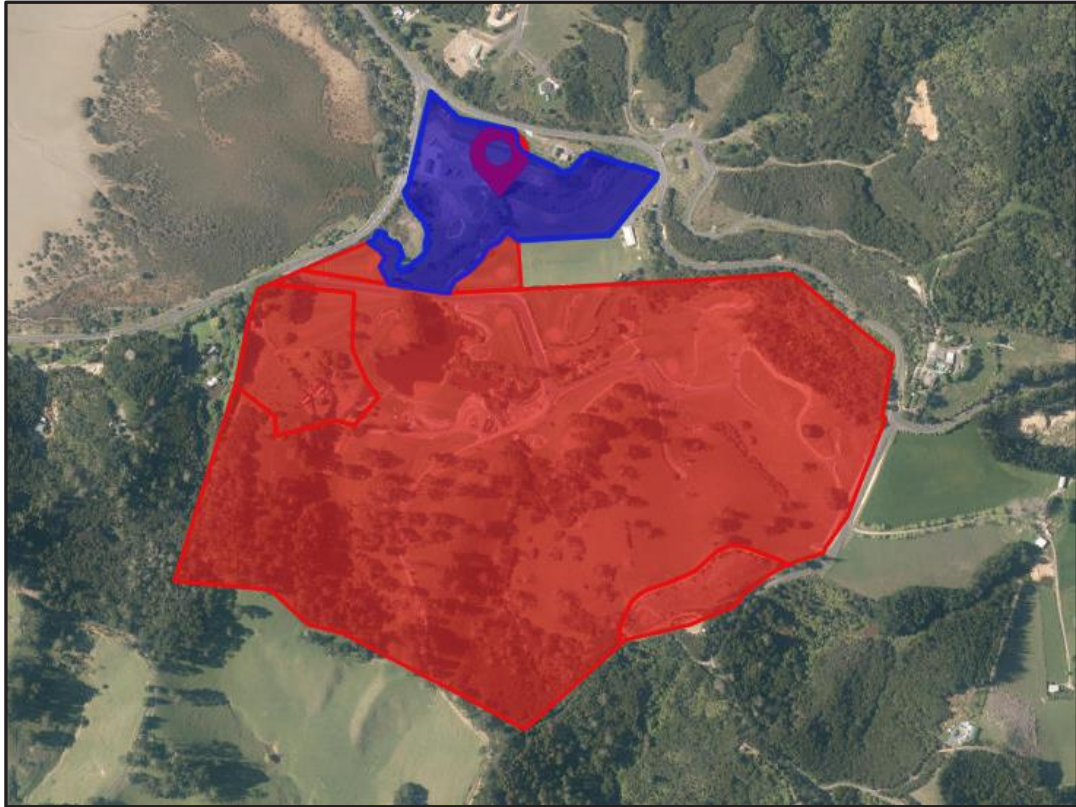


Figure 13: 15 Aucks Road. Source Emap

### 7.3.2 Owners and occupiers at adjoining property at 5855 Russell Whakapara Road, Russell / Kororāreka

5855 Russell Whakapara Road is situated generally to the north of the site, adjacent to proposed lots 53, 57, 59, 60, 11, and 12. This allotment is Council owned recreation reserve. As outlined in **Section 2** of this report, consultation was undertaken with Robin Rawson from the Council's Parks and Recreation Department. During this process, it was determined that a fencing covenant would be required for all new properties adjoining this boundary, which is accepted by the Applicant. This fencing covenant is expected to enhance active surveillance of the public open space.

Based on the Infrastructure Report by Maven, there will be no adverse stormwater runoff effects on this property. Additionally, as the site is not accessed directly off Aucks Road, the proposal is not expected to generate any traffic impacts on the property.

Overall, it is considered that the effects of the proposal will be less than minor on this recreation reserve.

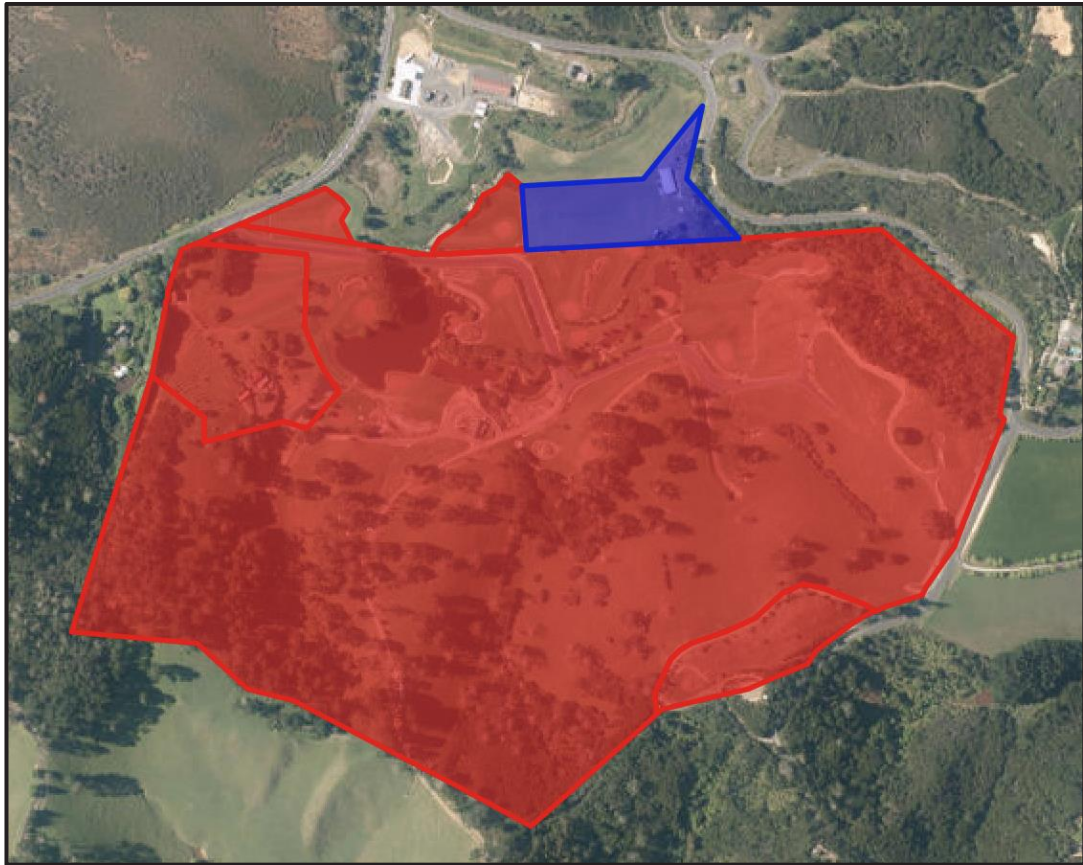


Figure 14: 5855 Russell Whakapara Road shown in blue. Source Emap

### 7.3.3 Owners and occupiers located at adjoining properties to the north-east

The properties shown in **Figure 15** are grouped together and are all relatively small lifestyle sized sections. These properties adjoin the proposed ecological enhancement area protecting the existing bush and wetland environments.

Wider effects including those related to construction activities, ecological impacts, the coastal environment, traffic safety and efficiency, servicing, hazards, reverse sensitivity, heritage, cultural aspects, and cumulative effects, will be less than minor on the owners and occupiers of these sites, as addressed above in Section 6.4 of this report.

In terms of visual amenity effects, the Landscape Assessment attached at **Appendix 9** finds that:

- Two lots, Lots 15 and 16 DP 403531, are located near the base of the slope and contain existing dwellings with a western outlook toward the site;
- A dwelling has recently been established on Lot 29 DP 426505 on the northern edge of the spur, which is largely shielded from views of the site;
- Lot 30 DP 426505 was recently developed and sits further up the spur. Although its major glazing faces the panoramic Orongo Bay view to the west and its northern face captures solar gain, the southern façade includes a few large windows facing south toward the site;
- Lots 28, 30–32, and 38 DP 426505 are currently vacant but are all exposed to views of the site;



- Another cluster of allotments is situated at the junction of Lanes and Russell Whakapara Roads, located on the saddle dividing the Orongo Bay catchment from the area draining east to Waikare Inlet. Existing dwellings occupy Lots 1 and 2 DP 181696 and Lot 3 DP 187577; and

Although natural mature vegetation, which will be preserved and enhanced, generally screens views of the development from the owners and occupiers of these adjacent properties, the elevated position and general orientation of these properties toward the site mean they will have an overlooking perspective. Therefore, the Landscape Assessment concludes that the adverse visual amenity effects on Lots 15 and 16 DP403531, Lot 28 DP426505, Lots 30–32 DP426505, Lot 38 DP426505, Lots 1 and 2 DP181696, and Lot 3 DP187577 will be minor and the level of effect will be moderate-low.

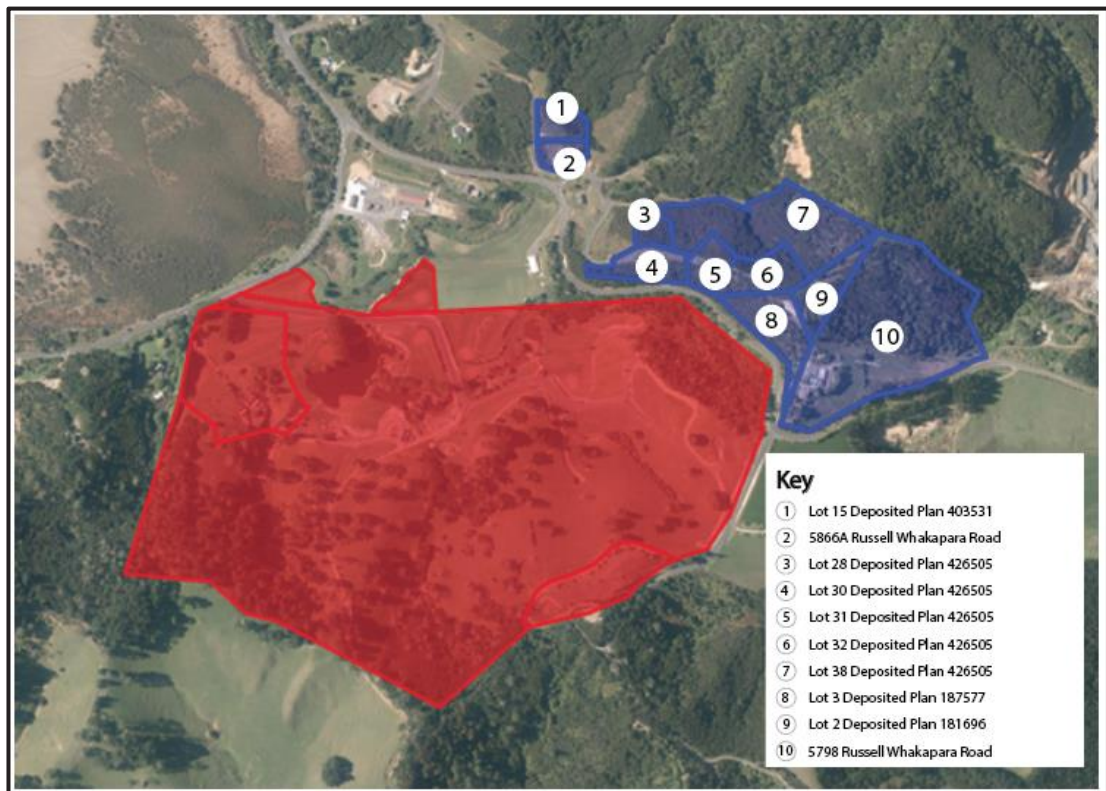


Figure 15. Adjacent sites to the east – with minor visual amenity effects. Source Emap

#### 7.3.4 Owners and occupiers located at 51a Aucks Road, Russell / Kororāreka

51a Aucks Road, Russell / Kororāreka (Lot 6 DP 517271) is elevated to the west of the site.

Wider effects including those related to construction activities, ecological impacts, the coastal environment, traffic safety and efficiency, servicing, hazards, reverse sensitivity, heritage, cultural aspects, and cumulative effects, will be less than minor on the owners and occupiers of this site, as addressed above in Section 6.4 of this report.

The Landscape Assessment contained in **Appendix 9** finds that the relatively new dwelling site on 51a Aucks Road, Russell / Kororāreka has views eastward across the site and is likely open to views of proposed Lots 46–49 of the proposed development. On the basis that this dwelling will have chosen to focus much of its outlook and solar access to the north as its plan form suggests (taking in Orongo Bay). The Landscape Assessment concludes that initial adverse visual amenity effects



are considered moderate-low and minor on this site, gradually reducing to low as the proposed planting on the site matures over the next 4–6 years.

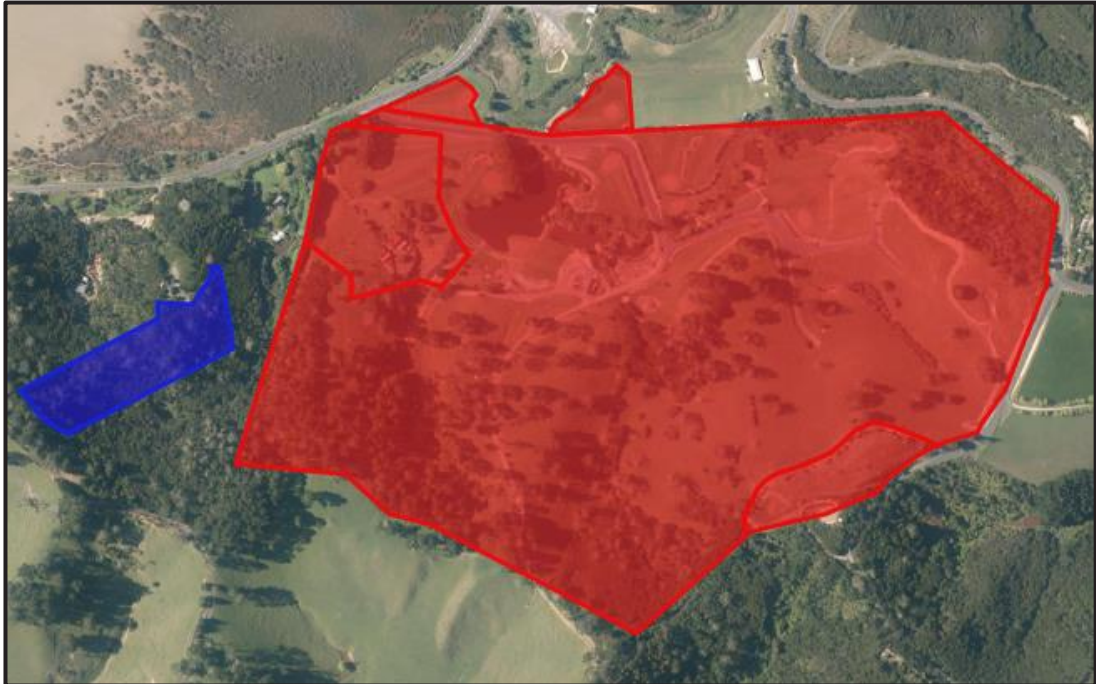


Figure 16. Lot 6 DP 517271. Source Emap

### 7.3.5 Owners and occupiers located at adjoining properties to the south-east

The lots shown in **Figure 17** are rural in character and are much larger than other lots sizes in the surrounding environment. These sites are situated on the opposite side of Lanes Road. They are visually distinct from the site due to the topography, which slopes southward toward the Waikare Inlet. As a result, it is unlikely these properties will have a direct view of the proposed development. However, in the event views are obtained, they are likely to be limited to the higher-elevation lots, which feature a density significantly greater than what is typically expected in Coastal Living Zone. It is further noted that the Landscape Assessment did not identify effects on these parties to be minor or more than minor.

For the reasons outlined in this report, it is considered that the effects of this proposal are less than minor on these properties.

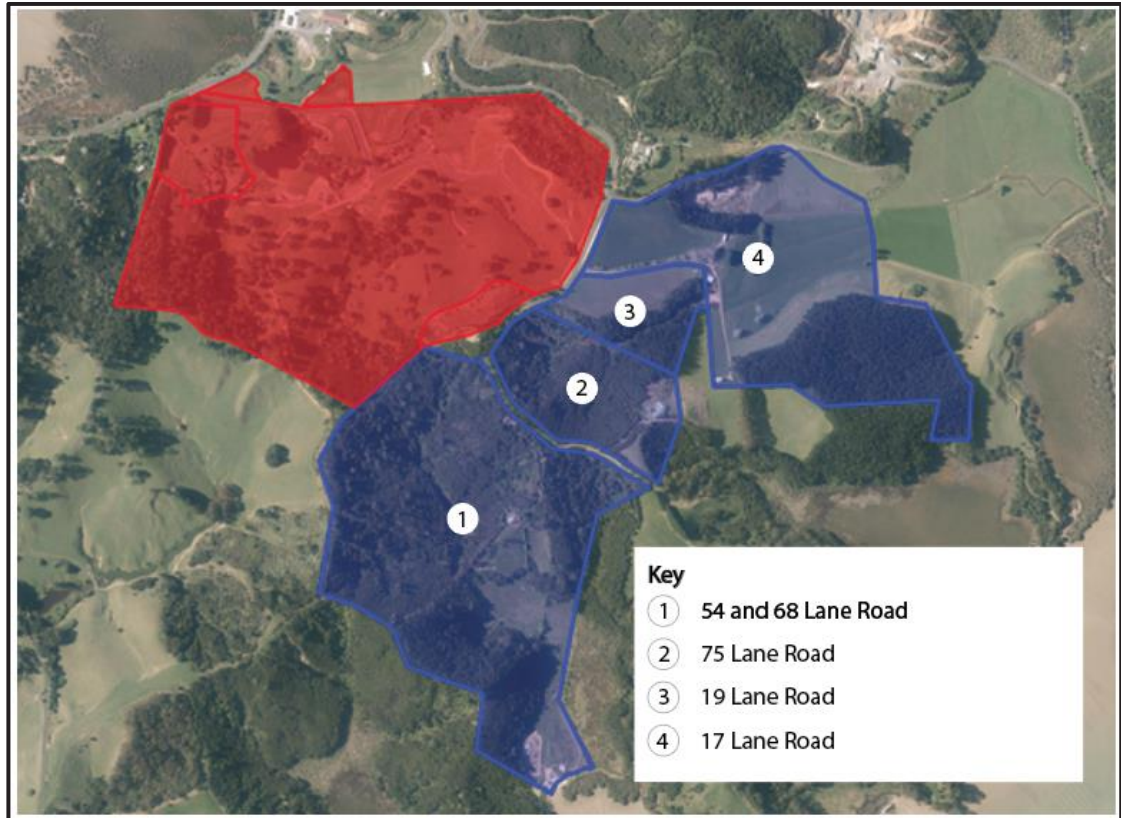


Figure 17: Adjoining properties to the south west of the Application site. Source: Emap.

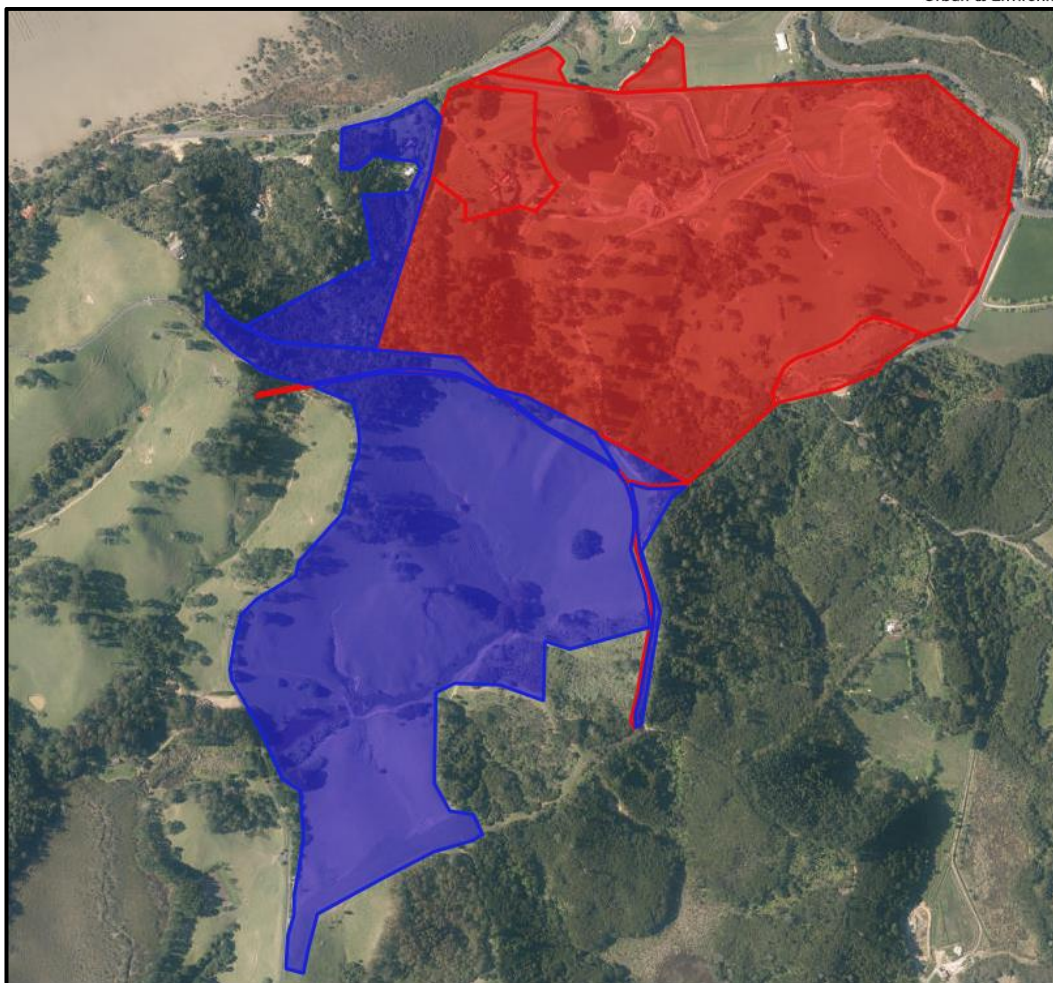
### 7.3.6 Owners and occupiers located at adjoining properties to the west

The properties to the west of the site are predominantly rural coastal in character, with exception to 45 Aucks Road, Russell / Kororāreka, which contains an existing dwelling. Due to their location, the proposed and existing vegetation on the site provides substantial screening of the subject site when viewed from the west.

Additionally, these properties are situated at a similar elevation to the site, meaning they will not overlook the development. As a result, the development will not appear visually dominant from these properties.

The traffic assessment accompanying this application evaluated the potential impacts on adjoining uses and concluded that the existing roading infrastructure and accessways for the development would not adversely affect the roading network. Consequently, no traffic-related effects are anticipated for the owners and occupiers of these properties.

In summary, the effects on the owners and occupiers of these properties are considered to be less than minor.



**Figure 18: Adjoining properties to the west of the Application site. Source: Emap.**

### 7.3.7 Summary of Effects

#### 7.3.7.1 Affected Parties

Taking the above into account, and the more detailed assessment in the Landscape Assessment, it is considered that adverse effects in relation to landscape, visual amenity and outlook effects will be minor on persons at:

- Lot 28 DP 426505;
- Lot 30 DP 426505;
- Lot 31 DP 426505;
- Lot 32 DP 426505;
- Lot 38 DP 426505;
- Lots 1 DP 181696 (5798 Russell Whakapara Road);
- Lot 2 DP 181696;
- Lot 3 DP 187577; and
- Lot 6 DP 517271.



At this stage, written approval has not been obtained from these parties.

#### 7.3.7.2 Unaffected Parties

Other than as specified above, the effects of the development on other properties within the localised environment are considered to be less than minor and appropriate for the following reasons:

- The proposal is for a vacant lot subdivision which will result in allotments which are of a size and shape which is consistent with the wider environment and are anticipated by the zoning of the land as Coastal Living;
- The Infrastructure Report has demonstrated that services can be contained within the development and will not exacerbate any natural hazards on the site;
- Erosion and sediment control devices are proposed to be installed prior to earthworks to ensure that any potential sediment runoff is contained within the site;
- The new allotments will result in an increase in traffic generation, however the Traffic Assessment attached at **Appendix 5** has considered the permitted uses within this zone and determined that trip generation can be accommodated for within the existing road network;
- The effects associated with the construction of retaining, roading and infrastructure, such as noise and dust will be temporary in nature and therefore will have less than minor adverse amenity effect on the residents of adjoining sites;
- Ecology, landscape, coastal character, access and traffic, servicing, earthworks and reverse sensitivity were assessed in section 6 above and are considered to be less than minor.

#### 7.3.7.3 Summary

It is considered, therefore, that the owners and occupiers of properties listed in Section 7.3.6.1 are adversely affected persons in relation to this proposal due effects associated with visual amenity values, and that no other parties are affected by this proposal.

As a result, it is recommended that this application proceed on a limited notified basis to the properties listed in Section 7.3.7.1.

## 8.0 Consideration of Applications (Section 104)

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### 8.1 Statutory Matters

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Subject to Part 2 of the Act, when considering an application for resource consent and any submissions received, a council must, in accordance with section 104(1) of the Act have regard to:

- Any actual and potential effects on the environment of allowing the activity;
- Any relevant provisions of a national environmental standard, other regulations, national policy statement, a New Zealand coastal policy statement, a regional policy statement or proposed regional policy statement; a plan or proposed plan; and
- Any other matter a council considers relevant and reasonably necessary to determine the application.

As a discretionary activity, section 104B of the Act states that a council:

- (a) may grant or refuse the application; and
- (b) if it grants the application, may impose conditions under section 108.

## 8.2 Weighting of District and Regional Plan

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### 8.2.1 Far North District Plan

On the 27th July 2022 FNDC notified their PDP. At the time of preparing this AEE, only rules identified as having immediate legal effect have been considered. This will remain the case until FNDC releases a decision on the PDP (this will occur once hearings have been completed at this stage, not forecast until at least the end of 2025).

As such, it is considered that significantly more weight should be placed on the ODP provisions, which is how the assessment of the relevant objectives and policies has been undertaken below, although the conclusion is that the proposal comfortably accords with both the relevant ODP and PDP provisions.

### 8.2.2 Northland Regional Plan

Now that all appeals have been resolved on the PRP, Council is taking steps to make the Plan fully operative. All rules in the PRP are now treated as operative, in accordance with Section 86F of the RMA (and any previous rule as inoperative). As such, only the provisions of the PRP have been considered in the assessment below.

## 8.3 Trade Competition

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With regard to section 104(3)(a)(i), there are no concerns relating to trade competition.

## 9.0 Effects on the Environment (Section 104(1)(A))

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### 9.1 Positive Effects

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#### 9.1.1 Ecological Protection and Enhancement

The positive effects associated with this development are largely associated with the significant ecological environmental benefit that will be generated by the restoration and enhancement of approximately 16.93ha of land comprising freshwater and terrestrial environmental features that contain and an array of natural values. Wild Ecology have indicated that the restoration and enhancement planting will not only restore degraded natural values (resulting from historic poor land use practices), but enhance the ecological values and linkages to existing covenanted areas located throughout the site. No indigenous vegetation removal is proposed and ecological features on site will be enhanced therefore resulting in a positive effect on the sites landscape and ecological values.

To ensure that these positive effects are delivered:

- (a) An Environmental Benefit Implementation Plan detailing the revegetation and restoration planting, fencing, pest control and certification process will be provided to Council for certification prior to certification pursuant to section 223 of the RMA;



- (b) An Ongoing Environmental Management Programme detailing monitoring and maintenance requirements will be provided to Council for certification prior to certification pursuant to section 223 of the RMA;
- (c) The above plans will be implemented prior to certification pursuant to section 224 of the RMA; and;
- (d) The areas will be protected in perpetuity by way of private land covenant and reinforced by the application of the consent notice condition registered on the titles of the relevant lots pursuant to s221 of the RMA.

Overall, the proposed development maintains natural character values and overall enhances the natural character values through the ecological enhancement planting.

## 9.2 Connectivity

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The development facilitates pedestrian movement throughout the site using off-road designated pedestrian tracks. This encourages pedestrian connectivity within the site, enhances accessibility for residents and fosters a sense of community and shared ownership of the space.

The proposal enables the retention of an access arrangement which maintains a high level of amenity for surrounding sites. Provision of adequate on-site parking and manoeuvring which contributes to the amenity of the development.

## 9.3 Economic and Social Benefits

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In addition to the above positive ecological effects, the proposal will also have significant economic and social benefits through the provision of different allotment sizes to a constrained market in the wider Russell / Kororāreka catchment. The proposal includes a variety of allotments, from larger allotments with greater views in the elevated portion of the site, through to smaller allotments in the lower lying portion of the site that will provide opportunities for more affordable sections in a largely expensive market for sections in the wider catchment.

## 9.4 Overall Effects Conclusion

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Having regard to the actual and potential effects on the environment of the activity resulting from the proposal, it was concluded in the assessment above that any wider adverse effects relating to the proposal will be no more than minor and that while the owners and occupiers of Lot 28 DP426505, Lots 30 – 32 DP426505, Lot 38 DP426505, Lots 1 and 2 DP181696, Lot 3 DP 187577 and Lot 6 DP517271 would be adversely affected by the proposal to a minor level, the effects would be appropriate on these parties.

Further, it is considered that the proposal will also result in significant positive effects including:

- The retention of an access arrangement which maintains a high level of amenity for surrounding sites. Provision of adequate on-site parking and manoeuvring which contributes to the amenity of the development;
- No indigenous vegetation removal is proposed and ecological features on site will be enhanced therefore resulting in a positive effect on the sites landscape and ecological values;
- The development as proposed provides for an opportunity to protect and enhance the ecological features contained within the site boundaries to result in a positive ecological effect;

- The proposed development maintains natural character values and overall enhances the natural character values through the ecological enhancement planting;
- A total area proposed for ecological management is approximately 16.93 ha;
- Economic and social benefits through the provision of different allotment sizes;
- The significant natural features and landscape patterns will be significantly enhanced through the Ecological Planting.

Overall, it is considered that when taking into account the positive effects, any actual and potential adverse effects on the environment of allowing the activity are minor and acceptable.

## 10.0 District Plan and Statutory Documents (Section 104(1)(B))

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### 10.1 National Policy Statement – Freshwater Management

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The National Policy Statement for Freshwater Management (“NPS-FM”) came in effect on 3 September 2020.

The NPS-FM provides direction for regional councils to set objectives for the state of freshwater bodies in their regions and to set limits on resource use to meet these objectives. The core intent of the policies in the NPS-FM is to provide stronger protection for freshwater bodies and wetlands.

Noting that no resource consents are triggered under the NES-F, and based on the assessment and conclusions reached in the Ecological Assessment by Wild Ecology (see **Appendix 8**), it is considered that the proposal is consistent with the objectives and policies of the NPS-FM as it seeks to restore and protect previously degraded ecosystems and development can be adequately serviced on site.

### 10.2 National Policy Statement – Highly Productive Land

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The National Policy Statement for Highly Productive Land (“NPS-HPL”) is not considered relevant to this proposal as the application site is mapped as Land Use Capability Class 4 and 6 by the New Zealand Land Resource Inventory.

### 10.3 National Policy Statement – Indigenous Biodiversity

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The National Policy Statement for Indigenous Biodiversity (“NPS-IB”) was published by the Minister of the Environment on 7 July 2023 and came into force on 4 August 2023, 28 days after notification in the New Zealand Gazette.

The NPS-IB applies to indigenous biodiversity in the terrestrial environment throughout Aotearoa New Zealand. As outlined within the Ecological Assessment by Wild Ecology, the application site does contain indigenous vegetation. The NPS-IB does not contain rules that apply to the current proposal, rather the relevant objective and policies in Part 2, and further 3.16 (Indigenous Biodiversity outside of SNAs) require consideration at section 104 stage. Therefore, the NPS-IB does apply to the proposal as a higher order planning document that the consent authority is required to “have regard to” pursuant to section 104(1)(b)(iii) of the Act,

Overall, it is considered that the proposal accords with the relevant provisions of the NPS-IB for the following reasons:

- The identification, protection and restoration of identified ecological features on the subject site is a key feature of the proposal. The wider site has been historically degraded by traditional farming practices and land development. As outlined above, with reference to the Wild Ecology Ecological Assessment, the proposal provides for significant ecological benefit via the proposed 16.93ha environmental benefit area. Within these areas, existing indigenous biodiversity is protected, and over time will be restored and enhanced. As such, the proposal will significantly exceed the requirement to achieve “at least no overall loss”, to the extent that the proposal will promote and provide for the restoration of indigenous biodiversity on the subject site, while providing for the social economic and cultural wellbeing of people and communities.
- With specific regard to Clause 3.16 (Indigenous Biodiversity outside SNAs, it is considered that proposal accords with this clause because, for the reasons outlined in the AEE and Wild Ecology Report, any adverse ecological effects will be less than minor and acceptable, and because the proposal gives effect to the objective and policies of the NPS-IB as outlined in the above bullet points.

#### 10.4 New Zealand Coastal Policy Statement

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The New Zealand Coastal Policy Statement (“**NZCPS**”) is a national policy statement with the purpose of ensuring that the requirements of the Resource Management Act in so far as it relates to the coastal environment of New Zealand are achieved. More specifically the NZCPS sets policies to protect the characteristics and qualities of the coastal environment from the issues it faces.

Objectives 2 & 6 and policies 6 & 13 are considered of most relevance to this proposal. Objectives 2 seeks to preserve the natural character of the coastal environment and protect landscape values by recognising the contributing factors and protecting them from inappropriate development. Objective 6 enables use and development of the coastal environment where appropriate whilst recognising the need to protect the values identified in Objective 2.

Policy 6 provides further direction in regards to what activities (including development) are appropriate in the coastal environment recognising that appropriate siting and design is vital to avoid compromising the values of the environment. Policy 13 seeks to preserve natural character by avoiding significant adverse effects of development and directs the use of assessment of natural character as a means to do this.

The proposed development is considered to be sympathetic to the natural character of the coastal environment. The siting of platforms on higher elevations have been considered through landscape input and are set to ensure future built form is contained within them, and design controls relating to the bulk of the structures will result in any visual impact on natural and coastal character largely contained within the site. Importantly, none of the existing mature native vegetation is proposed to be removed to accommodate the subdivision, and additional planting is proposed, with a proposed ecological management area of approximately 16.93 ha so this characteristic will be retained and ultimately enhanced by the proposed subdivision.

An assessment of effects on Natural Character was undertaken by LLA (attached as **Appendix 9**). The report indicates that aspects of the surrounding environment are considered to have High Natural Character, and agrees that the sensitivity of design, appropriate siting and building controls will reduce the potential for adverse effect upon the natural character.

Overall, it is considered that the development is appropriate for the coastal environment and as such, is in keeping with the purpose of the NZCPS.

## 10.5 Northland Regional Policy Statement 2016

The Operative Regional Policy Statement (“RPS”) for Northland contains high level policy guidance for development. The subject site does not contain any significant features as defined by the RPS and therefore consideration of the RPS provisions is limited to matters under the following objectives:

- **Objective 3.2** *Region-Wide Water Quality*
- **Objective 3.11** *Regional Form*
- **Objective 3.12** *Tangata whenua role in decision-making*
- **Objective 3.13** *Natural Hazard risk*

The following policies are also particularly relevant to this application:

**Policy 4.2.1** - *Improving overall water quality*

- a) *Establishing freshwater objectives and setting region-wide water quality limits in regional plans that give effect to Objective 3.2 of this regional policy statement.*
- b) *Reducing loads of sediment, nutrients, and faecal matter to water from the use and development of land and from poorly treated and untreated discharges of wastewater; and*
- c) *Promoting and supporting the active management, enhancement and creation of vegetated riparian margins and wetlands.*

**Policy 4.4.1** – *Maintaining and protecting significant ecological areas and habitats*

- (1) *In the coastal environment, avoid adverse effects, and outside the coastal environment avoid, remedy or mitigate adverse effects of subdivision, use and development so they are no more than minor on:*
  - a. *Indigenous taxa that are listed as threatened or at risk in the New Zealand Threat Classification System lists;*
  - b. *Areas of indigenous vegetation and habitats of indigenous fauna, that are significant using the assessment criteria in Appendix 5;*
  - c. *Areas set aside for full or partial protection of indigenous biodiversity under other legislation.*
- (2) *In the coastal environment, avoid significant adverse effects and avoid, remedy, or mitigate other adverse effects of subdivision, use and development on:*
  - a) *Areas of predominantly indigenous vegetation;*
  - b) *Habitats of indigenous species that are important for recreational, commercial, traditional or cultural purposes;*
  - c) *Indigenous ecosystems and habitats that are particularly vulnerable to modification, including estuaries, lagoons, coastal wetlands, dunelands, intertidal zones, rocky reef systems, eelgrass, northern wet heathlands, coastal and headwater streams, floodplains, margins of the CMA and freshwater bodies, spawning and nursery areas and saltmarsh.*

- (3) *Outside the coastal environment and where clause (1) does not apply, avoid, remedy or mitigate adverse effects of subdivision, use and development so they are not significant on any of the following:*
- a) *Areas of predominantly indigenous vegetation;*
  - b) *Habitats of indigenous species that are important for recreational, commercial, traditional or cultural purposes;*
  - c) *Indigenous ecosystems and habitats that are particularly vulnerable to modification, including wetlands, dunelands, northern wet heathlands, headwater streams, floodplains and margins of freshwater bodies, spawning and nursery areas.*
- (4) *For the purposes of clause (1), (2) and (3), when considering whether there are any adverse effects and/or any significant adverse effects:*
- a) *Recognise that a minor or transitory effect may not be an adverse effect; Regional Policy Statement for Northland Page 68 of 178*
  - b) *Recognise that where the effects are or maybe irreversible, then they are likely to be more than minor;*
  - c) *Recognise that there may be more than minor cumulative effects from minor or transitory effects.*
- (5) *For the purpose of clause (3) if adverse effects cannot be reasonably avoided, remedied or mitigated then it maybe appropriate to consider the next steps in the mitigation hierarchy i.e. biodiversity offsetting followed by environmental biodiversity compensation, as methods to achieve Objective 3.4.*

**Policy 4.4.2 – Supporting restoration and enhancement**

*Support voluntary efforts of landowners and community groups, iwi and hapū, to achieve Objective 3.15.*

**Policy 4.7.1 – Promote active management**

*In plan provisions and the resource consent process, recognise and promote the positive effects of the following activities that contribute to active management:*

- a) *Pest control, particularly where it will complement an existing pest control project / programme;*
- b) *Soil conservation / erosion control;*
- c) *Measures to improve water quality in parts of the CMA where it has deteriorated and is having significant adverse effects, or in freshwater bodies targeted for water quality enhancement;*
- d) *Measures to improve flows and / or levels in over allocated freshwater bodies;*
- e) *Re-vegetation with indigenous species, particularly in areas identified for natural character improvement;*
- f) *Maintenance of historic heritage resources (including sites, buildings and structures);*
- g) *Improvement of public access to and along the CMA or the margins of rivers or lakes except where this would compromise the conservation of historic heritage or significant indigenous vegetation and / or significant habitats of indigenous fauna;*



- h) Exclusion of stock from waterways and areas of significant indigenous vegetation and / or significant habitats of indigenous fauna;*
- i) Protection of indigenous biodiversity values identified under Policy 4.4.1, outstanding natural character, outstanding natural landscapes or outstanding natural features either through legal means or physical works;*
- j) Removal of redundant or unwanted structures and / or buildings except where these are of historic heritage value or where removal reduces public access to and along the coast or lakes and rivers;*
- k) Restoration or creation of natural habitat and processes, including ecological corridors in association with indigenous biodiversity values identified under Policy 4.4.1, particularly wetlands and / or wetland sequences;*
- l) Restoration of natural processes in marine and freshwater habitats.*

**Policy 5.1.1 - Planned and coordinated development**

*Subdivision, use and development should be located, designed and built in a planned and coordinated manner which:*

- a) Is guided by the 'Regional Form and Development Guidelines' in Appendix 2;*
- b) Is guided by the 'Regional Urban Design Guidelines' in Appendix 2 when it is urban in nature;*
- c) Recognises and addresses potential cumulative effects of subdivision, use, and development, and is based on sufficient information to allow assessment of the potential long-term effects;*
- d) Is integrated with the development, funding, implementation, and operation of transport, energy, water, waste, and other infrastructure;*
- e) Should not result in incompatible land uses in close proximity and avoids the potential for reverse sensitivity;*
- f) Ensures that plan changes and subdivision to / in a primary production zone, do not materially reduce the potential for soil-based primary production on land with highly versatile soils, or if they do, the net public benefit exceeds the reduced potential for soil-based primary production activities; and*
- g) Maintains or enhances the sense of place and character of the surrounding environment except where changes are anticipated by approved regional or district council growth strategies and / or district or regional plan provisions.*
- h) Is or will be serviced by necessary infrastructure.*

**Policy 5.1.2 – Development in the coastal environment**

*Enable people and communities to provide for their wellbeing through appropriate subdivision, use, and development that:*

- a. Consolidates urban development within or adjacent to existing coastal settlements and avoids sprawling or sporadic patterns of development;*
- b. Ensures sufficient development setbacks from the CMA to;*
  - i. maintain and enhance public access, open space, and amenity values; and*
  - ii. allow for natural functioning of coastal processes and ecosystems;*
- c. Takes into account the values of adjoining or adjacent land and established activities (both within the CMA and on land);*
- d. Ensures adequate infrastructure services will be provided for the development; and*

- e. *Avoids adverse effects on access to, use and enjoyment of surf breaks of national significance for surfing.*

**Policy 5.1.3** – *Avoiding the adverse effects of new use(s) and development*

**Policy 5.2.1** – *Managing the use of resources*

*Avoid the adverse effects, including reverse sensitivity effects of new subdivision, use and development, particularly residential development on the following:*

- a) *Primary production activities in primary production zones (including within the CMA);*
- b) *Commercial and industrial activities in commercial and industrial zones;*
- c) *The operation, maintenance or upgrading of existing or planned regionally significant infrastructure; and*
- d) *The use and development of regionally significant mineral resources.*

*Encourage development and activities to efficiently use resources, particularly network resources, water and energy, and promote the reduction and reuse of waste.*

**Policy 7.1.1** – *General risk management approach*

*Subdivision, use and development of land will be managed to minimise the risks from natural hazards by:*

- (a) *Seeking to use the best available information, including formal risk management techniques in areas potentially affected by natural hazards;*
- (b) *Minimising any increase in vulnerability due to residual risk;*
- (c) *Aligning with emergency management approaches (especially risk reduction);*
- (d) *Ensuring that natural hazard risk to vehicular access routes and building platforms for proposed new lots is considered when assessing subdivision proposals; and*
- (e) *Exercising a degree of caution that reflects the level of uncertainty as to the likelihood or consequences of a natural hazard event.*

**Policy 8.1.1** – *Tangata whenua participation*

*The regional and district councils shall provide opportunities for tangata whenua to participate in the review, development, implementation, and monitoring of plans and resource consent processes under the Resource Management Act 1991.*

**Policy 8.1.2** – *The regional and district council statutory responsibilities*

*The regional and district councils shall when developing plans and processing resource consents under the Resource Management Act 1991 (RMA):*

- a) *Recognise and provide for the relationship of tangata whenua and their culture and traditions with their ancestral land, water, sites wāhi tapu, and other taonga;*
- b) *Have particular regard to kaitiakitanga; and*
- c) *Take into account the principles of the Treaty of Waitangi including partnership.*

**Comment:** In terms of Policy 4.2.1 which provides for the improvement of water quality, as detailed in this report, silt and sediment controls are proposed to be implemented. As detailed in the Ecological Assessment, attached at **Appendix 8** the proposal results in the enhancement of wetlands onsite through enhancement planting and pest management. Is considered that with

appropriate conditions of consent, water quality issues can be addressed in accordance with the direction relating to water quality.

The proposed development includes measures to protect indigenous vegetation within the site, particularly through the establishment of a 16.93-hectare management area. This approach offers an opportunity to safeguard and enhance the site's ecological features, resulting in a positive ecological impact. Additionally, pest management initiatives are proposed to further support biodiversity outcomes. Therefore, the proposal is considered consistent with Policy 4.4.1, Policy 4.4.2, and Policy 4.7.1.

Particular consideration has been given to Policy 5.1.1(a), (c), (e), (f) and (h) and it is considered that the proposal accords with the relevant directions of these policies. In particular, the proposed development incorporates quality design principles including context, character, choice, connections, creativity custodianship and collaboration. With specific reference to 5.1.1(h) the proposal can be adequately serviced in terms of transportation, water, wastewater, and stormwater by existing and proposed infrastructure as highlighted within the Infrastructure Report and Wastewater Feasibility Assessment (see **Appendix 6** and **Appendix 7**).

The proposal will result in residential development being located within the Coastal Living Zone, as previously discussed, it is considered that due to the nature of the surrounding zoning, the land use and the kiwi high habitat, it is not considered that the proposed development will result in adverse effects on primary production activities. The proposed is considered to be consistent with Policy 5.1.3.

According to Policy 7.1.1 subdivision, use and development of land will be managed to minimise risks of natural hazards. The proposed subdivision and future residential use of the site, will be managed to minimise the risk of natural hazards by way of comprehensive design of onsite stormwater management and avoidance of areas high instability.

Policy 8.1.2 requires district council to recognise and provide for the relationship of tangata whenua and their culture and traditions, have particular regard to kaitiakitanga and take into account the principles of the Treaty of Waitangi including partnership when processing resource consents. As previously discussed, the Applicant has engaged with iwi and hapū and taken any feedback into account through the design phase of this development.

The RPS recognises that there are activities and land that should be protected from the negative impacts caused by subdivision, as further development can result in incompatible land use and reverse sensitivity issues. As discussed previously in this report, the application site is located within a coastal living area characterised by a range of residential uses in close proximity to an established settlement and associated services.

Future development will be required to appropriately manage stormwater and wastewater onsite, and site works are to be undertaken in a manner that the water quality of the surrounding environment is maintained.

Overall, for the reasons outlined above, it is considered that the proposed subdivision comfortably accords with the relevant objectives and policies of the RPS.

## 10.6 Objectives and Policies of the Proposed Regional Plan (PRP)

The key objectives and policies from the PRP are addressed in the context of the RPS above. It is also considered that these matters have been addressed by the assessment provided within this application and with reference to the NPS-FM and NPS-IB previously.

Of particular note the following objectives and policies are considered relevant to this proposal;

### **Objective F.1.2** *Water quality*

*Manage the use of land and discharges of contaminants to land and water so that:*

- a) existing water quality is at least maintained, and improved where it has been degraded below the river, lake or coastal water quality standards set out in H.3 Water quality standards and guidelines, and*
- b) the sedimentation of continually or intermittently flowing rivers, lakes and coastal water is minimised, and*
- c) the life-supporting capacity, ecosystem processes and indigenous species, including their associated ecosystems, of fresh and coastal water are safeguarded, and the health of freshwater ecosystems is maintained, and*
- d) the health of people and communities, as affected by contact with fresh and coastal water, is safeguarded, and*
- e) the health and safety of people and communities, as affected by discharges of sewage from vessels, is safeguarded, and*
- f) the quality of potable drinking water sources, including aquifers used for potable supplies, is protected, and*

### **Objective F.1.3** *Indigenous ecosystems and biodiversity*

*In the coastal marine area and in freshwater bodies, safeguard ecological integrity by:*

- 1) protecting areas of significant indigenous vegetation and significant habitats of indigenous fauna, and*
- 2) maintaining regional indigenous biodiversity, and*
- 3) where practicable, enhancing and restoring indigenous ecosystems and habitats to a healthy functioning state, and reducing the overall threat status of regionally and nationally threatened or at risk species, and*
- 4) preventing the introduction of new marine or freshwater pests into Northland and slowing the spread of established marine or freshwater pests within the region.*

### **Objective F.1.5** *Enabling economic well-being*

*the use and development of Northland's natural and physical resources is efficient and effective and managed in a way that will improve the economic, social and cultural well-being of Northland and its communities*

### **Objective F.1.9** *Tāngata whenua role in decision-making*

*Tāngata whenua's kaitiaki role is recognised and provided for in decision making over natural and physical resources*

**Objective F.1.10** *Natural hazard risk*

*The risks and impacts of natural hazard events (including the influence of climate change) on people, communities, property, natural systems, infrastructure and the regional economy are minimised by:*

- (a) increasing the understanding of natural hazards, including the potential influence of climate change on natural hazard events and the potential impacts on coastal biodiversity values, and*
- 2) becoming better prepared for the consequences of natural hazard events, and*
- (b) avoiding inappropriate new development in 100 year flood hazard areas and coastal hazard areas, and*
- (c) not compromising the effectiveness of existing natural and man-made defences against natural hazards, and*
- (d) enabling appropriate hazard mitigation measures to be implemented to protect existing vulnerable development, and*
- (e) promoting long-term strategies that reduce the risk of natural hazards impacting on people, communities and natural systems, and*
- (f) recognising that in justified circumstances, critical infrastructure may have to be located in natural hazard prone areas, and*
- (g) anticipating and providing for, where practicable, landward migration of coastal biodiversity values affected by sea level rise and natural hazard events.*

**Objective F.1.12** *Natural Character, Outstanding Natural Features, Historic Heritage and places of significance to tāngata whenua*

*Protect from inappropriate use and development:*

- 1) the characteristics, qualities and values that make up:*
  - a) Outstanding Natural Features in the coastal marine area and in freshwater bodies, and*
  - b) Areas of Outstanding and High Natural Character in the coastal marine area and in freshwater bodies within the coastal environment, and*
  - c) Natural Character in freshwater bodies outside the coastal environment, and*
  - d) Outstanding Natural Landscapes in the coastal marine area, and*
- 2) the integrity of Historic Heritage in the coastal marine area, and*
- 3) the values of places of significance to tāngata whenua in the coastal marine area and freshwater bodies.*

**Policy D.4.1** *Maintaining overall water quality*

*When considering an application for a resource consent to discharge a contaminant into water or onto or into land where it may enter water or onto land where it may enter water:*

- 1. ensure that the quality of fresh and coastal water is at least maintained, and*
- 2. where a water quality standard in H.3 Water quality standards and guidelines is currently met:*



- a) *ensure that the quality of water in a river, lake or the coastal marine area will continue to meet the standards in H.3 Water quality standards and guidelines; and*
- b) *consider whether any improvements to water quality are required in order to achieve F.1.2 Water quality;*
3. *where a water quality standard in H.3 Water quality standards and guidelines is currently exceeded, ensure that any resource consent for a new discharge will not, or is not likely to, cause or contribute to a further exceedance of a water quality standard in H.3 Water quality standards and guidelines;*
4. *where a water quality standard in H.3 Water quality standards and guidelines is currently exceeded and the exceedance of the water quality standard is caused or contributed to by an existing activity for which a replacement resource consent is being considered, ensure any replacement resource consent granted for the existing discharge includes a condition(s) that:*
  - a) *requires the quality of the discharge to be improved over the term of the consent to reduce the contribution of the discharge to the exceedance of the water quality standard in H.3 Water quality standards and guidelines; and*
  - b) *sets out a series of time bound steps, demonstrating how the activity will be managed to achieve the water quality improvements required by (4)(a).*
5. *ensure that the discharge will not cause an acute toxic adverse effect within the zone of reasonable mixing*
6. *where a discharge will, or is likely to, cause or contribute to:*
  - a) *an exceedance of the coastal sediment quality guidelines in H.3.4 Coastal sediment quality guidelines, or*
  - b) *a transitory exceedance of the toxicants, metals and metalloids standard in Table 22: Water quality standards for ecosystem health in rivers, and the activity is associated with the establishment, operation, maintenance or upgrade of Regionally Significant Infrastructure,*
  - c) *determine whether higher levels of contaminants in the particular location affected by the discharge can be provided for while still achieving F.1.2 Water quality, and set appropriate levels of contaminants in accordance with best practice methodology to safeguard the ecosystem values present at the location affected by the discharge; and*
7. *where existing water quality is unknown, or the effect of a discharge on water quality is unknown, the activity must be managed using a precautionary approach, which may include adaptive management.*

**Policy D.4.3** *Municipal, domestic and production land wastewater discharges*

*An application for resource consent to discharge municipal, domestic, horticultural or farm wastewater to water will generally not be granted unless:*

- 1) *the storage, treatment and discharge of the wastewater is done in accordance with recognised industry good management practices, and*
- 2) *a discharge to land has been considered and found not to be environmentally, economically or practicably viable.*

**Policy D.4.5** *Transitional policy under Policy A4 of the National Policy Statement for Freshwater Management 2017*

- 1) *When considering an application for a discharge, the consent authority must have regard to the following matters:*
  - a) *the extent to which the discharge would avoid contamination that will have an adverse effect on the life-supporting capacity of freshwater including on any ecosystem associated with freshwater, and*
  - b) *the extent to which it is feasible and dependable that any more than minor adverse effect on freshwater, and on any ecosystem associated with freshwater resulting from the discharge will be avoided.*
- 2) *When considering an application for a discharge, the consent authority must have regard to the following matters:*
  - a) *the extent to which the discharge would avoid contamination that will have an adverse effect on the health of people and communities as affected by their contact with freshwater, and*
  - b) *the extent to which it is feasible and dependable that any more than minor adverse effect on the health of people and communities as affected by their contact with freshwater resulting from the discharge will be avoided.*
- 3) *This policy applies to the following discharges (including a diffuse discharge by any person or animal):*
  - a) *a new discharge, or*
  - b) *a change or increase in any discharge of any contaminant into freshwater, or onto or into land in circumstances that may result in that contaminant (or, as a result of any natural process from the discharge of that contaminant, any other contaminant) entering freshwater.*
- 4) *Condition (1) of this policy does not apply to any application for consent first lodged before the National Policy Statement for Freshwater Management 2011 took effect on 1 July 2011. 5) Condition (2) of this policy does not apply to any application for consent first lodged before the National Policy Statement for Freshwater Management 2014 took effect.*

**Policy D.4.22** *Natural wetlands – requirements*

*Activities affecting a natural wetland:*

- 1) *must maintain the following important functions and values of wetlands:*
  - b) *water purification and nutrient attenuation, and*
  - c) *contribution to maintaining stream flows during dry periods, and*
  - d) *peak stream flow reduction, and*
  - e) *providing habitat for indigenous flora and fauna, including ecological connectivity to surrounding habitat, and*
  - f) *recreation, amenity and Natural Character values, and*
- 3) *avoid, remedy, or mitigate adverse effects on important wetland functions and values so they are not significant, or*

- 4) *must provide biodiversity off-setting or environmental biodiversity compensation, so that residual adverse effects on the important functions and values of wetlands are no more than minor.*

**Policy D.4.27** *Land preparation, earthworks and vegetation clearance*

*When assessing an application for a resource consent for earthworks, vegetation clearance or land preparation activity and any associated discharge of a contaminant, ensure that the activity:*

- 1) *will be done in accordance with established good management practices, and*
- 2) *avoids significant adverse effects, and avoids, remedies or mitigates other adverse effects on:*
  - a) *drinking water supplies, and*
  - b) *areas of high recreational use, and*
  - c) *aquatic ecosystem health, indigenous biodiversity in water bodies and coastal water and receiving environments that are sensitive to sediment or phosphorus accumulation.*

**Comment:** The subdivision design has been developed to avoid, remedy or mitigate potential adverse effects arising from activities (such as wastewater and stormwater systems relevant to the proposed activities) on the sensitive receiving environment. Based on the Infrastructure Report and the Wastewater Feasibility report, this proposal will not impact on freshwater systems, will be undertaken with best wastewater and stormwater practice measures, and is not considered to have an adverse effect on the health of people and communities or the receiving environment.

Cultural values of the site have been considered through the design phase of this development, with consultation with iwi and hapū. Any temporary effects on mahinga kai resources, indigenous biodiversity and wāhi tapu values have been managed through the design proposes and supporting mitigation proposed.

Accordance with relevant policies in D.4 are achieved through the extensive ecological mitigation measures proposed. It is concluded that all residual effects of the proposal on land and water will be low and have been assessed as being less than minor. Of note, no loss of wetland extent is proposed, no earthworks within proximity to wetlands and the effects on wetlands are appropriately managed. Moreover, a comprehensive protection and enhancement approach is proposed that will ensure the restoration of these wetlands over time as a result of the proposed subdivision.

The policies of D.6 are accorded with and risks of natural hazards to the proposal have been assessed and considered to be acceptable. All building platforms will be elevated above the flood level, and any infrastructure located in these areas being accessways and servicing is able to be designed to withstand flood events.

Overall, it is considered that the proposal is consistent with the relevant provisions from the Regional Plan for Northland.

## 10.7 Objectives and Policies of the Operative Far North District Plan

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The particular relevant objectives and policies of the ODP are listed as follows:

## 10.7.1 Chapter 10 - Coastal Environment

**Objective 10.3.1** *To manage coastal areas in a manner that avoids adverse effects from subdivision, use and development. Where it is not practicable to avoid adverse effects from subdivision use or development, but it is appropriate for the development to proceed, adverse effects of subdivision use or development should be remedied or mitigated.*

**Objective 10.3.2** *To preserve and, where appropriate in relation to other objectives, to restore, rehabilitate protect, or enhance:*

- (a) the natural character of the coastline and coastal environment;*
- (b) areas of significant indigenous vegetation and significant habitats of indigenous fauna;*
- (c) outstanding landscapes and natural features;*
- (d) the open space and amenity values of the coastal environment;*
- (e) water quality and soil conservation (insofar as it is within the jurisdiction of the Council).*

**Objective 10.3.3** *To engage effectively with Maori to ensure that their relationship with their culture and traditions and taonga is identified, recognised, and provided for.*

**Objective 10.3.6** *To minimise adverse effects from activities in the coastal environment that cross the CMA boundary.*

**Objective 10.4.6** *That activities and innovative development including subdivision, which provide superior outcomes and which permanently protect, rehabilitate and/or enhance the natural character of the coastal environment, particularly through the establishment and ongoing management of indigenous coastal vegetation and habitats, will be encouraged by the Council.*

**Objective 10.7.3.1** *To provide for the well-being of people by enabling low density residential development to locate in coastal areas where any adverse effects on the environment of such development are able to be avoided, remedied or mitigated.*

**Objective 10.7.3.2** *To preserve the overall natural character of the coastal environment by providing for an appropriate level of subdivision and development in this zone.*

**Policy 10.4.1** *That the Council only allows appropriate subdivision, use and development in the coastal environment. Appropriate subdivision, use and development is that where the activity generally:*

- (a) recognises and provides for those features and elements that contribute to the natural character of an area that may require preservation, restoration or enhancement; and*
- (b) is in a location and of a scale and design that minimises adverse effects on the natural character of the coastal environment; and*
- (c) has adequate services provided in a manner that minimises adverse effects on the coastal environment and does not adversely affect the safety and efficiency of the roading network; and*
- (d) avoids, as far as is practicable, adverse effects which are more than minor on heritage features, outstanding landscapes, cultural values, significant indigenous vegetation and significant habitats of indigenous fauna, amenity values of public land and waters and the natural functions and systems of the coastal environment; and*

- (e) promotes the protection, and where appropriate restoration and enhancement, of areas of significant indigenous vegetation and significant habitats of indigenous fauna; and*
- (f) recognises and provides for the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu and other taonga; and*
- (g) where appropriate, provides for and, where possible, enhances public access to and along the CMA; and*
- (h) gives effect to the New Zealand Coastal Policy Statement and the Regional Policy Statement for Northland.*

**Policy 10.4.3** *That the ecological values of significant coastal indigenous vegetation and*

- (a) significant habitats are maintained in any subdivision, use or development in*
- (b) the coastal environment*

**Policy 10.4.6** *That activities and innovative development including subdivision, which provide superior outcomes and which permanently protect, rehabilitate and/or enhance the natural character of the coastal environment, particularly through the establishment and ongoing management of indigenous coastal vegetation and habitats, will be encouraged by the Council.*

**Policy 10.4.8** *That development avoids, remedies or mitigates adverse effects on the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu and other taonga.*

**Policy 10.4.11** *To promote land use practices that minimise erosion and sediment run-off, and storm water and waste water from catchments that have the potential to enter the CMA.*

**Policy 10.4.12** *That the adverse effects of development on the natural character and amenity values of the coastal environment will be minimised through:*

- (a) the siting of buildings relative to the skyline, ridges, headlands and natural features;*
- (b) the number of buildings and intensity of development;*
- (c) the colour and reflectivity of buildings;*
- (d) the landscaping (including planting) of the site;*
- (e) the location and design of vehicle access, manoeuvring and parking areas.*

**Policy 10.7.4.1** *That the adverse effects of subdivision, use, and development on the coastal environment are avoided, remedied or mitigated.*

**Policy 10.7.4.3** *Subdivision, use and development shall preserve and where possible enhance, restore and rehabilitate the character of the zone in regards to s6 matters, and shall avoid adverse effects as far as practicable by using techniques including:*

- (a) clustering or grouping development within areas where there is the least impact on natural character and its elements such as indigenous vegetation, landforms, rivers, streams and wetlands, and coherent natural patterns;*
- (b) minimising the visual impact of buildings, development, and associated vegetation clearance and earthworks, particularly as seen from public land and the CMA;*



**Comment:** The above objectives and policies seek to manage, protect and enhance natural character, the open space and amenity values of the coastal environment, water quality and soil conservation and biodiversity values by limiting rural subdivision and development. At a high level, this requires subdivision to result in the protection of significant vegetation, wetlands and wildlife habitats, or enhancement planting, which can offset some of the adverse effects of subdivision on the environment and landscape values.

Objective 10.3.3 and Policy 10.4.1 emphasise the importance of effective engagement with Māori to ensure that their relationship with their culture and traditions and taonga is identified, recognised, and provided for. As outlined in this report, consultation with iwi and hapū has been undertaken. The feedback received during this engagement was largely positive, particularly regarding the potential for affordable housing as a result of the development and the increase in land for residential use in Russell / Kororāreka to enable whānau to return home, as well as the ecological benefits and pest control initiatives.

Concerns raised during the community hui in relation to wastewater and stormwater disposal, traffic movement, and landscape impacts, have been addressed within this report and through expert assessment. It is considered that this application appropriately recognises and provides for Māori cultural relationships, traditions and taonga.

The proposal includes extensive areas of enhancement planting which will ensure future development is integrated into the landscape while also providing ecological connections and corridors, to the existing conservation areas on surrounding sites. Overall, the proposed subdivision's density is not expected to compromise the locality's amenity values. The lot sizes align with the average allotment size requirements for a management plan subdivision in the ODP. The proposed ecological benefit area will be enhanced and protected while the existing areas of amenity planting will provide effective mitigation for the effects of residential development on the resulting allotments.

The subdivision provides superior outcomes to more traditional subdivision patterns, as it will permanently protect, rehabilitate and enhance the natural character of the coastal environment, particularly through the establishment and ongoing management of indigenous coastal vegetation and habitats. As stated in Objective 10.4.6, such development will be encouraged by the Council. No clearance of native vegetation is required to facilitate works for the subdivision and the Management Plan attached at **Appendix 12** will enable the active management of the proposed 64.9-hectare enhancement area.

As outlined in the Wastewater Feasibility Report and the Infrastructure Report (refer **Appendix 7** and **Appendix 6**) the disposal of stormwater and wastewater can be adequately provided for, as can an adequate supply/storage of water. The proposal would therefore avoid adverse effects on sensitive receiving environments and would protect the health and safety of residents.

Overall, these demonstrate the suitability of the subdivision and consistency with the relevant objectives and policies.

## 10.7.2 Chapter 12 Natural and Physical Resources

**Objective 12.1.3.3** *To recognise and provide for the distinctiveness, natural diversity and complexity of landscapes as far as practicable including the complexity found locally within landscapes and the diversity of landscapes across the District.*

**Policy 12.1.4.8** *That the trend is towards the enhancement rather than the deterioration of landscape values, including the encouragement of the restoration of degraded landscapes.*

**Policy 12.1.4.10** *That landscape values be protected by encouraging development that takes in account:*

- (a) the rarity or value of the landscape and/or landscape features;*
- (b) the visibility of the development;*
- (c) important views as seen from public vantage points on a public road, public reserve, the foreshore and the CMA;*
- (d) the desirability of avoiding adverse effects on the elements that contribute to the distinctive character of the coastal landscapes, especially outstanding landscapes and natural features, ridges and headlands or those features that have significant amenity value;*
- (e) the contribution of natural patterns, composition and extensive cover of indigenous vegetation to landscape values;*
- (f) Maori cultural values associated with landscapes;*
- (g) the importance of the activity in enabling people and communities to provide for their social, economic and cultural well-being.*

**Objective 12.3.3.1** *To achieve an integrated approach to the responsibilities of the Northland Regional Council and Far North District Council in respect to the management of adverse effects arising from soil excavation and filling, and minerals extraction.*

**Objective 12.3.3.2** *To maintain the life supporting capacity of the soils of the District.*

**Objective 12.3.3.3** *To avoid, remedy or mitigate adverse effects associated with soil excavation or filling.*

**Objective 12.3.3.4** *To enable the efficient extraction of minerals whilst avoiding, remedying or mitigating any adverse environmental effects that may arise from this activity.*

**Policy 12.3.4.1** *That the adverse effects of soil erosion are avoided, remedied or mitigated.*

**Policy 12.3.4.2** *That the development of buildings or impermeable surfaces in rural areas be managed so as to minimise adverse effects on the life supporting capacity of the soil.*

**Policy 12.3.4.3** *That where practicable, activities associated with soil and mineral extraction be located away from areas where that activity would pose a significant risk of adverse effects to the environment and/or to human health. Such areas may include those where:*

- (a) there are people living in close proximity to the site or land in the vicinity of the site is zoned Residential, Rural Living, Coastal Residential or Coastal Living;*
- (b) there are significant ecological, landscape, cultural, spiritual or heritage values;*
- (c) there is a potential for adverse effects on lakes, rivers, wetlands and the coastline;*
- (d) natural hazards may pose unacceptable risks.*

**Policy 12.3.4.4** *That soil excavation and filling, and mineral extraction activities be designed, constructed and operated to avoid, remedy or mitigate adverse effects on people and the environment.*

**Policy 12.3.4.5** *That soil conservation be promoted.*

**Policy 12.3.4.6** *That mining tailings that contain toxic or bio-accumulative chemicals are contained in such a way that adverse effects on the environment are avoided.*

**Objective 12.4.3.1** *To reduce the threat of natural hazards to life, property and the environment, thereby to promote the well being of the community*

**Objective 12.4.3.2** *To ensure that development does not induce natural hazards or exacerbate the effects of natural hazards.*

**Objective 12.4.3.3** *To ensure that natural hazard protection works do not have adverse effects on the environment.*

**Objective 12.4.3.4** *To ensure that the role in hazard mitigation played by natural features is recognised and protected.*

**Objective 12.4.3.5** *To improve public awareness of natural hazards as a means of helping people to avoid them.*

**Objective 12.4.3.6** *To take into account reasonably foreseeable changes in the nature and location of natural hazards.*

**Policy 12.4.4.6** *That the adverse effects on people, property and the environment from coastal hazards in Coastal Hazard Areas, as identified by the Northland Regional Council, are avoided.*

**Policy 12.4.4.7** *That the risk to adjoining vegetation and properties arising from fires be avoided.*

**Policy 12.4.4.8** *That the location, intensity, design and type of new coastal subdivision, use and development be controlled so that the need for hazard protection works is avoided or minimised.*

**Policy 12.4.4.9** *That the role of riparian margins in the mitigation of the effects of natural hazards is recognised and that the continuing ability of riparian margins to perform this role be assured.*

**Objective 12.7.3.1** *To avoid, remedy or mitigate the adverse effects of subdivision, use and development on riparian margins.*

**Objective 12.7.3.2** *To protect the natural, cultural, heritage and landscape values and to promote the protection of the amenity and spiritual values associated with the margins of lakes, rivers and indigenous wetlands and the coastal environment, from the adverse effects of land use activities, through proactive restoration/rehabilitation/revegetation.*

**Objective 12.7.3.3** *To secure public access (including access by Maori to places of special value such as waahi tapu, tauranga waka, mahinga kai, mahinga mataitai, mahinga waimoana and taonga raranga) to and along the CMA, lakes and rivers, consistent with Chapter 14 - Financial Contributions, to the extent that this is compatible with:*

- a. *the maintenance of the life-supporting capacity of the waterbody, water quality, aquatic habitats, and*
- b. *the protection of natural character, amenity, cultural heritage, landscape and spiritual values; and*
- c. *the protection of public health and safety; and*
- d. *the maintenance and security of authorised activities (but acknowledging that loss of privacy or fear of trespass are not valid reasons for precluding access). In some circumstances public*

*acquisition of riparian margins may be required and managed for purposes other than public access, for example to protect significant habitats, waahi tapu or historic sites, or for public recreation purposes*

**Objective 12.7.3.4** *To provide for the use of the surface of lakes and rivers to the extent that this is compatible with the maintenance of the life supporting capacity of the water body, water quality, aquatic habitats, and the protection of natural character, amenity, cultural heritage, landscape and spiritual values.*

**Objective 12.7.3.5** *To avoid the adverse effects from inappropriate use and development of the margins of lakes, rivers, indigenous wetlands and the coastline.*

**Objective 12.7.3.6** *To protect areas of indigenous riparian vegetation:*

*(a) physically, by fencing, planting and pest and weed control; and*

*(b) legally, as esplanade reserves/strips.*

**Objective 12.7.3.7** *To create, enhance and restore riparian margins*

**Policy 12.7.4.3** *That adverse effects of land use activities on the natural character and functioning of riparian margins and indigenous wetlands be avoided.*

**Policy 12.7.4.4** *That adverse effects of activities on the surface of lakes and rivers in respect of noise, visual amenity of the water body, life supporting capacity of aquatic habitats, on-shore activities, the natural character of the water body or surrounding area, water quality and Maori cultural values, are avoided, remedied or mitigated.*

**Policy 12.7.4.6** *That public access to and along lakes, rivers and the coastline be provided as a consequence of development or as a result of Council (see Method 10.5.19) or public initiatives except where it is necessary to restrict access or to place limits on the type of access, so as to:*

- a. protect areas of significant indigenous vegetation and/or significant habitats of indigenous fauna or*
- b. protect cultural values, including Maori culture and traditions; or*
- c. protect public health and safety; to the extent that is consistent with policies in Chapter 14.*

**Policy 12.7.4.7** *That any adverse effects on the quality of public drinking water supplies from land use activities, be avoided, remedied or mitigated. (Refer to Commentary and Methods 12.7.5.6 and 12.7.5.7.)*

**Policy 12.7.4.8** *That the Council acquire esplanade reserves, esplanade strips and access strips in accordance with Chapter 14 - Financial Contributions and Method 10.5.10 of the Plan.*

**Policy 12.7.4.9** *That riparian areas in Council ownership be managed so as to protect and enhance the water quality of surface waters*

**Comment:** The proposed subdivision layout has been designed to follow both the existing physical landscape features of the site as well creating built development as a result of previous subdivision of the site. The objectives and policies of Section 12 of the FNDP recognise and provide for the distinctiveness, natural diversity and complexity of landscapes as far as practicable with emphasis on enhancement rather than the deterioration of landscape values. As detailed above in this report, the subdivision provides superior outcomes which permanently protect, rehabilitate and enhance the natural character of the coastal environment, particularly through the establishment

and ongoing management of indigenous coastal vegetation and habitats. The Landscape Assessment attached at **Appendix 9** confirms that, landscape and natural character effects upon natural character values of the site itself are assessed as moderate-low, but not more than minor.

The proposed earthworks have been assessed in section 6.4 above and it was concluded that any adverse effects will be less than minor, as appropriate erosion and sediment controls will be in place to minimise sediment run-off, and dust suppressants will be in place to minimise nuisance effects.

Any effects as a result of natural hazards, including coastal flood risk and fire risk are addressed the geotechnical report attached as **Appendix 4**, the Infrastructure Report attached at **Appendix 6** and the Ecological Assessment attached at **Appendix 8** as detailed in Section 6.4 of this report. Overall, it is considered that the natural hazard risk can be adequately avoided or mitigated to ensure there is no risk to the site or adjacent land owners as a result of the development.

While an esplanade reserve waiver is sought, it is not considered that this will impact on the provision of public access. This is due to the existing boardwalks and riparian access adjacent to the site, and the sites' location, outside of Russell / Kororāreka, in an area which would not have significant demand for riparian access.

Overall, it is considered that the natural character of the coastal landscape is protected, and enhanced by this proposal.

### 10.7.3 Chapter 13 – Subdivision

**Objective 13.3.1** *To provide for the subdivision of land in such a way as will be consistent with the purpose of the various zones in the Plan, and will promote the sustainable management of the natural and physical resources of the District, including airports and roads and the social, economic and cultural well-being of people and communities.*

**Objective 13.3.2** *To ensure that subdivision of land is appropriate and is carried out in a manner that does not compromise the life-supporting capacity of air, water, soil or ecosystems, and that any actual or potential adverse effects on the environment which result directly from subdivision, including reverse sensitivity effects and the creation or acceleration of natural hazards, are avoided, remedied or mitigated.*

**Objective 13.3.3** *To ensure that the subdivision of land does not jeopardise the protection of outstanding landscapes or natural features in the coastal environment.*

**Objective 13.3.4** *To ensure that subdivision does not adversely affect scheduled heritage resources through alienation of the resource from its immediate setting/context.*

**Objective 13.3.5** *To ensure that all new subdivisions provide a reticulated water supply and/or on-site water storage and include storm water management sufficient to meet the needs of the activities that will establish all year round.*

**Objective 13.3.6** *To encourage innovative development and integrated management of effects between subdivision and land use which results in superior outcomes to more traditional forms of subdivision, use and development, for example the protection, enhancement and restoration of areas and features which have particular value or may have been compromised by past land management practices.*



**Objective 13.3.7** *To ensure the relationship between Māori and their ancestral lands, water, sites, wahi tapu and other taonga is recognised and provided for.*

**Objective 13.3.8** *To ensure that all new subdivision provides an electricity supply sufficient to meet the needs of the activities that will establish on the new lots created.*

**Objective 13.3.9** *To ensure, to the greatest extent possible, that all new subdivision supports energy efficient design through appropriate site layout and orientation in order to maximise the ability to provide light, heating, ventilation and cooling through passive design strategies for any buildings developed on the site(s).*

**Objective 13.3.10** *To ensure that the design of all new subdivision promotes efficient provision of infrastructure, including access to alternative transport options, communications and local services.*

**Objective 13.3.11** *To ensure that the operation, maintenance, development and upgrading of the existing National Grid is not compromised by incompatible subdivision and land use activities.*

**Policy 13.4.1** *That the sizes, dimensions and distribution of allotments created through the subdivision process be determined with regard to the potential effects including cumulative effects, of the use of those allotments on:*

*(a) natural character, particularly of the coastal environment;*

*(b) ecological values;*

*(c) landscape values;*

*(d) amenity values;*

*(e) cultural values;*

*(f) heritage values; and*

*(g) existing land uses.*

**Policy 13.4.2** *That standards be imposed upon the subdivision of land to require safe and effective vehicular and pedestrian access to new properties.*

**Policy 3.4.3** *That natural and other hazards be taken into account in the design and location of any subdivision.*

**Policy 13.4.4** *That in any subdivision where provision is made for connection to utility services, the potential adverse visual impacts of these services are avoided.*

**Policy 13.4.5** *That access to, and servicing of, the new allotments be provided for in such a way as will avoid, remedy or mitigate any adverse effects on neighbouring property, public roads (including State Highways), and the natural and physical resources of the site caused by silt runoff, traffic, excavation and filling and removal of vegetation.*

**Policy 13.4.6** *That any subdivision proposal provides for the protection, restoration and enhancement of heritage resources, areas of significant indigenous vegetation and significant habitats of indigenous fauna, threatened species, the natural character of the coastal environment and riparian margins, and outstanding landscapes and natural features where appropriate.*

**Policy 13.4.7** *That the need for a financial contribution be considered only where the subdivision would:*

*(a) result in increased demands on car parking associated with non-residential activities; or*

- (b) result in increased demand for esplanade areas; or*
- (c) involve adverse effects on riparian areas; or*
- (d) depend on the assimilative capacity of the environment external to the site.*

**Policy 13.4.8** *That the provision of water storage be taken into account in the design of any subdivision.*

**Policy 13.4.9** *That bonus development donor and recipient areas be provided for so as to minimise the adverse effects of subdivision on Outstanding Landscapes and areas of significant indigenous flora and significant habitats of fauna.*

**Policy 13.4.11** *That subdivision recognises and provides for the relationship of Māori and their culture and traditions, with their ancestral lands, water, sites, waahi tapu and other taonga and shall take into account the principles of the Treaty of Waitangi.*

**Policy 13.4.12** *That more intensive, innovative development and subdivision which recognises specific site characteristics is provided for through the management plan rule where this will result in superior environmental outcomes.*

**Policy 13.4.13** *Subdivision, use and development shall preserve and where possible enhance, restore and rehabilitate the character of the applicable zone in regards to s6 matters. In, addition subdivision, use and development shall avoid adverse effects as far as practicable by using techniques including:*

- (a) clustering or grouping development within areas where there is the least impact on natural character and its elements such as indigenous vegetation, landforms, rivers, streams and wetlands, and coherent natural patterns;*
- (b) minimising the visual impact of buildings, development, and associated vegetation clearance and earthworks, particularly as seen from public land and the CMA;*
- (c) providing for, through siting of buildings and development and design of subdivisions, legal public right of access to and use of the foreshore and any esplanade areas;*
- (d) through siting of buildings and development, design of subdivisions, and provision of access that recognise and provide for the relationship of Māori with their culture, traditions and taonga including concepts of mauri, tapu, mana, wehi and karakia and the important contribution Māori culture makes to the character of the District (refer Chapter 2 and in particular Section 2.5 and Council's "Tangata Whenua Values and Perspectives" (2004);*
- (e) providing planting of indigenous vegetation in a way that links existing habitats of indigenous fauna and provides the opportunity for the extension, enhancement or creation of habitats for indigenous fauna, including mechanisms to exclude pests;*
- (f) protecting historic heritage through the siting of buildings and development and design of subdivisions.*
- (g) achieving hydraulic neutrality and ensuring that natural hazards will not be exacerbated or induced through the siting and design of buildings and development.*

**Policy 13.4.14** *That the objectives and policies of the applicable environment and zone and relevant parts of Part 3 of the Plan will be taken into account when considering the intensity, design and layout of any subdivision.*

**Policy 13.4.15** *That conditions be imposed upon the design of subdivision of land to require that the layout and orientation of all new lots and building platforms created include, as appropriate, provisions for achieving the following:*

- (a) development of energy efficient buildings and structures;*
- (b) reduced travel distances and private car usage;*
- (c) encouragement of pedestrian and cycle use;*
- (d) access to alternative transport facilities;*
- (e) domestic or community renewable electricity generation and renewable energy use.*

**Comment:** The effects relating to noise, traffic, and the scale and intensity of the development have been considered in Section 6.4 of this report. In particular, the Transport Assessment (**Appendix 5**) confirms that the site will operate safely and efficiently from a traffic perspective and the Landscape Assessment **Appendix 9** confirms that the development is consistent with the surrounding environment. In this regard, the proposal is considered to be consistent with Policy 24.2.2.1 and Policy 24.2.2.2 which seek to manage effects on the roading network, public places and surrounding land uses.

The above objectives and policies seek to ensure the sustainable management of the natural and physical resources of the District, the protection of landscapes, heritage resources, the provision of adequate services, the recognition and protection of the relationship between Māori and their ancestral lands, water, sites, wahi tapu and other taonga and the efficient use of infrastructure.

As outlined in this report, consultation with iwi and hapū has been undertaken and it is considered that the proposal provides for the recognition and protection of the relationship between Māori and their ancestral lands, water, sites, wahi tapu and other taonga.

Section 6.4 of this report provides assessment on the impact of archaeological sites, within the project area. It is determined in this assessment that the effects are less than minor on heritage values, as they will be avoided by this development.

The sustainable and efficient use of infrastructure has been provided for through this development, through the utilisation of the existing roads, services and building platforms within the development that were established as part of an earlier approved subdivision.

As outlined in the wastewater feasibility report and the Infrastructure Report (refer **Appendix 7 and Appendix 6**) the disposal of stormwater and wastewater can be adequately provided for, as can an adequate supply/storage of water, without compromising water quality. The proposal would therefore avoid adverse effects on sensitive receiving environments and would protect the health and safety of residents.

The proposal includes areas of enhancement planting which will ensure future development is integrated into the landscape while also providing ecological connections and corridors, to the existing conservation covenant areas on surrounding sites. The proposed subdivision's density is not expected to compromise the locality's amenity values. The lot sizes align with the average allotment size requirements for a management plan subdivision. The proposed ecological benefit area will be enhanced and protected while the existing areas of amenity planting will provide effective mitigation for the future residential development on the resulting allotments.

The subdivision provides superior outcomes which permanently protect, rehabilitate and enhance the natural character of the coastal environment, particularly through the establishment and ongoing management of indigenous coastal vegetation and habitats. The activity will enable the active management a 64.9-hectare enhancement area.

For the above reasons, it is considered that this proposal is consistent with the objectives and policies of section 13 of the ODP.

#### 10.7.4 Transport

Chapter 11 provides objectives, policies and rules for the District’s transport network. This chapter is relevant due to the scale of the subdivision and potential effects on the wider transport network. While there is non-compliance with standards, it is considered in the transportation and Infrastructure Report that the private accessways feature formed widths and surfaces which will ensure safe and efficient vehicle access to all lots within the development.

Based on the Transport Assessment attached at **Appendix 5**, it is considered that any actual and potential adverse effects on the external transport network will be less than minor and acceptable and ultimately maintain a safe and efficient transport network as is sought by the Chapter.

### 10.8 Objectives and Policies of the Proposed Far North District Plan (PDP)

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As noted in Section 9 above, it is considered that minimal weighting should be given to the objectives and policies of the PDP given the limited progression of the PDP through the decision-making process.

The site’s subject to this application are mapped Rural Lifestyle Zone (“**RLZ**”), with Coastal Environment (“**CE**”), areas of High Natural Character (“**HNC**”), River Flood Hazard Zone (10 Year ARI and 100 Year ARI Events), and Coastal Flood (Zones 1 to 3) overlays. The relevant objectives and policies are contained within Part 2 and Part 3 of the PDP and are detailed as follows:

**CE-O1** *The natural character of the coastal environment is identified and managed to ensure its long-term preservation and protection for current and future generations.*

**CE-O2** *Land use and subdivision in the coastal environment:*

- a) *preserves the characteristics and qualities of the natural character of the coastal environment;*
- b) *is consistent with the surrounding land use;*
- c) *does not result in urban sprawl occurring outside of urban zones;*
- d) *promotes restoration and enhancement of the natural character of the coastal environment;*  
*and*
- e) *recognises tangata whenua needs for ancestral use of whenua Māori.*

**CE-O3** *Land use and subdivision in the coastal environment within urban zones is of a scale that is consistent with existing built development.*

**CE-P1** *Identify the extent of the coastal environment as well as areas of high and outstanding natural character using the assessment criteria in APP1- Mapping methods and criteria.*

**CE-P2** *Avoid adverse effects of land use and subdivision on the characteristics and qualities of the coastal environment identified as:*

- a) *outstanding natural character;*
- b) *ONL;*
- c) *ONF.*

**CE-P3** *Avoid significant adverse effects and avoid, remedy or mitigate other adverse effects of land use and subdivision on the characteristics and qualities of the coastal environment not identified as:*

- a) *outstanding natural character;*
- b) *ONL;*
- c) *ONF.*

**CE-P4** *Preserve the visual qualities, character and integrity of the coastal environment by: consolidating land use and subdivision around existing urban centres and rural settlements; and avoiding sprawl or sporadic patterns of development.*

**CE-P5** *Enable land use and subdivision in urban zones within the coastal environment where: there is adequacy and capacity of available or programmed development infrastructure; and the use is consistent with, and does not compromise the characteristics and qualities.*

**CE-P6** *Enable farming activities within the coastal environment where:*

*the use forms part of the values that established the natural character of the coastal environment; or, the use is consistent with, and does not compromise the characteristics and qualities.*

**CE-P7** *Provide for the use of Māori Purpose zoned land and Treaty Settlement land in the coastal environment where:*

- a) *the use is consistent with the ancestral use of that land; and*
- b) *the use does not compromise any identified characteristics and qualities.*

**CE-P8** *Encourage the restoration and enhancement of the natural character of the coastal environment.*

**CE-P9** *Prohibit land use and subdivision that would result in any loss and/or destruction of the characteristics and qualities in outstanding natural character areas.*

**CE-P10** *Manage land use and subdivision to preserve and protect the natural character of the coastal environment, and to address the effects of the activity requiring resource consent, including (but not limited to) consideration of the following matters where relevant to the application:*

- a) *the presence or absence of buildings, structures or infrastructure;*
- b) *the temporary or permanent nature of any adverse effects;*
- c) *the location, scale and design of any proposed development;*
- d) *any means of integrating the building, structure or activity;*
- e) *the ability of the environment to absorb change;*
- f) *the need for and location of earthworks or vegetation clearance;*



- g) *the operational or functional need of any regionally significant infrastructure to be sited in the particular location;*
- h) *any viable alternative locations for the activity or development;*
- i) *any historical, spiritual or cultural association held by tangata whenua, with regard to the matters set out in Policy TW-P6;*
- j) *the likelihood of the activity exacerbating natural hazards;*
- k) *the opportunity to enhance public access and recreation;*
- l) *the ability to improve the overall quality of coastal waters; and*
- m) *any positive contribution the development has on the characteristics and qualities.*

**SUB-O1** *Subdivision results in the efficient use of land, which:*

- a) *achieves the objectives of each relevant zone, overlays and district wide provisions;*
- b) *contributes to the local character and sense of place;*
- c) *avoids reverse sensitivity issues that would prevent or adversely affect activities already established on land from continuing to operate;*
- d) *avoids land use patterns which would prevent land from achieving the objectives and policies of the zone in which it is located;*
- e) *does not increase risk from natural hazards or risks are mitigated and existing risks reduced; and*
- f) *manages adverse effects on the environment.*

**SUB-O2** *Subdivision provides for the:*

- a) *Protection of highly productive land; and*
- b) *Protection, restoration or enhancement of Outstanding Natural Features, Outstanding Natural Landscapes, Natural Character of the Coastal Environment, Areas of High Natural Character, Outstanding Natural Character, wetland, lake and river margins, Significant Natural Areas, Sites and Areas of Significance to Māori, and Historic Heritage.*

**SUB-O3** *Infrastructure is planned to service the proposed subdivision and development where:*

- a) *there is existing infrastructure connection, infrastructure should be provided in an integrated, efficient, coordinated and future-proofed manner at the time of subdivision; and*
- b) *where no existing connection is available infrastructure should be planned and consideration be given to connections with the wider infrastructure network.*

**SUB-O4** *Subdivision is accessible, connected, and integrated with the surrounding environment and provides for:*

- a) *public open spaces;*
- b) *esplanade where land adjoins the CMA; and*
- c) *esplanade where land adjoins other qualifying waterbodies.*

**SUB-P1** *Enable boundary adjustments that do not alter:*

- a) *the degree of non compliance with District Plan rules and standards;*
- b) *the number and location of any access; and*
- c) *the number of certificates of title; and*
- d) *are in accordance with the minimum lot sizes of the zone and comply with access, infrastructure and esplanade provisions.*

**SUB-P2** *Enable subdivision for the purpose of public works, infrastructure, reserves or access.*

**SUB-P3** *Provide for subdivision where it results in allotments that:*

- a) *are consistent with the purpose, characteristics and qualities of the zone;*
- b) *comply with the minimum allotment sizes for each zone;*
- c) *have an adequate size and appropriate shape to contain a building platform; and*
- d) *have legal and physical access.*

**SUB-P4** *Manage subdivision of land as detailed in the district wide, natural environment values, historical and cultural values and hazard and risks sections of the plan*

**SUB-P5** *Manage subdivision design and layout in the General Residential, Mixed Use and Settlement zone to provide for safe, connected and accessible environments by:*

- a) *minimising vehicle crossings that could affect the safety and efficiency of the current and future transport network;*
- b) *avoid cul-de-sac development unless the site or the topography prevents future public access and connections;*
- c) *providing for development that encourages social interaction, neighbourhood cohesion, a sense of place and is well connected to public spaces;*
- d) *contributing to a well connected transport network that safeguards future roading connections; and*
- e) *maximising accessibility, connectivity by creating walkways, cycleways and an interconnected transport network.*

**SUB-P6** *Require infrastructure to be provided in an integrated and comprehensive manner by:*

- a) *demonstrating that the subdivision will be appropriately serviced and integrated with existing and planned infrastructure if available; and*
- b) *ensuring that the infrastructure is provided is in accordance the purpose, characteristics and qualities of the zone.*

**SUB- P7** *Require the vesting of esplanade reserves when subdividing land adjoining the coast or other qualifying waterbodies.*

**SUB-P8** *Avoid rural lifestyle subdivision in the Rural Production zone unless the subdivision:*

- a) *will protect a qualifying SNA in perpetuity and result in the SNA being added to the District Plan SNA schedule; and*
- b) *will not result in the loss of versatile soils for primary production activities.*

**SUB-P9** Avoid subdivision rural lifestyle subdivision in the Rural Production zone and Rural residential subdivision in the Rural Lifestyle zone unless the development achieves the environmental outcomes required in the management plan subdivision rule.

**SUB-P10** To protect amenity and character by avoiding the subdivision of minor residential units from principal residential units where resultant allotments do not comply with minimum allotment size and residential density.

**SUB-P11** Manage subdivision to address the effects of the activity requiring resource consent including (but not limited to) consideration of the following matters where relevant to the application:

- a) consistency with the scale, density, design and character of the environment and purpose of the zone;
- b) the location, scale and design of buildings and structures;
- c) the adequacy and capacity of available or programmed development infrastructure to accommodate the proposed activity; or the capacity of the site to cater for on-site infrastructure associated with the proposed activity;
- d) managing natural hazards;
- e) Any adverse effects on areas with historic heritage and cultural values, natural features and landscapes, natural character or indigenous biodiversity values; and
- f) any historical, spiritual, or cultural association held by tangata whenua, with regard to the matters set out in Policy TW-P6

**RLZ-O1** The Rural Lifestyle zone is used predominantly for low density residential activities and small-scale farming activities that are compatible with the rural character and amenity of the zone.

**RLZ-O2** The predominant character and amenity of the Rural Lifestyle zone is characterised by:

- a) low density residential activities;
- b) small scale farming activities with limited buildings and structures;
- c) smaller lot sizes than anticipated in the Rural Production Zone;
- d) a general absence of urban infrastructure;
- e) rural roads with low traffic volumes;
- f) areas of vegetation, natural features and open space.

**RLZ-O3** The role, function and predominant character and amenity of the Rural Lifestyle zone is not compromised by incompatible activities

**RLZ-O4** Land use and subdivision in the Rural Lifestyle zone does not compromise the effective and efficient operation of primary production activities in the adjacent Rural Production Zones.

**RLZ-P1** Enable activities that will not compromise the role, function and predominant character and amenity of the Rural Lifestyle zone, while ensuring their design, scale and intensity is appropriate to manage adverse effects in the zone, including:

- a) low density residential activities;
- b) small scale farming activities;

- c) *home business activities;*
- d) *visitor accommodation; and*
- e) *small scale education facilities.*

**RLZ-P2** *Avoid activities that are incompatible with the role, function and predominant character and amenity of the Rural Lifestyle zone because they are:*

- a) *contrary to the density anticipated for the Rural Lifestyle zone;*
- b) *predominately of an urban form or character;*
- c) *primary production activities, such as intensive indoor primary production, that generate adverse amenity effects that are incompatible with rural lifestyle living; or*
- d) *commercial, rural industry or industrial activities that are more appropriately located in a Settlement zone or an urban zone.*

**RLZ-P3** *Avoid where possible, or otherwise mitigate, reverse sensitivity effects from sensitive and other non-productive activities on primary production activities in the adjacent Rural Production zone.*

**RLZ-P4** *Manage land use and subdivision to address the effects of the activity requiring resource consent, including (but not limited to) consideration of the following matters where relevant to the application:*

- a) *consistency with the scale and character of the rural lifestyle environment;*
- b) *location, scale and design of buildings or structures;*
- c) *at zone interfaces:*
- d) *any setbacks, fencing, screening or landscaping required to address potential conflicts;*
- e) *the extent to which adverse effects on adjoining or surrounding sites are mitigated and internalised within the site as far as practicable;*
- f) *the capacity of the site to cater for on-site infrastructure associated with the proposed activity;*
- g) *the adequacy of roading infrastructure to service the proposed activity;*
- h) *managing natural hazards;*
- i) *any adverse effects on historic heritage and cultural values, natural features and landscapes or indigenous biodiversity; and*
- j) *any historical, spiritual, or cultural association held by tangata whenua, with regard to the matters set out in Policy TW-P6.*

**Comment:** The Rural Lifestyle Zone recognises and provides for rural living maintains the character and amenity of the zone. As stated earlier in this report, the proposal is considered to be in-keeping with the density of the surrounding environment, while also providing for superior environmental outcomes.

SUB-O1 and RLZ-P3 seek to manage the effects of reverse sensitivity. In this regard, the proposal is well separated well from any other horticultural and agricultural activities. It is not considered, therefore, that any reverse sensitivity effects will result from the proposal.

As outlined in the wastewater feasibility report and the Infrastructure Report (refer **Appendix 7 and Appendix 6**) the disposal of stormwater and wastewater can be adequately provided for, as can an adequate supply/storage of water, without compromising water quality. The proposal would therefore avoid adverse effects on sensitive receiving environments and would protect the health and safety of residents. Traffic effects are considered in the report by Commute, which concludes that the existing roading infrastructure is sufficient for the additional traffic movements as a result of this proposal.

The proposal includes extensive areas enhancement planting which will ensure future development is integrated into the landscape while also providing ecological connections and corridors, to the existing conservation covenant areas on surrounding sites.

While the site is subject to coastal flood hazards, there is no residential development proposed within these areas. The internal roads are for the most part elevated above the future 100-yr flood level. The Infrastructure Report, concludes that effects as a result of the coastal flooding are negligible as the resulting lots will not be accessible from the public road.

Potential adverse effects on landscape and visual amenity values have been managed through the careful location of the building platforms and proposed works within the existing landscape, in addition to building controls and comprehensive planting through the development. This proposal is considered to be consistent with RLZ-O2, RLZ-P2 and RLZ-P4 which requires that landscape character and visual amenity values are maintained and that any development is compatible with the surrounding environment.

Overall, the proposed management plan subdivision is considered to be consistent with the outcomes anticipated by the PDP.

## 10.9 Summary

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It is considered that the proposed development is generally in accordance with the objectives and policies of the ODP, PDP, RPS, PRP, NZCPS, NPS-FM and NPS-IB.

## 11.0 Relevant Rules and Assessment Criteria

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The FNDC specifies the relevant assessment criteria to be considered in assessing this application for each of the consent matters.

The criteria in **Appendix 16** largely cover the same matters that have been discussed and assessed in the above report, pertaining to environmental effects and the objectives and policies of the FNDC and the NRP. The following comments are made in summary:

- The assessment matters being relating visual amenity, bulk, landscape, privacy, outlook and enjoyment of private open spaces on adjacent sites, natural character have been addressed in the landscape report attached as **Appendix 9**,
- The assessment matters relating to earthworks and natural hazards have been addressed in the geotechnical report attached as **Appendix 4**, the Infrastructure Report attached at **Appendix 6** and the Ecological Assessment attached at **Appendix 8**;
- The assessment matters relating to the management plan subdivision are addressed in Section 6, 8 and 11 of this report and in the Management Plan attached at **Appendix 12**;



- The assessment matters relating to water quality, stormwater management are addressed in the Infrastructure Report attached at **Appendix 6** and the wastewater report attached at **Appendix 7**;
- The assessment matters relating to Indigenous vegetation, wetlands, fire risk, controlling of animals, are addressed in the Ecological Assessment attached at **Appendix 8**;
- The assessment matters relating to Cultural and significance of Māori are address above in Section 6.4 of this report;
- The matters relating to financial contributions have been considered by Councils Parks and Recreation Department, with the correspondence attached at **Appendix 2**.

Overall, it is considered that the proposal meets the assessment criteria of the FNDP for the reasons described in sections 6, 7, and 10 above.

## 12.0 Part 2 Matters

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Section 5 of Part 2 identifies the purpose of the RMA as being the sustainable management of natural and physical resources. This means managing the use, development and protection of natural and physical resources in a way that enables people and communities to provide for their social, cultural and economic well-being and health and safety while sustaining those resources for future generations, protecting the life supporting capacity of ecosystems, and avoiding, remedying or mitigating adverse effects on the environment.

Section 6 of the Act sets out a number of matters of national importance including (but not limited to) the protection of outstanding natural features and landscapes and historic heritage from inappropriate subdivision, use and development.

Section 7 identifies a number of “other matters” to be given particular regard by Council and includes (but is not limited to) Kaitiakitanga, the efficient use of natural and physical resources, the maintenance and enhancement of amenity values, and maintenance and enhancement of the quality of the environment.

Section 8 requires Council to take into account the principles of the Treaty of Waitangi.

Overall, as the effects of the proposal are considered to be no more than minor, and the proposal accords with the relevant ODP, PDP, RPS, PRP, NZCPS, NPS-FM and NPS-IB objectives and policies, it is considered that the proposal will not offend against the general resource management principles set out in Part 2 of the Act.

## 13.0 Other Matters (Section 104(1)(C))

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### 13.1 Record of Title Interests

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The Record of Title for the site is assessed in section 3.2 of this report. No further assessment of the registered interests is required.

## 14.0 Section 106 Subdivision

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Under section 106 of the Act, a consent authority may refuse to grant a subdivision consent if it considers that there is significant risk from natural hazards, or sufficient provision has not been made for legal and physical access to each allotment to be created by the subdivision.

The site is subject to small, isolated areas of known coastal flood hazards. The areas subject to flooding hazards are the low-lying portions of the site, which will be clear of future building platforms and accessways.

The proposed development provides for each proposed Lot to gain access via proposed ROW and associated vehicle crossings on to this which are to be constructed to the relevant Council engineering standards.

It is concluded that there is no significant risk from natural hazards and all lots will be provided with legal and physical access arrangements. The proposal is therefore consistent with section 106.

## 15.0 Conclusion

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The proposal involves a combined subdivision and land use consent to develop land comprising 43.28ha at Aucks Road, Russell / Kororāreka for a management plan subdivision to create 66 allotments including one allotment in shared ownership (Lot 200) which contains the internal roading network and reserve area.

Based on the above report it is considered that:

- Public notification is not required as the adverse effects are considered to be no more than minor, and there are no special circumstances to warrant public notification;
- The adverse effects associated with landscape, visual amenity and outlook on persons at Lot 28 DP426505, Lots 30 – 32 DP426505, Lot 38 DP426505, Lots 1 and 2 DP181696, Lot 3 DP 187577 and Lot 6 DP 517271 will be more than minor and no written approvals have been provided. Therefore, limited notification of the application to these parties is recommended;
- The adverse effects of the proposal including those related to construction activities, ecological impacts, the coastal environment, traffic safety and efficiency, servicing, hazards, reverse sensitivity, heritage, cultural aspects, and cumulative effects, will be less than minor and appropriate. There are also significant positive effects including the enhancement of the natural character values through the ecological enhancement planting and the proposed ecological management is approximately 16.93 ha;
- the proposal accords with the relevant ODP, PDP, RPS, PRP, NZCPS, NPS-FM and NPS-IB objectives and policies; and
- the proposal is considered to be consistent with Part 2 of the Act.

It is therefore concluded that the proposal satisfies all matters the consent authority is required to assess, and that it can be **granted** on a limited notified basis.



**RECORD OF TITLE  
UNDER LAND TRANSFER ACT 2017  
FREEHOLD  
Search Copy**



  
R.W. Muir  
Registrar-General  
of Land

**Identifier** **476989**  
**Land Registration District** **North Auckland**  
**Date Issued** 28 October 2009

**Prior References**

NA117C/424      NA123B/680

---

**Estate** Fee Simple  
**Area** 3.6455 hectares more or less  
**Legal Description** Lot 1 Deposited Plan 187577 and Lot 3-4  
Deposited Plan 420232

**Registered Owners**

Willowridge Developments Limited

---

**Interests**

Appurtenant to Lot 1 DP 187577 herein is an electricity supply right specified in Easement Certificate B664045.3 - 14.5.1987 at 12.26 pm

The easements specified in Easement Certificate B664045.3 are subject to Section 309 (1) (a) Local Government Act 1974

Appurtenant to Lot 1 DP 187577 herein is a telephone supply right created by Transfer B790220.2 - 2.3.1988 at 2:18 pm

Appurtenant to Lots 3 and 4 DP 420232 herein are rights of way specified in Easement Certificate D314934.9 - 28.9.1998 at 12.44 pm

Subject to Section 241(2) and Sections 242(1) and (2) Resource Management Act 1991(affects DP 420232)

8300644.4 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 28.10.2009 at 3:13 pm (Affects Lots 3 & 4 DP 420232)

Appurtenant hereto is a right of way and a right to convey electricity, telecommunications and computer media created by Easement Instrument 8300644.5 - 28.10.2009 at 3:13 pm

12193860.1 Mortgage to Westpac New Zealand Limited - 16.8.2021 at 11:24 am

Land Covenant in Covenant Instrument 12682951.1 - 21.3.2023 at 3:57 pm

CT 476989

CH2009/198

Title Diagram CT 476989

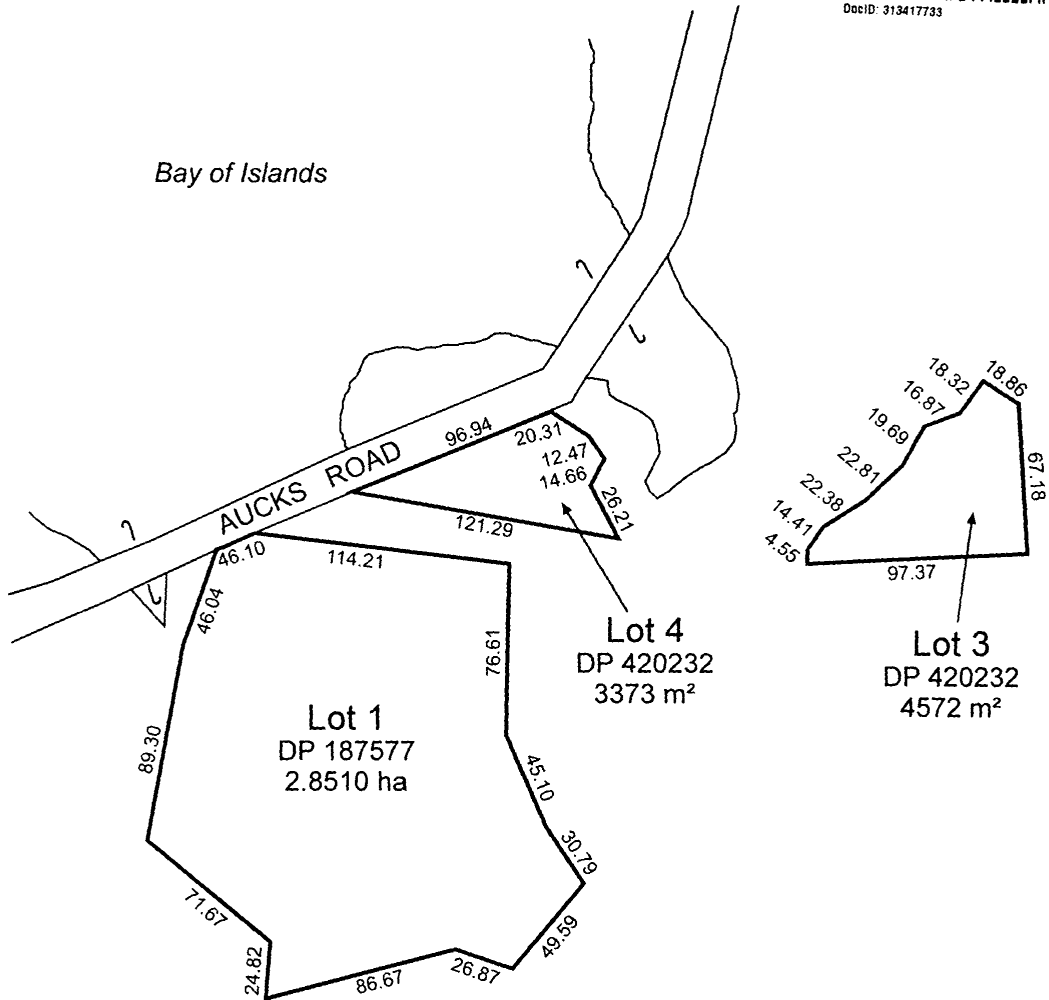
Copy - 01/01, Page - 001, 04/11/09, 12:48



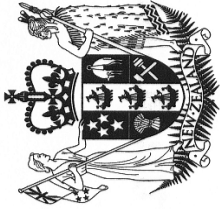
DocID: 313417733



Bay of Islands



TOTAL CT AREA: 3.6455 ha



**RECORD OF TITLE  
UNDER LAND TRANSFER ACT 2017  
FREEHOLD  
Search Copy**



R. W. Muir  
Registrar-General  
of Land

**Identifier**   **912226**

**Land Registration District**   **North Auckland**

**Date Issued**                                       23 June 2020

**Prior References**

NA117C/425

**Estate**    Fee Simple

**Area**    38.2940 hectares more or less

**Legal Description**                           Lot 1 Deposited Plan 542129

**Registered Owners**

Willowridge Developments Limited

**Interests**

Appurtenant hereto is an electricity supply right specified in Easement Certificate B664045.3 - 14.5.1987 at 12.26 pm

The easements specified in Easement Certificate B664045.3 are subject to Section 309 (1) (a) Local Government Act 1974

Appurtenant hereto is a telephone supply right created by Transfer B790220.2 - 2.3.1988 at 2:18 pm

D574444.3 Conservation Covenant pursuant to Section 77 Reserves Act 1977 - 25.1.2001 at 9:00 am

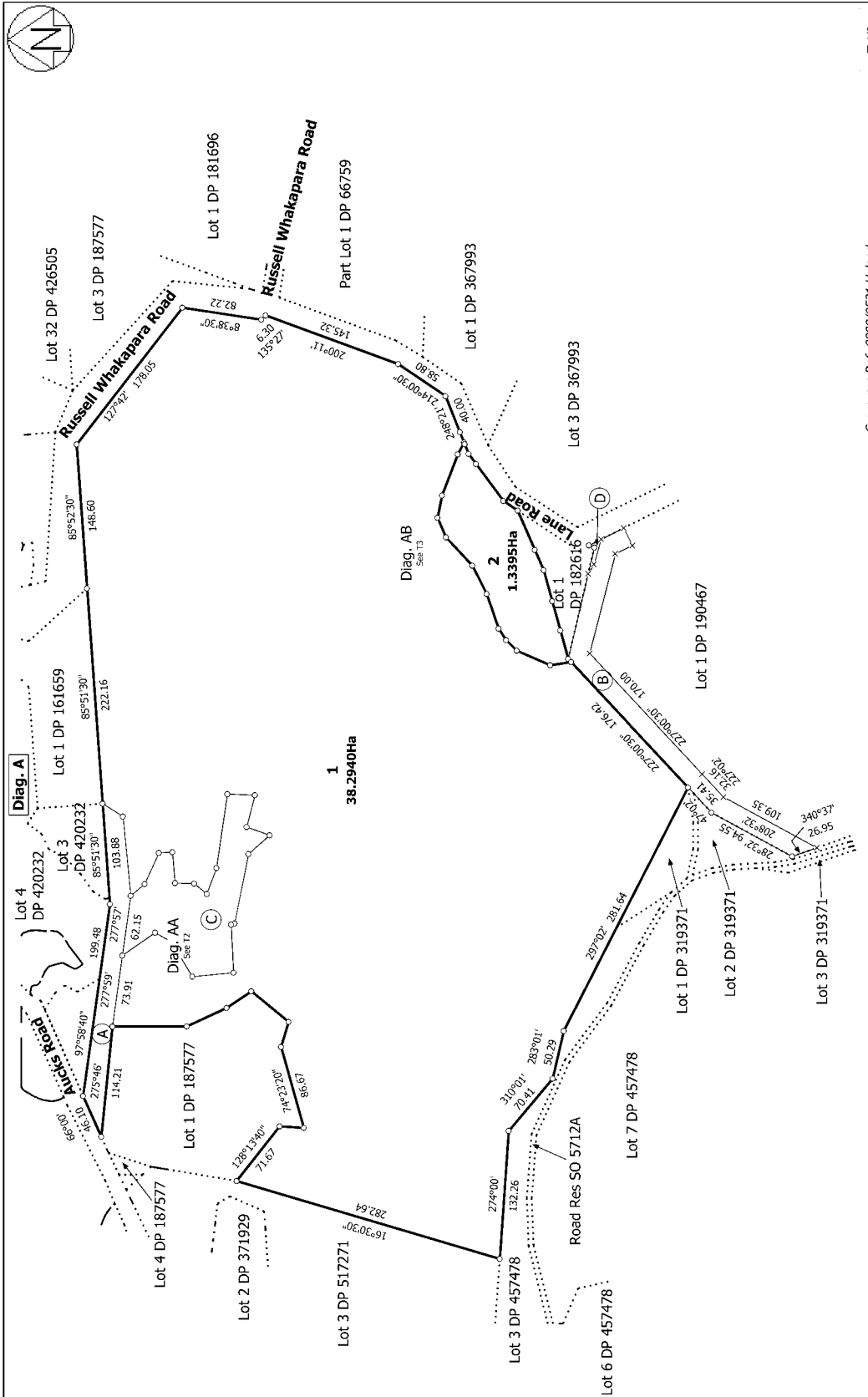
Subject to a right of way and a right to convey electricity, telecommunications and computer media over part marked A on

DP 542129 created by Easement Instrument 8300644.5 - 28.10.2009 at 3:13 pm

12193860.1 Mortgage to Westpac New Zealand Limited - 16.8.2021 at 11:24 am

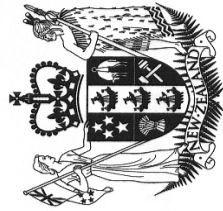
Land Covenant in Covenant Instrument 12682951.1 - 21.3.2023 at 3:57 pm





Surveyors Ref: 8899/9531 Hyland T 1/3

Land District: North Auckland <b>Digitally Generated Plan</b> <small>Generated on: 27/02/2020 12:06am Page 3 of 5</small>	<b>Lots 1 and 2 Being a Subdivision of Lot 2 DP 187577 and Easement over Lot 1 DP 190467</b>	<b>Title Plan</b> LT 542129 Approved on: 27/02/2020
---	--	---



**RECORD OF TITLE  
UNDER LAND TRANSFER ACT 2017  
FREEHOLD  
Search Copy**



*R. W. Muir*  
Registrar-General  
of Land

**Identifier**                   **912227**

**Land Registration District**   **North Auckland**

**Date Issued**                   23 June 2020

**Prior References**

NA117C/425

**Estate**

Fee Simple

**Area**

1.3395 hectares more or less

**Legal Description**

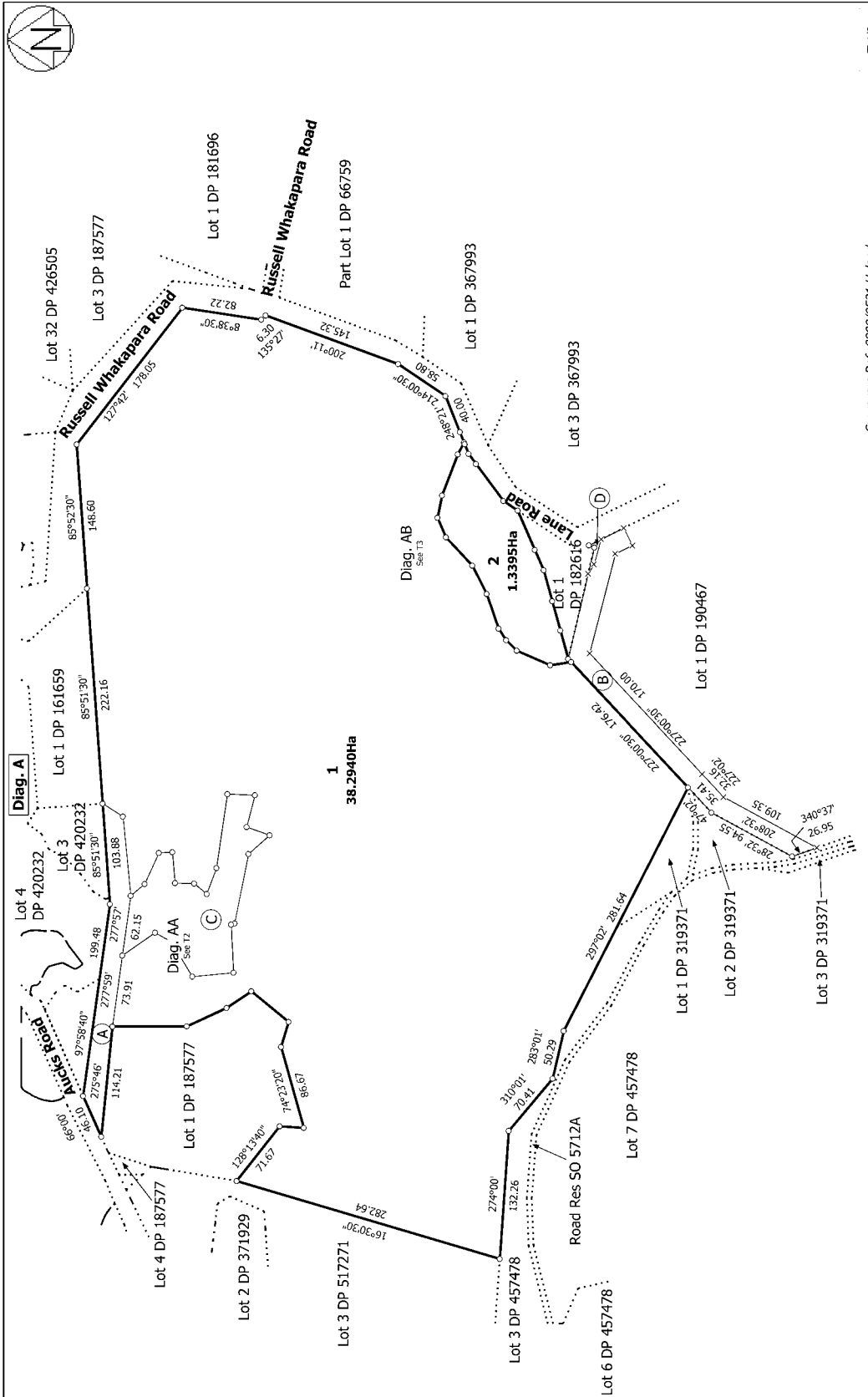
Lot 2 Deposited Plan 542129

**Registered Owners**

Willowridge Developments Limited

**Interests**

Appurtenant hereto is an electricity supply right specified in Easement Certificate B664045.3 - 14.5.1987 at 12.26 pm  
 The easements specified in Easement Certificate B664045.3 are subject to Section 309 (1) (a) Local Government Act 1974  
 Appurtenant hereto is a telephone supply right created by Transfer B790220.2 - 2.3.1988 at 2:18 pm  
 D574444.3 Conservation Covenant pursuant to Section 77 Reserves Act 1977 - 25.1.2001 at 9:00 am  
 I11735593.2 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 23.6.2020 at 11:30 am  
 I2193860.1 Mortgage to Westpac New Zealand Limited - 16.8.2021 at 11:24 am  
 Land Covenant in Covenant Instrument 12682951.1 - 21.3.2023 at 3:57 pm



T 1/3

Surveyors Ref: 8899/9531 Hyland

Land District: North Auckland  
 Digitally Generated Plan  
 Generated on: 27/02/2020 12:06am Page 3 of 5

Surveyor: Denis McGregor Thomson  
 Firm: Thomson Survey Limited

**Lots 1 and 2 Being a Subdivision of Lot 2 DP 187577 and Easement over Lot 1 DP 190467**

**Title Plan**  
 LT 542129  
 Approved on: 27/02/2020

# View Instrument Details



**Instrument No** 8300644.4  
**Status** Registered  
**Date & Time Lodged** 28 October 2009 15:13  
**Lodged By** Davis, Gregory Leslie  
**Instrument Type** Consent Notice under s221(4)(a) Resource Management Act 1991



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Affected Computer Registers	Land District
476989	North Auckland
476990	North Auckland

---

**Annexure Schedule:** Contains 1 Page.

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## Signature

Signed by Gregory Leslie Davis as Territorial Authority Representative on 20/10/2009 11:43 AM

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



Private Bag 752, Memorial Ave  
Kaikohe 0400, New Zealand  
Freephone: 0800 920 029  
Phone: (09) 405 2750  
Fax: (09) 401 2137  
Email: ask.us@fndc.govt.nz  
Website: www.fndc.govt.nz

**THE RESOURCE MANAGEMENT ACT 1991**

**SECTION 221 : CONSENT NOTICE**

**REGARDING RC 2090603**  
the Subdivision being Lot 3 & 4 DP 195294  
North Auckland Registry

**PURSUANT** to Section 221 and for the purpose of Section 224 (c)(ii) of the Resource Management Act 1991, this Consent Notice is issued by the **FAR NORTH DISTRICT COUNCIL** to the effect that conditions described in the schedule below are to be complied with on a continuing basis by the subdividing owner and the subsequent owners after the deposit of the survey plan, and these are to be registered on the titles of the allotments specified under each condition below.

**SCHEDULE**

**Lots 3 & 4 DP 420232**

- i. No dwelling or habitable building shall be erected or brought onto Lots 3 & 4 without the prior consent of the Council. Lots 3, 4 & Lot 1 DP 187577 are held together in a single Certificate of Title and shall be regarded as a single site for the purposes of the District Plan residential intensity provisions.

SIGNED:

A handwritten signature in black ink, appearing to read 'M.A. McDonald'.

Mr M.A. McDonald

By the FAR NORTH DISTRICT COUNCIL  
Under delegated authority:  
PRINCIPAL PLANNER.

DATED at KERIKERI this

8<sup>th</sup> day of September

2009.



# View Instrument Details

**Instrument No** 8300644.5  
**Status** Registered  
**Date & Time Lodged** 28 October 2009 15:13  
**Lodged By** Davis, Gregory Leslie  
**Instrument Type** Easement Instrument



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Affected Computer Registers	Land District
476989	North Auckland
476990	North Auckland
NA117C/424	North Auckland
NA117C/425	North Auckland

---

**Annexure Schedule:** Contains 2 Pages.

---

## Grantor Certifications

- I certify that I have the authority to act for the Grantor and that the party has the legal capacity to authorise me to lodge this instrument
- I certify that I have taken reasonable steps to confirm the identity of the person who gave me authority to lodge this instrument
- I certify that any statutory provisions specified by the Registrar for this class of instrument have been complied with or do not apply
- I certify that I hold evidence showing the truth of the certifications I have given and will retain that evidence for the prescribed period
- I certify that the Mortgagee under Mortgage 6617509.1 has consented to this transaction and I hold that consent

## Signature

Signed by Gregory Leslie Davis as Grantor Representative on 26/11/2009 11:37 AM

---

## Grantee Certifications

- I certify that I have the authority to act for the Grantee and that the party has the legal capacity to authorise me to lodge this instrument
- I certify that I have taken reasonable steps to confirm the identity of the person who gave me authority to lodge this instrument
- I certify that any statutory provisions specified by the Registrar for this class of instrument have been complied with or do not apply
- I certify that I hold evidence showing the truth of the certifications I have given and will retain that evidence for the prescribed period

## Signature

Signed by Gregory Leslie Davis as Grantee Representative on 26/11/2009 11:37 AM

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



Approved by Registrar-General of Land under No. 2007/6225

**Easement instrument to grant easement or *profit à prendre*, or create land covenant**  
*Sections 90A and 90F, Land Transfer Act 1952*

Land registration district

NORTH AUCKLAND



BARCODE

Grantor

Surname(s) must be underlined or in CAPITALS.

L R HYLAND LIMITED

Grantee

Surname(s) must be underlined or in CAPITALS.

L R HYLAND LIMITED

Grant\* of easement or *profit à prendre* or creation or covenant

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

Dated this                      day of

Attestation

	<p><b>Signed in my presence by the Grantor</b></p> <p>_____</p> <p><i>Signature of witness</i></p> <p><i>Witness to complete in BLOCK letters (unless legibly printed)</i></p> <p><b>Witness name</b></p> <p><b>Occupation</b></p> <p><b>Address</b></p>
	<p>Signature [common seal] of Grantor</p>

	<p><b>Signed in my presence by the Grantee</b></p> <p>_____</p> <p><i>Signature of witness</i></p> <p><i>Witness to complete in BLOCK letters (unless legibly printed)</i></p> <p><b>Witness name</b></p> <p><b>Occupation</b></p> <p><b>Address</b></p>
	<p>Signature [common seal] of Grantee</p>

Certified correct for the purposes of the Land Transfer Act 1952.

\_\_\_\_\_

[Solicitor for] the Grantee

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

Approved by Registrar-General of Land under No. 2007/6225

**Annexure Schedule 1**Easement instrument Dated  Page  of  pages**Schedule A***(Continue in additional Annexure Schedule if required.)*

Purpose (nature and extent) of easement, profit, or covenant	Shown (plan reference)	Servient tenement (Identifier/CT)	Dominant tenement (Identifier/CT or in gross)
Right of Way	A on DP 420232	Lot 2 DP 187577	Lots 1 DP 187577 and Lots 3 & 4 DP 420232
Right to convey Electricity	A on DP 420232	Lot 2 DP 187577	Lots 1 DP 187577 and Lots 3 & 4 DP 420232
Right to convey Telecommunications and computer media	A on DP 420232	Lot 2 DP 187577	Lots 1 DP 187577 and Lots 3 & 4 DP 420232

*Delete phrases in [ ] and insert memorandum number as required.**Continue in additional Annexure Schedule if required.***Easements or profits à prendre rights and powers (including terms, covenants, and conditions)**

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

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

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

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

**Covenant provisions***Delete phrases in [ ] and insert memorandum number as required.**Continue in additional Annexure Schedule if required.*

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

[Memorandum number \_\_\_\_\_, registered under section 155A of the Land Transfer Act 1952]

[Annexure Schedule 2].

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

# View Instrument Details



**Instrument No** 11735593.2  
**Status** Registered  
**Date & Time Lodged** 23 June 2020 11:30  
**Lodged By** Jonson, Jan Dorothy  
**Instrument Type** Consent Notice under s221(4)(a) Resource Management Act 1991



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Affected Records of Title	Land District
912227	North Auckland

---

**Annexure Schedule** Contains 2 Pages.

---

## Signature

Signed by Lucia Lisa Aprea as Territorial Authority Representative on 22/06/2020 12:44 PM

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



Remdes Bay 257, Maramai Ave  
Whakapu 0140, New Zealand  
Telephone: 0800 929 029  
Phone (08) 401 5200  
Fax (08) 401 2137  
Email: info@fn.govt.nz  
Website: www.fn.govt.nz

*Te Kaitiaki a Te Tokerau ki Te Raki*

## THE RESOURCE MANAGEMENT ACT 1991

### SECTION 221: CONSENT NOTICE

#### REGARDING RC 2170042

Being the Subdivision of LOT 2 DP 187577-SUBJ TO & INT IN EASES  
North Auckland Registry

PURSUANT to Section 221 and for the purpose of Section 224 (c) (ii) of the Resource Management Act 1991, this Consent Notice is issued by the **FAR NORTH DISTRICT COUNCIL** to the effect that conditions described in the schedule below are to be complied with on a continuing basis by the subdividing owner and the subsequent owners after the deposit of the survey plan, and these are to be registered on the titles of the allotments specified below.

### SCHEDULE

#### Lot 2 DP 542129

- (i) In conjunction with the construction of any building which includes a wastewater treatment & effluent disposal system the applicant shall submit for Council approval a TP58 Report prepared by a Chartered Professional Engineer or an approved TP58 Report Writer. The report shall be prepared generally in accordance with the Site and Soil Evaluation prepared by BOI Plumbing and Drainage Ltd and submitted with RC 2170042. The report shall confirm that all of the treatment & disposal system can be fully contained within the lot boundary and comply with the Regional Water & Soil Plan Permitted Activity Standards.
- (ii) In conjunction with the construction of any dwelling, and in addition to a potable water supply, a water collection system with sufficient supply for fire fighting purposes is to be provided by way of tank or other approved means and to be positioned so that it is safely accessible for this purpose. These provisions will be in accordance with the New Zealand Fire Fighting Water Supply Code of Practice SNZ PAS 4509.
- (iii) No more than two dogs and two cats shall be introduced or kept on the lot at any time. Any dog must be micro-chipped and have a current kiwi aversion trained certification. Any dog must be within a dog-proof fenced area on the lot and be under effective control at all times when outside of the fenced area, e.g. on a lead. At night any dog must be kept inside or be tied up. Any cat is to be neutered, microchipped and kept inside at night.



Far North  
District Council

Range Bay 757, Mercury Bay  
Te Kaitiaki 6440, New Zealand  
Telephone: 0800 920 679  
Fax: 091 401 5200  
Tel: 091 401 2137  
Email: [info@fn.govt.nz](mailto:info@fn.govt.nz)  
Website: [www.fn.govt.nz](http://www.fn.govt.nz)

*Te Kaitiaki o Tei Tokerau ki Te Raki*

SIGNED:

A handwritten signature in black ink, appearing to read 'P.J. Killalea'.

Mr Patrick John Killalea - Authorised Officer

By the FAR NORTH DISTRICT COUNCIL

Under delegated authority:

PRINCIPAL PLANNER – RESOURCE MANAGEMENT

DATED at KERIKERI this 19<sup>th</sup> day of December 2019



# View Instrument Details



**Instrument No** 12682951.1  
**Status** Registered  
**Date & Time Lodged** 21 March 2023 15:57  
**Lodged By** Rowlands, Brittany Joan  
**Instrument Type** Land Covenant under s116(1)(a) or (b) Land Transfer Act 2017



---

Affected Records of Title	Land District
476989	North Auckland
76318	North Auckland
912226	North Auckland
912227	North Auckland
NA113D/111	North Auckland
NA118B/623	North Auckland

---

**Annexure Schedule** Contains 2 Pages.

---

## Covenantor Certifications

- I certify that I have the authority to act for the Covenantor and that the party has the legal capacity to authorise me to lodge this instrument
- I certify that I have taken reasonable steps to confirm the identity of the person who gave me authority to lodge this instrument
- I certify that any statutory provisions specified by the Registrar for this class of instrument have been complied with or do not apply
- I certify that I hold evidence showing the truth of the certifications I have given and will retain that evidence for the prescribed period

## Signature

Signed by Rebecca Mary Karamaena as Covenantor Representative on 21/03/2023 11:27 AM

---

## Covenantee Certifications

- I certify that I have the authority to act for the Covenantee and that the party has the legal capacity to authorise me to lodge this instrument
- I certify that I have taken reasonable steps to confirm the identity of the person who gave me authority to lodge this instrument
- I certify that any statutory provisions specified by the Registrar for this class of instrument have been complied with or do not apply
- I certify that I hold evidence showing the truth of the certifications I have given and will retain that evidence for the prescribed period

## Signature

Signed by Rebecca Mary Karamaena as Covenantee Representative on 21/03/2023 11:28 AM

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



This approved format may be used for lodgement as an electronic instrument under the Land Transfer Act 2017

**Form 26**

**Covenant Instrument to note land covenant**

(Section 116(1)(a) & (b) Land Transfer Act 2017)

**Covenantor**

WILLOWRIDGE DEVELOPMENTS LIMITED

**Covenantee**

WILLOWRIDGE DEVELOPMENTS LIMITED

**Grant of Covenant**

**The Covenantor**, being the registered owner of the burdened land(s) set out in Schedule A, **grants to the Covenantee** (and, if so stated, in gross) the covenant(s) set out in Schedule A, with the rights and powers or provisions set out in the Annexure Schedule(s).

**Schedule A**  
*required*

*Continue in additional Annexure Schedule, if*

Purpose of covenant	Shown (plan reference)	Burdened Land (Record of Title)	Benefited Land (Record of Title) or in gross
Covenant - No Objection	All of the land contained within the burdened land	RT NA118B/623 RT 76318	RT 912226 RT 912227 RT 476989 RT NA113D/111

This approved format may be used for lodgement as an electronic instrument under the Land Transfer Act 2017

**Covenant rights and powers (including terms, covenants and conditions)**

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

Continue in additional Annexure Schedule if required.

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

~~[Memorandum number \_\_\_\_\_, registered under section 209 of the Land Transfer Act 2017].~~

[Annexure Schedule One ].

Annexure Schedule One

1. The Covenantor acknowledges and agrees that this instrument shall be registered against the titles to the Benefited Land and the Burdened Land and agrees:
  - a. To observe and perform the Covenants in this Instrument at all times (and to ensure that all occupiers, employees, contractors, invitees observes and performs the Covenants at all times); and
  - b. Unless otherwise specified in this Instrument, the Covenants will forever run with and bind the Burdened Land for the benefit of the Benefited Land.
2. The Covenantor covenants with the Covenantee that:
  - a. **No Objection:** The Covenantor shall not make or lodge, be a party to, procure, assist or support, finance or contribute to the cost of any submissions or proceedings (under the Resource Management Act 1991 or otherwise) designed or intended to or having the effect of limiting, preventing or restricting:
    - i. any rezoning or amendments to the provisions of the District Plan or any proposed plan for residential and related activity on the Benefitted Land;
    - ii. or any residential or related activity being undertaken or proposed to be undertaken on the Benefitted Land.
  - b. **Road Vesting:** The covenants set out in this instrument shall cease to apply to any part of the Burdened Land which is intended to vest in the Crown or any territorial authority or any utility company as road, reserve or utility site, upon survey relating to such vesting or transfer being approved as to survey and being accepted for deposit by Land Information New Zealand.

B664045.3 EC

Approved by the District Land Registrars: North Auckland 4221175, South Auckland H.008116/1974, Canterbury 957768, Marlborough 75776, Gisborne 112239.9, Hawkes Bay 303051, Taranaki 217464.1, Wellington A038045, Westland 45629.

### EASEMENT CERTIFICATE

(IMPORTANT: Registration of this certificate does not of itself create any of the easements specified herein).

I, JAN HARM MULLER of Aucklnad, Company Director and OTTOLINA JOHANNA SMEELE of Auckland, Married Woman as tenants in common in equal shares

being the registered proprietor of the land described in the Schedule hereto hereby certify that the easements specified in that Schedule, the servient tenements in relation to which are shown on a plan of survey deposited in the Land Registry Office at Auckland on the day of 19 under No. 109590 are the easements which it is intended shall be created by the operation of section 90A of the Land Transfer Act 1952.

#### SCHEDULE DEPOSITED PLAN NO.

Nature of Easement (e.g., Right of Way, etc.)	Servient Tenement		Dominant Tenement Lot No.(s) or other Legal Description	Title Reference
	Lot No.(s) or other Legal Description	Colour, or Other Means of Identification, of Part Subject to Easement		
Electricity	Lot 1	A	part Section 30 Block V Russell Survey District	Balance 750/160  formerly 750/160 now 610/902

N.B. On no account should this margin be used

N.B. On no account should this margin be used

State whether any rights or powers set out here are in addition to or in substitution for those set out in the Seventh Schedule to the Land Transfer Act 1952.

1. Rights and powers: (in substitution for those set out in the Seventh Schedule to the Land Transfer Act 1952)

1. THE full free and uninterrupted and unrestricted right liberty and privilege for the grantee and his tenants (in common with the grantor and his tenants) and any other person lawfully entitled so to do from time to time and at all times to take convey and lead wires and cables below the ground for the purpose of conveying electricity from the source of supply or point of entry as the case may be across the land over which the easement is granted or created together with the additional rights set out in clause 3 of this schedule.

~~2. THE full free and uninterrupted and unrestricted right liberty and privilege for the grantee and his tenants (in common with the grantor and his tenants) and any other person lawfully entitled so to do from time to time and at all times to underground convey telephone wires cables or other conduits together with the additional right incidental thereto set out in clause 3 hereof.~~

3. THE full free and uninterrupted and unrestricted right liberty and privilege for the grantee and his tenants (in common with the grantor and his tenants) and any other person lawfully entitled so to do for the purpose of the easement concerned

- (a) To use any cables wires pipes or other means of conveyance already laid on the stipulated course or any cables wires or other means of conveyance in replacement or in substitution therefor;
- (b) Where no such line of cables wires or other means exists to have laid placed and maintained a line of cable wire or other means of conveyance of sufficient size and of suitable material for the purpose under the surface of the land over which the easement is granted or created;
- (c) In order to construct and maintain the efficiency of any wires cables pipes or any other means of conveyance the full free and uninterrupted and unrestricted right liberty and privilege for the grantee his tenants servants agents and workmen with any tools implements machinery vehicles or equipment of whatsoever nature necessary for the purpose to enter upon the land over which easement is created or granted and to remain there for any reasonable time for the purpose of laying inspecting cleansing repairing maintaining and renewing the cabling wiring or any part thereof and of opening up the soil of that land to such extent as may be necessary and reasonable in that regard subject to the condition that as little disturbance as possible is caused to the surface of the land of the grantor and that the surface is restored as nearly as possible to its original condition and any other damage done by reason of the aforesaid operations is properly and completely repaired to the reasonable satisfaction of the registered proprietors for the time being of the servient tenement.

N.B. On no account should this margin be used

N.B. On no account should this margin be used

IN THE MATTER of the Land Transfer  
Act 1952

A N D

IN THE MATTER of Caveat No.  
B.475465.1 (North  
Auckland Registry)

CONSENT OF CAVEATOR TO REGISTRATION OF DEALING

RAINER BEAT MARTI of Switzerland, Businessman, the Caveator  
under the abovementioned Caveat DOETH HEREBY CONSENT to the  
registration of the instruments referred to in the Schedule  
hereto BUT WITHOUT PREJUDICE to the rights of the Caveator  
protected by the said Caveat.

SCHEDULE

1. Partial withdrawal of Caveat B.475465.1 in respect of Lot  
2 on Land Transfer Plan 109590.
2. Certificate pursuant to Section 306(1)(f)(i) of the Local  
Government Act 1974 in respect Land Transfer Plan 109590.
3. Easement Certificate specifying the easement which it is  
intended be created by the operation of Section 90A of the  
Land Transfer Act 1952 being an electricity easement over  
the part marked "A" on Lot 1 on Land Transfer Plan 109590.

DATED this 11<sup>th</sup> day of February 1987

SIGNED by the said )  
RAINER BEAT MARTI )  
as Caveator in the )  
presence of:- )

*R. Marti*

*Blair Keast,  
Solicitor  
Palmer*

Correct for the Purposes of  
the Land Transfer Act 1952

*[Signature]*

Solicitor for the Caveator

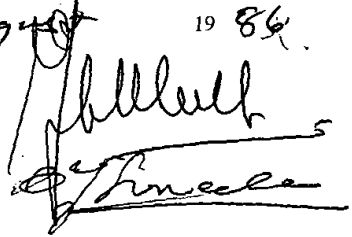
2. Terms, conditions, covenants, or restrictions in respect of any of the above easements:

N.B. On no account should this margin be used

N.B. On no account should this margin be used

X Dated this 5<sup>th</sup> day of August 19 86.

Signed by the above-named  
JAN HARM MULLER and  
OTTOLINA JOHANNA SMEELE



in the presence of

Witness [Signature]  
Occupation [Signature]  
Address [Signature]



# EASEMENT CERTIFICATE

**IMPORTANT:** Registration of this certificate does not of itself create any of the easements specified herein.

Correct for purposes of the Land Transfer Act

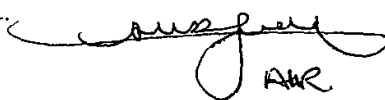


(Solicitor for) the registered proprietor

The within easements  
whenever created will be  
subject to Section 309

(1) (2) Local Government

act 1974.

  
AAR

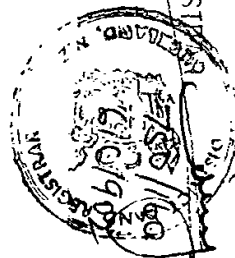
N.B. On no account should this margin be used

N.B. On no account should this margin be used

Particulars entered in the Register as shown in the schedule of land herein on the date and at the time stamped below

District .....  
Land Registra  
Assistant  
of the District of .....

ASSISTANT LAND REGISTRAR  
PARTICULARS ENTERED IN REGISTER  
LAND REGISTRY AUCKLAND



12.26 14. MAY 87 B 664045 32

Bruce Tunnicliffe  
Solicitor  
AUCKLAND.



B-790220.2

Approved by the Registrar-General of Land, Wellington, No. 367635.80  
Approved by the District Land Registrar, North Auckland, No. 4363/80

TE B790220.2 Transfer a

Cpy - 01/01, Pgs - 008, 16/04/07, 08:37



DocID: 201454589

Under the Land Transfer Act 1952

# Memorandum of Transfer

WHEREAS

JAN HARM MULLER of Auckland, Company Director and OTTOLINA JOHANNA SMEELE of Auckland, Married Woman as tenants in common in equal shares (hereinafter called "the Transferor")

being registered as proprietor

of an estate in fee simple

subject however to such encumbrances, liens and interests as are notified by memoranda underwritten or endorsed hereon in that piece of land situated in the Land District of North Auckland containing 42.1702 hectares more or less situated in Blocks I, II, V, and VI of the Russell Survey District being Old Land Claim Number 30 and being balance of Certificate of Title 750/160 (North Auckland Registry) LIMITED AS TO PARCELS

~~XXXXXXXXXXXX~~

SUBJECT TO

1. Proclamation No. 10400
2. Certificate K.26933  
Proclamation No. 10970
3. Proclamation No. 14255  
Proclamation 213228

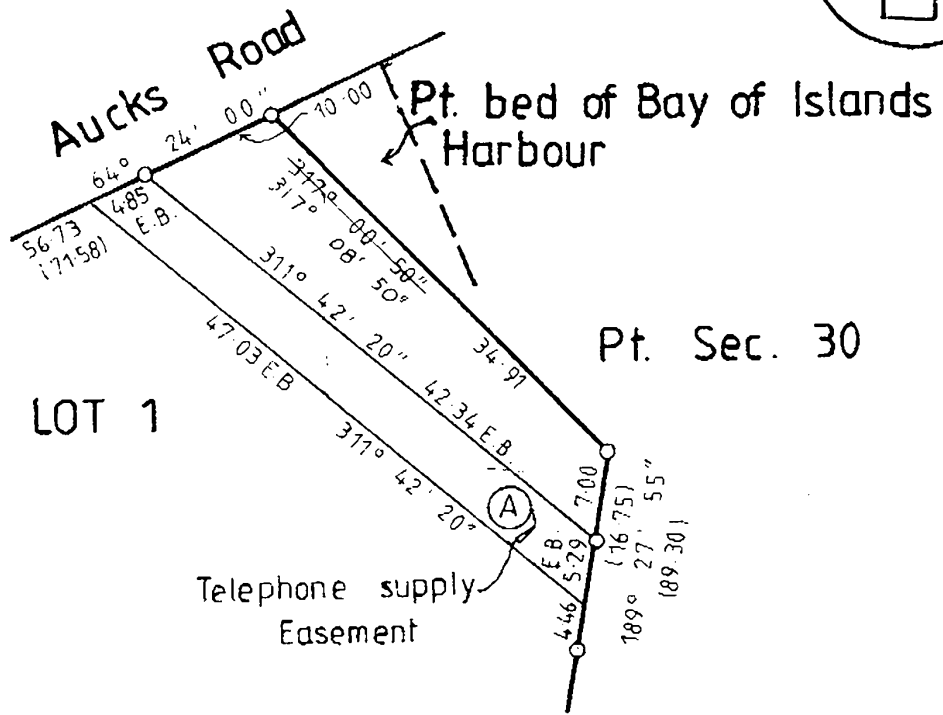
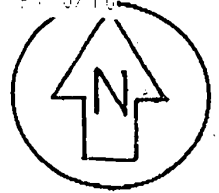
TRANSFEE MORTGAGE, LEASE  
ASSIGNMENT and AGREEMENT  
stamped with duty of  
\$228.00 on 01/03/07  
\$..... on .....  
or  
Dist. Commissioner of Inland  
Revenue

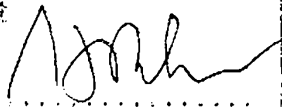
*[Signature]*  
("the first land")

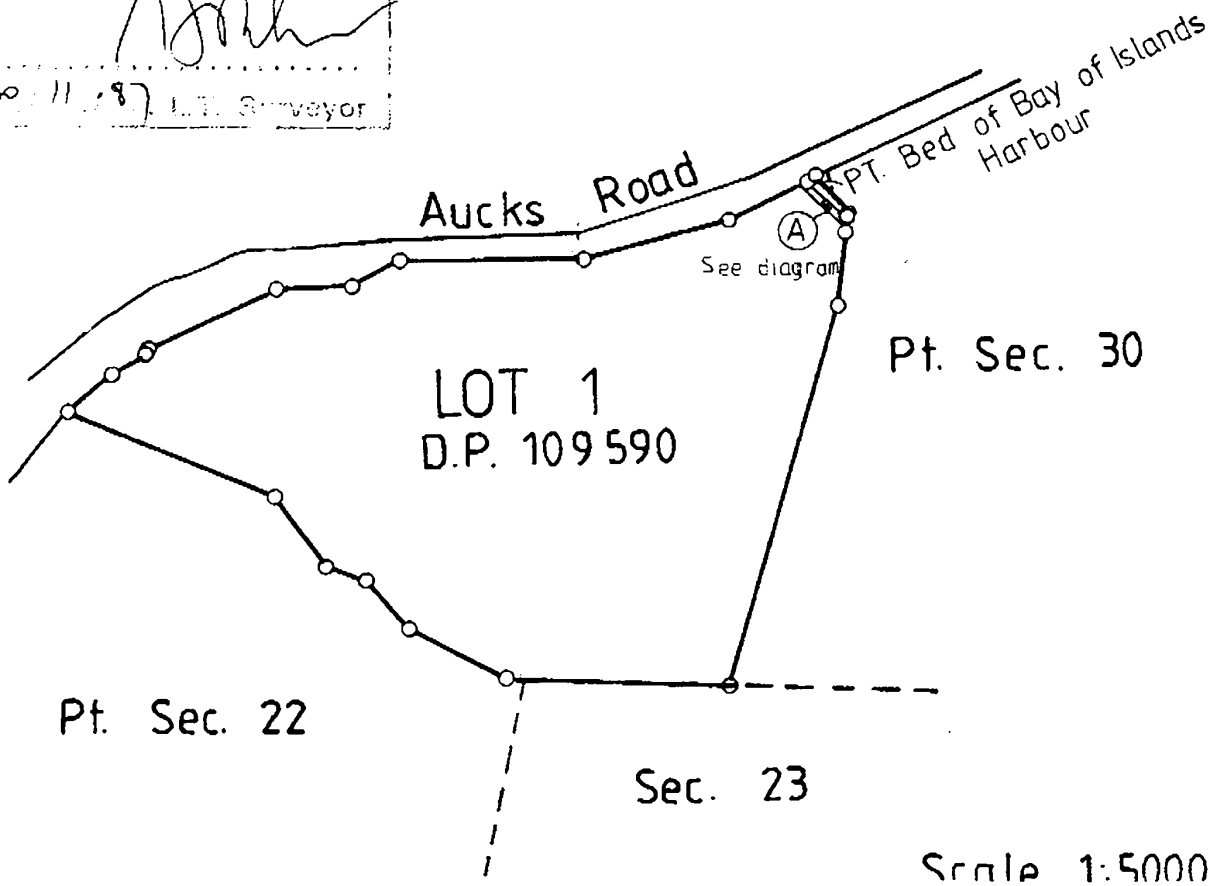
AND WHEREAS the Transferor is also the registered proprietor of an estate in fee simple in all that parcel of land containing 12.4950 hectares more or less being Lot 1, on Deposited Plan 109590 being Part Sections 30 and 51, Block V, Russell Survey District comprised in Certificate of Title 61C/901 (North Auckland Land Registry)

SUBJECT TO : Easements in Easement Certificate B.664045.3 (subject to Section 309 of the Local Government Act, 1974)

("the second land")



Correct  
  
 30/11/87 L.T. Surveyor



LVC 2

No. 1502 S.F. 4/10  
18/1/2185 m 2  
Worm  
A.L.R.

STATUTORY DECLARATION WHERE PURCHASER OR LESSEE IS A COMPANY OR OTHER BODY CORPORATE

IN THE MATTER of the Land Settlement Promotion and Land Acquisition Act 1952 (hereinafter referred to as the Act), and

IN THE MATTER of an Agreement for Sale and Purchase

dated the 18th day of November 19 85

from JAN HARM MULLER and OTTOLINA JOHANNA SMEELE as Vendor (or Lessor)

to SUSAN MARY SPENCER as trustee for a company to be formed as Purchaser (or Lessee)

affecting all that parcel of land containing 43 hectares more or less being the balance of the land in Certificate of Title Volume 750 Folio 160 after subdivision of Lots 1 and 2 on the annexed plan of subdivision together with electricity and telephone easements

being ~~the~~ part of the land comprised and described in certificate of title, Volume 750

folio 160 (North Auckland Land Registry).

I, SUSAN MARY SPENCER of Russell, Business Woman

solemnly and sincerely declare:

1. I am a Director of SPENCER ENTERPRISES LIMITED the purchaser (or lessee) of the land above-described.

2. The purchaser (or lessee) has entered into the transaction solely on its own behalf as the person beneficially entitled thereunder.

3. The purchaser (or lessee) does not own, lease, hold, or occupy in fee simple or under any tenure of more than 1 year's duration, either severally, jointly, or in common with any other person, any farm land, as defined in the Act, outside a city or borough or town district, and has no estate or interest, whether legal or equitable and whether vested or contingent, under any trust or will in any such farm land.

4. ~~There are no other directors of the company.~~

Or (a) No member of the company and no wife or husband of any member of the company owns, leases, holds, or occupies in fee simple or under any tenure of more than 1 year's duration, whether severally, jointly, or in common with any other person, any farm land, as so defined, outside a city or borough or town district, or has any estate or interest, whether legal or equitable and whether vested or contingent, under any trust, will, or intestacy, in any such farm land:

(b) No parent of any member of the company under 17 years of age, owns, leases, holds, or occupies in fee simple or under any tenure of more than 1 year's duration, either severally, jointly, or in common with any other person, any farm land, as so defined, outside a city or borough or town district, or has any estate or interest, whether legal or equitable and whether vested or contingent, under any trust, will, or intestacy, in any such farm land:

(c) All the shares in the company are held by members on their own behalf and as the persons beneficially entitled thereto.

5. No company of which the purchaser (or lessee) is a member, the members of which are less than 10 in number, owns, leases, holds, or occupies in fee simple or under any tenure of more than 1 year's duration, either severally, jointly, or in common with any other person, any farm land, as so defined, outside a city or borough or town district, or has any estate or interest, whether legal or equitable and whether vested or contingent, under any trust or will, in any such farm land.

6. The purchaser (or lessee) has not since the passing of the Act (namely, the 16th day of October 1952) transferred, granted, leased, or otherwise disposed of any estate or interest in farm land, as so defined, to any person as a trustee for any person or created any trust in respect of any estate or interest in any such farm land.

SPENCER  
ENTERPRISES  
LIMITED

7. The transaction is not subject to Part IIA of the Act because—  
The purchaser (or lessee) is not an overseas corporation as defined in section 35A of the Act.

~~The transaction does not relate to any land of any of the classes described in paragraph (f) of subsection (1) of section 35B of the said Act (as substituted by section 2 of the Land Settlement Promotion and Land Acquisition Amendment Act 1969).~~

The Purchaser (or lessee) is the trustee under the following trust  
and every beneficiary under the trust is a New Zealand citizen  
(or every beneficiary under the trust who is an individual is a New Zealand citizen and no beneficiary under the trust that is a body corporate is an overseas corporation as defined in section 35A of the Act).

And I make this solemn declaration conscientiously believing the same to be true and by virtue of the Oaths and Declarations Act 1957.

DECLARED at PAIHIA

this 13th day of December 1985

before me - *[Signature]*

Justice of the Peace  
Solicitor of the Supreme Court  
other person authorised to take and receive statutory declarations

NOTE - 1. Where only Part II of the Act applies to the transaction, the declarant is required to declare as to the matters prescribed in paragraphs 1 to 7 of this form.

2. Where the declaration is made for the purposes of section 35D of the Act, the declarant is required to declare as to the matters prescribed in paragraphs 1 and 7 of this form.

3. Where Part II only or both Parts II and IIA apply to the transaction, and the purchaser or lessee is a trustee, then, under section 24 (1) (a) of the Act the consent of the Court is required and this form is not applicable.

4. Section 2 (1) of the Act contains the following definitions:

"Farm land" means land that, in the opinion of the Land Valuation Committee, or, as the case may be, of the Land Valuation Court, is or should be used exclusively or principally for agricultural purposes:

Provided that, where land that is being used exclusively or principally for agricultural purposes could, in the opinion of the Committee or, as the case may be, of the Court, be used with greater advantage to the community generally for non-agricultural purposes, it shall for the purposes of this Act be deemed not to be farm land.

"Agricultural purposes" has a meaning corresponding to the term "agriculture", which for the purposes of this definition means the cultivation of the soil for the production of food products and other useful products of the soil, and includes the use of land for horticultural or pastoral purposes, or for the keeping of pigs, bees, or poultry.

5. The classes of land described in paragraph (f) of section 35B (1) of the Act are as follows:

- (a) Any land of 1 acre or over in area which under any operative regional planning scheme or proposed or operative district scheme under the Town and Country Planning Act 1953, is designated or zoned as a reserve, or as a public park, or for recreation purposes, or as private open space, or for preservation as a place of or containing an object of historical or scientific interest or natural beauty, or any proposed such purpose.
- (b) Any land of 5 acres or over in area which under any such proposed or operative district scheme is zoned for rural purposes or is so zoned that farming of any kind is a predominant or conditional use in that zone.
- (c) Any land of 1 acre or over in area which is not included in any proposed or operative district scheme provided and maintained by any Council or other local authority under that Act.
- (d) Any land being or forming part of any island (except the North Island and the South Island) which is less than 100 miles from the nearest part of the coast of the North Island or of the South Island.
- (e) Any land being or forming part of any island of the Chatham Islands.

LUCKS ROAD

PT. SEC 30

Pt. bed of Bay of Islands Harbour

1:500

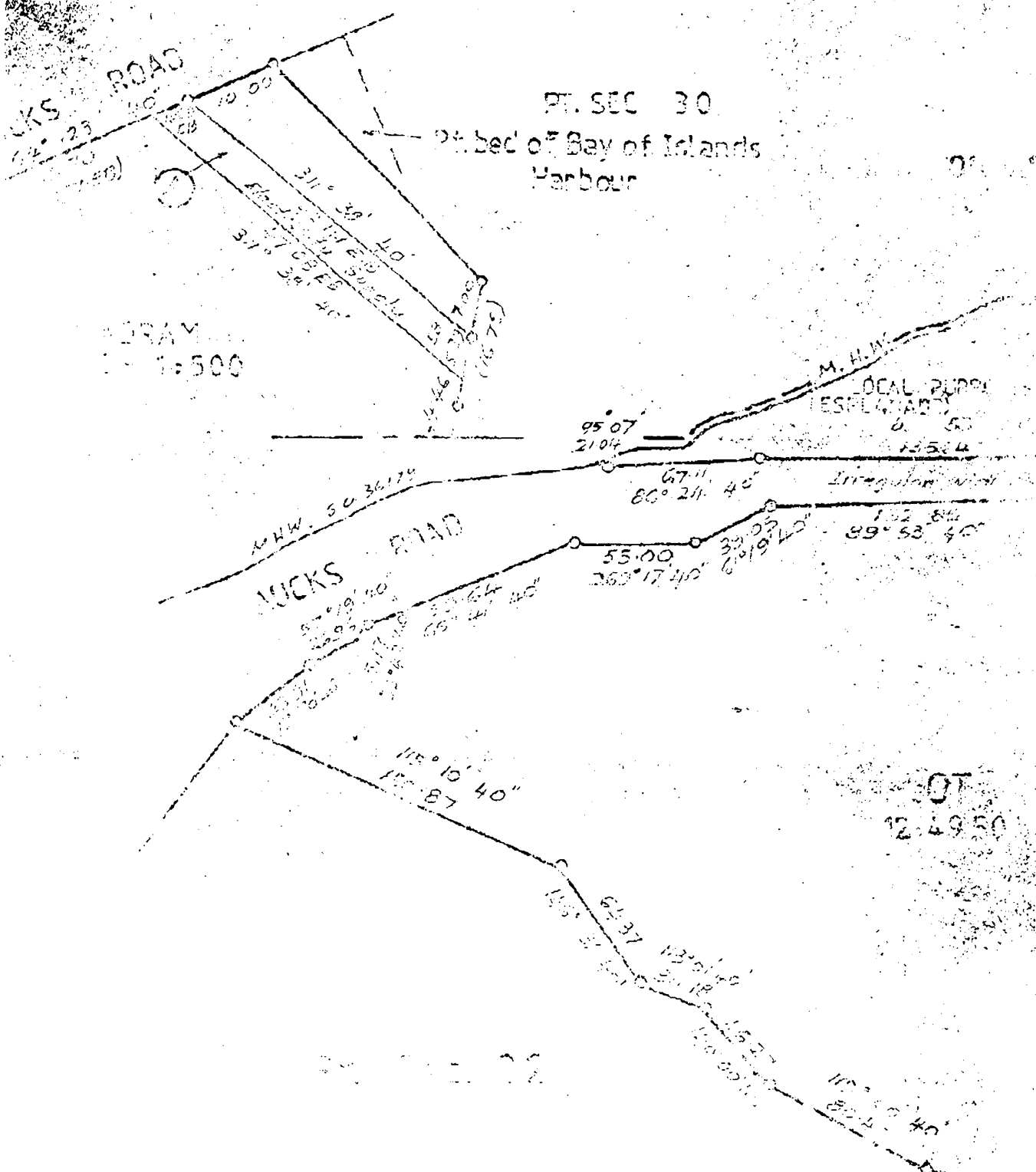
M.H.W.

DEAL PUPP  
RESERVATION

LUCKS ROAD

Irregular width

12-49-50







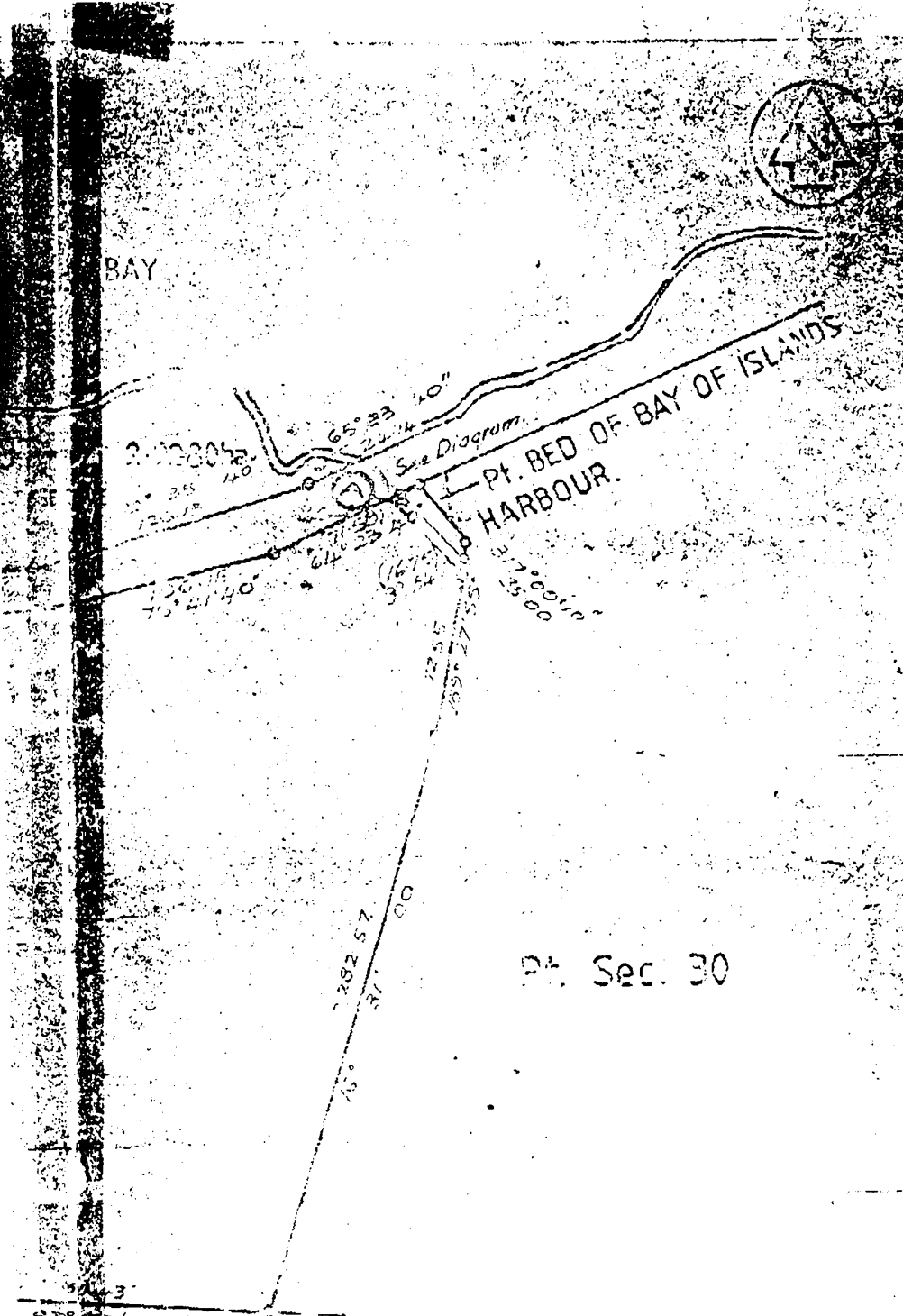
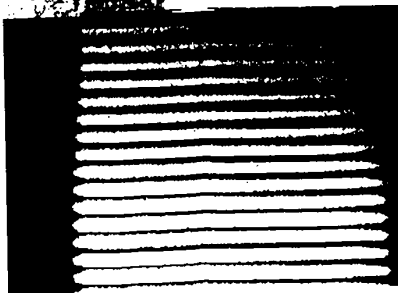


Diagram
Now
Loc.
Measure
Purpose of
Electricity
Support
Total Area. 10
Comprised in
Robert C. Registered Surveyor I hereby certify that the by me or other persons and have been made Surveyors for 1906 Dated at KANAKA of July
Field Book
Reference Plans
Examined
Approved



consideration of the sum of FIVE HUNDRED AND FIFTY THOUSAND DOLLARS (\$550,000.00) which sum includes \$100,000.00 for chattels) paid to the Transferor by SPENCER ENTERPRISES LIMITED a duly incorporated Company having its registered office at Ohio (hereinafter called "the Transferee") (the receipt of which sum is hereby acknowledged)

Do hereby Transfer to the said Transferee

all their estate and interest in the

first land above described see attached.

In witness whereof these presents have been executed this

of September 1987

*20th*

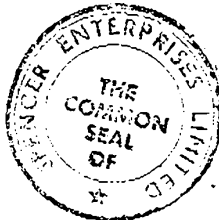
day

Signed by the above named JAN HARM )  
MULLER and OTTOLINA JOHANNA )  
SMEELE )  
in the presence of: [Signature] )

[Signature]  
[Signature]  
[Signature]

The Common Seal of SPENCER )  
ENTERPRISES LIMITED was )  
hereunto affixed in the )  
presence of: )

[Signature]  
Director



[Signature]  
Director

No.

TRANSFER OF

Correct for the purposes of the Land Transfer Act.

Solicitor for the Transferee.

JH MULLER and OJ SREELE ..... Transferor

HEREBY CERTIFY THAT THIS TRANSACTION DOES NOT CONTRAVENE THE PROVISIONS OF PART 3A OF THE LAND SETTLEMENT PROMOTION AND LAND ACQUISITION ACT 1952.

SOLICITOR FOR THE TRANSFEREE

SPENCER ENTERPRISES LIMITED ..... Transferee

Particulars entered in the Register as shown herein on the date and at the time endorsed below.

Assistant / District Land Registrar

of the District of

C'st 117c/424  
117c/425  
117c/426  
88c/452

2.18 02.MAR88 H 79022012  
PARTICULARS ENTERED IN REGISTER  
LAND REGISTRY  
ASST L...  
0109 WALLACE SPENCER & DODDS  
1980

WALLACE SPENCER McBREARTY & DODDS  
SOLICITORS  
PAIHIA

25

Solicitors for the Transferee

Approved by the District Land Registrar, South Auckland No. 351560  
 Approved by the District Land Registrar, North Auckland, No. 4380/81  
 Approved by the Registrar-General of Land, Wellington, No. 436748.1/81

## EASEMENT CERTIFICATE

**D314934.9**

(IMPORTANT: Registration of this certificate does not of itself create any of the easements specified herein).

**EC**

I/We **DONALDSON PROPERTY CO-ORDINATES LIMITED**

being the registered proprietor(s) of the land described in the Schedule hereto hereby certify that the easements specified in that Schedule, the servient tenements in relation to which are shown on a plan of survey deposited in the Land Registry Office at **Auckland** on the **19** day of **19** under No. **188462** are the easements which it is intended shall be created by the operation of section 90A of the Land Transfer Act 1952.

### SCHEDULE DEPOSITED PLAN NO. 188462

Nature of Easement (e.g., Right of Way, etc.)	Servient Tenement		Dominant Tenement Lot No.(s) or other Legal Description	Title Reference
	Lot No.(s) or other Legal Description	Colour, or Other Means of Identification, of Part Subject to Easement		
Right of way ✓	Lot 35 DP 188462	A ✓	Lots 19 to 34 ✓ inclusive on DP 188462	<del>188C/161</del> to 188C/176 inc
Right of way	Lot 35 DP 188462	A	Lot 36 to Lot 49 ✓ Inc. on DP 188462	188C/178 to 188C/191 Inc
Right of way	Lot 35 DP 188462	A	Lots 1 to 3 inc. ✓ on DP 175811	108A/901, 108A/902 & pt 108A/903
Right of way	Lot 49 DP ✓ 188462	B ✓	Lots 19 to 34 ✓ Inc. on DP 188462	188C/161 to 188C/176 Inc
Right of way	Lot 49 DP 188462	B	Lot 36 to Lot 49 inc on DP 188462	118C/178 to 188C/191 inc
Right of way	Lot 49 DP 188462	B	Lots 1 to 3 inc ✓ on DP 175811	108A/901, 108A/902 & pt 108A/903


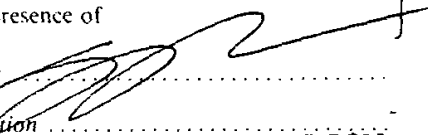
**A**


State whether any rights or powers set out here are in addition to or in substitution for those set out in the Seventh Schedule to the Land Transfer Act 1952.

1. Rights and powers:

2. Terms, conditions, covenants, or restrictions in respect of any of the above easements:

1.4.3.3

 Dated this 25th day of September 19 98  
Signed by the above-named  
DONALDSON PROPERTY CO-ORDINATES  
LIMITED  
in the presence of  
Witness   
Occupation .....  
Address .....  
G.W. DAVIDSON  
SOLICITOR  
TAKAPUNA

  
.....  
Director  
R. W. Davidson



**EASEMENT CERTIFICATE**

**(IMPORTANT):** Registration of this certificate does not of itself create any of the easements specified herein.

*Correct for the purposes of the Land Transfer Act*

*[Handwritten Signature]*  
Solicitor for the registered proprietor

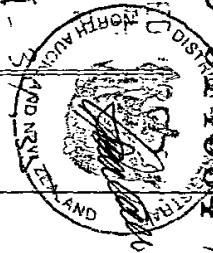
The above/~~within~~ easements when created will be/~~be~~ subject to Section 243(a) Resource Management Act 1991

*[Handwritten Signature]*  
for DLR

COUPE DAVIDSON SWEETMAN  
SOLICITORS  
TAKAPUNA

1244 28 SEP 98 D 214994-9  
PARTICULARS ENTERED  
LAND REGISTER NO  
ASST LAND REGISTRAR

19-3  
26-499  
1-3 pp 17-5811



*[Vertical handwritten text on the right margin]*

**CONSERVATION COVENANT**  
**(SECTION 77 RESERVES ACT 1977)**

THIS DEED of COVENANT is made

BETWEEN SPENCER ENTERPRISES LIMITED (the "Landowner") of one part

AND THE MINISTER OF CONSERVATION ("the Minister") of the other part.

**WHEREAS**

- A. The Landowner is the registered proprietor of the Land which comprises part of an estate in fee simple containing 39.6285 hectares more or less being Lot 2 Deposited Plan 187577 and being all the land comprised and described in Certificate of Title 117C/425 (North Auckland Registry).

**SUBJECT TO:**

(i) Electricity Supply Easement over part Lot 1 DP 109590 marked "A" DP 109590 CT 88C/452 and Lots 1-3 DP 143618 CTs 85B/332-334 as specified in Easement Certificate B664045.3, such electricity supply easements subject to section 309(1)(a) Local Government Act 1974.

(ii) Telephone supply easement over part Lot 1 DP 109590 CT88C/452 and Lots 1-3 DP143618 CTs 85B/332-334 created by Transfer B790220.1.

- B. The Land contains a habitat for wildlife including but not limited to Brown Teal (*Anas aucklandia chilortis*).
- C. The parties are agreed that the Land should be managed so as to preserve its natural environment, landscape, amenity, wildlife, and freshwater

**NOW THEREFORE THIS COVENANT WITNESSES** that in accordance with section 77 of the Reserves Act 1977 the Landowner and Minister mutually agree as follows.

**1. INTERPRETATION**

- 1.1 In this Covenant unless the context otherwise requires:

"Act" means the Reserves Act 1977.

"Covenant" means this Deed of Covenant.

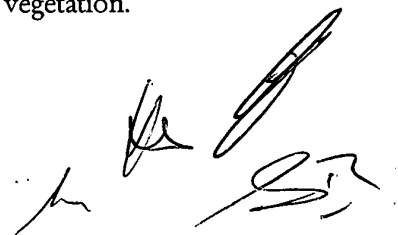
"Land" means the land described in Schedule 1 of this Covenant .

"Landowner" means **Spencer Enterprises Limited** the registered proprietors of the Land.

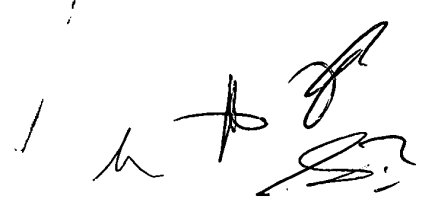
"Minister" means the Minister of Conservation.

"Pests" includes any noxious or troublesome animals.

"Weeds" includes any noxious or troublesome plants, trees or other vegetation.



- 1.2 For avoidance of doubt:
  - 1.2.1 The reference to any Act in this Covenant extends to and includes any amendment to or substitution of that Act.
  - 1.2.2 Clause and other headings are for ease of reference only and shall not be treated as forming any part of the context or to affect the interpretation of this Covenant.
  - 1.2.3 Words importing the singular number shall include the plural and vice versa.
  - 1.2.4 References to parties are references to parties to this Covenant.
  - 1.2.5 References to clauses are references to clauses in this Covenant.
  - 1.2.6 References to persons shall be deemed to include references to individuals, companies, corporations, firms, partnerships, joint ventures, associations, organisations, trusts, states or agencies of states, government departments and local and municipal authorities in each case whether or not having separate legal personality.
  - 1.2.7 Expressions defined in the main body of this Covenant bear the defined meaning in the whole of this Covenant including the Recitals. Where the parties disagree over the interpretation of anything contained in this Covenant and in determining the issue, the parties must have regard to the matters contained in the Recitals.
  - 1.2.8 Any obligation not to do anything must be treated to include an obligation not to suffer, permit or cause the thing to be done.
  - 1.2.9 Words importing one gender include the other gender.
  - 1.2.10 The agreements contained in this Covenant bind in perpetuity the Land into whomsoever's hands the Land may come (but not as to render the Landowner personally liable in damages for any breach of covenant committed after it has parted with all interest in the Land)/and shall also bind any lessee of the Land for the term of any lease.
  - 1.2.11 Where clauses in this Covenant require further agreement between the parties then such agreement must not be unreasonably withheld.
- 1.3 Subject to the rights, obligations and agreements conferred by this Covenant and until surrender by the Crown, the Landowner may exercise all rights and obligations consistent with ownership of the Land.
2. OBJECTIVES OF THE COVENANT
  - 2.1 The Land must be managed so as:



- 2.1.1 To preserve, protect and enhance the natural environment, scenic landscape, amenities, and freshwater values of the Land.
- 2.1.2 To protect wildlife and their habitats, including but not limited to Brown Teal (*Anas aucklandia chilortis*)

### 3. IMPLEMENTATION OF OBJECTIVES

3.1 Unless agreed in writing by the parties (either under this Covenant or by other writing) the Landowner must not carry out or permit in relation to the Land:

- 3.1.1 Grazing of the Land by livestock or keeping livestock on the Land .
- 3.1.2 Felling, removal or damage of any native tree, shrub or other plant on the Land.
- 3.1.3 The planting of any species of tree, shrub or other plant or seed sowing of such species.
- 3.1.4 The erection of any fence, building, structure or other improvement for any purpose.
- 3.1.5 Any burning or top dressing.
- 3.1.6 Any cultivation, earth works or other soil disturbances.
- 3.1.7 Any archaeological or other scientific research involving disturbance of the soil.

3.2 Unless required to do so by statute the Landowner must not carry out or permit in relation to the land:

- 3.2.1 Any prospecting or mining for minerals, coal or other deposit on or under the Land.
- 3.2.2 Any erection of utility transmission lines across the Land.
- 3.2.3. The granting of any easement or concession over the Land.

3.3 The Landowner must:

- 3.3.1 Eradicate or control all weeds and pests on the Land to the extent required by any enactment and where necessary to maintain and enhance the natural process of regeneration of the native vegetation.
- 3.3.2 As far as practicable prevent any wildfire upon or threatening the Land and not permit the wildfire to escape.
- 3.3.3 Notify the Minister as soon as practicable in the event of wildfire threatening the Land.
- 3.3.4 Keep the Land free from exotic tree species.



- 3.3.5 Keep the Land free from rubbish or other unsightly or offensive material.
- 3.3.6 Keep the Land free from cats, rabbits, and domestic and feral animals.
- 3.3.7 Provide a suitable habitat for birdlife.
- 3.3.8 Encourage plants that are a food source for birdlife.
- 3.3.9 Manage the plant growth to encourage the regeneration of the native vegetation through its successive stages of natural regeneration.
- 3.4 The Landowner must comply with all requisite statutes, regulations and bylaws affecting the Land.
- 3.5 The Landowner acknowledges that this Covenant does not affect the Minister's exercise of any powers under any Act.
- 3.6 The Landowner will meet the cost of fencing the Land.

#### 4. PUBLIC ACCESS

- 4.1 The general public shall be excluded from the Land.

#### 5. THE MINISTER'S OBLIGATIONS

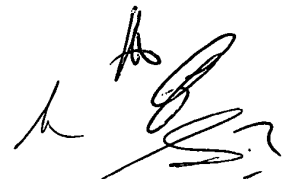
- 5.1 The Minister must have regard to the objectives of this Covenant when considering any requests for approval under this Covenant and will not unreasonably decline any approval.

#### 6. JOINT OBLIGATIONS

- 6.1 Each party shall bear its own legal costs in the preparation and execution of this Covenant.
- 6.2 The Landowner shall bear the cost of the registration of this Covenant.

#### 7. OBLIGATIONS UPON SALE OF THE LAND

- 7.1 If the Landowner sells, leases or otherwise parts with possession of the Land, the Landowner must ensure that it obtains the agreement of any purchaser, lessee or assignee to comply with the terms of this Covenant, including any agreement by the purchaser or assignee to ensure that upon any subsequent sale or assignment (whether by sale, lease or otherwise) any subsequent purchaser, lessee or assignee must also comply with the terms of this Covenant including this clause.
- 7.2 If, for any reason, this Covenant is unregistered and the Landowner fails to obtain the agreement of any purchaser, lessee or assignee to comply with the terms of this Covenant as set out in clause 7.1, the Landowner shall continue to be liable in damages for any breach of the Covenant committed after it has parted with all interest in the Land in respect to which such breaches occur.

A handwritten signature in black ink, appearing to be 'H. B. S.', is located in the bottom right corner of the page.

8. DURATION OF COVENANT

8.1 This Covenant shall bind the parties in perpetuity to the rights and obligations contained in it.

9. MISCELLANEOUS MATTERS

9.1 **Rights:** the rights hereby granted are expressly declared to be in the nature of a covenant.

9.2 **Trespass Act:** except as provided in this Covenant, the Covenant does not diminish or affect the rights of the Landowner to exercise his or her landowner rights under the Trespass Act 1980 or any other statute or generally at law or otherwise. For avoidance of doubt these rights may be exercised by the Landowner if the Landowner reasonably considers that person has breached the rights and/or restrictions of access conferred by this Covenant.

9.3 While this Covenant remains in force and subject to the terms and conditions set out in this Covenant, sections 93 to 105 of the Reserves Act 1977 as far as they are applicable if necessary modifications apply to the Land as if the Land were a reserve.

9.4 This Covenant must be signed by both parties and registered against the Certificates of Title and the Landowner must undertake all reasonable endeavours to make available to the Minister the Certificates of Title to the Land. If the Landowner cannot produce any Certificate of Title the Landowner must, at the Landowners expense, obtain a duplicate of such Certificate of Title. The Minister then, at his/her expense, must register the Covenant against the Certificate of Title.


9.5 **Acceptance of Covenant:** until the Covenant is registered, the parties agree to be bound by the provisions of the Covenant.

10. NOTICES

10.1 Any notice required to be given under this Covenant shall be sufficiently given if made in writing and served as provided in section 152 of the Property Law Act 1952 and shall be sufficiently given if actually received by the party to whom it is addressed or that party's solicitor.

10.2 Any notice required to be given by the Minister shall be sufficiently given if it is signed by the Conservator, Northland Conservancy. Any notice required to be served upon the Minister shall be sufficiently served if delivered to the office for the time being of the Conservator, Northland Conservancy, at Whangarei.

10.3 Any notice required to be given by the Landowner shall be sufficiently given if it is signed by the registered proprietor or a director of the registered proprietor as the case may be from time to time.

Handwritten signatures in black ink, including a large stylized signature and a smaller one.

10.4 Any notice required to be served on the Landowner shall be sufficiently served if delivered to the Landowner care of Cooper White & Associates, Chartered Accountants, 12 Seddon Street, Pukekohe, P.O. Box 303.

## 11. DEFAULT

11.1 Where there is any breach of any agreement contained in this Covenant by either party, then the other party shall be entitled to take such action as may be necessary to remedy the breach or prevent any further damage occurring as a result of the breach and shall also be entitled to recover from the party responsible for the breach as a debt due all costs incurred by the other party as a result of remedying such breach or prevent such damage.

11.2 Should either party to this Covenant become of the reasonable view that the other party (the defaulting party) has defaulted in performance of or observance of its obligations under this Covenant then that party (notifying party) may, by written notice:

11.2.1 Advise the defaulting party of the default.

11.2.2 State the action reasonably required of the defaulting party to perform in accordance with this Covenant; and

11.2.3 State a reasonable period within which the defaulting party must take action to remedy the breach.

## 12. DISPUTE RESOLUTION PROCESSES

12.1 **Resolve by managers:** if the defaulting party fails to take the requisite actions required within the time required in the notice under clause 10.2 or if the defaulting party disputes the notice or any aspect of it; or any other dispute in connection with this Covenant and the rights and obligations contained herein; then the parties agree to make efforts to resolve the disputes through negotiation between the representatives with managerial responsibility on behalf of each party.

12.2 **Resolve by the Minister and Landowner:** in the event that resolution is not agreed within one month of the date given in clause 11.2.3 then the matter will be referred directly to the Landowner and to the Minister for negotiation and/or resolution.

12.3 **Mediation:** if a resolution contemplated by the process provided in 11.2 is not agreed within three months of the date given in clause 11.2.3 then the matter will be referred to formal mediation by the parties with a mediator agreed between. Failing agreement between the parties as to an agreed mediator, then such will be appointed by the President of the New Zealand Law Society.

12.4 **Failure of mediation:** in the event that the matter is not resolved by mediation within nine months of the date referred to in clause 11.2.3 then the parties agree that the provisions in the Arbitration Act 1996 shall apply. The parties further agree that the results of arbitration shall be binding upon the parties.





SCHEDULE 1

Description of Land

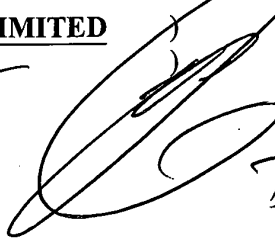
That piece of land marked "C" on Deposited Plan 187577 ( annexed hereto) being part of the land contained in CT 117C/425 ( North Auckland Registry).

In witness whereof this Covenant has been executed this 8<sup>th</sup> day of December 2000.

**SIGNED** by **SPENCER ENTERPRISES LIMITED**  
in the presence of :




**KB Hetherington**  
**Solicitor**  
**Wynyard Wood**  
**Auckland**



S.G. Callender  
Director

**SIGNED** by **GERALD EDWARD ROWAN,** )  
Conservator for the Northland Conservancy, )  
Department of Conservation, acting pursuant to an )  
Instrument of Delegation from the Minister of )  
Conservation dated the 29 October 1997.. and in the )  
presence of )



Witness:   
(A.R. MacPherson)

Address : Wellington

Occupation: Solicitor

Special Certificate LV  
 Registered Owners  
 Approved pursuant to Section 223 of the Resource Management Act 1991 on the 10<sup>th</sup> day of February 1998 subject to the granting of a Certificate of Consent for the proposed subdivision of the land shown on the plan.

The Common Seal of the For North District Council is affixed hereto in the presence of the District Council Officer.

Propose	Subdivision of Land
Legal or Title	Legal Title
Intention	DP 160404
Intention	DP 160404
Intention	DP 160404

Number and Name of Owners in Full

Name	Share	Percentage	Character
DP 160404	100%	100%	DP 160404

Notes: Area shown is to be subject to a long covenant.

Site Use allocated  
 Lot 1 - Residential  
 Lot 2 - Residential  
 Lot 3 - Residential

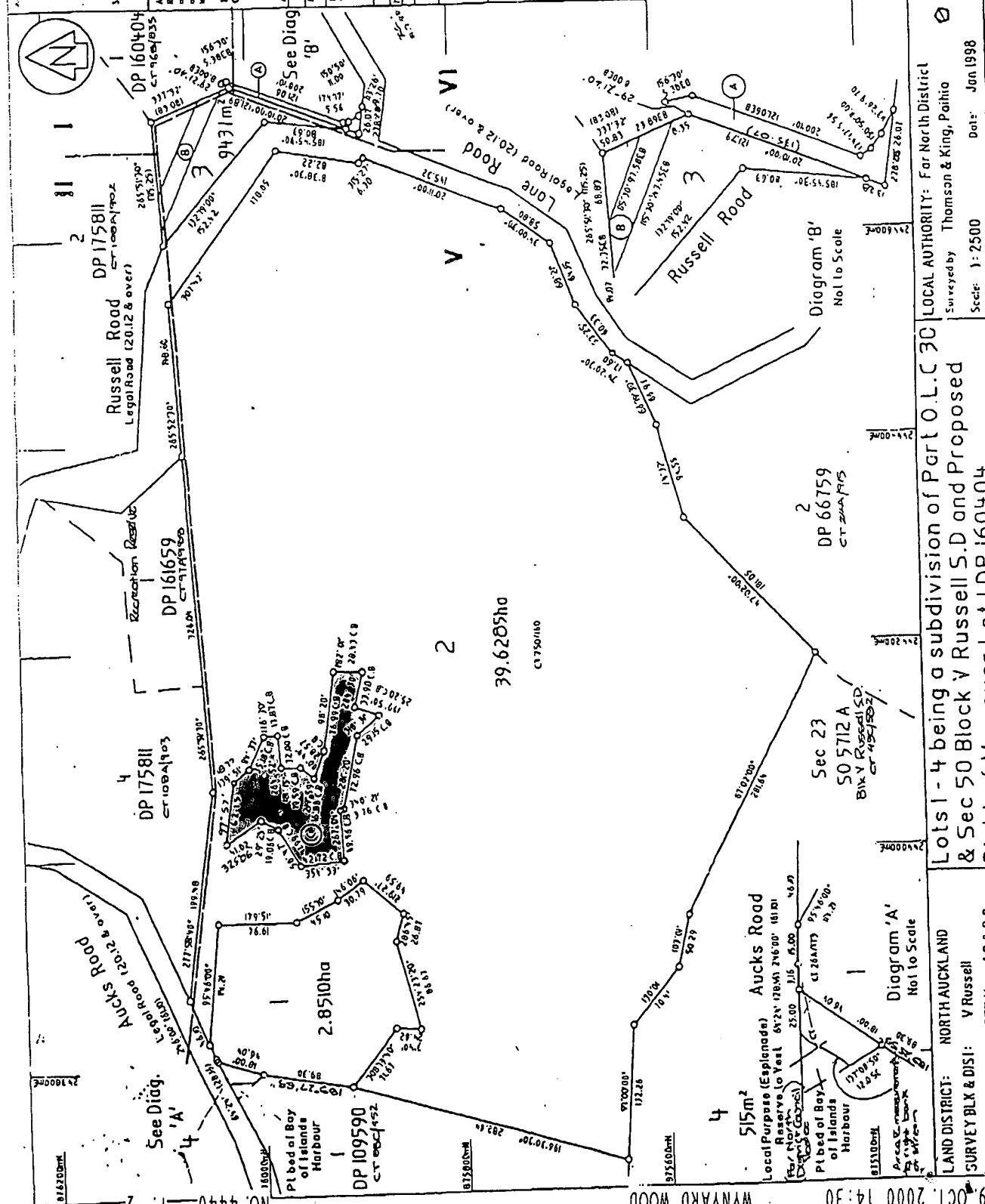
Total Area 43.4741 ha  
 Comprised in (1) 39.6205 ha (2) 2.8510 ha (3) 0.9996 ha (4) 0.9996 ha

1. David Brett King of Paithia. Registered Surveyor and holder of an annual practicing certificate who may act as a registered surveyor for the purposes of section 223 of the Resource Management Act 1991. He has been appointed as the Surveyor for this subdivision and has been made known to the District Council and the Registrar of Land. He is a member of the Institute of Surveyors and is a member of the New Zealand Surveyors' Association. He is a member of the New Zealand Surveyors' Association and is a member of the New Zealand Surveyors' Association. He is a member of the New Zealand Surveyors' Association and is a member of the New Zealand Surveyors' Association.

Approved as to Survey  
 15. 11. 98  
 District Land Registrar

Deposited this 14th day of Sept 1998

13 FEB 03 DP 187577



LOCAL AUTHORITY: For North District  
 Surveyed by Thomson & King, Paithia  
 Scale: 1:2500 Date: Jan 1998

LAND DISTRICT: NORTH AUCKLAND  
 SURVEY BLK & DIS: V Russell  
 NZAS, Q05 SHEET No. 1.2 & 2.2

Lots 1 - 4 being a subdivision of Part O.L.C 30  
 & Sec 50 Block V Russell S.D and Proposed  
 Right of Way over Lot 1 DP 160404

**CONSERVATION COVENANT**

Pursuant to section 77 of  
the Reserves Act 1977

Correct for the  
purpose of the Land Transfer Act

*(Handwritten signature)*  
**(A. R. MACPHERSON)**

**SPENCER ENTERPRISES LIMITED**

Solicitor for the Minister

Covenantor

to

**THE MINISTER OF CONSERVATION**

Particulars entered in Register

Vol                      Folio

Date: .....

Time: .....

-----  
Assistant District Land Registrar  
Of the North Auckland Land District  
-----

Northland Conservancy  
Department of Conservation  
**NORTHLAND**

PARTICULARS ENTERED IN REGISTER  
LAND REGISTRY NORTH ISLAND  
for REGISTRAR-GENERAL OF LAND

9.00 25.JAN01 D 57444413



**LINZ COPY**

# Schedule of Consultation



To: Far North District Council

From: Olivia Stirling – Barker & Associates Limited C/o Willowridge Developments Limited

Date: 12 December 2024

Re: Schedule of consultation as it relates to a Resource Consent for a Management Plan Subdivision at Aucks Road in Russell / Kororāreka.

## Appendices

- Appendix 1 Kororāreka Marae
- Appendix 2 Kororāreka Marae Community Session Minutes
- Appendix 3 Kāretu Marae
- Appendix 4 Top Energy Email
- Appendix 5 Far North District Council Pre-application minutes
- Appendix 6 Northland Regional Council Pre-application minutes
- Appendix 7 FNDC Parks and Reserves Comment
- Appendix 8 Emails to Heritage New Zealand
- Appendix 9 Consultation Presentation

## 1.0 Background

This document has been prepared to outline the consultation that has been undertaken prior to the lodgement of the application for the combined subdivision and land use consent to develop land comprising 43.28ha at Aucks Road, Russell / Kororāreka.

## 2.0 Consultation undertaken

The following table outlines the consultation undertaken prior to lodgement, including the methods used and the outcomes achieved.

Party	Method	Date	Outcome
Kororāreka Marae	Representatives from the Marae Whaea Deb and Whaea Win from Kororareka Marae visited the site.	24 September 2024	See minutes attached at <b>Appendix 1</b> and the AEE for detail and responses to feedback received.

<b>Kororāreka Marae Community</b>	Two community sessions were undertaken at the Marae.	10 November 2024	See minutes attached at <b>Appendix 3</b> and the AEE for detail and responses to feedback received. The powerpoint presented is attached at <b>Appendix 9</b> .
<b>2.1.2.2 Te Kapotai</b>	Representatives visited the site. A hui was held on site with Kara and Vicky.	4 November 2024	See minutes attached at <b>Appendix 2</b> and the AEE for detail and responses to feedback.
<b>Far North District Council</b>	A concept development meeting with Rinku Mishra, Nadia De La Gurre, Pravin Singh and Setha Maharaj.	18 September 2024	See minutes attached at <b>Appendix 5</b> and the AEE for detail and responses to feedback.
<b>Northland Regional Council</b>	A pre-application meeting with Katie McGuire.	1 October 2024	See minutes attached at <b>Appendix 6</b> and the AEE for detail and responses to feedback
<b>Heritage New Zealand</b>	Email	27 September 2024 and 7 October 2024	No response. An archaeological comment was obtained as attached to the AEE. HNZ have not raised concerns through previous subdivision of the site.
<b>Top Energy</b>	Letter	23 September 2024	See attached letter at <b>Appendix 4</b> . No concerns were raised as a result of the proposal.
<b>FNDC Parks and Reserves Comment</b>	Email	15 October 2024	See email attached at <b>Appendix 7</b> and the AEE for detail and responses to feedback.

### 3.0 Conclusion

As outlined in the table above, consultation has been undertaken over several months during the design phase of this development. It is considered that consultation has been adequately carried out with all relevant parties, feedback has been obtained, and this is reflected in the application

**From:** [David Badham](#)  
**To:** [DEBRA REWIRI](#)  
**Cc:** [Olivia Stirling](#); [David McKenzie](#); [spatriciapatu@gmail.com](mailto:spatriciapatu@gmail.com); [moppettm@xtra.co.nz](mailto:moppettm@xtra.co.nz); [davies1960@gmail.com](mailto:davies1960@gmail.com); [burton@jsnz.com](mailto:burton@jsnz.com)  
**Subject:** RE: FW: Orongo Bay Subdivision Proposal  
**Date:** Tuesday, 1 October 2024 9:18:32 pm

---

Kia ora Deb,

Ngā mihi anō for your and Aunty Winnie's time on site last Tuesday 24/10. It was great to meet you both kanohi ki te kanohi on site and to show you around.

Below are some brief notes I recorded from the hui:

- Introductions / whakawhanaungatanga – we introduced ourselves, where we are from etc.
- I discussed the attached plans and summarised the development:
  - The site is currently maintained as single landholding with multiple titles;
  - The site is owned by Willowridge Developments Limited – Allan Dippie is the main representative and we spoke briefly about his vision for the site and previous track record of developments, particularly in the South Island;
  - A comprehensive and holistic management plan approach has been taken to the subdivision design;
  - 65 lots are proposed with a communal Lot 200.
  - Ecologist Madara Vilde from Wild Ecology has been engaged to undertake comprehensive ecological opportunities and constraints mapping as one of the first tasks of the subdivision design. This has informed the location of proposed building platforms, accessways and allotment boundaries;
  - A comprehensive approach to landscape and visual effects has been taken. Landscape architect Mike Farrow has been to the site half a dozen times to carefully select sites for building platforms etc;
  - We are seeking a management plan subdivision under Rule 13.9.2.2 of the Operative Far North District Plan. Other matters will also be triggered for resource consent, however overall, it is anticipated that the proposal will trigger resource consent as a discretionary activity – resource consents will also be applied for from Northland Regional Council.
  - An archaeological assessment has already been undertaken. There were previously two archaeological sites identified on the site reference Q05/1270 and Q05/1269. The assessment has confirmed that there is in fact only one. This archaeological site has been identified on site and marked out, and subsequently avoided in terms of any indicative building area (in proposed Lot 9), the scheme plan will be updated to show this and we also had a look on site;
- Richard then took us for a drive in his vehicle around the site and I pointed out some of the key features of the site and development.

Can you please confirm if you are comfortable with the above notes, or add anything further if you think I have missed this. I just want to make sure I have an agreed record of the site visit / hui for when we lodge the resource consent.

One of your key pieces of feedback was that you would be keen for the Applicant and our consultants to do a presentation at Kororaereka Marae. They've confirmed that they are happy to do this and there are possible dates on:

- Monday 4 November 2024
- Tuesday 5 November 2024
- Friday 8 November 2024

Are there any times on those dates above that would work for you? We would plan to do a more

fullsome presentation on the proposal to explain what we are proposing and outlining the various technical assessments that we have underpinning the subdiviison design etc. Please let me know what works for you, and I will get this locked in at our end.

Finally, I got contacted late last week by Kara George from Karetu Marae saying that they have an interest in the site and area. I just wanted to check if you or others from Kororaereka Marae had any comments or thoughts on this?

Ngā mihi | Kind regards,

---

DAVID BADHAM  
Partner/Northland Manager  
[021 203 1034](tel:0212031034)  
[davidb@barker.co.nz](mailto:davidb@barker.co.nz)

[barker.co.nz](http://barker.co.nz) 

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**From:** David Badham

**Sent:** Friday, 20 September 2024 4:41 pm

**To:** DEBRA REWIRI <[rewiri.boyce@xtra.co.nz](mailto:rewiri.boyce@xtra.co.nz)>

**Cc:** Olivia Stirling <[OliviaS@barker.co.nz](mailto:OliviaS@barker.co.nz)>; David McKenzie <[merkenzie@gmail.com](mailto:merkenzie@gmail.com)>;  
[spatriciapatu@gmail.com](mailto:spatriciapatu@gmail.com); [moppetm@xtra.co.nz](mailto:moppetm@xtra.co.nz); [daviesl1960@gmail.com](mailto:daviesl1960@gmail.com); [burton@jsnz.com](mailto:burton@jsnz.com)

**Subject:** RE: FW: Orongo Bay Subdivision Proposal

Kia ora Deb,

Confirming our kōrero from earlier, that Tuesday 10am is all good. Let's meet on site at the existing house indicated below. I'll bring some copies of the plans etc, and fingers crossed for nice weather for a bit of a Hikoi on site.

Looking forward to properly meeting kanohi ki te kanohi on site.





Ngā mihi | Kind regards,

---

DAVID BADHAM  
Partner/Northland Manager  
[021 203 1034](tel:0212031034)  
[davidb@barker.co.nz](mailto:davidb@barker.co.nz)

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[barker.co.nz](http://barker.co.nz)



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**From:** DEBRA REWIRI <[rewiri.boyce@xtra.co.nz](mailto:rewiri.boyce@xtra.co.nz)>  
**Sent:** Friday, 20 September 2024 3:12 pm  
**To:** David Badham <[DavidB@barker.co.nz](mailto:DavidB@barker.co.nz)>  
**Cc:** Olivia Stirling <[OliviaS@barker.co.nz](mailto:OliviaS@barker.co.nz)>; David McKenzie <[merkenzie@gmail.com](mailto:merkenzie@gmail.com)>;  
[spatriciapatu@gmail.com](mailto:spatriciapatu@gmail.com); [moppetm@xtra.co.nz](mailto:moppetm@xtra.co.nz); [davies1960@gmail.com](mailto:davies1960@gmail.com); [burton@jsnz.com](mailto:burton@jsnz.com)  
**Subject:** Re: FW: Orongo Bay Subdivision Proposal

Kiaora David

Would it be possible to meet Tuesday 24th September 10am onsite?

Ngāa mihi

Deb

On 16/09/2024 15:52 NZST David Badham <[davidb@barker.co.nz](mailto:davidb@barker.co.nz)> wrote:

Kia ora Deb,

I am just following up again on the below and attached as per my voicemail and text. We are still keen on your feedback and to meet (virtually or kanohi ki te kanohi) to discuss this proposal.

Can you please give me a call on my cell when you are free?

Ngā mihi | Kind regards,

---

DAVID BADHAM  
Partner/Northland Manager  
021 203 1034  
[davidb@barker.co.nz](mailto:davidb@barker.co.nz)

[barker.co.nz](http://barker.co.nz) 

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**From:** David Badham

**Sent:** Friday, 6 September 2024 4:05 pm

**To:** DEBRA REWIRI <[rewiri.boyce@xtra.co.nz](mailto:rewiri.boyce@xtra.co.nz)>

**Cc:** Olivia Stirling <[OliviaS@barker.co.nz](mailto:OliviaS@barker.co.nz)>; [moppettm@xtra.co.nz](mailto:moppettm@xtra.co.nz); David McKenzie <[merkenzie@gmail.com](mailto:merkenzie@gmail.com)>; [spatriciapatu@gmail.com](mailto:spatriciapatu@gmail.com); marsha davis <[standinginwater@gmail.com](mailto:standinginwater@gmail.com)> <[standinginwater@gmail.com](mailto:standinginwater@gmail.com)>; [burton@jsnz.com](mailto:burton@jsnz.com); [davies1960@gmail.com](mailto:davies1960@gmail.com); [dianesmith14@hotmail.com](mailto:dianesmith14@hotmail.com); Suz Te Tai <[kmcchair2016@gmail.com](mailto:kmcchair2016@gmail.com)>

**Subject:** RE: Orongo Bay Subdivision Proposal

Kia ora anō Deb,

Thanks for your patience with this. Please find attached a copy of the draft scheme plan for the proposed subdivision on the site.

Please let me know when you or anyone else is keen to catch up on this. I'm down at AIMs games in Tauranga with my son next week but am free on Monday 16/9 or Tuesday 17/9 if you would like to meet (virtually or kanohi ki te kanohi) to discuss this proposal.

Ngā mihi | Kind regards,

---

DAVID BADHAM  
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[davidb@barker.co.nz](mailto:davidb@barker.co.nz)

[barker.co.nz](http://barker.co.nz) 

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**From:** DEBRA REWIRI <[rewiri.boyce@xtra.co.nz](mailto:rewiri.boyce@xtra.co.nz)>

**Sent:** Friday, 23 August 2024 10:54 am

**To:** David Badham <[DavidB@barker.co.nz](mailto:DavidB@barker.co.nz)>

**Cc:** Olivia Stirling <[OliviaS@barker.co.nz](mailto:OliviaS@barker.co.nz)>; [moppettm@xtra.co.nz](mailto:moppettm@xtra.co.nz); David McKenzie <[merkenzie@gmail.com](mailto:merkenzie@gmail.com)>; [spatriciapatu@gmail.com](mailto:spatriciapatu@gmail.com); marsha davis <[standinginwater@gmail.com](mailto:standinginwater@gmail.com)> <[standinginwater@gmail.com](mailto:standinginwater@gmail.com)>; [burton@jsnz.com](mailto:burton@jsnz.com); [daviesl1960@gmail.com](mailto:daviesl1960@gmail.com); [dianesmith14@hotmail.com](mailto:dianesmith14@hotmail.com); Suz Te Tai <[kmcchair2016@gmail.com](mailto:kmcchair2016@gmail.com)>

**Subject:** Re: Orongo Bay Subdivision Proposal

Kiaora David

Thank you for making contact with me and this particular area would also include [aside from us as Haukainga]Ngati Manu so I will cc them into the ongoing korero.

Look forward to meeting with you soon.

Ngaa mihi

Deb

On 23/08/2024 10:44 NZST David Badham <[davidb@barker.co.nz](mailto:davidb@barker.co.nz)> wrote:

Mōrena Deb,

Ngā mihi anō for your kōrero on the phone this morning.

As mentioned, myself and my colleague Olivia (cc'd in), are working for our client Willowridge Developments who own the site at 39 Aucks Road, Russell. We are currently looking at a subdivision proposal for the site. I contacted Auriole from NRC and Llani from FNDC who passed on your details as the relevant marae / hapū contact for the area to get in touch with in terms of engagement on this.

No resource consent has been lodged, and we are currently in the design phase for the project. We anticipate having a draft scheme plan available next week which we can share with you, and then arrange a time to meet (possibly on site) to discuss any feedback you may have and next steps etc.

My contact details are below if you wish to discuss any further. In the meantime, happy to discuss further as required, just give me a bell on my cell below.

Ngā mihi | Kind regards,

---

DAVID BADHAM  
Partner/Northland Manager  
021 203 1034  
[davidb@barker.co.nz](mailto:davidb@barker.co.nz)

PO Box 37,  
Whangārei 0140  
Level 1, 136 Bank Street, Whangārei 0112

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Auckland, Hamilton, Cambridge,

[barker.co.nz](http://barker.co.nz)



Tauranga, Napier, Wellington,  
Christchurch, Queenstown, Wānaka

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**Project:** Consultation Kororāreka Marae - Orongo Bay Resource Consent Application

**Date:** 4 November 2024

**Time:** 10:00am – 11:30am

**Location:** Kororāreka Marae

**Attendees Applicant:** Allan Dippie (Applicant), David Badham (Planning) – B&A, Mike Farrow (Landscape) – LLA, Richard (Property care taker)

Item	Detail
1	<b>Whakawhanaungatanga/ Introductions</b>
2	<p><b>Consultation Overview:</b></p> <p>a) Whaea Deb gave a brief overview of the consultation to date.</p> <ul style="list-style-type: none"> <li>i. Kororāreka Marae were notified of the application in August;</li> <li>ii. Representatives of Kororāreka Marae were invited and have undertaken a site visit, with David and Richard.</li> </ul> <p>b) David noted that pre-application engagement had also been undertaken with Heritage New Zealand Pouhere Taonga, kāretu marae representatives, Top Energy, FNDC and NRC.</p>
2	<p><b>Subdivision Concept and Background</b></p> <p>a) David gave a brief overview of the site and the proposal, noting;</p> <ul style="list-style-type: none"> <li>i) The site is currently maintained as single landholding with multiple titles;</li> <li>ii) Previous resource consents that have been granted on the site, and the roading infrastructure and power connections already established;</li> <li>iii) A comprehensive and holistic management plan approach has been taken to the subdivision design;</li> <li>iv) 65 lots are proposed with a communal Lot 200 and indicative staging;</li> <li>v) Ecologist Madara Vilde from Wild Ecology has been engaged to undertake comprehensive ecological opportunities and constraints mapping as one of the first tasks of the subdivision design. This has informed the location of proposed building platforms, accessways and allotment boundaries;</li> <li>vi) A comprehensive approach to landscape and visual effects has been taken. Landscape architect Mike Farrow has been to the site half a dozen times to carefully select sites for building platforms etc;</li> <li>vii) Zoning overview and that we are seeking a management plan subdivision under Rule 13.9.2.2 of the Operative Far North District Plan;</li> <li>viii) Regional Consents from NRC are likely required for earthworks and under the NES-FW for setbacks from wetlands. This is likely to be a discretionary activity, depending on final ecological details. Approval will be sought separately for these consents.</li> </ul>
3	<p><b>Allotment sizes</b></p> <p>a) David and Allan talked to the allotment sizes, noting that there was diversity within the development, including, larger lots on higher elevations which would inevitably be more</p>

Item	Detail
	<p>expensive as more earthworks would be required and smaller lots on the lower elevation, which would provide more affordable options and be aimed towards entry level buyers;</p> <p>b) A question was raised whether allotment sizes could be made smaller, to enable more affordable living opportunities. Allan responded that we are limited by the average allotment size under the District Plan, therefore, we are unable to create more smaller lots, however the development provides for a good balance;</p>
4	<p><b>Wastewater</b></p> <p>a) Attendees raised questions regarding wastewater disposal and expressed concerns about the developments potential impact on Orongo Bay and the local oyster farms;</p> <p>b) David and Allan explained that careful consideration had been given to wastewater disposal impacts throughout the design phase. The subdivision’s design followed a management plan approach, addressing both opportunities and constraints, including effective servicing and wastewater disposal solutions;</p> <p>c) Maven Engineers were engaged early in the project and have contributed valuable input throughout the development process, particularly in determining boundary locations and wastewater management solutions;</p> <p>d) This subdivision will achieve a significantly improved wastewater outcome compared to historical septic systems. Additionally, cattle previously grazed on the property were removed by the applicant to reduce the environmental impact on the surrounding area;</p> <p>e) Wastewater from the development will be treated to meet the standards set by the FNDC and NRC, ensuring that no untreated discharge enters Orongo Bay;</p> <p>f) David and Allan note that we are confident in the wastewater management technology.</p>
5	<p><b>Ecology</b></p> <p>a) David explained that kiwi aversion training would be mandatory for dogs, while cats and mustelids would be prohibited. Attendees noted that dogs are important to many residents, given the area’s reputation as a "dog town." David and Allan acknowledged this, adding that they believe they have found a balanced approach, developed in consultation with their ecologist.</p> <p>b) Attendees that have visited the site were impressed by the ecological potential and outcomes of the development proposal.</p>
6	<p><b>Final feedback</b></p> <ol style="list-style-type: none"> <li>1. The attendees appreciated the opportunity to consult;</li> <li>2. Attendees reinforced the importance of run-off and sewage impacts on the Oyster farms;</li> <li>3. This development provides opportunity to improve the diversity within the town, with both younger and older people. When Māori families lost their land there has been no opportunity to buy the land back, this development provides opportunity for the whānau to can come back to the town due to previous affordability and land opportunity restraints.</li> </ol>

**Project:** Consultation Kororāreka Marae - Orongo Bay Resource Consent Application

**Date:** 4 November 2024

**Time:** 2:30pm – 4:00pm

**Location:** Kororāreka Marae

**Attendees Applicant:** Allan Dippie (Applicant), David Badham (Planning) – B&A, Mike Farrow (Landscape) – LLA, Richard (Property care taker)

Item	Detail
1	<b>Whakawhanaungatanga/ Introductions</b>
2	<p><b>Consultation Overview:</b></p> <ul style="list-style-type: none"> <li>a) Whaea Deb gave a brief overview of the consultation to date.                             <ul style="list-style-type: none"> <li>i. Kororāreka Marae were notified of the application in August;</li> <li>ii. Representatives of Kororāreka Marae were invited and have undertaken a site visit, with David and Richard.</li> </ul> </li> <li>b) David noted that pre-application engagement had also been undertaken with Heritage New Zealand Pouhere Taonga, kāretu marae representatives, Top Energy, FNDC and NRC.</li> </ul>
2	<p><b>Subdivision Concept and Background</b></p> <ul style="list-style-type: none"> <li>a) David gave a brief overview of the site and the proposal, noting;                             <ul style="list-style-type: none"> <li>i) The site is currently maintained as single landholding with multiple titles;</li> <li>ii) Previous resource consents that have been granted on the site, and the roading infrastructure and power connections already established;</li> <li>iii) A comprehensive and holistic management plan approach has been taken to the subdivision design;</li> <li>iv) 65 lots are proposed with a communal Lot 200 and indicative staging;</li> <li>v) Ecologist Madara Vilde from Wild Ecology has been engaged to undertake comprehensive ecological opportunities and constraints mapping as one of the first tasks of the subdivision design. This has informed the location of proposed building platforms, accessways and allotment boundaries;</li> <li>vi) A comprehensive approach to landscape and visual effects has been taken. Landscape architect Mike Farrow has been to the site half a dozen times to carefully select sites for building platforms etc;</li> <li>vii) Zoning overview and that we are seeking a management plan subdivision under Rule 13.9.2.2 of the Operative Far North District Plan;</li> <li>viii) Regional Consents from NRC are likely required for earthworks and under the NES-FW for setbacks from wetlands. This is likely to be a discretionary activity, depending on final ecological details. Approval will be sought separately for these consents.</li> </ul> </li> </ul>
3	<p><b>Landscaping</b></p> <ul style="list-style-type: none"> <li>a) An attendee commented on the potential visual impact of the development. David responded by explaining that, although the development will be visible from outside the site, it will be</li> </ul>



Item	Detail
	<p>well integrated with the landscape through vegetation and building controls which have been carefully considered. The development master plan has been created with significant input from Mike, the landscape architect;</p> <p>b) David referred to the landscape opportunities map, and talked to the comprehensive landscaping throughout the site as a result of the development;</p> <p>c) An attendee expressed concern that the development was too intensive for this location. David explained the management plan approach for the subdivision and that the development maintains compliance with the average lot size across the development.</p>
4	<p><b>Wastewater</b></p> <p>a) David and Allan talked to wastewater concerns raised in the last meeting and explained that careful consideration had been given to wastewater disposal;</p> <p>b) It was raised that given the size of some of the allotments, that septic systems would not be able to be established on each lot. David and Allan described the tertiary systems proposed and the benefits to such systems;</p> <p>c) This subdivision will achieve a significantly improved wastewater outcome compared to historical septic systems. Additionally, cattle previously grazed on the property were removed by the applicant to reduce the environmental impact on the surrounding area;</p> <p>d) Wastewater from the development will be treated to meet the standards set by the FNDC and NRC, ensuring that no untreated discharge enters Orongo Bay;</p> <p>e) We are confident in the wastewater management technology, which will be detailed in the application.</p>
5	<p><b>Transport</b></p> <p>a) An attendee raised that with so many additional lots and not much carparking around town, could a park and ride be looked into? David responded that they would investigate the feasibility of this idea.</p>
	<p><b>Community Outcomes</b></p> <p>a) Attendees asked how the applicant planned to support the community through this project. Allan responded that the project contributes by creating job opportunities, providing entry-level housing, enhancing biodiversity, and promoting native regeneration. He highlighted positive steps already taken on the site, including removing cattle, fences, and exotic vegetation;</p> <p>b) Questions were raised by attendees about how housing affordability would be assured. Allan responded that the development provides diverse options including lots sizes, and elevations, to provide for a diverse range of people. We are constrained by the average allotment size across the development; therefore, some larger lots need to be provided which will consequently be more expensive;</p> <p>c) In light of the Council's infrastructure challenges, an attendee suggested considering additional infrastructure support. Allan and David explained that they had explored the option of vesting road ownership to the Council, but this would require the Council to maintain the road. Instead, a body corporate will be established, with a residents' society responsible for managing the road.</p>
6	<p><b>Final feedback</b></p>

Item	Detail
	<ol style="list-style-type: none"><li>1. The attendees appreciated that the applicant was considering the outcomes of the community through the design stage;</li><li>2. This development provides opportunity for affordable housing which is a good outcome for whānau that cannot currently afford to live in Russell;</li><li>3. Sustainability concerns.</li></ol>

**From:** [David Badham](#)  
**To:** [Kara George](#)  
**Cc:** [Allan Dipple](#); [Olivia Stirling](#)  
**Subject:** RE: FW: Orongo Bay - Proposed Subdivision  
**Date:** Sunday, 10 November 2024 2:08:08 pm  
**Attachments:** [Orongo Bay Development - Engagement Presentation.pdf](#)

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Kia ora Kara,

Ngā mihi anō to you and Vicky for your time on site on Monday 4/11. It was great to see you again, and to meet Vicki.

Below are some brief notes I recorded from the hui:

- Introductions / whakawhanaungatanga – we (Allan, Vicky, Richard, you and I) introduced ourselves, where we are from etc.
- I talked to the attached and summarised the development:
  - The site is currently maintained as single landholding with multiple titles across approx 43.71ha;
  - The site is owned by Willowridge Developments Limited – Allan is the main representative and we spoke briefly about his vision for the site
  - Roading infrastructure and power connections are largely already established;
  - An archaeological assessment has already been undertaken. There were previously two archaeological sites identified on the site reference Q05/1270 and Q05/1269. The assessment has confirmed that there is in fact only one. This archaeological site has been identified on site and marked out, and subsequently avoided in terms of any indicative building area (in proposed Lot 9), the scheme plan will be updated to show this and we also had a look on site;
  - You noted that there is historic kōrero of remains being discovered in this locality during previous development (you mentioned possibly in the 1990s). You highlighted that importance of having a simple and clear Accidental Discovery Protocol on the site that required you to be contacted if anything was discovered during earthworks. We agreed, and confirmed that we would offer an ADP as a condition of the consent;
  - A comprehensive and holistic management plan approach has been taken to the subdivision design;
  - 65 lots are proposed with a communal Lot 200;
  - The subdivision will be staged, with 5 currently proposed. We discussed the staging, noting that lots to the east of Lane Road would be in Stage 1, during the building platforms already being largely formed with access and power connections readily available.
  - Ecologist Madara Vilde from Wild Ecology has been engaged to undertake comprehensive ecological opportunities and constraints mapping as one of the first tasks of the subdivision design. This has informed the location of proposed building platforms, accessways and allotment boundaries;
  - A comprehensive approach to landscape and visual effects has been taken. Landscape architect Mike Farrow has been to the site half a dozen times to carefully select sites for building platforms etc; and
  - We are seeking a management plan subdivision under Rule 13.9.2.2 of the

Operative Far North District Plan. Other matters will also be triggered for resource consent, however overall, it is anticipated that the proposal will trigger resource consent as a discretionary activity – resource consents will also be applied for from Northland Regional Council.

Can you please confirm if you are comfortable with the above notes, or add anything further if you think I have missed this. I just want to make sure I have an agreed record of the hui for when we lodge the resource consent.

We are also happy to share any documentation for the proposal. If there is anything in particular that you want to see, please let me know. In the meantime I have attached a copy of the presentation I talked to.

Ngā mihi | Kind regards,

---

DAVID BADHAM  
Partner/Northland Manager  
[021 203 1034](tel:0212031034)  
[davidb@barker.co.nz](mailto:davidb@barker.co.nz)

[barker.co.nz](http://barker.co.nz)



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**From:** Kara George <[karataumarere@gmail.com](mailto:karataumarere@gmail.com)>

**Sent:** Wednesday, 30 October 2024 6:05 pm

**To:** David Badham <[DavidB@barker.co.nz](mailto:DavidB@barker.co.nz)>

**Subject:** Re: FW: Orongo Bay - Proposed Subdivision

Sounds great! See you then!

Nga mihi Kara

On Wed, Oct 30, 2024 at 5:55 PM David Badham <[DavidB@barker.co.nz](mailto:DavidB@barker.co.nz)> wrote:

Kia ora anō Kara,

How does 12pm onsite next Monday 4/11 work for you?

Ngā mihi | Kind regards,

---

DAVID BADHAM  
Partner/Northland Manager  
[021 203 1034](tel:0212031034)  
[davidb@barker.co.nz](mailto:davidb@barker.co.nz)

[barker.co.nz](http://barker.co.nz)



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**From:** Kara George <[karataumarere@gmail.com](mailto:karataumarere@gmail.com)>  
**Sent:** Wednesday, 30 October 2024 5:49 pm  
**To:** David Badham <[DavidB@barker.co.nz](mailto:DavidB@barker.co.nz)>  
**Subject:** Re: FW: Orongo Bay - Proposed Subdivision

Kia ora David,

Thank you for your prompt reply.

I would prefer to meet "kanohi ki te kanohi" preferably on site

At this stage I am available all week . Happy to fit in with your schedule

Nga mihi Kara

On Wed, Oct 30, 2024 at 10:12 AM David Badham <[DavidB@barker.co.nz](mailto:DavidB@barker.co.nz)> wrote:

Kia ora Kara,

Happy to have a discussion. When is good for you to do this? I am available via phone for the rest of the week. Alternatively I am heading up north on Monday 5/11 if you would like to catch up kanohi ki te kanohi.

Ngā mihi | Kind regards,

---

DAVID BADHAM  
Partner/Northland Manager  
[021 203 1034](tel:0212031034)  
[davidb@barker.co.nz](mailto:davidb@barker.co.nz)

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**From:** Kara George <[karataumarere@gmail.com](mailto:karataumarere@gmail.com)>  
**Sent:** Monday, 28 October 2024 6:47 pm  
**To:** David Badham <[DavidB@barker.co.nz](mailto:DavidB@barker.co.nz)>  
**Subject:** Re: FW: Orongo Bay - Proposed Subdivision

Kia ora David ,

I have looked at the scheme and would like to have a discussion around something with more detail.

I understand that the owner is in town this week looking to engage with local Iwi.

Can I reiterate that it is the Te Kapotai who has Mana Whenua across Orongo Bay , not the

Koroareka Mare Incorporated Society or Ngati Manu.

Nga mih Kara George,- 0272367887  
Kaumatua Te Kapotai hapu.

On Wed, Oct 23, 2024 at 2:09 PM David Badham <[DavidB@barker.co.nz](mailto:DavidB@barker.co.nz)> wrote:

Kia ora anō Kara,

Just following up on the below and attached, to see if you have had a chance to consider.  
If you wish to discuss this Kaupapa, please call me on my cell below.

Ngā mihi | Kind regards,

---

DAVID BADHAM  
Partner/Northland Manager  
[021 203 1034](tel:0212031034)  
[davidb@barker.co.nz](mailto:davidb@barker.co.nz)

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**From:** David Badham  
**Sent:** Monday, 7 October 2024 3:41 pm  
**To:** [karataumarere@gmail.com](mailto:karataumarere@gmail.com)  
**Cc:** Olivia Stirling <[OliviaS@barker.co.nz](mailto:OliviaS@barker.co.nz)>  
**Subject:** Orongo Bay - Proposed Subdivision

Kia ora Kara,

Thanks for your call the other day.

Attached is a copy of the plans for the proposed subdivision that we have also shared with Deb and others from Kororareka Marae.

Once you have had a chance to review, please let me know if you would like to catch up to discuss. We have not lodged resource consent yet, but are looking to do so in early November.

Please note that I am on annual leave overseas from tomorrow until next Tuesday. In the meantime, my colleague Olivia (cc'd in) can answer any queries you may have on this.

Ngā mihi | Kind regards,

---

DAVID BADHAM  
Partner/Northland Manager

[021 203 1034](tel:0212031034)  
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Auckland, Hamilton, Cambridge,  
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Christchurch, Queenstown, Wānaka

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*Top Energy Limited*

Level 2, John Butler Centre  
60 Kerikeri Road  
P O Box 43  
Kerikeri 0245  
New Zealand  
PH +64 (0)9 401 5440  
FAX +64 (0)9 407 0611

23 September 2024

Chris Page  
Maven Associates Ltd

Email: [chrisp@maven.co.nz](mailto:chrisp@maven.co.nz)

To Whom It May Concern:

**RE: PROPOSED SUBDIVISION  
Willowridge Developments Ltd – 39 Aucks Road, Russell.  
Lot 1 DP 187577, Lot 3 & 4 DP 420232 and Lot 1 & 2 DP 542129.**

Thank you for your recent correspondence with attached proposed subdivision scheme plans.

Top Energy's requirement for this subdivision is nil.  
Top Energy recommends power is made available to the additional lots at the development stage and that an easement in gross in favour of Top Energy be included for the proposed accessways. Design and costs to provide a power supply would be provided after application and an on-site survey have been completed.

Link to application: [Top Energy | Top Energy](#)

In order to get a letter from Top Energy upon completion of your subdivision, a copy of the resource consent decision must be provided.

Yours sincerely

**Aaron Birt**  
Planning and Design  
T: 09 407 0685  
E: aaron.birt@topenergy.co.nz

**Project:** Orongo Bay Resource Consent Application - Concept Development Meeting

**Date:** 18 September 2024

**Time:** 9:00am – 10:00am

**Location:** Virtual – MS Teams

**Attendees:** David Badham & Olivia Stirling – Planning B&A  
 Chris Page (Survey) and Toby Madeno (Civil Engineering) – Maven  
 Josh Curreen – Geotech  
 Alison Devlin – Willowridge Developments (Applicant Representative).  
 Rinku Mishra – FNDC RC Engineer, Nadia De la Guerre – T/L Engineers  
 Pravin Singh – FNDC Rooding  
 Swetha Maharaj – FNDC Snr Planner

Item	Detail
1	<b>Introductions</b>
2	<p><b>Subdivision Concept and Background</b></p> <p>a) David gave a brief overview of the site and its features, noting;</p> <ul style="list-style-type: none"> <li>i) The site is currently maintained as single landholding with multiple titles, including six parcels of land held in four Records of Title;</li> <li>ii) The site has an approximate area of 43.71ha;</li> <li>iii) In 2000, RC 2010379 approved the subdivision of Lot 2 DP 187577 into 19 allotments and one allotment to vest in road. RC2010379 was subsequently varied to create 11 allotments and one access allotment;</li> <li>iv) The formation of an accessway through Lot 7 DP 208629 was approved by RC2020315 which enabled the excavation of upto 5,000m<sup>3</sup> of earth to form the access for the approved subdivision consent RC 2022315;</li> <li>v) Existing roading infrastructure and some power connections from previously granted resource consent RC2010379 have been established on the site. Section 223 was completed, with a number of physical works being undertaken on site, but no 224 / title issued. The consenting background will be covered in the AEE;</li> </ul> <p>b) A comprehensive and holistic approach has been taken to the subdivision design;</p> <p>c) 65 lots are proposed with a communal Lot 200.</p>
3	<p><b>Planning Background</b></p> <ul style="list-style-type: none"> <li>a) The Operative Zoning is Coastal Living, with a small wedge of General Coastal in the top portion to the south of the Site, off Lane Road (which will be excluded from the proposal);</li> <li>b) The Proposed Plan Zoning is Rural Lifestyle Zone, with Rural Production on Lot 2 DP 542129. The site is partially subject to Coastal Environment and Flood Hazard overlays. The proposed</li> </ul>

Item	Detail
	<p>Plan (obs and pols, rules have no legal effect) will be attributed limited weight given that hearings are still underway, and decisions are some time away;</p> <ul style="list-style-type: none"> <li>c) NRC maps show the site as being flood susceptible in the lower northern-western portion of the site;</li> <li>d) We are seeking a management plan subdivision under Rule 13.9.2.2 of the Operative Far North District Plan. Other matters will also be triggered for resource consent, however overall, it is anticipated that the proposal will trigger resource consent as a discretionary activity;</li> <li>e) An archaeological assessment has already been undertaken. There were previously two archaeological sites identified on the site reference Q05/1270 and Q05/1269. The assessment has confirmed that there is in fact only one. This archaeological site has been identified on site and marked out, and subsequently avoided in terms of any indicative building area (in proposed Lot 9), the scheme plan will be updated to show this;</li> <li>f) Regional Consents from NRC are likely required for earthworks and under the NES-FW for setbacks from wetlands. This is likely to be a discretionary activity, depending on final ecological details. Approval will be sought separately for these consents;</li> <li>g) Hapū consultation – Initial engagement with representatives from Kororareka Marae (Deb Rewiri) has commenced. Whaea Deb along with other representatives were referenced to us by FNDC (Llani Harding) and NRC (Auriole Ruka). They have confirmed they are interested in the site / development, and we have offered to meet (virtually or kanohi ki te kanohi on site) to discuss their views and seek any feedback.</li> </ul>
4	<p><b>Ecology</b></p> <ul style="list-style-type: none"> <li>a) Ecologist Madara Vilde from Wild Ecology has been engaged to undertake comprehensive ecological opportunities and constraints mapping as one of the first tasks of the subdivision design. This has informed the location of proposed building platforms, accessways and allotment boundaries;</li> <li>b) We will be proposing domestic pet restrictions. At this stage our ecologist is recommending a no cats or mustelids consent notice / covenant on the titles, with mitigation in place for dogs (e.g., kiwi aversion training, enclosures at night etc);</li> <li>c) Large areas of bush protection and enhancement areas will be proposed throughout the site. This will provide ecological enhancement providing an overall positive ecological effect alongside landscaped backdrops for building platforms.</li> </ul> <p><b>Landscape</b></p> <ul style="list-style-type: none"> <li>a) A comprehensive approach to landscape and visual effects has been taken. Landscape architect Mike Farrow has been to the site half a dozen times to carefully select sites for building platforms etc;</li> <li>b) There will be additional landscape / amenity planting around building areas to further visually soften and mitigate the development;</li> <li>c) Design guidelines (e.g., recessive colours, height controls, reflectivity) will also be imposed on elevated sections to further mitigate future build development;</li> <li>d) A landscape assessment will carefully assess neighbouring properties alongside the wider environment.</li> </ul>
5	<p><b>Scheme plan &amp; Survey</b></p> <ul style="list-style-type: none"> <li>a) The design has been dictated by ecological and landscaping opportunities and constraints;</li> </ul>

Item	Detail
	<ul style="list-style-type: none"> <li>b) Shared roads and communal areas are to be held and maintained by Residents Society which has been proposed for ongoing maintenance and upkeep to avoid assets having to be vested with Council;</li> <li>c) The development has been designed to utilise existing infrastructure;</li> <li>d) Flexible staging will be proposed.</li> </ul>
6	<p><b>Civil Engineering</b></p> <p><u>Roading/ Access</u></p> <ul style="list-style-type: none"> <li>a) Tried to keep gradients under 12.5% where possible;</li> <li>b) Three formation standards will be proposed within the development;</li> </ul> <p><i>Elizebeth</i> - As far as the existing accessway go will these be vested to Council? It appears that a rural style development is proposed i.e. draining and footpaths;</p> <p><i>Response</i> – Roads and shared areas are proposed to be held in a shared ownership, and managed by the Residents Society. The rural style of development is intended through the design to enable the development to be in keeping with the surrounding environment. As this is a management plan subdivision, a comprehensive approach to the development has been taken. Pedestrian pathways will be integrated into the development in a way that aligns with the outcomes expected by the District Plan standards.</p> <p><u>Stormwater</u></p> <p>Storm water management was detailed by Toby at a high level. There'll be a lot more detail that comes in with the application. It is proposed to provide discharge points into the table drains directly. All the roads will have table drains and or swales. The discharge from the development will be directed to the pond within Lot 200.</p> <p>There is no downstream property that would be affected by the development, and we are adjacent to the coast.</p> <p><u>Firefighting and water supply</u></p> <p>Every lot will have tanks for their portable and non-portable supply. We will specify a minimum requirement, which would likely be 45,000 litres, 10,000 of which will be reserved for firefighting.</p>
7	<p><b>Geotech</b></p> <ul style="list-style-type: none"> <li>a) We have undertaken cross sections across the site to determine platform locations and risk associated with each allotment, and how the relative level of risk can be managed;</li> <li>b) Detailed assessment will be provided with the application.</li> </ul>
8	<p><b>Council Feedback</b></p> <p><b><i>Geotechnical Assessment</i></b></p> <ul style="list-style-type: none"> <li>a) Recommendations for each platform to be provided and associated risk detailed – Josh noted the comprehensive Geotech modelling and analysis that has been undertaken to inform building platform locations. This will be outlined in the detailed geotechnical assessment to be provided with the AEE;</li> <li>b) Suggestion to decrease the 18% gradient in the road – response noted that what is proposed complies with the Council’s Standards;</li> </ul>

***Roading***

- a) The scheme plan shows land locked parcels (e.g., Lots 15,16,18,19 ,47-49, 23-24. 62-64), these are required to be updated prior to lodgement – this will be addressed in the scheme plan, but in response access to these lots will be proposed either by direct vehicle crossing Lot 200 or via ROW easements;
- b) Given the size of the development, there is an expectation that roads are up to Council vesting standards – Toby noted the proposed roading typology for the subdivision. A comprehensive assessment will be provided in the AEE. David noted that non-compliance with Council standards is a gateway to assessment, rather than a definitive determination of what is acceptable or not. The justification and effects basis for the roading formation and legal standards will be outlined in the AEE;
- c) A traffic assessment is required in relation to the intersection of Aucks Road and the development, demonstrating if the existing access formation is still appropriate – this was noted and will be sought by the Applicant;
- d) Assessment of the potential requirement of lighting in Aucks Road corridor to be provided – this was noted and will be addressed in the AEE;
- e) Pedestrian connectivity to the surrounding network, possible grass berms – it was noted that a comprehensive and bespoke approach to pedestrian access is being undertaken throughout the development. Alongside walkways within communal road reserves where necessary, this will result in pedestrian pathways through the ecological and amenity planting areas to provide separation from vehicles and a greater level of amenity. This will be addressed within the Engineering and Landscape assessments that accompany the AEE;

***Hazards***

- a) A key concern from Council will be around the roads accessing the development off Aucks Road due to the flooding mapping from NRC. Assessment is required to address this concern – this will be addressed within the AEE, noting the preliminary response regarding the bigger picture of sea level rise and the level of Aucks Road and other public roads in the vicinity;
- b) Expectation for 2d modelling and detailed analysis for what will happen if there is flooding – the necessity of any modelling will be addressed in the engineering assessment;
- c) Residents will need an exit route during flood events where the roads become impassible – this will be addressed in the engineering assessment.

***Wastewater***

- a) Provide detail on Lot 55,58 and 59 wastewater solutions – the Applicant is aware of the issue and is investigating options.

***Ecology***

- a) Kiwi High Habitat, normally consent requires no dogs and cats other than in exceptional circumstances – This was noted, and the Applicant will be relying on its expert ecological assessment on this matter;

***Planning***

- a) Consultation with the parks and reserves team is required due to the adjoining recreation reserve;
- b) Liaise with Top Energy in regard to their easement requirements;

Item	Detail
	<p>c) In terms of staging, make it clear how we will stage the development i.e. staging as we go as opposed to fixed staging. Swetha is happy for hybrid staging depending on the detail provided;</p> <p>d) Detail required on how the resident's society will work i.e. the management of the development.</p>
9	<p><b>Immediate Next Steps/ Actions</b></p> <p><b>Applicant</b></p> <ol style="list-style-type: none"> <li>1. Consultation to be undertaken with HNZ;</li> <li>2. Consultation to be undertaken with parks and reserves team regarding adjacent reserve (sport field);</li> <li>3. The scheme plan shows land locked parcels, update to demonstrate where each access is;</li> <li>4. Liaise with Top Energy in regard to their easement requirements;</li> <li>5. Look into flood hazard risk relating to roading.</li> </ol> <p><b>FNDC</b></p> <ol style="list-style-type: none"> <li>1. Riunku to discuss the proposal with Elizabeth and provide a written response regarding roading matters, street lighting on Aucks Road intersection, ownership of the roads by the Resident's Society, and any other matters;</li> <li>2. Council and the Applicant engineers to undertake a separate meeting to tease out details (Applicant will organise);</li> <li>3. Rinku to share contact details of the reserves team.</li> </ol>
10	<p><b>Any Other Matters</b></p> <p>None were raised.</p>

Project: Orongo Bay Resource Consent Application - Concept Development Meeting

Date: 1 October 2024

Time: 2:30pm – 3:15pm

Location: Virtual – MS Teams

Attendees: David Badham (Planning) – B&A  
 Chris Page (Survey) and Toby Mandeno (Civil Engineering) – Maven  
 Katie McGuire (Planning) – Northland Regional Council

Item	Detail
1	<b>Introductions</b>
2	<p><b>Subdivision Concept and Background</b></p> <p>a) David gave a brief overview of the site and its features, noting;</p> <ul style="list-style-type: none"> <li>i) The site is currently maintained as single landholding with multiple titles;</li> <li>ii) A comprehensive and holistic management plan approach has been taken to the subdivision design;</li> <li>iii) 65 lots are proposed with a communal Lot 200.</li> <li>iv) Ecologist Madara Vilde from Wild Ecology has been engaged to undertake comprehensive ecological opportunities and constraints mapping as one of the first tasks of the subdivision design. This has informed the location of proposed building platforms, accessways and allotment boundaries;</li> <li>v) A comprehensive approach to landscape and visual effects has been taken. Landscape architect Mike Farrow has been to the site half a dozen times to carefully select sites for building platforms etc;</li> <li>vi) We are seeking a management plan subdivision under Rule 13.9.2.2 of the Operative Far North District Plan. Other matters will also be triggered for resource consent, however overall, it is anticipated that the proposal will trigger resource consent as a discretionary activity; and</li> <li>vii) Regional Consents from NRC are likely required for earthworks and under the NES-FW for setbacks from wetlands. This is likely to be a discretionary activity, depending on final ecological details. Approval will be sought separately for these consents.</li> </ul>
3	<p><b>Flooding</b></p> <p>a) David identified that the site is subject to coastal Flooding Hazards in NRC mapping. There are no River Hazards identified on the site</p> <p>b) Toby discussed the approach to flooding for the development, noting that residential development has been avoided in the lower lying flood susceptible areas and an increased RL has been provided on the allotments.</p>



Item	Detail
	<p>c) Toby – Do we need to formally attenuate roads and impervious services – Katie referred to C.4.6.2 permitted activity criteria. Need to demonstrate that we comply with the standards. Subject to complying with the standards, no formal treatment is needed.</p> <p>d) Katie – no concerns raised with the approach to flooding and the level of the existing roading from NRC perspective.</p>
4	<p><b>Wastewater</b></p> <p>a) Toby explained the approach to wastewater disposal. This will be onsite disposal, primarily by dripper lines on the allotments.</p> <p>b) Toby identified that there are some constraints on allotments 55-59 which are lower lying and adjacent to existing (predominantly man-made water bodies). Essentially the size and shape of these allotments is making it challenging to fit in necessary disposal fields within the setbacks from the waterbodies in the Regional Plan.</p> <p>c) Katie explained that there is a Transfers of Powers for wastewater resource consents from an onsite system up to 3000 litres per day with FNDC, and recently it was determined that all such resource consents must be processed by FNDC</p> <p>d) Katie noted that while FNDC will ultimately have to process the consent, she outlined that it is common for NRC to receive and process applications for a reduced setback or effluent disposal area, where there is secondary and tertiary treatment. NRC utilise Australian and NZ Standards, and as long as a clear assessment is provided (engineering and ecology), these are often approved.</p> <p>e) Katie confirmed that she would send through the relevant rules, section of the transfer of powers and contact details of FNDC contact to get in touch with re their process for wastewater treatment within proximity to waterbodies.</p>
5	<p><b>Earthworks</b></p> <p>a) David advised that bulk earthworks RC would be applied from NRC, and that the application would be supported by an engineering report from Maven with a draft erosion and sediment control plan and ecological assessment from Wild Ecology.</p> <p>b) David noted that there is an archaeological site on Lot 9 that has been identified, marked out on site with an archaeological assessment.</p> <p>c) Katie noted that assessment of NES-FW – diversion and discharge and earthworks in proximity to wetlands will need to be assessed, in particular Regulation 45C and 54.</p>
6	<p><b>Immediate Next Steps/ Actions</b></p> <ol style="list-style-type: none"> <li>1. Katie to send through relevant rules, section of the transfer of powers and contact details of FNDC contact to get in touch with re their process for wastewater treatment within proximity to waterbodies (already done).</li> </ol>

**From:** [Olivia Stirling](mailto:Olivia.Stirling@fndc.govt.nz)  
**To:** [Olivia Stirling](mailto:Olivia.Stirling@fndc.govt.nz)  
**Subject:** Aucks Road, Russell - Management Plan Subdivision  
**Date:** Tuesday, 15 October 2024 9:12:23 am  
**Attachments:** [image007.png](#)  
[image.png](#)  
[image009.png](#)  
[image010.png](#)  
[image011.png](#)  
[image012.png](#)  
[image013.png](#)

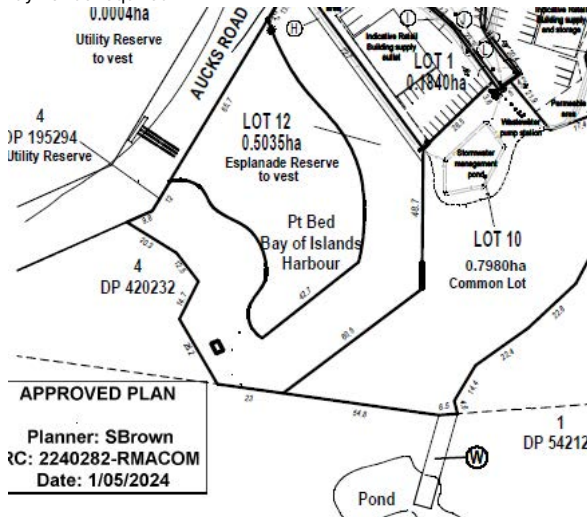
---

**From:** Robin Rawson <[Robin.Rawson@fndc.govt.nz](mailto:Robin.Rawson@fndc.govt.nz)>  
**Sent:** Tuesday, October 8, 2024 10:41 AM  
**To:** Olivia Stirling <[OliviaS@barker.co.nz](mailto:OliviaS@barker.co.nz)>  
**Subject:** Aucks Road, Russell - Management Plan Subdivision

Greetings Olivia

Thank you for your preapplication enquiry. I understand that the proposed subdivision is for residential purposes and that the access and adjoining green spaces including a lake are to be collectively owned by a residents association for the development to provide them the benefit of shared open space. The subdivision site adjoins existing Council recreation reserve and proposed Council esplanade reserve.

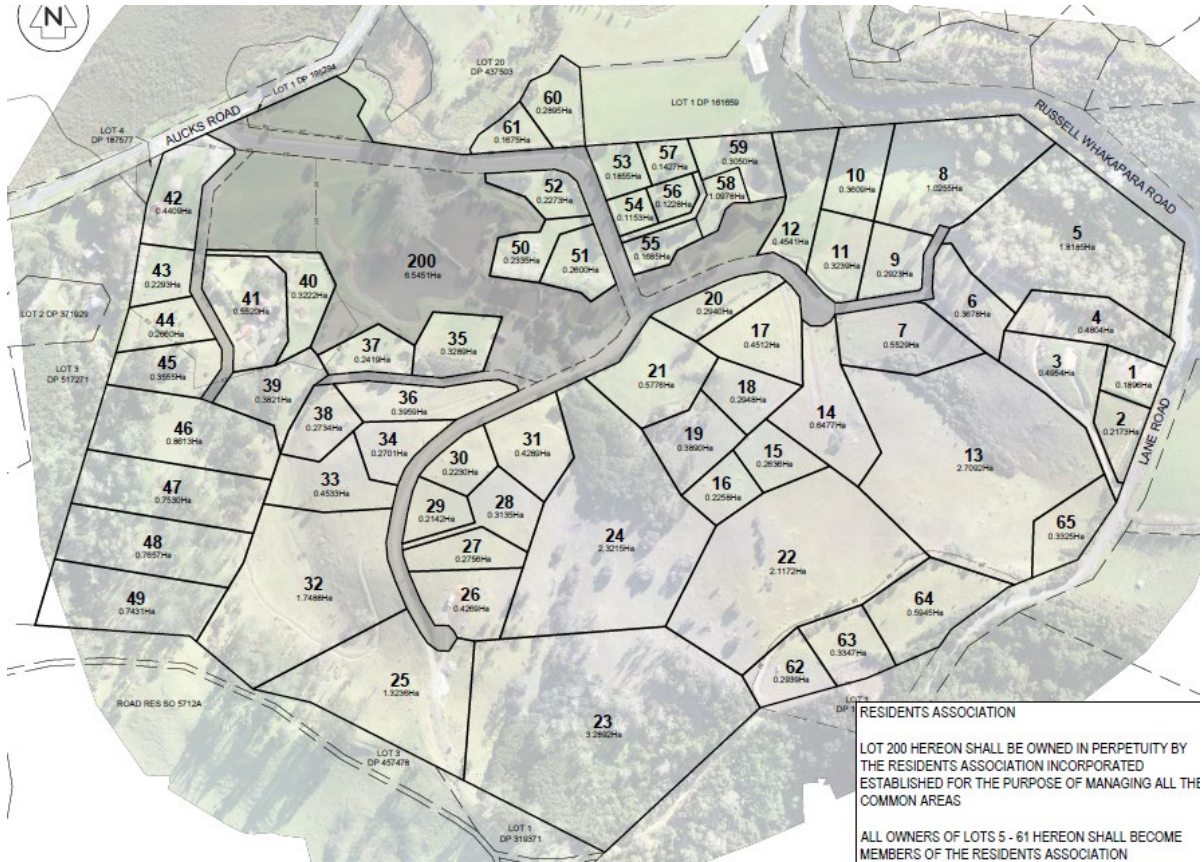
1. Affected party approval - FNDC is unable to provide affected party approval for FNDC resource consents and instead will provide comment that can be included in a resource consent, noting that there will be more information included in a resource consent that could change the assessment.
2. Lot 1 DP 161659 is a recreation reserve, and a fencing covenant will be requested to apply to all new properties adjoining this boundary. As surveillance of public open space is encouraged, any conditions requiring tall fences or planting will be opposed. Drainage on adjoining sites needs to be designed so there are no negative effects on the reserve and playing field.
3. Proposed Lot 12 LT 449810 Esplanade reserve to vest is to be created from Lot 20 DP 437503 to the north. If private drainage is proposed through this area an easement will be required. If infrastructure is largely underground a public consultation process may not be required.



4. It is my understanding that an esplanade reserve assessment is required for areas within 20m of hydro parcels / MHWS further to 14.6.1 (a)(iii). If you disagree with this interpretation you may wish to discuss with FNDC planning to get a definitive answer. If required, an assessment would need to consider the existing dwelling to be held in proposed Lot 42 that would be within the 20m setback from a hydro parcel and may need to include a very small section of the driveway formation within proposed Lot 200. Application for an esplanade reserve waiver would require consultation with mana whenua.
5. Council budgets for land purchase are not large, and should esplanade reserve provisions not apply, purchase of additional areas is not assessed as being a priority as there are reserve parcels along the coastal walk area and this development is outside of the main township areas.
6. Comments from Council's infrastructure team would also be taken into account in relation to vesting, and there may be benefit in my attending any CDM meeting where stormwater and other matters may be discussed.

Please give me a call if you have any questions.

Ngā mihi | Regards  
Robin



**Robin Rawson**  
Parks & Reserves  
Planner - Growth Planning  
and Placemaking  
M 272171426 | P  
6494015288 |  
[Robin.Rawson@fndc.govt.nz](mailto:Robin.Rawson@fndc.govt.nz)

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

Pokapū Kōrero 24-hāora | 24-hour  
Contact Centre 0800 920 029  
[fndc.govt.nz](http://fndc.govt.nz)



**From:** Olivia Stirling <[OliviaS@barker.co.nz](mailto:OliviaS@barker.co.nz)>  
**Sent:** Friday, September 27, 2024 4:00 PM  
**To:** Robin Rawson <[Robin.Rawson@fndc.govt.nz](mailto:Robin.Rawson@fndc.govt.nz)>  
**Cc:** David Badham <[DavidB@barker.co.nz](mailto:DavidB@barker.co.nz)>  
**Subject:** Aucks Road, Russell - Management Plan Subdivision

You don't often get email from [olivias@barker.co.nz](mailto:olivias@barker.co.nz). [Learn why this is important](#)

**CAUTION:** This email originated from outside Far North District Council.  
Do not click links or open attachments unless you recognise the sender and know the content is safe.

Kia ora Robin,

Your contact was passed onto me by Swetha following a concept development meeting.

We are in the process to preparing a 65-lot management plan subdivision application off Aucks Road in Russell.

I have attached the proposed scheme plan. Can you please take a look at this and provide feedback from a parks and reserves perspective.

Please let us know if you would prefer to meet to discuss the development, or if you have any questions or concerns. We are ultimately seeking parks and reserves written approval for this development, given the reserve adjacent to the site.

I look forward to hearing from you.

Ngā mihi | Kind regards,

---

Olivia Stirling  
Senior Planner  
022 170 8796  
[OliviaS@barker.co.nz](mailto:OliviaS@barker.co.nz)

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Wānaka Lakes

[barker.co.nz](http://barker.co.nz) 

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Auckland, Hamilton, Cambridge,  
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Christchurch, Queenstown, Wānaka

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**From:** [Olivia Stirling](#)  
**To:** [inforthern@heritage.org.nz](mailto:inforthern@heritage.org.nz); [bedwards@heritage.org.nz](mailto:bedwards@heritage.org.nz)  
**Cc:** [David Badham](#)  
**Subject:** Re: Archeological Site - 39 Aucks Road, Russell  
**Date:** Monday, 7 October 2024 3:26:18 pm

---

Ahiahī mārie,

Just following up to make sure you received the below.

Please don't hesitate to let us know if you have any questions.

Ngā mihi | Kind regards,

---

Olivia Stirling  
Senior Planner  
022 170 8796  
[OliviaS@barker.co.nz](mailto:OliviaS@barker.co.nz)

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[barker.co.nz](http://barker.co.nz)



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**From:** Olivia Stirling  
**Sent:** Friday, September 27, 2024 3:48 PM  
**To:** [inforthern@heritage.org.nz](mailto:inforthern@heritage.org.nz) <[inforthern@heritage.org.nz](mailto:inforthern@heritage.org.nz)>; [bedwards@heritage.org.nz](mailto:bedwards@heritage.org.nz) <[bedwards@heritage.org.nz](mailto:bedwards@heritage.org.nz)>  
**Cc:** David Badham <[davidb@barker.co.nz](mailto:davidb@barker.co.nz)>  
**Subject:** Archeological Site - 39 Aucks Road

Kia ora,

We are in the process of preparing an application for FNDC for a management plan subdivision. I have attached the proposed scheme plan.

Through previous subdivision of the site two recorded archaeological sites Q05/1269 and Q05/1270 were identified.

We commissioned Northern Archaeological Research to undertake a site visit to relocate and mark up the previously recorded archaeological sites, (Q05/1269, consisting of three terraces, and Q05/1270, consisting of two terraces). The terrace features at site Q05/1269 are currently clearly evident under mown grass mid-slope, and are located within proposed Lot 9. These terraces have been marked out with painted wooden pegs in a rectangular enclosed area with a small buffer.

Archaeological site Q05/1270 could not be definitively relocated.

Prior to lodgement we will add the marked site onto the scheme plan, as it has been surveyed. We have avoided the site through the planning phase of the subdivision, and we will ensure that future landowners are aware of this site and the recommendations of the archaeological assessment by way of offered conditions.

Please let us know if you would prefer to meet to discuss the development, or if you have any questions or concerns. We are ultimately seeking HNZPT written approval for this development.

Ngā mihi | Kind regards,

---

Olivia Stirling  
Senior Planner  
022 170 8796  
[OliviaS@barker.co.nz](mailto:OliviaS@barker.co.nz)

PO Box 158,  
Queenstown 9348  
28 Helwick St  
Wānaka Lakes  
[barker.co.nz](http://barker.co.nz)



B&A Logo



Kerikeri, Whangārei, Warkworth,  
Auckland, Hamilton, Cambridge,  
Tauranga, Napier, Wellington,  
Christchurch, Queenstown, Wānaka

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# 39 Aucks Road – Proposed Management Plan Subdivision – Engagement Presentation

4 November 2024

**B&A**  
Urban & Environmental



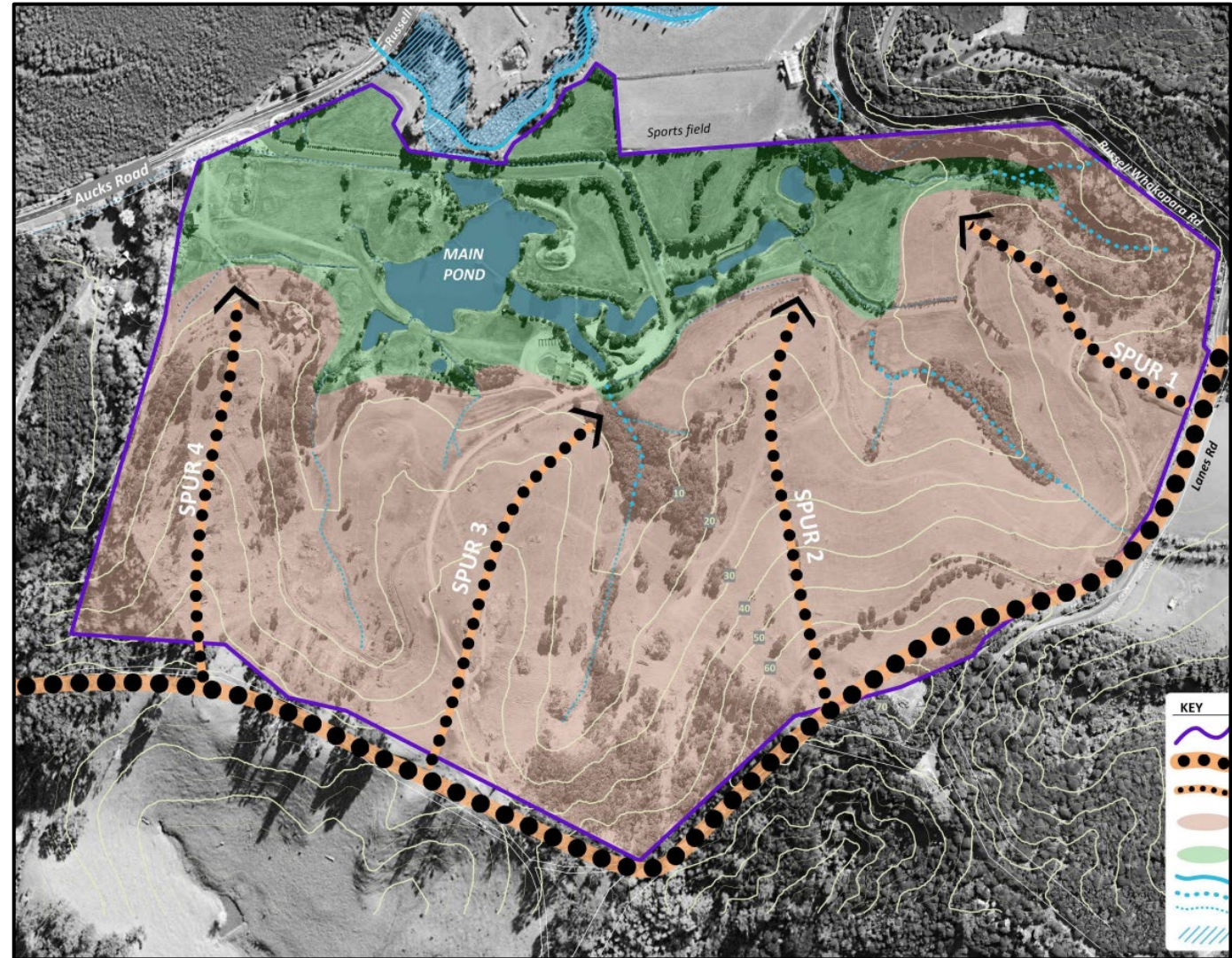
- Whakawhanaungatanga / Introductions
- Subject Site
- Planning Context
- Key Features
- Proposal
- Other Details and Next Steps



What we will cover

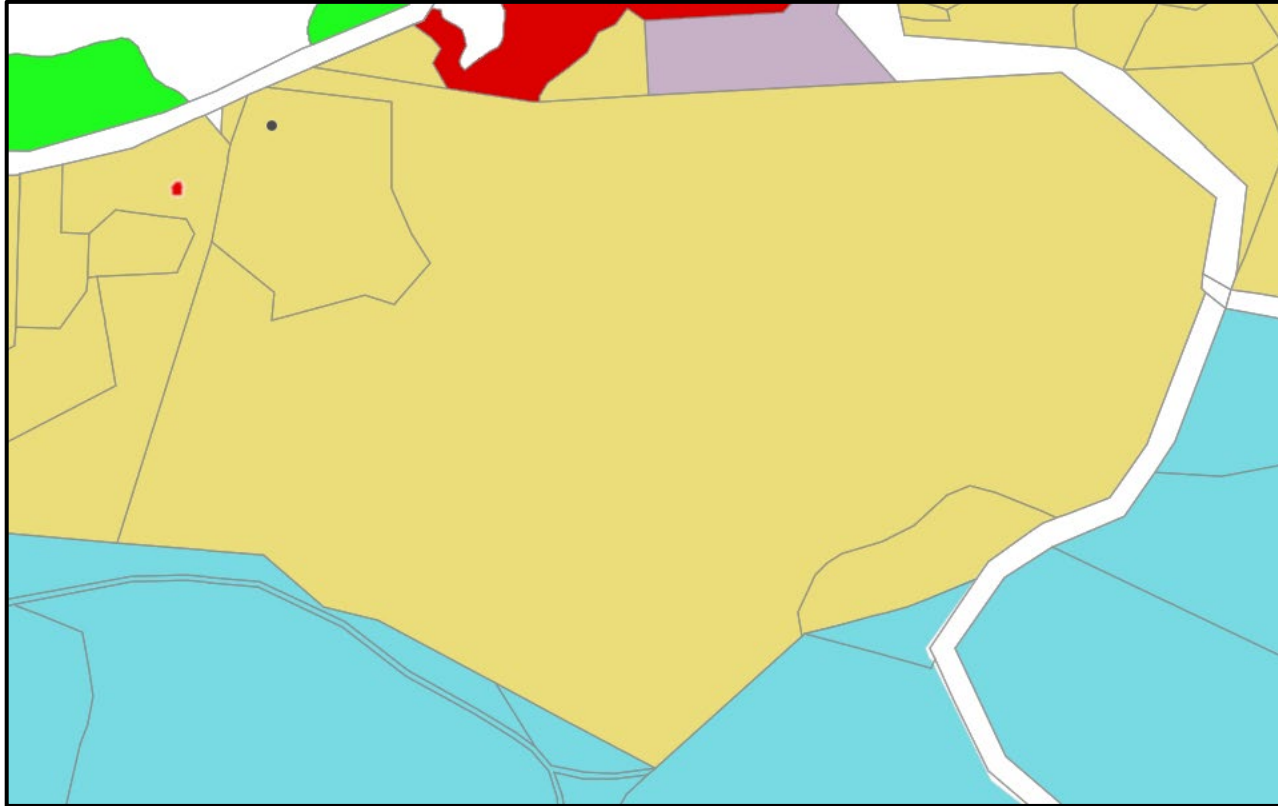


- Single landholding with multiple parcels.
- Approximately 43.71ha.
- Previous resource consents granted for subdivision.
- Roading infrastructure and power connections already established.
- Slopping site with a northern aspect and lower lying area and ponds to the north.
- No outstanding landscapes identified.
- Archaeological sites in the north.



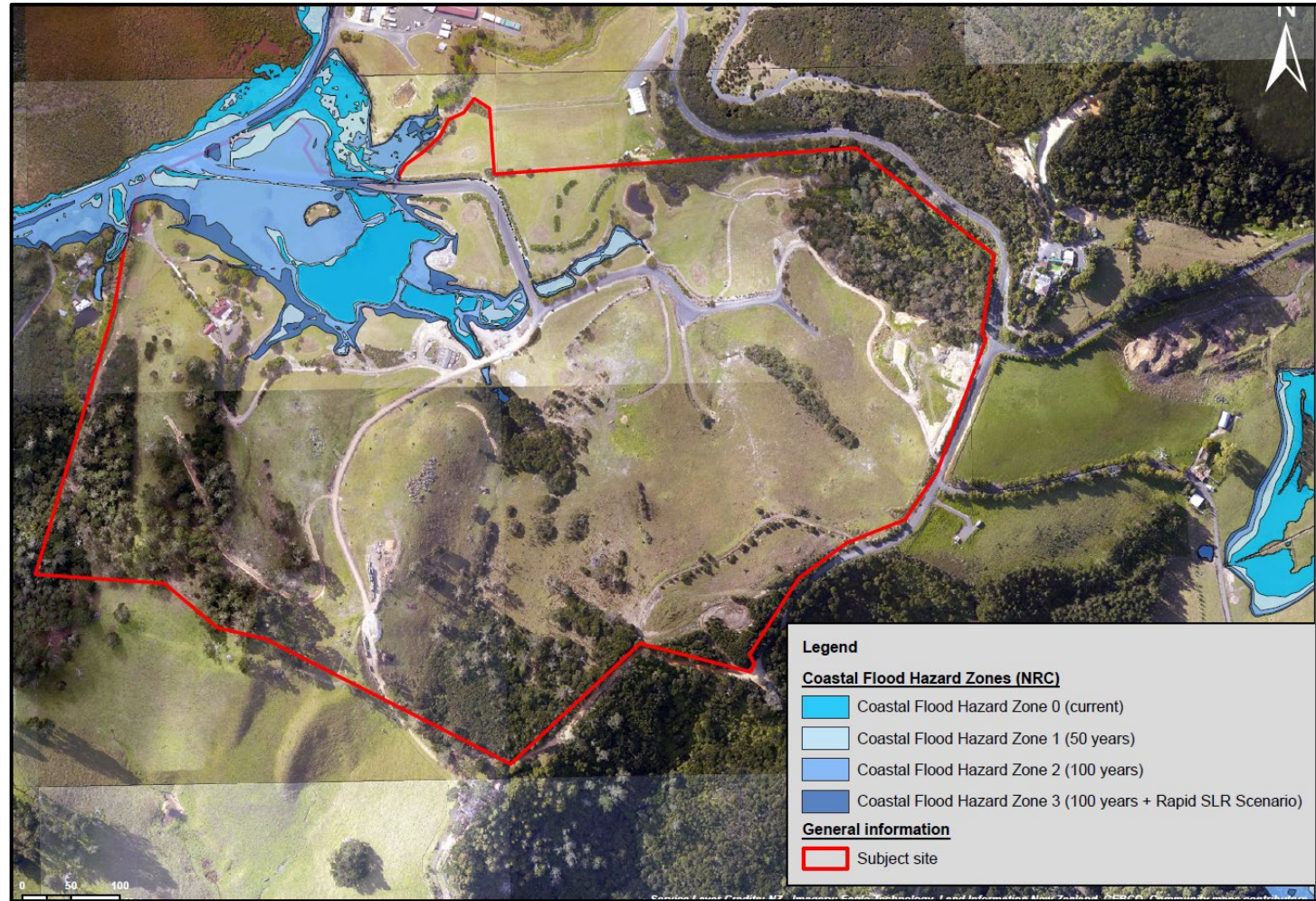
ODP Planning Map (*Coastal Living Zone*)

PDP Planning Map (*Rural Lifestyle Zone*)





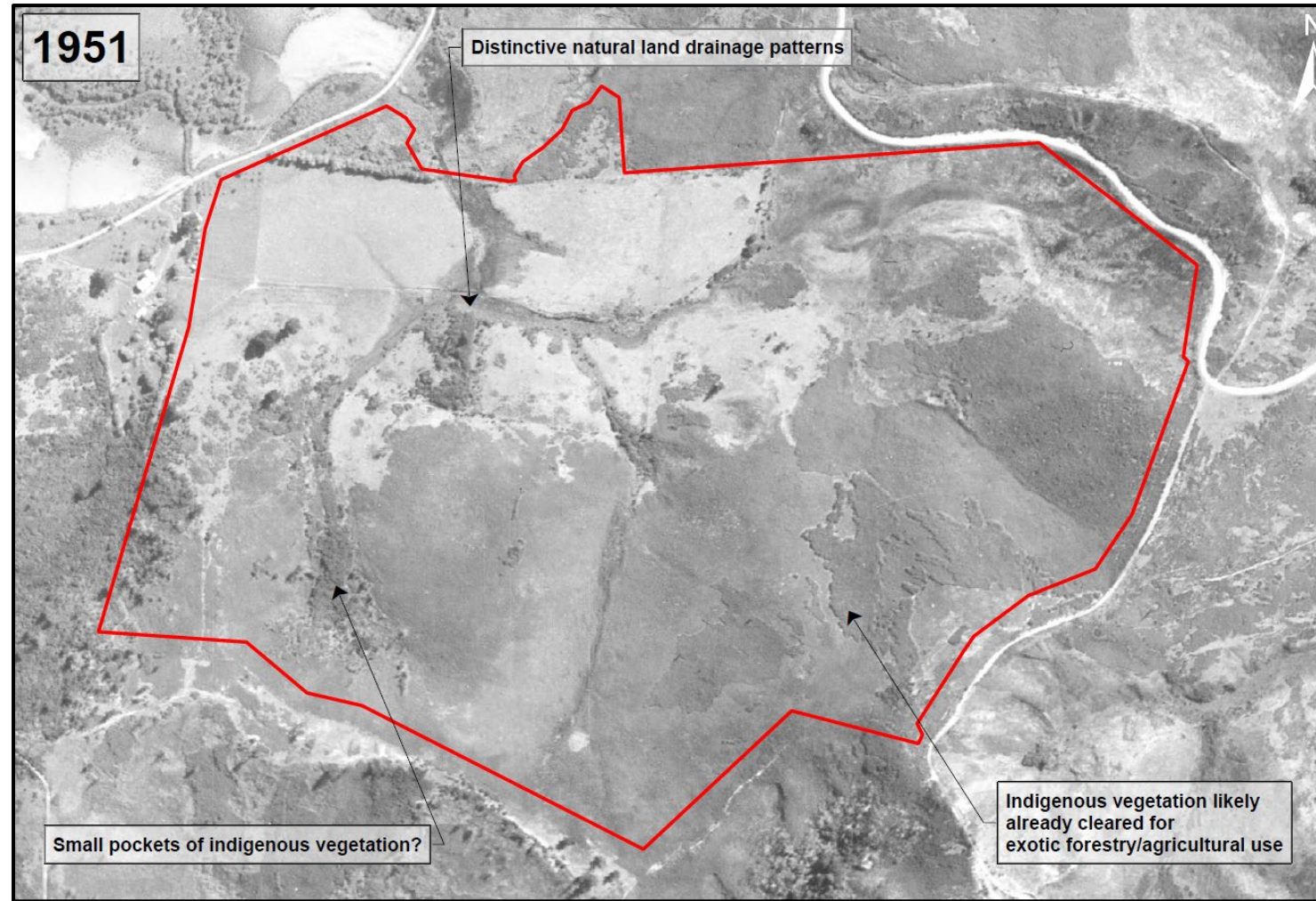
- Low lying area to the north west is within NRC coastal flood hazard zone.
- This is a key constraint for the design of the subdivision.
- Development in this area has been avoided.



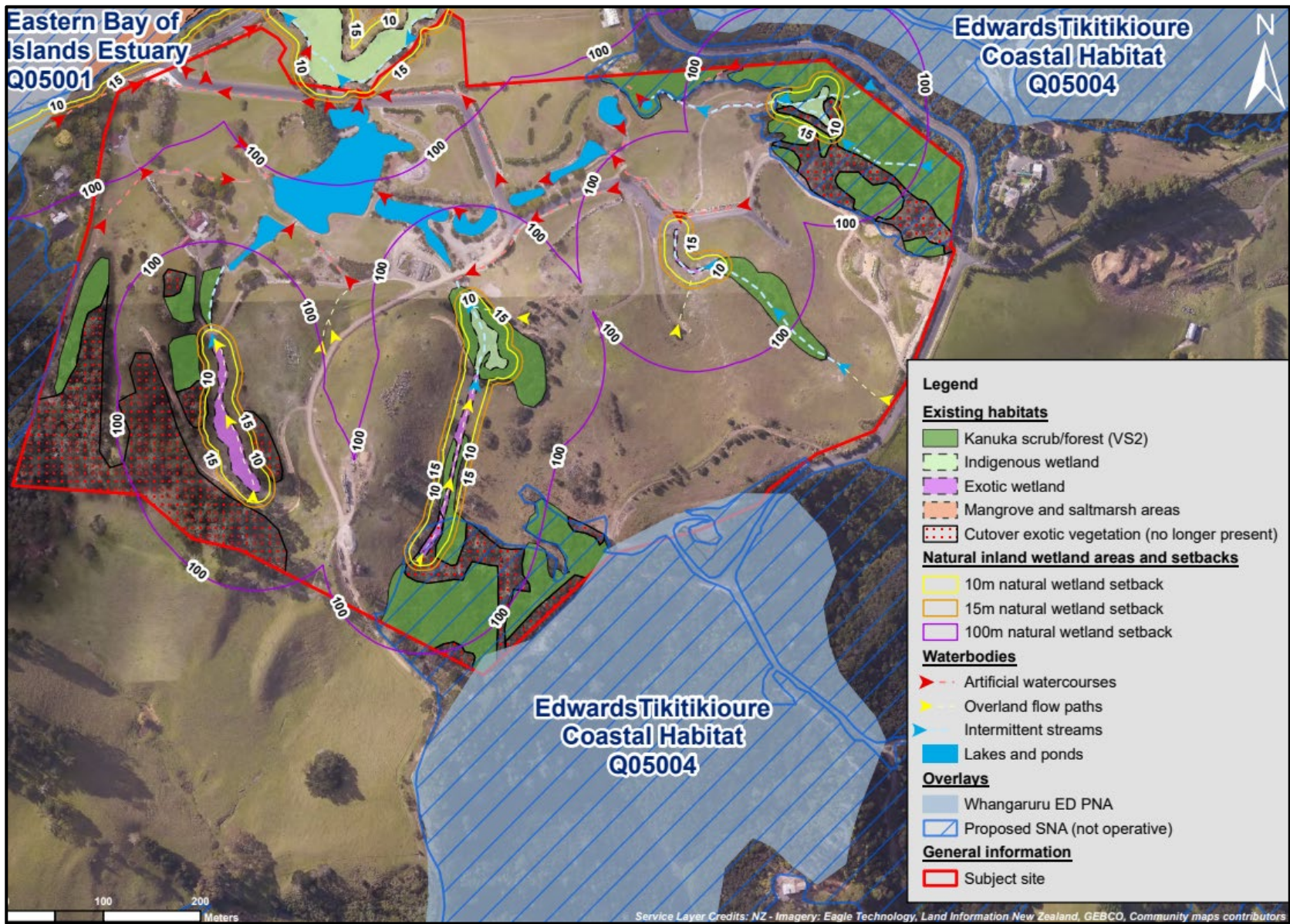
## Key Features – Coastal Flood Hazards



- Comprehensive approach to ecological opportunities and constraints mapping.
- Review of historic aerials to identify potential natural wetlands and areas of indigenous vegetation.
- Central to identifying sensitive ecological areas on the site for further protection and enhancement (e.g., planting and weed and pest control).



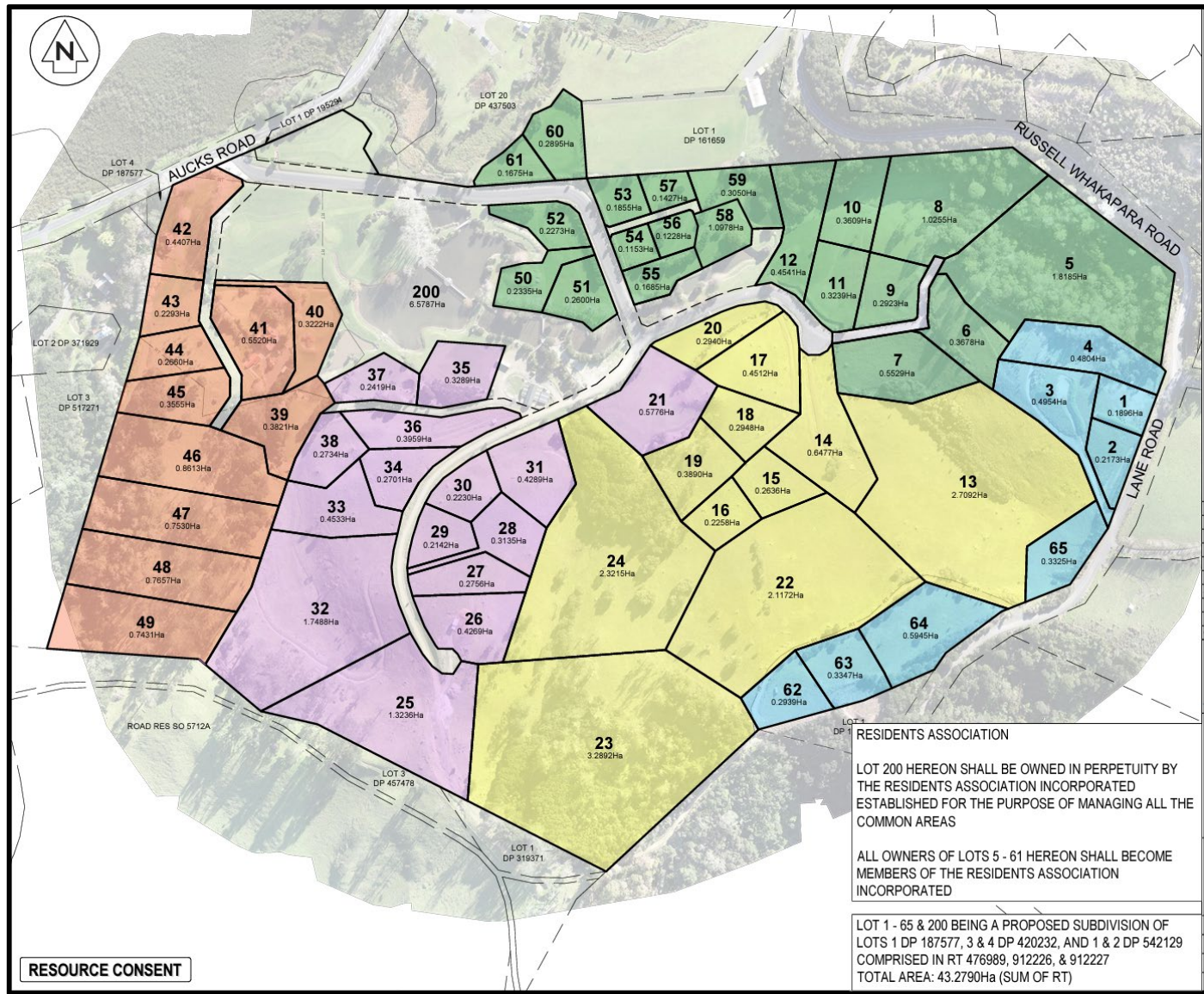




## Key Features – Ecological Mapping



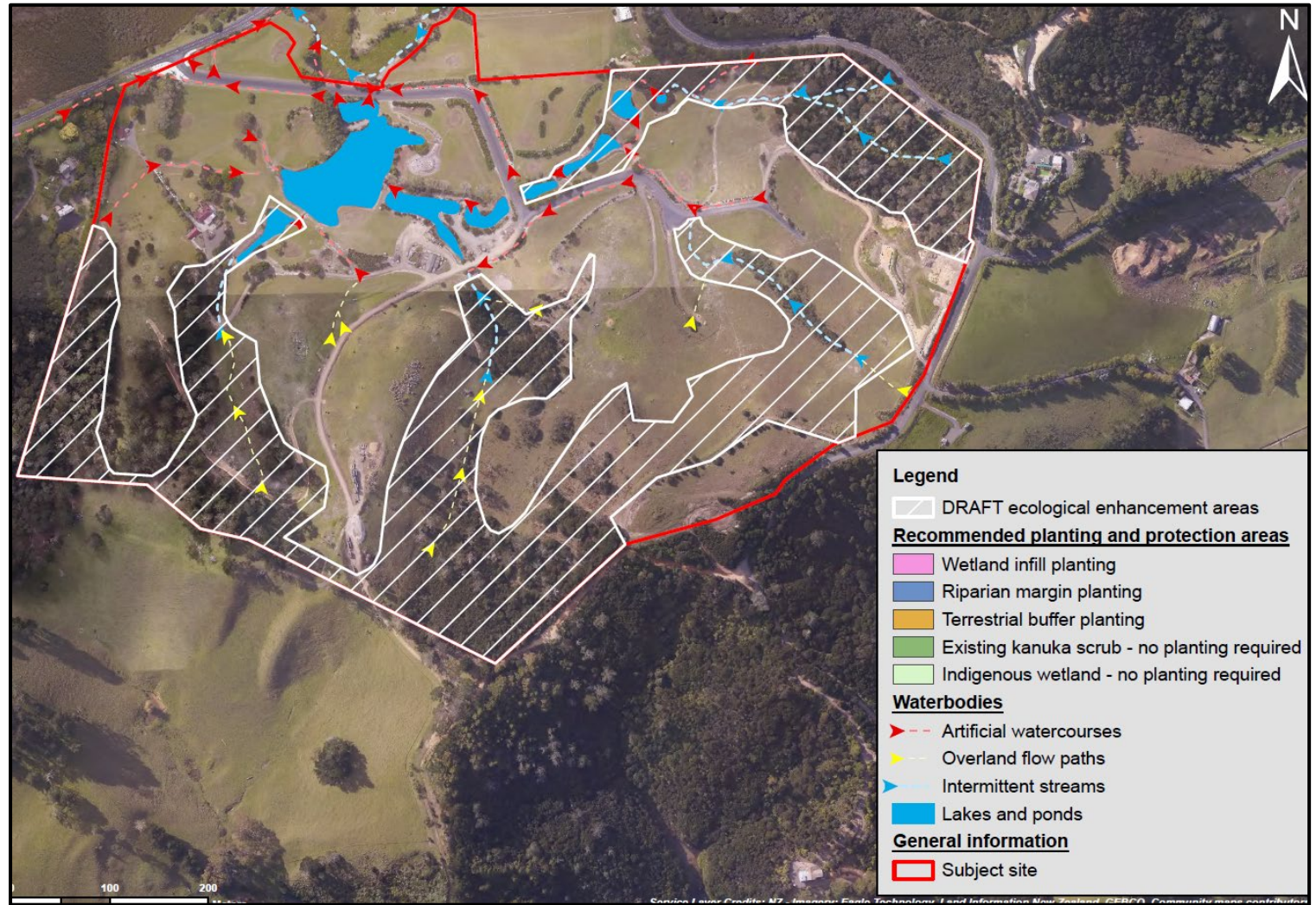
- Management Plan Subdivision as a Discretionary Activity.
- Utilise existing roading layout and avoid residential development in lower lying areas.
- 65 Lots with Lot 200 in the lower lying area and main roading network as a communal lot, with shared ownership.
- Staged subdivision – currently 5 stages proposed.
- Resource consents required from FNDC and NRC.



## The Proposal – Key Features



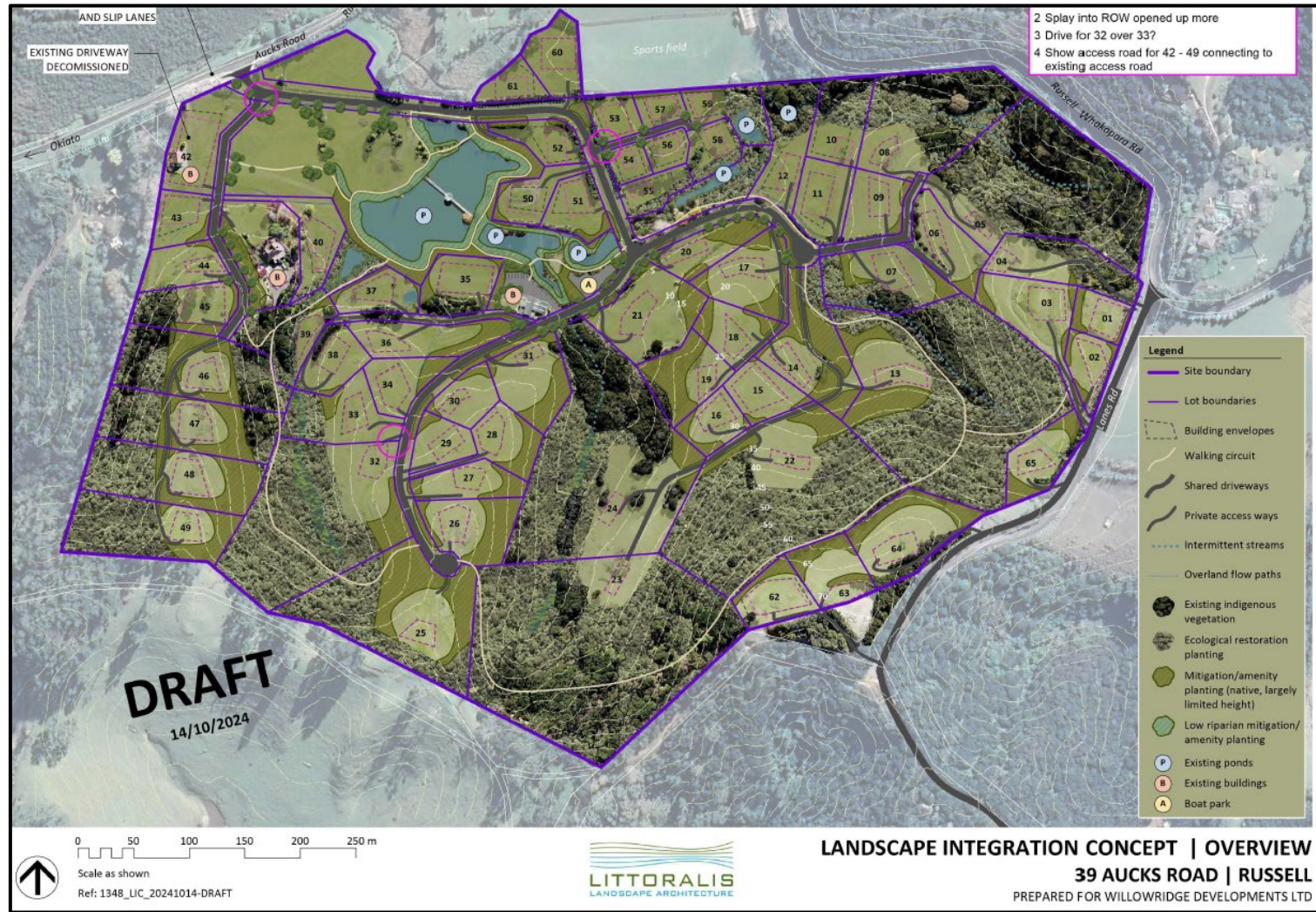
- Comprehensive ecological protection and enhancement.
- Development avoided in wetlands and areas of existing indigenous vegetation.
- Significant areas of planting for ecological enhancement.
- Domestic pet restrictions –no cats & mustelids, with mitigation in place for dogs (e.g., kiwi aversion, enclosures at night).



## The Proposal – Ecological Enhancement



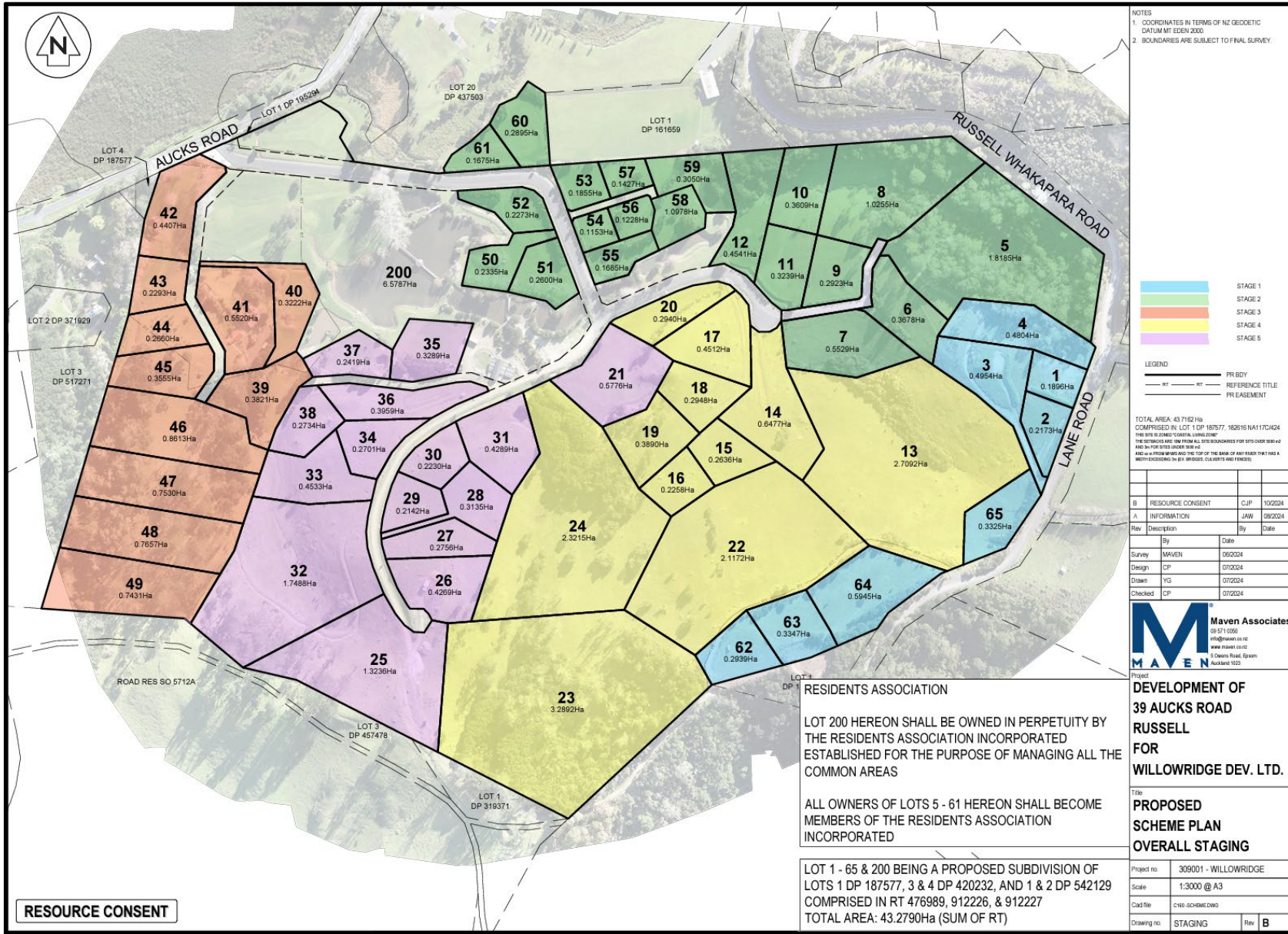
- Comprehensive landscape integration concept.
- Ecological and landscape planting areas aligned for mutual benefit.
- Sensitive located building envelopes.
- Internal walking circuit for residents.
- Communal facilities / areas in the lower lying area of the site.



## The Proposal – Landscape Integration Concept

- Application is supported by comprehensive assessments:
  - Ecology
  - Landscape and visual
  - Engineering (three waters and natural hazards)
  - Geotech
  - Archaeology
  - Traffic and roading
  - Overall Assessment of Environmental Effects
- Pre-application meetings with FNDC and NRC already completed.
- Pre-application engagement with Kororāreka Marae and Kāretu Marae representatives.
- Contact with Top Energy and Heritage New Zealand Pouhere Taonga
- Targeting lodgement before the end of November 2024.





# The Proposal – Scheme



He Pātai? | Any Questions?

**Barker & Associates**

Kerikeri | Whangārei | Warkworth | Auckland | Hamilton | Cambridge | Tauranga | Havelock North | Wellington | Christchurch | Queenstown & Wānaka

**B&A**

Urban & Environmental





- NOTES
- COORDINATES IN TERMS OF NZ GEODETIC DATUM MT EDEN 2000.
  - BOUNDARIES ARE SUBJECT TO FINAL SURVEY.
  - PEDESTRIAN RIGHT OF WAY LOCATION SUBJECT TO FINAL SURVEY RELATIVE TO NECESSARY ECOLOGICAL OFFSETS.

STAGE 1  
STAGE 2  
STAGE 3  
STAGE 4  
STAGE 5

LEGEND

PR BDY  
REFERENCE TITLE  
PR EASEMENT

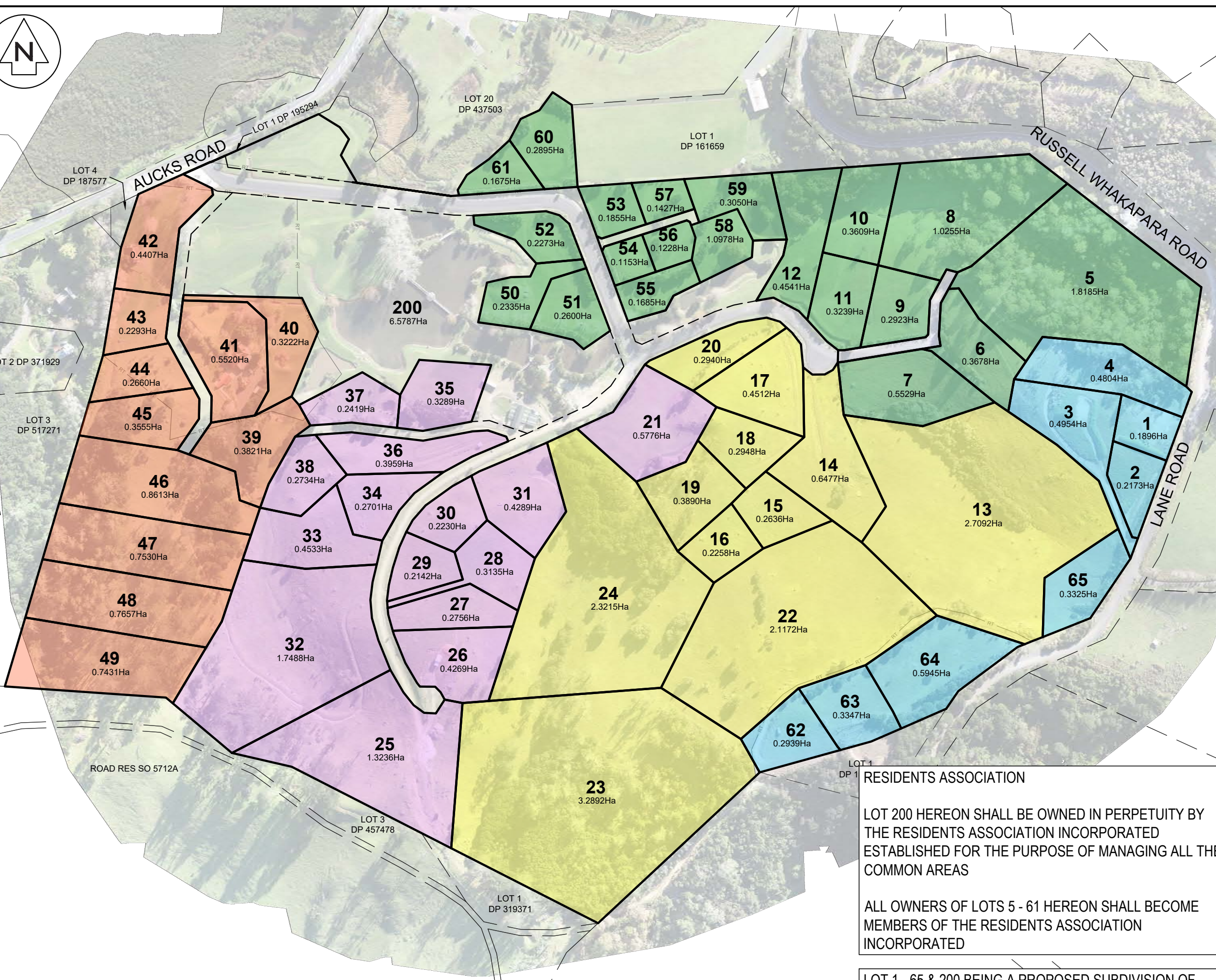
TOTAL AREA: 43.7162 Ha  
 COMPRISED IN: LOT 1 DP 187577, 182616 NA117C/424  
 THIS SITE IS ZONED "COASTAL LIVING ZONE"  
 THE SETBACKS ARE 10M FROM ALL SITE BOUNDARIES FOR SITES OVER 5000 m<sup>2</sup>  
 AND 3m FOR SITES UNDER 5000 m<sup>2</sup>  
 AND 3m FROM MHWs AND THE TOP OF THE BANK OF ANY RIVER THAT HAS A WIDTH EXCEEDING 3m (EX. BRIDGES, CULVERTS AND FENCES)

D	BLD PLATFORMS	CJP	11/2024
C	BLD PLATFORMS CHG	CJP	11/2024
B	RESOURCE CONSENT	CJP	10/2024
A	INFORMATION	JAW	08/2024
Rev	Description	By	Date
	Survey	MAVEN	06/2024
	Design	CP	07/2024
	Drawn	YG	07/2024
	Checked	CP	07/2024

Project  
**DEVELOPMENT OF  
 39 AUCKS ROAD  
 RUSSELL  
 FOR  
 WILLOWRIDGE DEV. LTD.**

Title  
**PROPOSED  
 SCHEME PLAN  
 OVERALL STAGING**

Project no.	309001 - WILLOWRIDGE
Scale	1:3000 @ A3
Cad file	C160 - SCHEME.DWG
Drawing no.	STAGING Rev <b>D</b>



**RESIDENTS ASSOCIATION**

LOT 200 HEREON SHALL BE OWNED IN PERPETUITY BY THE RESIDENTS ASSOCIATION INCORPORATED ESTABLISHED FOR THE PURPOSE OF MANAGING ALL THE COMMON AREAS

ALL OWNERS OF LOTS 5 - 61 HEREON SHALL BECOME MEMBERS OF THE RESIDENTS ASSOCIATION INCORPORATED

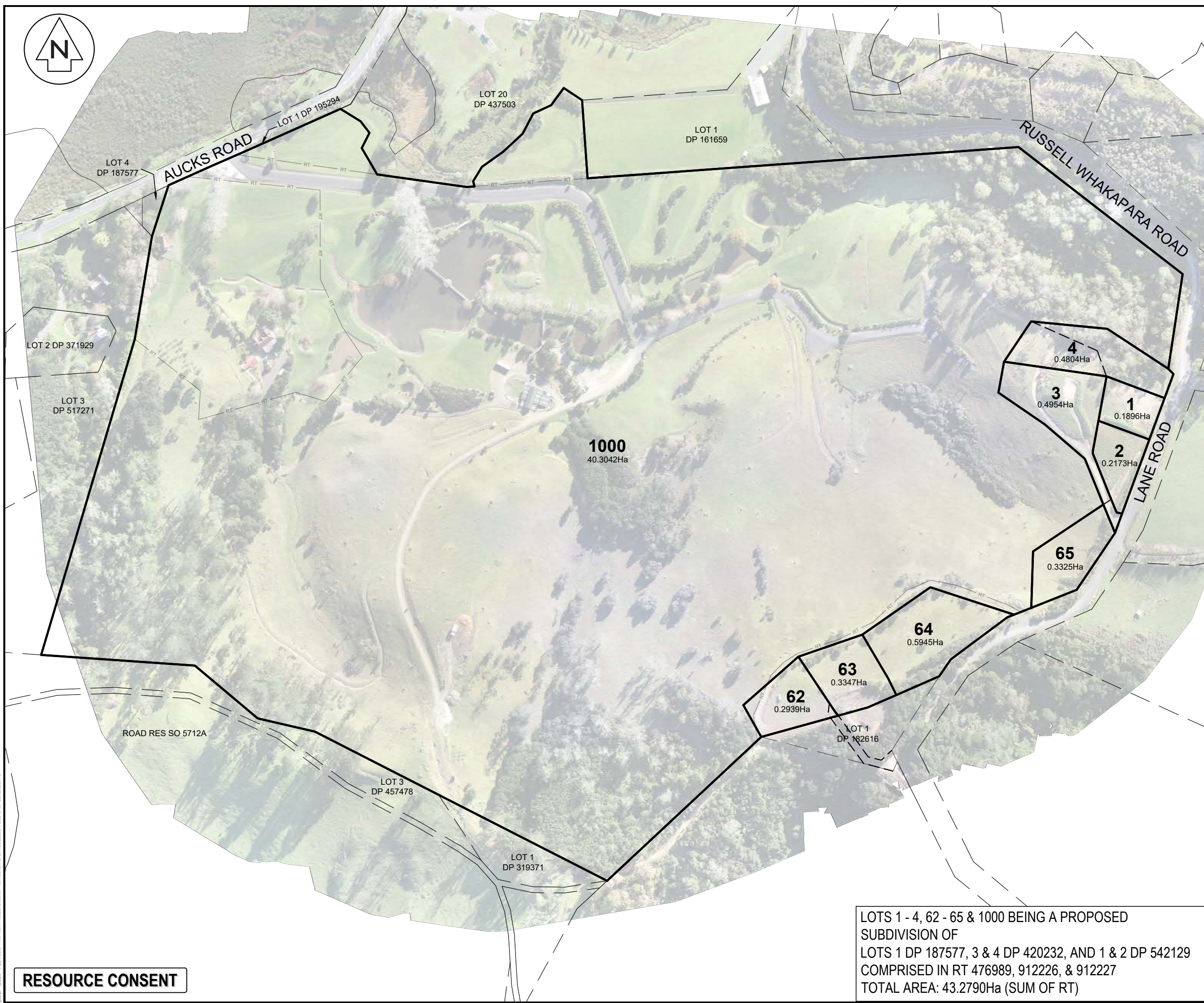
LOT 1 - 65 & 200 BEING A PROPOSED SUBDIVISION OF LOTS 1 DP 187577, 3 & 4 DP 420232, AND 1 & 2 DP 542129  
 COMPRISED IN RT 476989, 912226, & 912227  
 TOTAL AREA: 43.2790Ha (SUM OF RT)

**RESOURCE CONSENT**





- NOTES
1. COORDINATES IN TERMS OF NZ GEODETIC DATUM MT EDEN 2000.
  2. BOUNDARIES ARE SUBJECT TO FINAL SURVEY.
  3. PEDESTRIAN RIGHT OF WAY LOCATION SUBJECT TO FINAL SURVEY RELATIVE TO NECESSARY ECOLOGICAL OFFSETS.



LEGEND

	PR BDY
	REFERENCE TITLE
	PR EASEMENT

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 COMPRISED IN: LOT 1 DP 187577, 182616 NA117C/424  
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 THE SETBACKS ARE 10M FROM ALL SITE BOUNDARIES FOR SITS OVER 5000 m2  
 AND 3m FOR SITES UNDER 5000 m2.  
 AND 3m FROM MHWS AND THE TOP OF THE BANK OF ANY RIVER THAT HAS A  
 WIDTH EXCEEDING 3m (E.G. BRIDGES, CULVERTS AND FENCES)

D	BLD PLATFORMS	CJP	11/2024
C	BLD PLATFORMS CHG	CJP	11/2024
B	RESOURCE CONSENT	CJP	10/2024
A	INFORMATION	JAW	08/2024
Rev	Description	By	Date
	Survey	MAVEN	06/2024
	Design	CP	07/2024
	Drawn	YG	07/2024
	Checked	CP	07/2024

**Maven Associates**  
 09 571 0050  
 info@maven.co.nz  
 www.maven.co.nz  
 5 Owens Road, Epsom  
 Auckland 1023

Project  
**DEVELOPMENT OF  
 39 AUCKS ROAD  
 RUSSELL  
 FOR  
 WILLOWRIDGE DEV. LTD.**

Title  
**PROPOSED  
 SCHEME PLAN  
 STAGE 1, OVERALL**

Project no.	309001 - WILLOWRIDGE
Scale	1:3000 @ A3
Cad file	C160 - SCHEME.DWG
Drawing no.	STAGE 1 SH1
Rev	<b>D</b>

LOTS 1 - 4, 62 - 65 & 1000 BEING A PROPOSED  
 SUBDIVISION OF  
 LOTS 1 DP 187577, 3 & 4 DP 420232, AND 1 & 2 DP 542129  
 COMPRISED IN RT 476989, 912226, & 912227  
 TOTAL AREA: 43.2790Ha (SUM OF RT)

**RESOURCE CONSENT**

DATE: 12/24 FILEPATH: F:\MVEN\PROJECTS\309001 - 39 AUCKS ROAD, RUSSELL\DWG\SC160 - SCHEME.DWG





- NOTES
1. COORDINATES IN TERMS OF NZ GEODETIC DATUM MT EDEN 2000.
  2. BOUNDARIES ARE SUBJECT TO FINAL SURVEY.
  3. PEDESTRIAN RIGHT OF WAY LOCATION SUBJECT TO FINAL SURVEY RELATIVE TO NECESSARY ECOLOGICAL OFFSETS.

MEMORANDUM OF EASEMENTS

PURPOSE	SHOWN	BURDENED LAND	BENEFITTED LAND
RIGHT OF WAY & SERVICES	A	LOT 3 HEREON	LOT 2 HEREON
	B	LOT 1 DP 182616	LOT 62 & 63 HEREON
	C	LOT 62 HEREON	LOT 63 HEREON

PROPOSED LAND COVENANTS  
PURSUANT TO EITHER SEC 22 OF THE QE II NATIONAL TRUST ACT 1977 OR SECTION 77 OF THE RESERVES ACT 1977

SHOWN	BURDENED LAND	AREA
AA	LOT 4 HEREON	0.2612Ha

INDICATIVE BUILDING PLATFORM

D	BLD PLATFORMS	CJP	11/2024
C	BLD PLATFORMS CHG	CJP	11/2024
B	RESOURCE CONSENT	CJP	10/2024
A	INFORMATION	JAW	08/2024
Rev	Description	By	Date
Survey	MAVEN		06/2024
Design	CP		07/2024
Drawn	YG		07/2024
Checked	CP		07/2024

**Maven Associates**  
09 571 0050  
info@maven.co.nz  
www.maven.co.nz  
5 Owens Road, Epsom  
Auckland 1023

Project  
**DEVELOPMENT OF  
39 AUCKS ROAD  
RUSSELL  
FOR  
WILLOWRIDGE DEV. LTD.**

Title  
**PROPOSED  
SCHEME PLAN  
STAGE 1**

Project no.	309001 - WILLOWRIDGE
Scale	1:3000 @ A3
Cad file	C160 - SCHEME.DWG
Drawing no.	STAGE 1 SH2
Rev	<b>D</b>

LOTS 1 - 4, 62 - 65 & 1000 BEING A PROPOSED SUBDIVISION OF  
LOTS 1 DP 187577, 3 & 4 DP 420232, AND 1 & 2 DP 542129  
COMPRISED IN RT 476989, 912226, & 912227  
TOTAL AREA: 43.2790Ha (SUM OF RT)

**RESOURCE CONSENT**





- NOTES
- COORDINATES IN TERMS OF NZ GEODETIC DATUM MT EDEN 2000.
  - BOUNDARIES ARE SUBJECT TO FINAL SURVEY.
  - PEDESTRIAN RIGHT OF WAY LOCATION SUBJECT TO FINAL SURVEY RELATIVE TO NECESSARY ECOLOGICAL OFFSETS.

MEMORANDUM OF EASEMENTS

PURPOSE	SHOWN	BURDENED LAND	BENEFITTED LAND
RIGHT OF WAY & SERVICES	E, Z		LOTS 5-12, 50-61 & 2000 HEREON
	F	LOT 200 HEREON	LOTS 53-59 HEREON
	D		LOTS 5-11 HEREON
	DA	LOT 11 HEREON	LOT 10 HEREON

PROPOSED LAND COVENANTS  
PURSUANT TO EITHER SEC 22 OF THE QE II NATIONAL TRUST ACT 1977 OR SECTION 77 OF THE RESERVES ACT 1977

SHOWN	BURDENED LAND	AREA
AB	LOT 7 HEREON	3.9078Ha
AC, BC, CC	LOT 5 HEREON	
AD, BD, CD	LOT 8 HEREON	
AE, BE, CE	LOT 10 HEREON	
AF, BF, CF	LOT 12 HEREON	
AG, BG	LOT 59 HEREON	
AH	LOT 58 HEREON	
AI, AM	LOT 200 HEREON	
AJ	LOT 55 HEREON	
AK	LOT 60 HEREON	
AL	LOT 61 HEREON	

LEGEND

	PR BDY
	RT
	REFERENCE TITLE
	PR EASEMENT

Rev	Description	By	Date
D	BLD PLATFORMS	CJP	11/2024
C	BLD PLATFORMS CHG	CJP	11/2024
B	RESOURCE CONSENT	CJP	10/2024
A	INFORMATION	JAW	08/2024

Rev	Description	By	Date
Survey	MAVEN		06/2024
Design	CP		07/2024
Drawn	YG		07/2024
Checked	CP		07/2024

Project  
**DEVELOPMENT OF 39 AUCKS ROAD RUSSELL FOR WILLOWRIDGE DEV. LTD.**

Title  
**PROPOSED SCHEME PLAN STAGE 2, OVERALL**

Project no.	309001 - WILLOWRIDGE
Scale	1:3000 @ A3
Cad file	C160 - SCHEME.DWG
Drawing no.	STAGE 2 SH1
Rev	<b>D</b>

SCHEDULE OF EASEMENTS

PURPOSE	SHOWN	BURDENED LAND	BENEFITTED LAND
PEDESTRIAN RIGHT OF WAY	NA	LOT 2000 HEREON	LOTS 5-12, 50-61 HEREON & LOTS 1-4 & 62-65 STAGE 1
	BC	LOT 8 HEREON	LOTS 6-12, 50-61 & 2000 HEREON & LOTS 1-4 & 62-65 STAGE 1
	BD	LOT 5 HEREON	LOTS 5-7, 9-12, 50-61 & 2000 HEREON & LOTS 1-4 & 62-65 STAGE 1
	BE	LOT 5 HEREON	LOTS 5-7, 9-12, 50-61 & 2000 HEREON & LOTS 1-4 & 62-65 STAGE 1
	BF	LOT 5 HEREON	LOTS 5-7, 9-12, 50-61 & 2000 HEREON & LOTS 1-4 & 62-65 STAGE 1
	BF	LOT 5 HEREON	LOTS 5-7, 9-12, 50-61 & 2000 HEREON & LOTS 1-4 & 62-65 STAGE 1

LOTS 5 - 12, 50 - 61, 200 & 2000 BEING A PROPOSED SUBDIVISION OF LOT 1000 STAGE 1  
TOTAL AREA: 40.3042Ha (SUM OF RT)

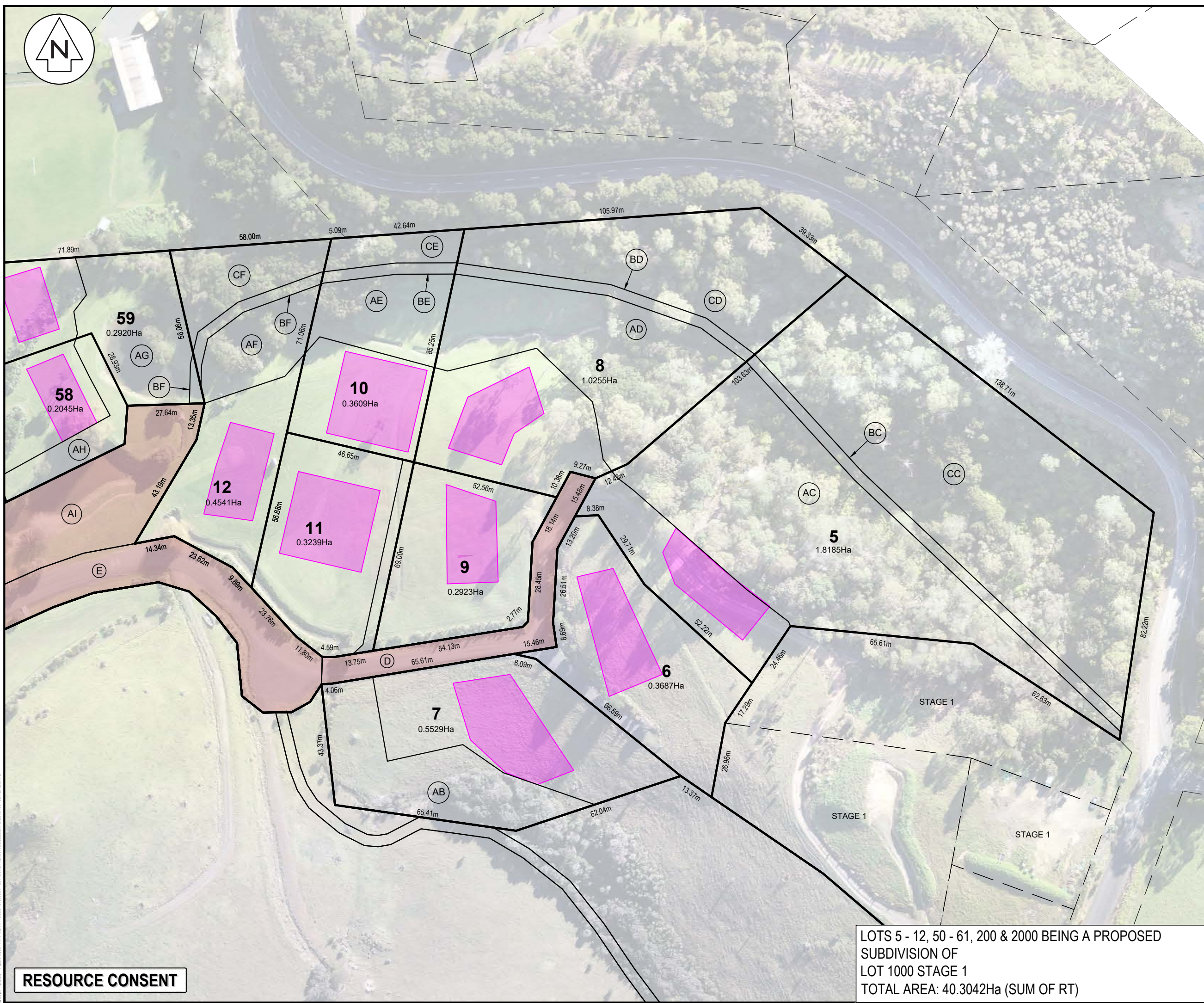
**RESOURCE CONSENT**

DATE: 12/24 FILEPATH: F:\MVEN\PROJECTS\309001 - 39 AUCKS ROAD, RUSSELL\DWG\SCHEM.DWG





- NOTES
1. COORDINATES IN TERMS OF NZ GEODETIC DATUM MT EDEN 2000.
  2. BOUNDARIES ARE SUBJECT TO FINAL SURVEY.
  3. PEDESTRIAN RIGHT OF WAY LOCATION SUBJECT TO FINAL SURVEY RELATIVE TO NECESSARY ECOLOGICAL OFFSETS.



LEGEND

- INDICATIVE BUILDING PLATFORM
- PR BDY
- RT
- RT
- REFERENCE TITLE
- PR EASEMENT

D	BLD PLATFORMS	CJP	11/2024
C	BLD PLATFORMS CHG	CJP	11/2024
B	RESOURCE CONSENT	CJP	10/2024
A	INFORMATION	JAW	08/2024
Rev	Description	By	Date
Survey	MAVEN		06/2024
Design	CP		07/2024
Drawn	YG		07/2024
Checked	CP		07/2024

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 Auckland 1023

Project  
**DEVELOPMENT OF  
 39 AUCKS ROAD  
 RUSSELL  
 FOR  
 WILLOWRIDGE DEV. LTD.**

Title  
**PROPOSED  
 SCHEME PLAN  
 STAGE 2**

Project no.	309001 - WILLOWRIDGE
Scale	1:3000 @ A3
Cad file	C160 - SCHEME.DWG
Drawing no.	STAGE 2 SH2
Rev	<b>D</b>

LOTS 5 - 12, 50 - 61, 200 & 2000 BEING A PROPOSED  
 SUBDIVISION OF  
 LOT 1000 STAGE 1  
 TOTAL AREA: 40.3042Ha (SUM OF RT)

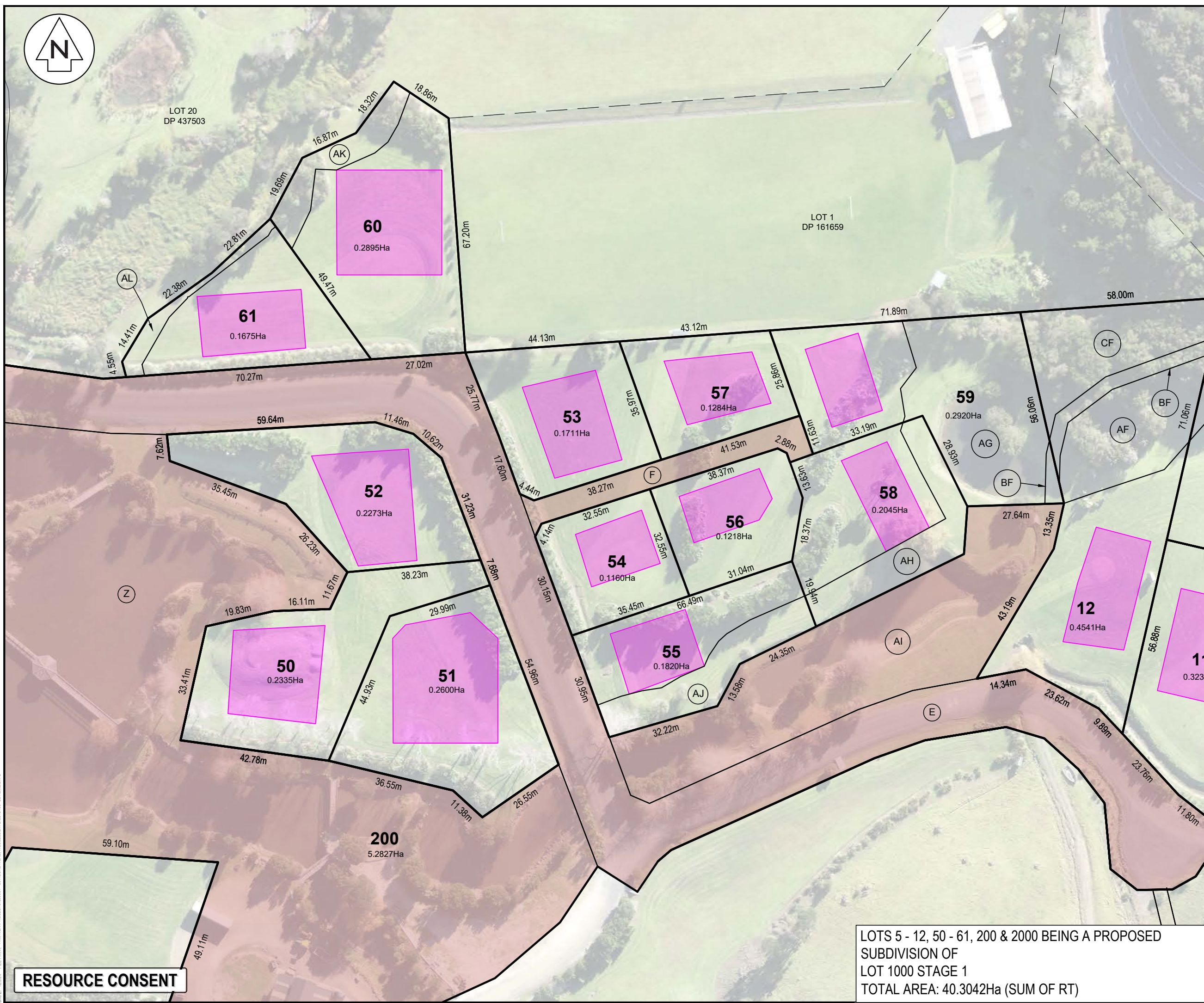
**RESOURCE CONSENT**

DATE: 12/24 FILE PATH: F:\MVEN\PROJECTS\309001 - 39 AUCKS ROAD, RUSSELL\DWG\SC160 - SCHEME.DWG





- NOTES
1. COORDINATES IN TERMS OF NZ GEODETIC DATUM MT EDEN 2000.
  2. BOUNDARIES ARE SUBJECT TO FINAL SURVEY.
  3. PEDESTRIAN RIGHT OF WAY LOCATION SUBJECT TO FINAL SURVEY RELATIVE TO NECESSARY ECOLOGICAL OFFSETS.



LEGEND

	PR BDY
	REFERENCE TITLE
	PR EASEMENT

TOTAL AREA: 43.7162 Ha  
 COMPRISED IN: LOT 1 DP 187577, 182616 NA117C/424  
 THIS SITE IS ZONED "COASTAL LIVING ZONE"  
 THE SETBACKS ARE 10M FROM ALL SITE BOUNDARIES FOR SITS OVER 5000 m2  
 AND 3m FOR SITES UNDER 5000 m2  
 AND 3m FROM MHWS AND THE TOP OF THE BANK OF ANY RIVER THAT HAS A  
 WIDTH EXCEEDING 3m (EX. BRIDGES, CULVERTS AND FENCES)

D	BLD PLATFORMS	CJP	11/2024
C	BLD PLATFORMS CHG	CJP	11/2024
B	RESOURCE CONSENT	CJP	10/2024
A	INFORMATION	JAW	08/2024
Rev	Description	By	Date
	Survey	MAVEN	06/2024
	Design	CP	07/2024
	Drawn	YG	07/2024
	Checked	CP	07/2024

Project  
**DEVELOPMENT OF  
 39 AUCKS ROAD  
 RUSSELL  
 FOR  
 WILLOWRIDGE DEV. LTD.**

Title  
**PROPOSED  
 SCHEME PLAN  
 STAGE 2**

LOTS 5 - 12, 50 - 61, 200 & 2000 BEING A PROPOSED  
 SUBDIVISION OF  
 LOT 1000 STAGE 1  
 TOTAL AREA: 40.3042Ha (SUM OF RT)

Project no.	309001 - WILLOWRIDGE
Scale	1:3000 @ A3
Cad file	C160 - SCHEME.DWG
Drawing no.	STAGE 2 SH3
Rev	<b>D</b>

DATE: 12/24 FILE PATH: F:\MVEN\PROJECTS\309001 - 39 AUCKS ROAD, RUSSELL\DWG\SC160 - SCHEME.DWG

**RESOURCE CONSENT**



**RESOURCE CONSENT**



- NOTES
- COORDINATES IN TERMS OF NZ GEODETIC DATUM MT EDEN 2000.
  - BOUNDARIES ARE SUBJECT TO FINAL SURVEY.
  - PEDESTRIAN RIGHT OF WAY LOCATION SUBJECT TO FINAL SURVEY RELATIVE TO NECESSARY ECOLOGICAL OFFSETS.

**MEMORANDUM OF EASEMENTS**

PURPOSE	SHOWN	BURDENED LAND	BENEFITTED LAND
RIGHT OF WAY & SERVICES	E, G, Z	LOT 200 HEREON	LOTS 40-49 & 3000 HEREON
	H	LOT 46 HEREON	LOTS 47-49 HEREON
	I	LOT 47 HEREON	LOTS 48 & 49 HEREON
	J	LOT 48 HEREON	LOT 49 HEREON

**PROPOSED LAND COVENANTS**  
PURSUANT TO EITHER SEC 22 OF THE QE II NATIONAL TRUST ACT 1977 OR SECTION 77 OF THE RESERVES ACT 1977

SHOWN	BURDENED LAND	AREA
AR	LOT 49 HEREON	1.7252Ha
AQ & AS	LOT 48 HEREON	
AP & AT	LOT 47 HEREON	
AO, AU, BO, NB	LOT 46 HEREON	
AV	LOT 45 HEREON	

**EXISTING LAND COVENANTS**

SHOWN	BURDENED LAND	CREATED BY
AI & AM	LOT 200 HEREON	STAGE 2

**LEGEND**

- INDICATIVE BUILDING PLATFORM
- PR BDY
- RT
- REFERENCE TITLE
- PR EASEMENT

Rev	Description	By	Date
D	BLD PLATFORMS	CJP	11/2024
C	BLD PLATFORMS CHG	CJP	11/2024
B	RESOURCE CONSENT	CJP	10/2024
A	INFORMATION	JAW	08/2024

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Auckland 1023

**DEVELOPMENT OF  
39 AUCKS ROAD  
RUSSELL  
FOR  
WILLOWRIDGE DEV. LTD.**

**PROPOSED  
SCHEME PLAN  
STAGE 3, OVERALL**

Project no.	309001 - WILLOWRIDGE
Scale	1:3000 @ A3
Cad file	C160 -SCHEME.DWG
Drawing no.	STAGE 3 SH 1
Rev	<b>D</b>

**SCHEDULE OF EASEMENTS**

PURPOSE	SHOWN	BURDENED LAND	BENEFITTED LAND
PEDESTRIAN RIGHT OF WAY	NA, NC, NF	LOT 2000 HEREON	LOTS 40-49 HEREON
	NB	LOT 46 HEREON	LOTS 40-45, 47-49, & 3000 HEREON
	ND	LOT 41 HEREON	LOTS 40, 42-49, & 3000 HEREON
	NE	LOT 40 HEREON	LOTS 41-49 & 3000 HEREON

LOTS 40 - 49, 200 & 3000 BEING A PROPOSED SUBDIVISION OF  
LOT 2000 STAGE 2  
TOTAL AREA: 31.4523Ha (SUM OF RT)



**EXISTING EASEMENTS**

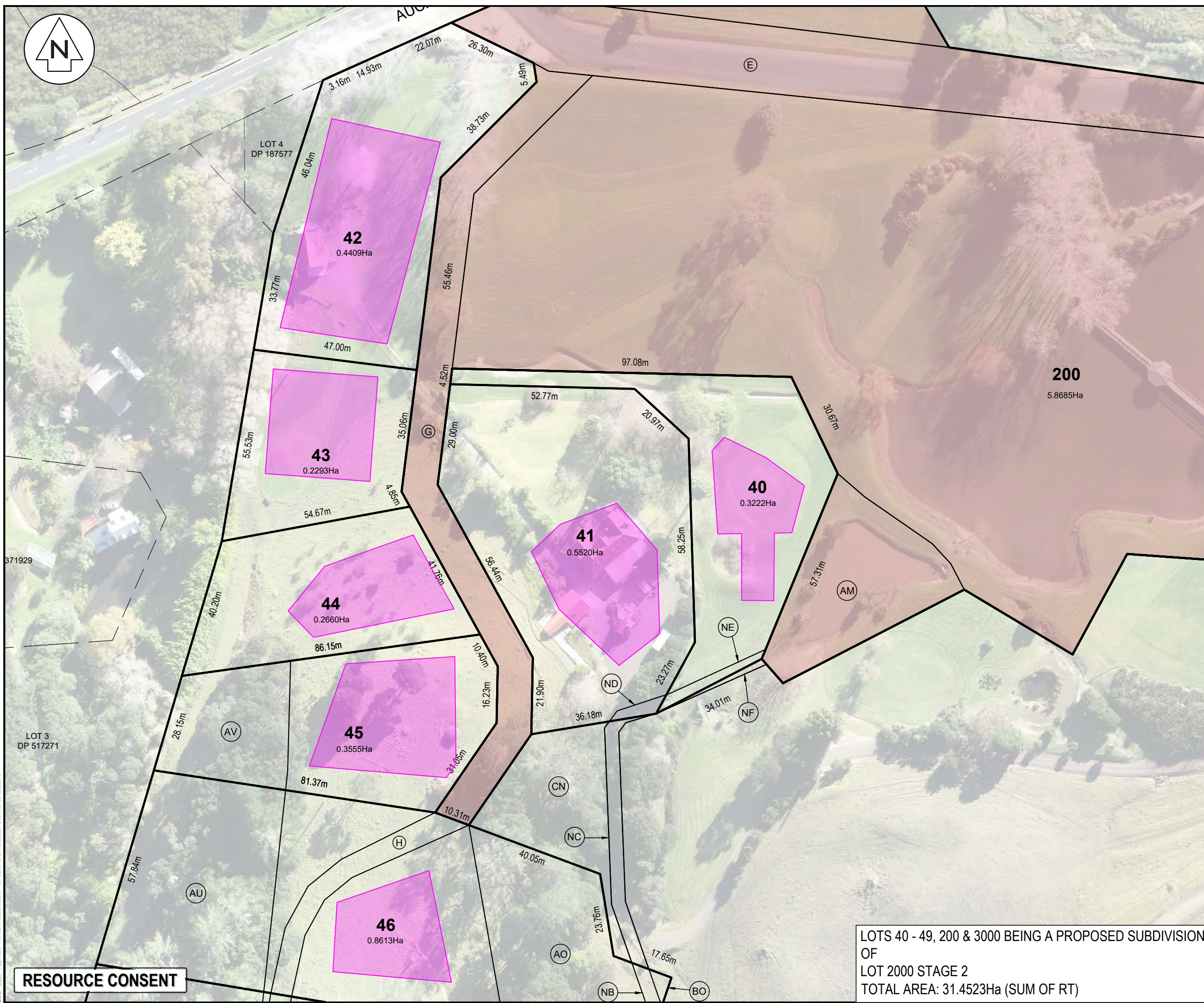
PURPOSE	SHOWN	BURDENED LAND	CREATED BY
PEDESTRIAN RIGHT OF WAY	NA, NC, NF	LOT 3000 HEREON	STAGE 2
	NB	LOT 46 HEREON	
	ND	LOT 41 HEREON	
	NE	LOT 40 HEREON	
RIGHT OF WAY & SERVICES	D, E, F, Z	LOT 200 HEREON	

DATE: 12/24 FILEPATH: F:\MVEN\PROJECTS\309001 - 39 AUCKS ROAD, RUSSELL\DWG\SCHEM.DWG





- NOTES
1. COORDINATES IN TERMS OF NZ GEODETIC DATUM MT EDEN 2000.
  2. BOUNDARIES ARE SUBJECT TO FINAL SURVEY.
  3. PEDESTRIAN RIGHT OF WAY LOCATION SUBJECT TO FINAL SURVEY RELATIVE TO NECESSARY ECOLOGICAL OFFSETS.



LEGEND

	INDICATIVE BUILDING PLATFORM
	PR BDY
	RT
	RT
	REFERENCE TITLE
	PR EASEMENT

D	BLD PLATFORMS	CJP	11/2024
C	BLD PLATFORMS CHG	CJP	11/2024
B	RESOURCE CONSENT	CJP	10/2024
A	INFORMATION	JAW	08/2024
Rev	Description	By	Date
Survey	MAVEN		06/2024
Design	CP		07/2024
Drawn	YG		07/2024
Checked	CP		07/2024

Project  
**DEVELOPMENT OF  
 39 AUCKS ROAD  
 RUSSELL  
 FOR  
 WILLOWRIDGE DEV. LTD.**

Title  
**PROPOSED  
 SCHEME PLAN  
 STAGE 3**

LOTS 40 - 49, 200 & 3000 BEING A PROPOSED SUBDIVISION OF LOT 2000 STAGE 2  
 TOTAL AREA: 31.4523Ha (SUM OF RT)

Project no.	309001 - WILLOWRIDGE
Scale	1:3000 @ A3
Cad file	C160 - SCHEME.DWG
Drawing no.	STAGE 3 SH 2
Rev	<b>D</b>

DATE: 12/24 FILE PATH: F:\MVEN\PROJECTS\309001 - 39 AUCKS ROAD - RUSSELL\DWG\SC160 - SCHEME.DWG





LOT 3  
DP 517271

**45**  
0.3555Ha

**46**  
0.8613Ha

**47**  
0.7530Ha

**48**  
0.7657Ha

**49**  
0.7431Ha

- NOTES
1. COORDINATES IN TERMS OF NZ GEODETIC DATUM MT EDEN 2000.
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LEGEND

INDICATIVE BUILDING PLATFORM

— PR BDY

— RT — RT — REFERENCE TITLE

— PR EASEMENT

D	BLD PLATFORMS	CJP	11/2024
C	BLD PLATFORMS CHG	CJP	11/2024
B	RESOURCE CONSENT	CJP	10/2024
A	INFORMATION	JAW	08/2024
Rev	Description	By	Date
Survey	MAVEN		06/2024
Design	CP		07/2024
Drawn	YG		07/2024
Checked	CP		07/2024

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Project  
**DEVELOPMENT OF  
 39 AUCKS ROAD  
 RUSSELL  
 FOR  
 WILLOWRIDGE DEV. LTD.**

Title  
**PROPOSED  
 SCHEME PLAN  
 STAGE 3**

LOTS 40 - 49, 200 & 3000 BEING A PROPOSED SUBDIVISION OF LOT 2000 STAGE 2  
 TOTAL AREA: 31.4523Ha (SUM OF RT)

Project no.	309001 - WILLOWRIDGE
Scale	1:3000 @ A3
Cad file	C160 - SCHEME.DWG
Drawing no.	STAGE 3 SH 3
Rev	<b>D</b>

**RESOURCE CONSENT**

DATE: 12/24 FILE PATH: F:\MVEN\PROJECTS\309001 - 39 AUCKS ROAD, RUSSELL\DWG\SC160 - SCHEME.DWG



**RESOURCE CONSENT**



- NOTES
- COORDINATES IN TERMS OF NZ GEODETIC DATUM MT EDEN 2000.
  - BOUNDARIES ARE SUBJECT TO FINAL SURVEY.
  - PEDESTRIAN RIGHT OF WAY LOCATION SUBJECT TO FINAL SURVEY RELATIVE TO NECESSARY ECOLOGICAL OFFSETS.

**MEMORANDUM OF EASEMENTS**

PURPOSE	SHOWN	BURDENED LAND	BENEFITTED LAND
RIGHT OF WAY & SERVICES	E, Z	LOT 200 HEREON	LOTS 13-20, 22-24 & 4000 HEREON
	MA	LOT 14 HEREON	LOTS 13, 15, 16, 22-24 HEREON
	MB	LOT 22 HEREON	LOTS 15, 16, 23 & 24 HEREON
	MC	LOT 24 HEREON	LOT 23 HEREON
	MD	LOT 20 HEREON	LOTS 17-19 HEREON
	ME	LOT 17 HEREON	LOTS 18 & 19 HEREON
MF	LOT 18 HEREON	LOT 19 HEREON	

**PROPOSED LAND COVENANTS**

PURSUANT TO EITHER SEC 22 OF THE QE II NATIONAL TRUST ACT 1977 OR SECTION 77 OF THE RESERVES ACT 1977

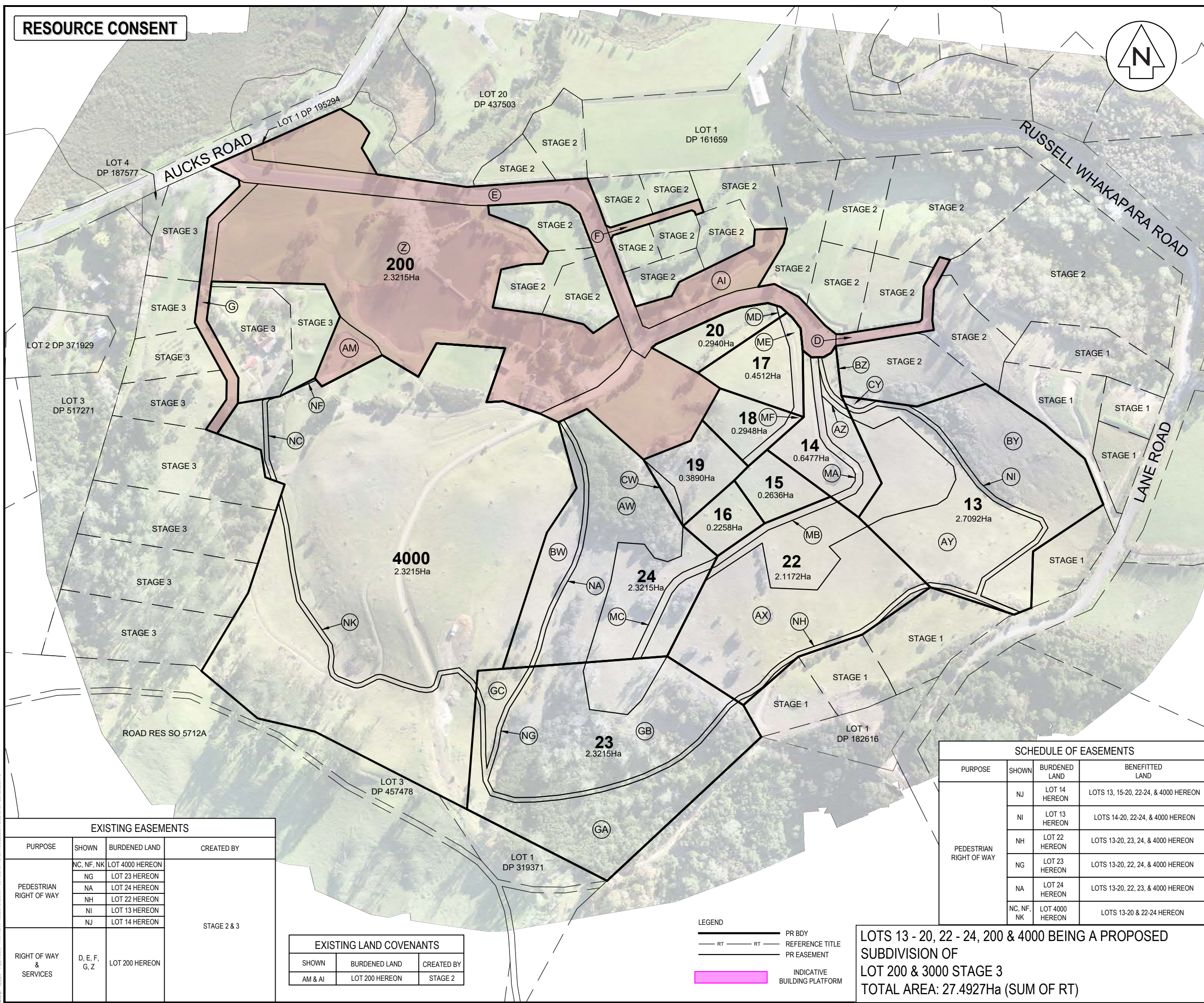
SHOWN	BURDENED LAND	AREA
AY, BY, NI	LOT 13 HEREON	8.5352Ha
CW	LOT 19 HEREON	
AX, NH	LOT 22 HEREON	
GA, GB, GC, NG	LOT 23 HEREON	
AW, BW, NA	LOT 45 HEREON	

Rev	Description	By	Date
D	BLD PLATFORMS	CJP	11/2024
C	BLD PLATFORMS CHG	CJP	11/2024
B	RESOURCE CONSENT	CJP	10/2024
A	INFORMATION	JAW	08/2024

Project  
**DEVELOPMENT OF  
 39 AUCKS ROAD  
 RUSSELL  
 FOR  
 WILLOWRIDGE DEV. LTD.**

Title  
**PROPOSED  
 SCHEME PLAN  
 STAGE 4, OVERALL**

Project no.	309001 - WILLOWRIDGE
Scale	1:3000 @ A3
Cad file	C160 - SCHEME.DWG
Drawing no.	STAGE 4 SH 1
Rev	<b>D</b>



**SCHEDULE OF EASEMENTS**

PURPOSE	SHOWN	BURDENED LAND	BENEFITTED LAND
PEDESTRIAN RIGHT OF WAY	NJ	LOT 14 HEREON	LOTS 13, 15-20, 22-24, & 4000 HEREON
	NI	LOT 13 HEREON	LOTS 14-20, 22-24, & 4000 HEREON
	NH	LOT 22 HEREON	LOTS 13-20, 23, 24, & 4000 HEREON
	NG	LOT 23 HEREON	LOTS 13-20, 22, 24, & 4000 HEREON
	NA	LOT 24 HEREON	LOTS 13-20, 22, 23, & 4000 HEREON
	NC, NF, NK	LOT 4000 HEREON	LOTS 13-20 & 22-24 HEREON

LOTS 13 - 20, 22 - 24, 200 & 4000 BEING A PROPOSED SUBDIVISION OF LOT 200 & 3000 STAGE 3  
 TOTAL AREA: 27.4927Ha (SUM OF RT)

**EXISTING EASEMENTS**

PURPOSE	SHOWN	BURDENED LAND	CREATED BY
PEDESTRIAN RIGHT OF WAY	NC, NF, NK	LOT 4000 HEREON	STAGE 2 & 3
	NG	LOT 23 HEREON	
	NA	LOT 24 HEREON	
	NH	LOT 22 HEREON	
	NI	LOT 13 HEREON	
	NJ	LOT 14 HEREON	
RIGHT OF WAY & SERVICES	D, E, F, G, Z	LOT 200 HEREON	

**EXISTING LAND COVENANTS**

SHOWN	BURDENED LAND	CREATED BY
AM & AI	LOT 200 HEREON	STAGE 2

**LEGEND**

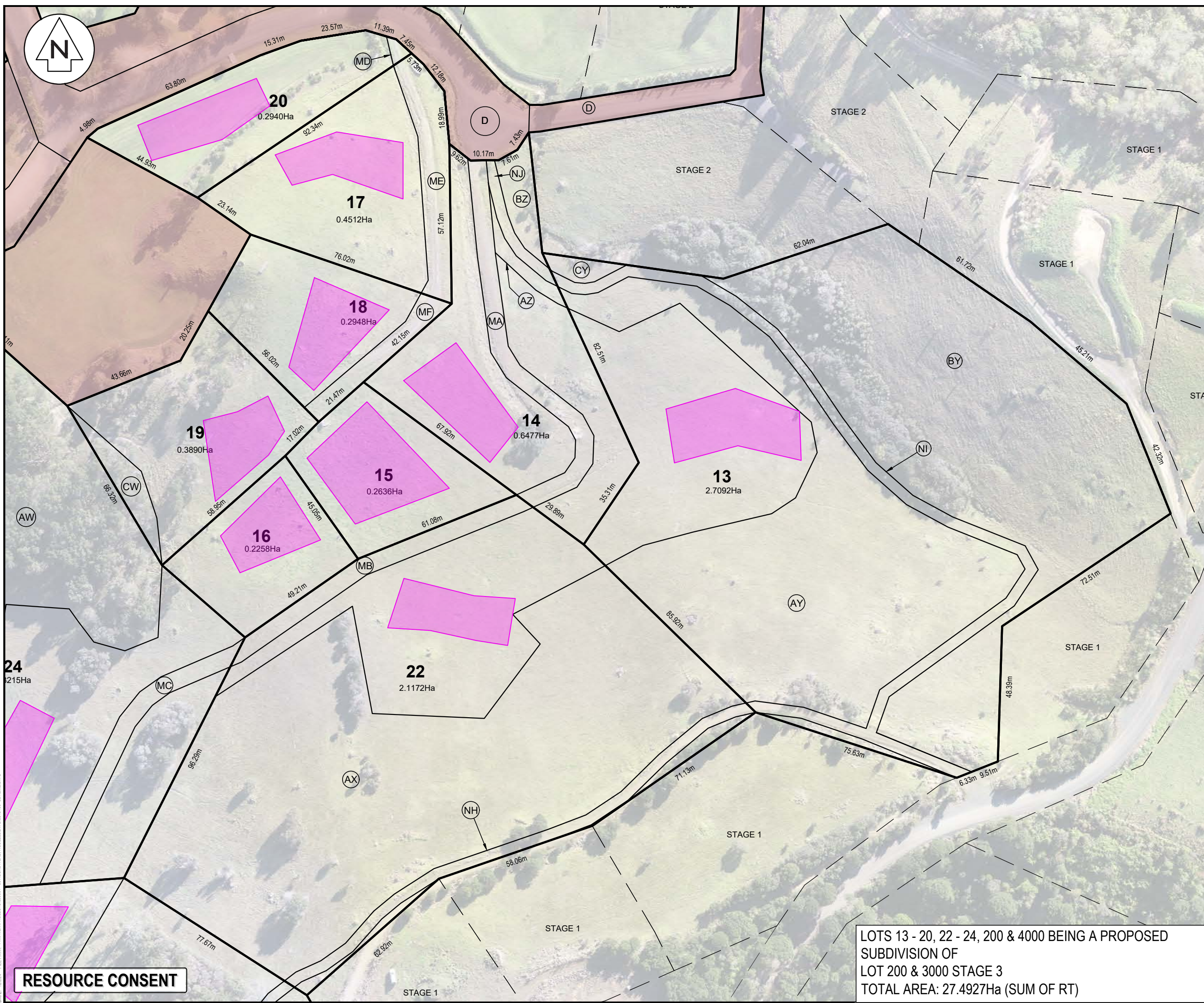
- PR BDY (Solid line)
- REFERENCE TITLE (Dashed line)
- PR EASEMENT (Dotted line)
- INDICATIVE BUILDING PLATFORM (Pink shaded area)

DATE: 12/24 FILEPATH: F:\Maven\Projects\309001 - 39 AUCKS ROAD, RUSSELL\DWG\SCHEM.DWG





- NOTES
1. COORDINATES IN TERMS OF NZ GEODETIC DATUM MT EDEN 2000.
  2. BOUNDARIES ARE SUBJECT TO FINAL SURVEY.
  3. PEDESTRIAN RIGHT OF WAY LOCATION SUBJECT TO FINAL SURVEY RELATIVE TO NECESSARY ECOLOGICAL OFFSETS.



**LEGEND**

- INDICATIVE BUILDING PLATFORM
- PR BDY
- RT
- REFERENCE TITLE
- PR EASEMENT

Rev	Description	By	Date
D	BLD PLATFORMS	CJP	11/2024
C	BLD PLATFORMS CHG	CJP	11/2024
B	RESOURCE CONSENT	CJP	10/2024
A	INFORMATION	JAW	08/2024
Survey	MAVEN		06/2024
Design	CP		07/2024
Drawn	YG		07/2024
Checked	CP		07/2024

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 Auckland 1023

Project  
**DEVELOPMENT OF  
 39 AUCKS ROAD  
 RUSSELL  
 FOR  
 WILLOWRIDGE DEV. LTD.**

Title  
**PROPOSED  
 SCHEME PLAN  
 STAGE 4**

Project no.	309001 - WILLOWRIDGE
Scale	1:3000 @ A3
Cad file	C160 - SCHEME.DWG
Drawing no.	STAGE 4 SH 2
Rev	<b>D</b>

LOTS 13 - 20, 22 - 24, 200 & 4000 BEING A PROPOSED  
 SUBDIVISION OF  
 LOT 200 & 3000 STAGE 3  
 TOTAL AREA: 27.4927Ha (SUM OF RT)

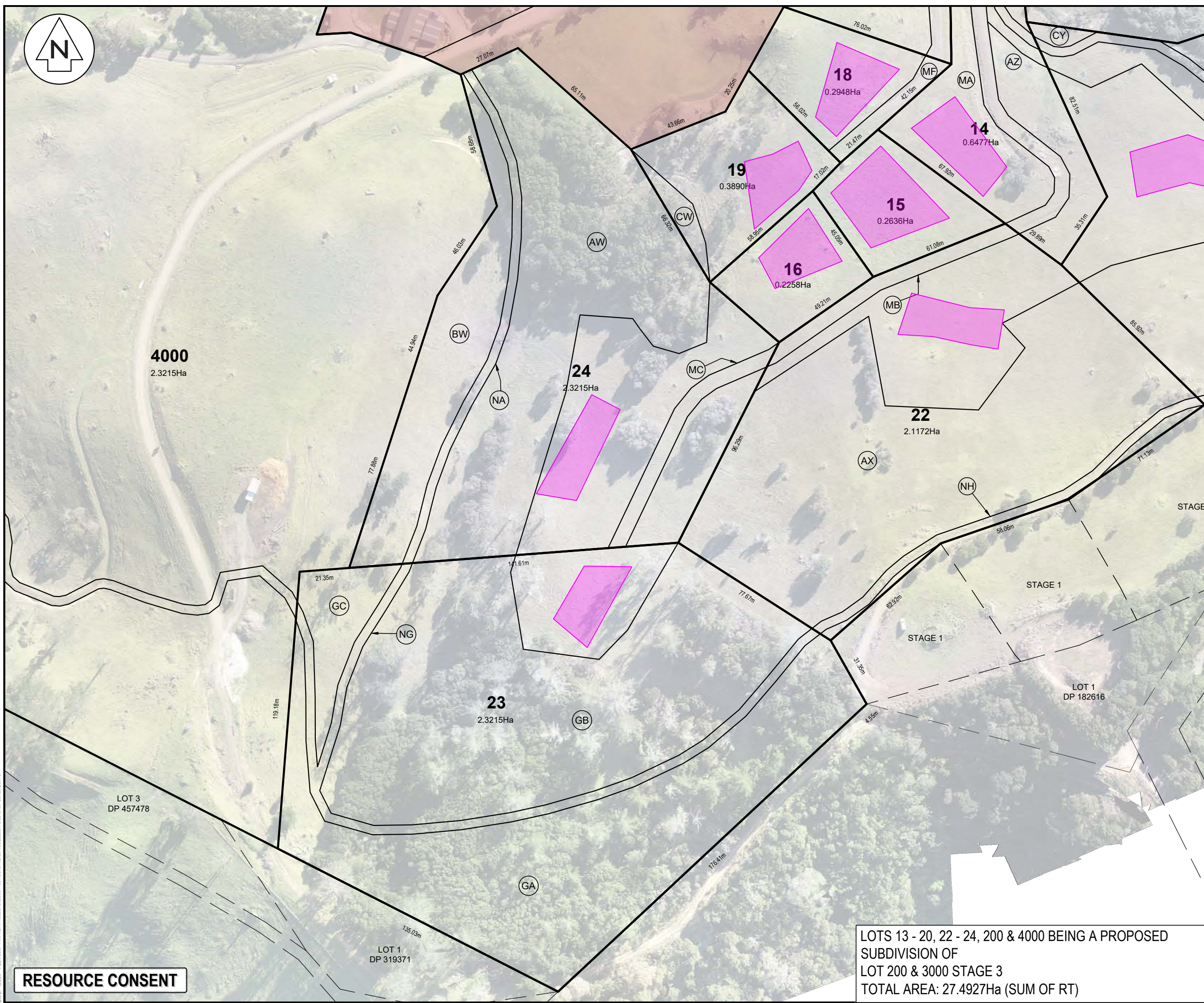
**RESOURCE CONSENT**

DATE: 12/24 FILE PATH: F:\MVEN\PROJECTS\309001 - 39 AUCKS ROAD, RUSSELL\DWG\SC160 - SCHEME.DWG





- NOTES
1. COORDINATES IN TERMS OF NZ GEODETIC DATUM MT EDEN 2000.
  2. BOUNDARIES ARE SUBJECT TO FINAL SURVEY.
  3. PEDESTRIAN RIGHT OF WAY LOCATION SUBJECT TO FINAL SURVEY RELATIVE TO NECESSARY ECOLOGICAL OFFSETS.



**LEGEND**

INDICATIVE BUILDING PLATFORM

PR BDY

RT

REFERENCE TITLE

PR EASEMENT

Rev	Description	By	Date
D	BLD PLATFORMS	CJP	11/2024
C	BLD PLATFORMS CHG	CJP	11/2024
B	RESOURCE CONSENT	CJP	10/2024
A	INFORMATION	JAW	08/2024

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Project  
**DEVELOPMENT OF  
 39 AUCKS ROAD  
 RUSSELL  
 FOR  
 WILLOWRIDGE DEV. LTD.**

Title  
**PROPOSED  
 SCHEME PLAN  
 STAGE 4**

Project no.	309001 - WILLOWRIDGE
Scale	1:3000 @ A3
Cad file	C160 - SCHEME.DWG
Drawing no.	STAGE 4 SH 3
Rev	<b>D</b>

LOTS 13 - 20, 22 - 24, 200 & 4000 BEING A PROPOSED  
 SUBDIVISION OF  
 LOT 200 & 3000 STAGE 3  
 TOTAL AREA: 27.4927Ha (SUM OF RT)

**RESOURCE CONSENT**

DATE: 12/24 FILEPATH: F:\MVEN\PROJECTS\309001 - 39 AUCKS ROAD, RUSSELL\DWG\SCHEM.DWG



**RESOURCE CONSENT**



- NOTES
1. COORDINATES IN TERMS OF NZ GEODETIC DATUM MT EDEN 2000.
  2. BOUNDARIES ARE SUBJECT TO FINAL SURVEY.
  3. PEDESTRIAN RIGHT OF WAY LOCATION SUBJECT TO FINAL SURVEY RELATIVE TO NECESSARY EASEMENTS

PURPOSE	SHOWN	BURDENED LAND	BENEFITED LAND
RIGHT OF WAY & SERVICES	E, H	LOT 200 HEREON	LOTS 21 & 25-39 HEREON
	I	LOT 200 HEREON	LOTS 35-39 HEREON

SCHEDULE OF EASEMENTS			
PEDESTRIAN RIGHT OF WAY	NG, NL, NM	LOT 25 HEREON	LOTS 21 & 26-39 HEREON
	NK	LOT 32 HEREON	LOTS 21, 25-31 & 33-39 HEREON
	NN	LOT 33 HEREON	LOTS 21, 25-32 & 34-39 HEREON
	NC, NF	LOT 39 HEREON	LOTS 21 & 25-38 HEREON

PROPOSED LAND COVENANTS		
PURSUANT TO EITHER SEC 22 OF THE QE II NATIONAL TRUST ACT 1977 OR SECTION 77 OF THE RESERVES ACT 1977		
SHOWN	BURDENED LAND	AREA
GH, GG, NG	LOT 25 HEREON	2.4790Ha
GI, GJ, NK	LOT 32 HEREON	
GK, GL, NN	LOT 33 HEREON	
GM	LOT 38 HEREON	
GN, GO, NC, NF	LOT 39 HEREON	

LEGEND			
	PR BDY		
	RT	REFERENCE TITLE	
		PR EASEMENT	

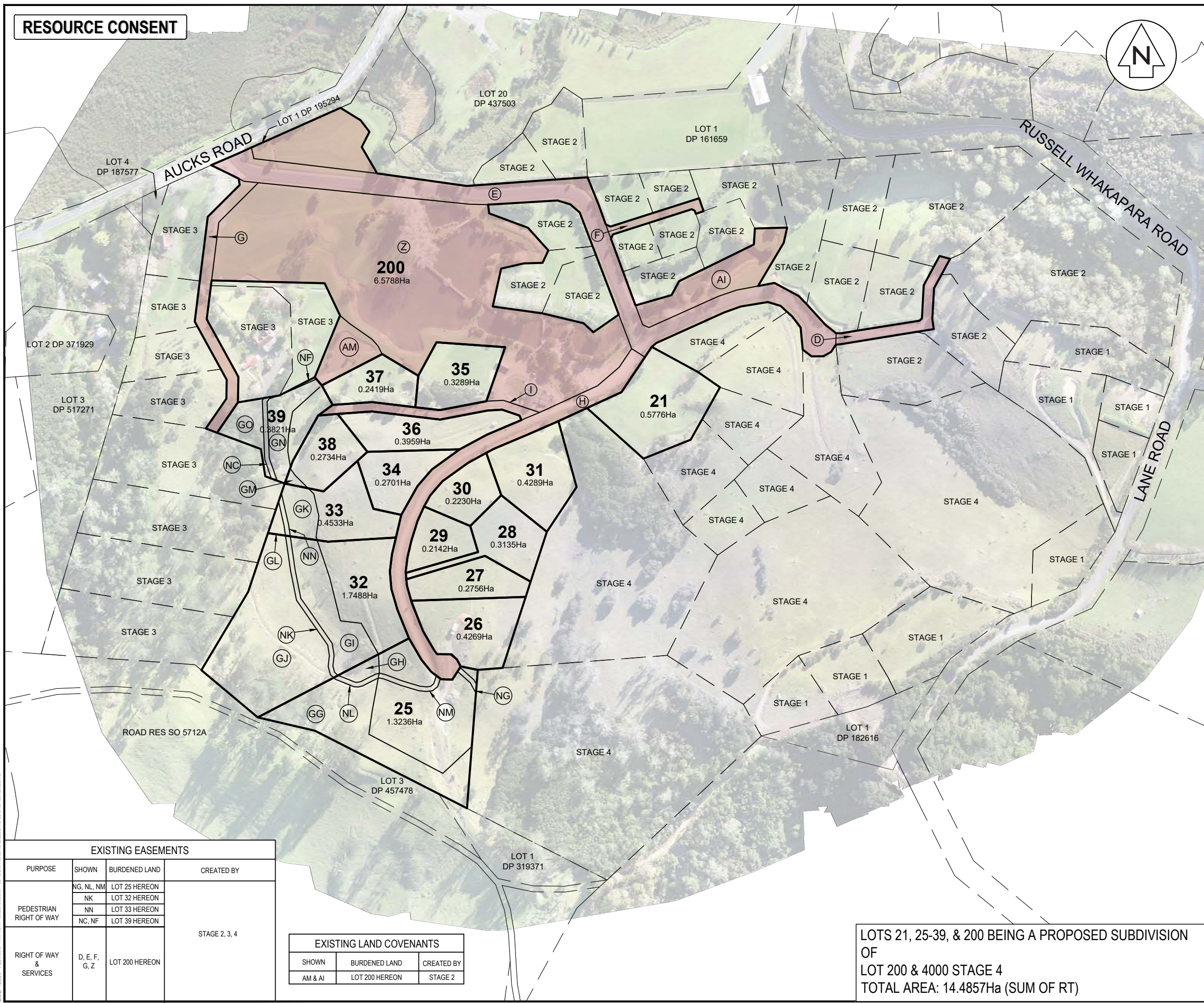
Rev	Description	By	Date
D	BLD PLATFORMS	CJP	11/2024
C	BLD PLATFORMS CHG	CJP	11/2024
B	RESOURCE CONSENT	CJP	10/2024
A	INFORMATION	JAW	08/2024

Rev	Description	By	Date
Survey	MAVEN		06/2024
Design	CP		07/2024
Drawn	YG		07/2024
Checked	CP		07/2024

Project  
**DEVELOPMENT OF  
 39 AUCKS ROAD  
 RUSSELL  
 FOR  
 WILLOWRIDGE DEV. LTD.**

Title  
**PROPOSED  
 SCHEME PLAN  
 STAGE 5, OVERALL**

Project no.	309001 - WILLOWRIDGE
Scale	1:3000 @ A3
Cad file	C160 - SCHEME.DWG
Drawing no.	STAGE 5 SH 1 Rev <b>D</b>



EXISTING EASEMENTS			
PURPOSE	SHOWN	BURDENED LAND	CREATED BY
PEDESTRIAN RIGHT OF WAY	NG, NL, NM	LOT 25 HEREON	STAGE 2, 3, 4
	NK	LOT 32 HEREON	
	NN	LOT 33 HEREON	
	NC, NF	LOT 39 HEREON	
RIGHT OF WAY & SERVICES	D, E, F, G, Z	LOT 200 HEREON	

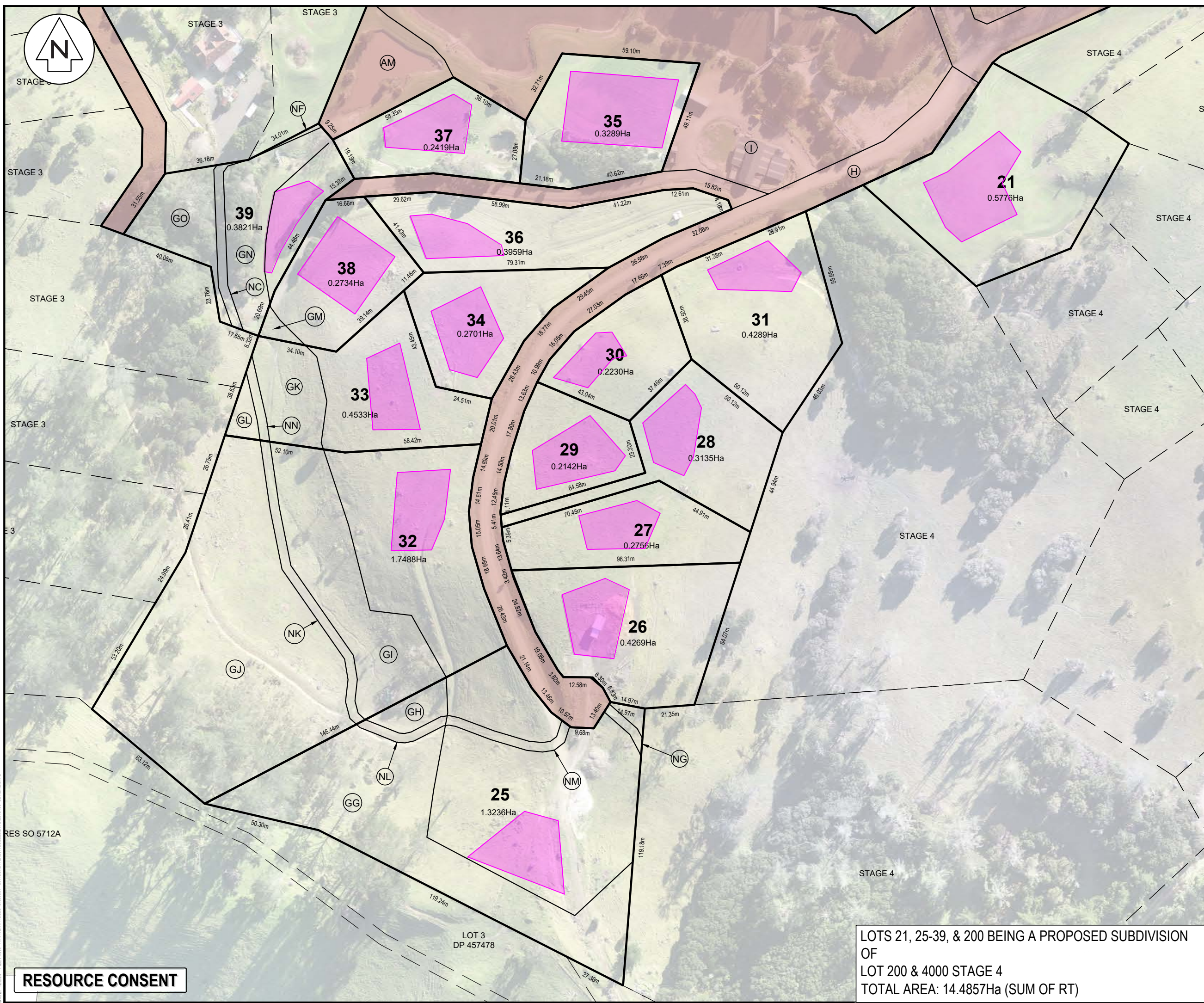
EXISTING LAND COVENANTS		
SHOWN	BURDENED LAND	CREATED BY
AM & AI	LOT 200 HEREON	STAGE 2

LOTS 21, 25-39, & 200 BEING A PROPOSED SUBDIVISION OF  
 LOT 200 & 4000 STAGE 4  
 TOTAL AREA: 14.4857Ha (SUM OF RT)





- NOTES
1. COORDINATES IN TERMS OF NZ GEODETIC DATUM MT EDEN 2000.
  2. BOUNDARIES ARE SUBJECT TO FINAL SURVEY.
  3. PEDESTRIAN RIGHT OF WAY LOCATION SUBJECT TO FINAL SURVEY RELATIVE TO NECESSARY ECOLOGICAL OFFSETS.



**LEGEND**

- INDICATIVE BUILDING PLATFORM
- PR BDY
- RT
- REFERENCE TITLE
- PR EASEMENT

D	BLD PLATFORMS	CJP	11/2024
C	BLD PLATFORMS CHG	CJP	11/2024
B	RESOURCE CONSENT	CJP	10/2024
A	INFORMATION	JAW	08/2024
Rev	Description	By	Date
Survey	MAVEN		06/2024
Design	CP		07/2024
Drawn	YG		07/2024
Checked	CP		07/2024

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Project  
**DEVELOPMENT OF  
 39 AUCKS ROAD  
 RUSSELL  
 FOR  
 WILLOWRIDGE DEV. LTD.**

Title  
**PROPOSED  
 SCHEME PLAN  
 STAGE 5**

Project no.	309001 - WILLOWRIDGE
Scale	1:3000 @ A3
Cad file	C160 - SCHEME.DWG
Drawing no.	STAGE 5 SH 2
Rev	<b>D</b>

LOTS 21, 25-39, & 200 BEING A PROPOSED SUBDIVISION OF  
 LOT 200 & 4000 STAGE 4  
 TOTAL AREA: 14.4857Ha (SUM OF RT)

**RESOURCE CONSENT**

DATE: 12/24 FILEPATH: F:\MVEN\PROJECTS\309001 - 39 AUCKS ROAD, RUSSELL\DWG\SC160 - SCHEME.DWG



## Geotechnical Assessment Report

Proposed Subdivision

39 Aucks Road, Russell

For

Willowridge Developments Ltd

*Supporting report for Applications to Far North District Council and Northland Regional Council*

*Haigh Workman reference 23 020*

December 2024





## 1 Revision History

Revision N <sup>o</sup>	Issued By	Description	Date
A	Josh Curreen	First Issue	September 2024
B	Josh Curreen	Revised Scheme Plan	December 2024

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## ***Executive Summary***

Haigh Workman Ltd (Haigh Workman) has been engaged by Willowridge Developments Ltd to carry out a geotechnical investigation for a proposed subdivision comprising 65 residential lots at 39 Aucks Road, Russell. This report contains information required for subdivisional earthworks, as well as outlining geotechnical design issues that need to be considered for subsequent building design and construction on each residential Lot.

The underlying soils comprise a deeply weathered residual Waipapa Group soil mantle across the sloping parts of the site (i.e. ridges), with Pleistocene age Tauranga Group alluvial deposits across the low-lying northern parts of the site. Minor localised non-engineered fill was encountered in some parts of the site, inferred to have been placed for the previous golf course fairways and greens. Inferred colluvium was encountered up to 3.0 mbgl in TP01 and 2.0 mbgl in BH26, in the vicinity of platform 21.

There are several historic scarp features, as outlined in section 3.2, which are generally at or near the toe of the spur ridges. No weaker lenses were observed in the CPTs or hand augers carried out below the old scarp features and are considered relic features. Slope stability analyses indicates that stable building platforms can be provided on all lots subject to the recommendations herein. The proposed building platforms on Lot 04, 05, 18, 19, 26, 27, 28, 30, 33, 34, 62 and 63 will require setbacks from steep slopes and/or mapped scarp features. Building restriction lines have been set out on the attached site plans SP02 to SP05.

The preliminary settlement assessment indicates settlements up to 120 mm on Lot 50, Lot 51 and Lot 52, which will require mitigation / ground stabilisation for fill induced settlement (i.e. Pre-loading). Alternatively, deep driven pile foundations (driven to refusal) can be adopted. On all other lots (excluding Lots 50, 51 and 52), we do not consider consolidation settlement to cause any undue risk to the building platforms provided the fill thickness does not exceed 1.0 m beneath the building platform, and the fill is placed to an engineered standard. If fill exceeds 1.0 m thick, ground improvement (i.e. pre-loading) or deep piled foundations would likely be required. Differential settlements on these lots are predicted to be within tolerable limits given in B1/VM4 for the proposed filling outlined on Maven Associates cut and fill plans numbered C220 to C226, dated 11/2024.

Based on our liquefaction assessment and clayey nature of the overburden soils, we consider the potential for liquefaction induced ground damage (for ULS 0.13 g adopting mean hazard level) is minor and liquefaction damage is unlikely. We consider the effects from excess pore pressure and liquefaction to be between insignificant (L0) to mild (L1) in accordance with Table 5.1 (Module 3), with negligible differential settlements across the site due to limited excess pore water pressures. Step change behaviour was assessed for the lower bound ULS case (0.19 g, Mw 6.5 earthquake) which indicates minor liquefaction in some thin layers at greater depths however, these are not continuous through the CPTs and unlikely to manifest at the surface given the clayey nature of the overburden soils.

Overall soils types are considered highly expansive (Class H), based upon shrink-swell and Atterberg limit testing carried out on the site. Due to this classification, soils lie outside the definition of good ground within NZS3604:2011. Shallow foundations are considered to be generally appropriate for the majority of the lots, provided they are within the building restriction lines. Deeper foundations will be required if located on or near sloping ground. Ground stabilisation would be required if building beyond the restriction lines. Foundation recommendations are outlined in Section 7.



All earthworks should be carried out to the requirements of NZS 4404:2010 'Land Development and Subdivision Infrastructure' and NZS 4431:2022 'Engineered Fill Construction for Lightweight Structures' and in accordance with the recommendations outlined in Section 8.

Filling should be kept to a minimum and limited to 1.0 m beneath all building platform areas. If fill exceeds 1.0 m thick beneath any future building platforms, then a site-specific settlement analysis is required to estimate the differential settlement and associated angular distortion across the proposed buildings. Filling should be avoided on or around the steeper slopes on the ridgelines and beyond any building restriction lines, unless specific engineered design is undertaken to demonstrate it is safe to do so. No additional filling is recommended on any of the proposed building platforms, other than that indicated on Maven Associates cut and fill plans numbered C220 to C226, dated 11/2024, Rev. A.

Subject to constraints and recommendations outlined in Sections 6, 7 and 8, each residential Lot is considered to have a building platform area suitable for domestic residential development subject to specific geotechnical assessment and foundation design at building stage.

Future geotechnical investigation is recommended for each individual lot at building consent stage to confirm the subsoil conditions, confirm the soil expansivity, and provide site specific geotechnical assessment for foundation design within each lot. This report is not intended to be used for foundation design, other than provide general framework for building platform suitability. A summary of the Lot specific geotechnical recommendations is given in Table 13.

# **1 Introduction**

## **1.1 Project Brief and Scope**

Haigh Workman Ltd (Haigh Workman) has been commissioned by Willowridge Developments Ltd to prepare a geotechnical assessment report for use in support of Resource Consent applications to Far North District Council and Northland Regional Council for the proposed 65 lot residential subdivision.

The scope of this report encompasses the geotechnical suitability in the context of the proposed development as defined in our Short Form Agreement dated 23<sup>rd</sup> of July 2024. This appraisal has been designed to assess the subsoil conditions for earthworks and identify geotechnical constraints for the proposed development. As part of this assessment, the following work has been undertaken:

- A walkover inspection of the site with surface mapping of the geomorphological features;
- Reference to geological maps to assess the likely underlying geology and subsoil conditions;
- A review of historic aerial photographs;
- Intrusive site investigation for evaluation of subsurface conditions;
- Laboratory testing to confirm soil properties;
- Settlement and liquefaction analyses; and
- Slope stability analyses to identify stable building platforms.

This report summarises our findings and recommendations in relation to the proposed development plans prepared by Maven Associates to support Consent applications to Far North District Council and Northland Regional Council.

The principal objective of the investigation is to develop geotechnical models of the site so that geotechnical constraints to the proposed development can be identified and to provide assurance to Council that stable / suitable building platforms are available or can be made available for the proposed development.

## **2 Site Description and Proposed Development**

### **2.1 General**

Site Address: 39 Aucks Road, Russell

Legal Descriptions: Lot 1 DP187577, Lot 1 DP542129, Lot 2 DP542129, Lot 1 DP 182616, Lot 3 DP420232 and Lot 4 DP420232.

Site Area (combined): 43.716 ha

The site is predominantly situated across 4 spur ridges that slope down to the north from a main ridgeline that traverses around the southernmost boundary. The flanks of the spur ridges are moderately sloping with gradients up to 20 - 25°. There are 4 main flow paths between the spur ridges that traverse towards the north and into a series of man-made ponds on the flatter northern part of the site.

There is a gravel driveway off Aucks Road which provides access to the existing dwellings in the north-western part of the site. There is also a sealed double lane accessway from Aucks Road in the north-western corner of the lot which runs along the northern boundary, crosses over the ponds and associated waterways, then splits into 2 roads that run up the outer ridgelines. There is an existing shed situated adjacent to the pond on the northern part of the site. Access to the site can also be gained from Lanes Road which runs around the easternmost boundary.

At the time of investigation, the majority of undeveloped area around the property was grassed with patches of native bush/scrub dotted around the site, mainly on the flanks of the western ridgeline, easternmost gully, and across the steeper southern part of the property. There are also some exotic trees and fruit trees planted around the existing dwelling and within the stockpiled fill material around edges of the pond and lower building platforms.

The approximate location of these site features are shown on site SP01 to SP05 attached in Appendix A. An overview of the subject area is illustrated in Figure 1 below.



**Figure 1: Site Location**

## 2.2 Proposed Development

Based on discussions with our client and civil drawings prepared by Maven Associates, Ref. 309001 – WILLOWRIDGE, Rev. A, dated 11/2024, numbered C200 – C506 and Scheme plans numbered STAGE 1 to 5, SH1 to SH3, Rev. D, it is understood that the proposed development works involve:

- The creation of 65 residential lots with areas ranging from 1,153 m<sup>2</sup> to 32,892 m<sup>2</sup>.
- Four Jointly Owned Access Lots (J.O.A.Ls) off the existing private sealed road.
- Two driveways off the end of the existing sealed road, Driveway 1 is 154 m long, and Driveway 2 is 392 m long.
- Earthworks involving cutting the crest of ridgelines to create level platforms. Cutting into the sidling platforms is also proposed to form some of the building platforms, with cutting up to a maximum depth of 3.0 m depth shown. Other sidling building platforms where no earthworks are shown will likely require some cutting and/or filling supported by retaining wall, however earthworks on these platforms does not form part of the subdivision enabling works. Most of the platforms are shown to be near level with a gentle crossfall of 5%. The latest cut-fill plans indicate up to 21,900 m<sup>3</sup> cut volume.
- Filling up to 1.0 m deep across some of the lower northern parts of the site to raise ground levels above the flood hazard. Minor filling is shown on the outer extent of some ridgeline platforms but is typically less than 0.5 m depth.

The Maven scheme plan suggests staging the subdivision in 5 separate stages as shown on drawing numbered 'STAGING', Rev. B, dated 11/2024.

## 3 Geology

### 3.1 Published Geology

Sources of Information:

- Institute of Geological & Nuclear Sciences, 1:250,000 Scale, 2009: "*Geology of the Whangarei area*" \*;
- NZMS Sheet 290 Q04/05, 1:100,000 scale map, Edition 1, 1980: "Whangaroa-Kaikohē" (Soils);
- NZMS Sheet 290 Q04/05, 1:100,000 scale map, Edition 1, 1981: "Whangaroa-Kaikohē" (Rocks).

The site is within the bounds of the GNS Geological Map 2 "*Geology of the Whangarei area*", 1:250,000 scale. The published geological map indicates the site is underlain by Waipapa Group greywacke (TJw). The soils of the Waipapa Group comprise massive to thin bedded, lithic volcanoclastic metasandstone and argillite of Permian to Jurassic age. The low-lying northern part of the site is mapped as Tauranga Group alluvium (eQa) of middle Pleistocene age.

The geological map is shown in Figure 2 below, with geological units presented in Table 1 below.

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\* Edbrooke, S.W.; Brook, F.J. (compilers) 2009. *Geology of the Whangarei Area*. Institute of Geological and Nuclear Sciences 1:250 000 geological map 2. 1 sheet + 68 p. Lower Hutt, New Zealand. GNS Science.





**Figure 2: Geological Map Extract**

**Table 1: Geological Legend**

Symbol	Unit Name	Description
eQa	Tauranga Group	Poorly to moderately consolidated mud, sand, gravel and peat or lignite of alluvial, swamp and estuarine origin. Middle Pleistocene age.
TJw	Waipapa Group	Massive to thin bedded, lithic volcanoclastic metasandstone and argillite (TJw) with minor conglomerate (TJg) and tectonically enclosed basalt (TJv), chert and red and green siliceous argillite (TJc). Permian to Jurassic age.

Further reference to the New Zealand land inventory map, Sheet 290 Q04/05 (Bay of Islands), indicates the site is predominantly underlain by 'soils of the rolling and hilly land; well to moderately well drained, Rangiora clay, clay loam and silty clay loam (RAH+RA)'. The lower northern part of the site is mapped as 'soils of the flood plains; well to moderately well drained, Whakapara silt loam and clay loam (WF)'. The underlying rock weathers to a yellow-brown soft sandy clay to depths of 30 m.

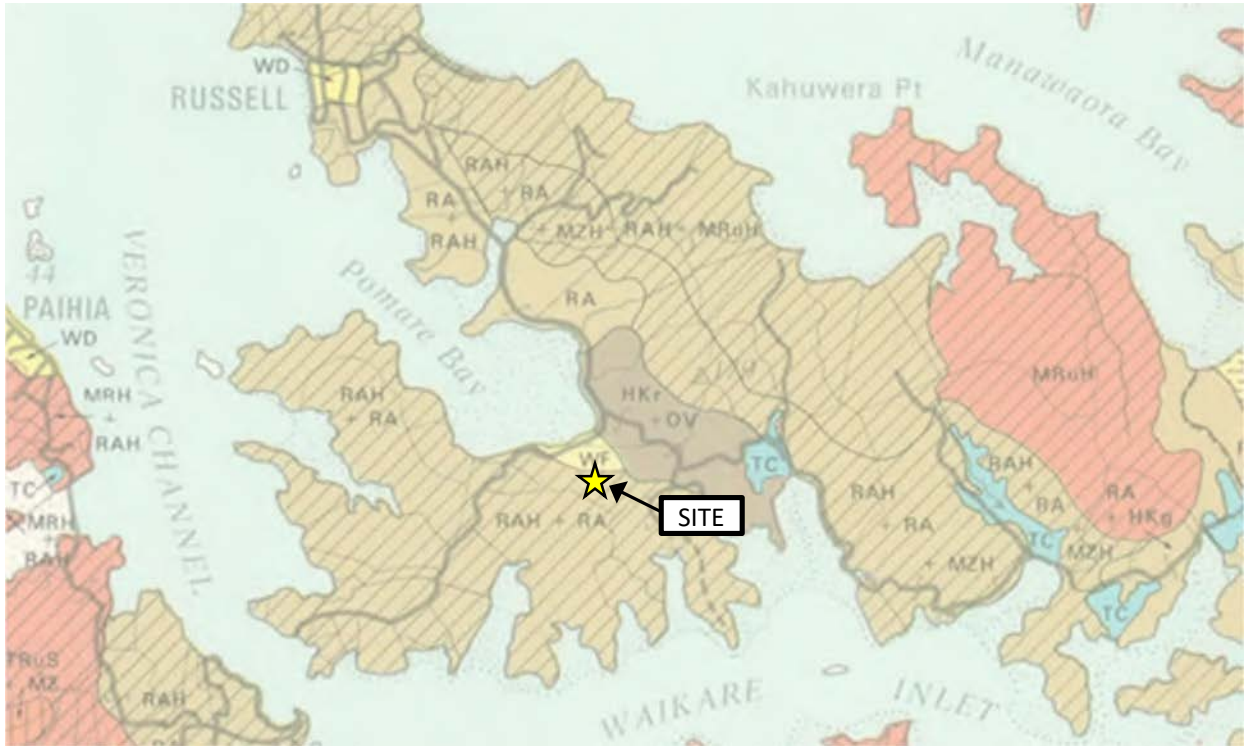


Figure 3: NZMS Soil Map - Sheet 290 Q04/05

### 3.2 Geomorphology

Based on the site walkover carried out, review of the geological maps and topography from LINZ LiDAR data, the geomorphology of the site and surrounding area is inferred as follows.

The subject site is primarily situated over spur ridges which slope moderately down towards the north from the main ridgeline that generally follows the southernmost boundary. The flanks of these spur ridges are moderately sloping with gradients up to 20 - 25°. The slopes can generally stand at moderately steep gradients due to the relatively high strength of the rock mass and residual soils, although shallow instabilities (e.g terracettes and shallow slumping) are often found indicative of shallow soil creep. Based on site observations and the LiDAR contours, the terracettes generally start to form where gradients exceed 18 - 20°.

There are several historic scarp features, as illustrated in Figure 4 below, which are generally at or near the toe of the spur ridges. Ground improvement or setbacks will be required from all historic scarp features for any affected building platforms.

The northern part of the site is underlain by alluvial deposits and there are a number of man-made ponds across this area that receive stormwater runoff from the flow paths that run between the spur ridgelines.

The inferred geological boundary between the Waipapa Group unit (TJw) and Tauranga Group alluvium (eQa) is relatively well defined by the LINZ LiDAR data with alluvial unit covering the northern part of the site, and diminishing as the gullies extend up between spur ridgelines. The inferred geological boundary is sketched below.

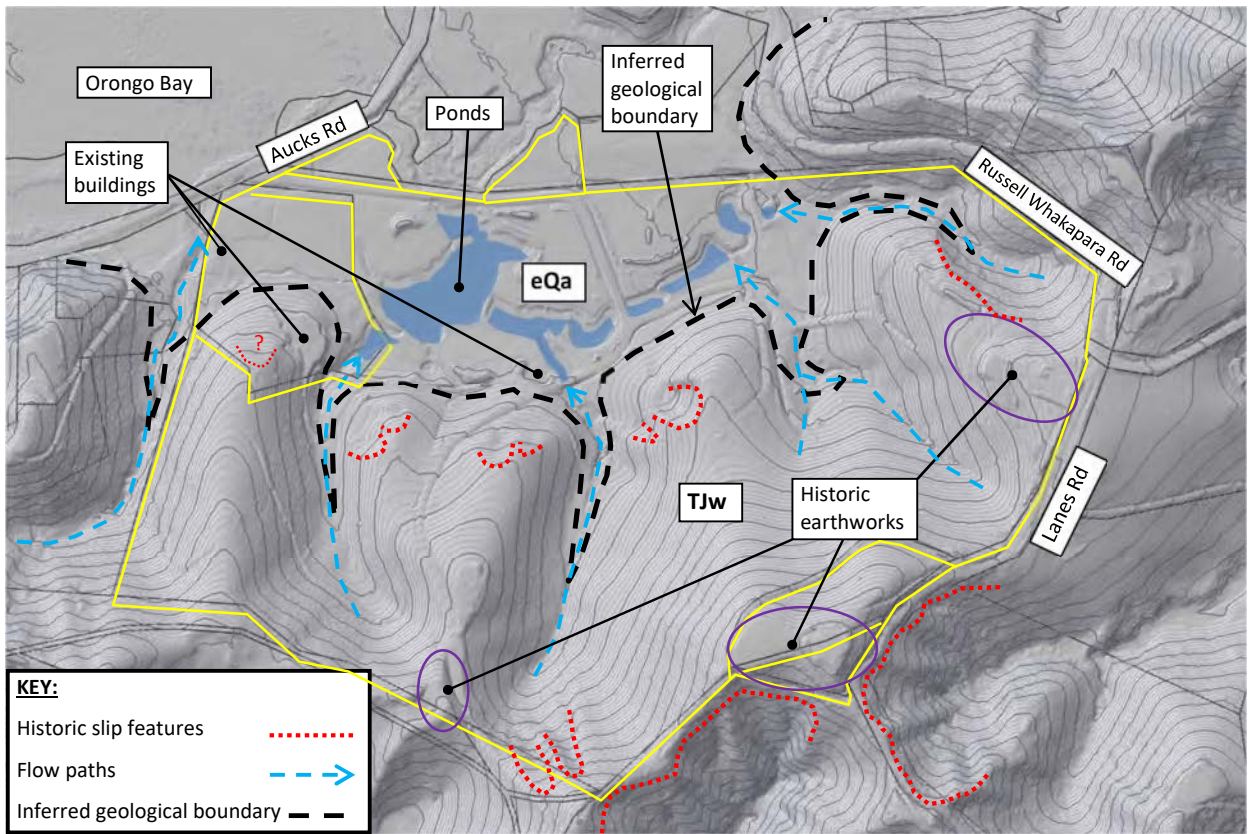


Figure 4: Geomorphological Features from DEM (2018 – 2020)

## 4 Historic Aerial Photography

<p>This aerial photograph from 1951 shows the site boundaries outlined in yellow. A dashed line indicates the 'Existing dwelling' in the north-western corner. A red dashed circle highlights a 'Scarp feature' on the eastern side. The roads 'Aucks Rd' and 'Russell Whakapara Rd' are labeled. A label 'Site extent (approx.)' points to the yellow boundary line.</p>	<p><b>1951 Aerial (Retrolens)</b></p> <p>Earliest historic aerial available that clearly shows the site.</p> <p>The dwelling/cottage exists in the north-western corner.</p> <p>The remainder of the site is largely undeveloped with the ridgelines in regenerating bush/scrub and the low-lying area in pasture.</p> <p>Old scarp feature above lot 21 is evident. Other features are more subtle and difficult to see due to vegetation.</p>
<p>This aerial photograph from 1971 shows the same site boundaries outlined in yellow. The 'Scarp feature' is again highlighted with a red dashed circle. The roads 'Aucks Rd' and 'Russell Whakapara Rd' are labeled. A label 'Site extent (approx.)' points to the yellow boundary line.</p>	<p><b>1971 Aerial (Retrolens)</b></p> <p>Regenerating bush covers more of the property (in the north-eastern part).</p> <p>No other obvious change since 1951.</p>



	<p><b>1978 Aerial (Retrolens)</b></p> <p>The majority of the site is now in pasture with a few scattered trees in the southern part.</p> <p>Some crossings have been formed over the waterways to the north.</p> <p>Shed has been constructed near centre of lot. Building platform for the main dwelling has been formed.</p> <p>Old slip features at end of central ridge spur are now evident after clearing of vegetation.</p>
	<p><b>2004 Aerial (Google Earth)</b></p> <p>Internal roading through the subject site has been formed, but not yet sealed.</p> <p>Ponds have been constructed in the low-lying northern part.</p> <p>The main dwelling has been constructed.</p> <p>Earthworks have been carried out in the southern and eastern part of the property.</p>
	<p><b>2011 Aerial (Google Earth)</b></p> <p>Internal roads have been sealed.</p> <p>No other obvious changes between 2011 and present day.</p>

## 5 Geotechnical Investigations

### 5.1 Subsoil Investigations

Haigh Workman undertook geotechnical investigations between 29<sup>th</sup> July and 6<sup>th</sup> August 2024. The investigations comprised the drilling of 40 hand auger boreholes (BH01 to BH40) and 30 Cone Penetration Tests (CPT01 to CPT30). Two test pits were also carried out in areas of suspected colluvial deposits.

#### 5.1.1 Hand Auger Boreholes

The hand auger boreholes were drilled to depths of between 2.0 and 5.0 metres below ground level (mbgl). Investigations were logged in accordance with The New Zealand Geotechnical Society, "Guidelines for the Field Classification and Description of Soil and Rock for Engineering Purposes" (2005). Investigation locations are shown on drawing SP02 to SP05 Appendix A. All shear strengths shown on the appended logs are Vane Shear Strengths in accordance with the NZGS; "Test Method for determining the Vane Shear Strength of a Cohesive Soil using a Hand-held Shear Vane", 2001.

#### 5.1.2 Cone Penetrometer Tests

CPTs were undertaken by Underground Investigation Ltd. Testing was undertaken to refusal (anchors pulling out of the ground). A maximum depth of 29.8m was achieved at CPT18 location. Underground Investigation Ltd provided a cone penetration rig attached to a remote controlled, rubber tracked machine to test and record ground information. CPT soundings are presented in Appendix C.

### 5.2 Ground Conditions

Based on the results of the geotechnical investigation conducted by Haigh Workman and review of published geological maps, it is considered that the underlying soils comprise a deeply weathered residual Waipapa Group soil mantle across the sloping parts of the site (i.e. ridges), with Pleistocene aged Tauranga Group alluvial deposits across the low-lying northern parts of the site. Non-engineered fill was encountered in some parts of the site, inferred to have been placed for the previous golf course fairways and greens. The fill is typically less than 0.6 m deep in these areas. Inferred colluvium was encountered up to 3.0 mbgl in TP01 and 2.0 mbgl in BH26, in the vicinity of platform 21. There is an historic scarp feature above platform 21 and the depth of colluvium aligns well with the inferred original ground line (based on adjacent slopes).

CPT soundings within the Tauranga Group alluvium indicate a crustal layer comprising stiff clays typically in the upper 2.5 to 4.0 mbgl, underlain by a thick deposit of soft to firm clays. Below the soft to firm layer, strength gradually increase with depth before encountering very dense sand and/or gravel layer at the refusal depth. CPTs within the Waipapa Group material generally indicate a deep weathering profile that gradually increases in strength with depth. CPTs on the eastern and western ridgelines encountered highly weathered greywacke rock near the termination depth however, testing on the 2 central ridgelines did not encounter rock.

The ground surface across the development area and nearby slopes were drawn from LINZ Data Service LiDAR contours. Geological cross sections are included within Appendix A. Subsoil conditions on the site have been interpolated between the boreholes, therefore some variation between test positions are likely. Detailed hand auger logs are presented within Appendix B. The tables below summarise the materials encountered in both the hand auger boreholes and CPTs.

**Table 2: Hand Auger Borehole Summary**


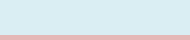

Test I.D.	Topsoil Depth	Non-Eng. fill	Alluvium [Tauranga Group]	Residual Soil [Waipapa Group]	Groundwater Level
BH01 (Lot 50)	0.2	NE	>3.0	NE	0.5
BH02 (Lot 60)	0.2	NE	>3.0	NE	2.8
BH03 (Lot 54)	0.2	NE	>3.0	NE	2.2
BH04 (Lot 55)	NE	0.4	>2.0	NE	NE
BH05 (Lot 58)	0.2	0.6	>3.0	NE	1.1
BH06 (Lot 12)	0.3	NE	>2.0	NE	1.0
BH07 (Lot 07)	0.2	0.4	NE	>4.0	2.1
BH08 (Lot 08)	0.2	NE	NE	>4.0	NE
BH09 (Lot 09)	0.2	NE	NE	>3.0	NE
BH10 (Lot 05)	NE	NE	NE	>3.0	NE
BH11 (Lot 04)	NE	NE	NE	>3.0	NE
BH12 (Lot 04)	0.3	NE	NE	>4.2	NE
BH13 (Lot 03)	NE	NE	NE	>4.0	NE
BH14 (Lot 01)	NE	0.2	NE	>1.2 (Scala refusal)	NE
BH15 (Lot 65)	0.2	NE	NE	>3.0	NE
BH16 (Lot 64)	0.2	NE	NE	>4.0	NE
BH17 (Lot 63)	NE	NE	NE	>3.0	NE
BH18 (Lot 62)	NE	0.1	NE	>3.0	NE
BH19 (Lot 13)	0.1	NE	NE	>3.0	NE
BH20 (Lot 14)	0.2	NE	NE	>3.0	NE
BH21 (Lot 16)	0.2	NE	NE	>3.0	NE
BH22 (Lot 22)	0.2	NE	NE	>4.0	NE
BH23 (Lot 24)	0.3	NE	NE	>3.0	NE
BH24 (Lot 17)	0.1	NE	NE	>4.0	NE
BH25 (Lot 20)	0.2	NE	NE	>3.0	0.5
BH26 (Lot 21)	0.3	NE	>3.0 (2m colluvium)	NE	1.4
BH27 (Lot 31)	0.2	NE	NE	>4.0	NE
BH28 (Lot 30)	0.2	NE	NE	>3.0	NE
BH29 (Lot 28)	0.2	NE	NE	>3.0	NE
BH30 (Lot 25)	0.2	NE	NE	>4.0	NE
BH31 (Lot 25)	0.2	NE	NE	>5.0	NE
BH32 (O.L.F.P)	NE	0.5	>3.0	NE	1.0
BH33 (Lot 37)	NE	0.4	>3.0	NE	2.8
BH34 (Lot 38)	0.3	NE	NE	5.0	NE
BH35 (Lot 39)	NE	0.5	5.0	NE	2.4
BH36 (Lot 40)	0.2	1.0	NE	>2.0 (Scala refusal)	1.7
BH37 (Lot 43)	NE	0.5	2.5	4.9	1.8
BH38 (Lot 44)	0.2	NE	NE	5.0	NE
BH39 (Lot 45)	0.2	NE	NE	4.9	NE
BH40 (Lot 48)	0.2	NE	NE	3.0	NE
TP01 (Lot 21)	NE	0.5	3.0m colluvium	>4.0	NE
TP02 (Lot 36)	0.2	NE	NE	>5.0	NE

NE = Not Encountered. NT = Not Tested. All depths measured in metres below current ground level (mbgl).

BH26 and TP01 encountered colluvium to respective depths of 2.0 and 3.0 mbgl.

**Table 3: CPT Results Summary**

Test I.D.	Inferred Colluvium	Alluvium [Tauranga Group]	Residual Soil [Waipapa Group]	Weathered Rock [Waipapa Group]	Groundwater Level
CPT01 (Lot 51)	NE	>14.2*	NE	NE	1.4
CPT02 (Lot 52)	NE	>11.7*	NE	NE	2.9
CPT03 (Lot 60)	NE	>14.1*	NE	NE	3.8
CPT04 (Lot 53)	NE	>17.3*	NE	NE	2.1
CPT05 (Lot 55)	NE	>22.1	NE	NE	2.7
CPT06 (Lot 58)	NE	>12.4*	NE	NE	0.5
CPT07 (Lot 21)	2.0	5.8	28.8	>29.6	0.6
CPT08 (Lot 21)	3.0	NE	18.1	>18.3	6.2
CPT09 (Lot 12)	NE	>22.3	NE	NE	3.9 collapsed
CPT10 (Lot 05)	NE	NE	24.5	>24.9	19.3
CPT11 (Lot 04)	NE	NE	9.8	>10.4	NE
CPT12 (Lot 05)	NE	NE	16.5	>16.7	NE
CPT13 (Lot 23)	NE	NE	26.1	>26.4	18.3
CPT14 (Lot 24)	NE	NE	>24.9	NE	NE
CPT15 (Lot 24)	NE	NE	>23.6	NE	3.0 collapsed
CPT16 (Lot 24)	NE	NE	>20.5	NE	10.6
CPT17 (Lot 28)	NE	NE	>28.6	NE	19.3 collapsed
CPT18 (Lot 26)	NE	NE	>29.8	NE	NE
CPT19 (Lot 36)	2.0**	NE	14.1	>15.0	10.2
CPT20 (Lot 38)	NE	NE	14.7	>15.0	5.1
CPT21 (Lot 37)	NE	2.0	12.2	>12.9	0.4
CPT22 (Lot 35)	NE	5.2	12.3	>12.6	5.0
CPT23 (Lot 47)	NE	NE	11.8	>12.3	5.5 collapsed
CPT24 (Lot 18)	NE	NE	>24.0	NE	22.9
CPT25 (Lot 43)	NE	2.5	>18.4	NE	3.6
CPT26 (Lot 47)	NE	NE	10.5	>12.3	4.2
CPT27 (Lot 49)	NE	NE	13.1	>17.6	NE
CPT28 (Lot 47)	NE	NE	18.8	>19.5	NE
CPT29 (Lot 44)	NE	NE	23.2	>23.6	6.5
CPT30 (Lot 61)	NE	>11.4	NE	NE	3.6 collapsed

<b>Colour Key:</b>	<b>Geological Unit</b>
	Tauranga Group (Alluvium)
	Waipapa Group
	Suspected Colluvium

NE = Not Encountered. NT = Not tested.

\*Inferred refusal within very dense sand/gravel (Tauranga Group Alluvium).

\*\*Colluvium not obvious in adjacent test pit however, has been modelled as colluvium in SLIDE given the surrounding topography.



**5.2.1 Topsoil**

Topsoil was encountered within most of the boreholes to between 100 and 300 mm depth, but typically around 200 mm depth. The natural topsoil was generally described as dark brown and dark greyish brown silt and clayey silt, moist to wet with low plasticity.


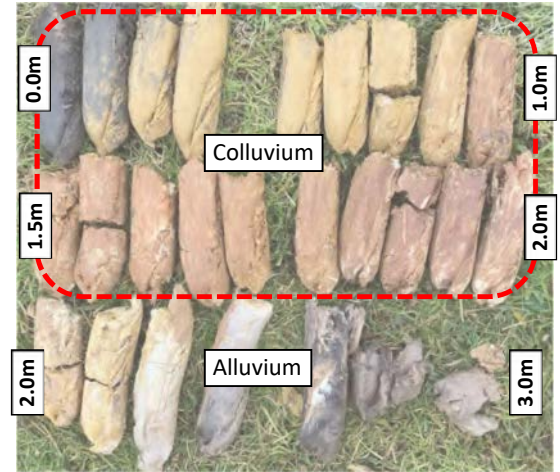
**5.2.2 Non-engineered Fill**

Localised areas of non-engineered fill were encountered across parts of the site, inferred to have been placed for the previous golf course fairways and greens. The fill is typically less than 0.6 m thick in these areas, but up to 1.0m deep on lot 40 (BH36).

No wide-spread filling appears to have been historically carried out across the proposed lots. The material excavated from the ponds (circa 2002) appears to have been placed in stock-piled mounds around the ponds and has been planted out. Some material may have also been taken off site.

**5.2.3 Inferred Colluvium**

The geomorphology indicates historic scarp features at the base of the ridgelines around lot 19/21, 30, 31, 36, 38 and 44 (refer to SP02 to SP05). The site investigation targeted these areas in attempt to identify any colluvial and/or weaker layers downslope of the features. Test pits were undertaken on lot 21 and lot 36 adjacent to the CPTs. No obvious colluvium or weaker layers were observed on lot 36, 38 or 44, however the test pit carried out on lot 21 had a distinct change in material at approximately 3.0 mbgl. No weaker lenses were observed in the CPT around this interface and it is assumed that this is a relic slip feature. Furthermore, the depth of inferred colluvium (3.0 mbgl) aligns well with the adjacent slopes (inferred to be the original ground line).

	
<p><b>Test pit TP01 photograph.</b></p> <p>Showing inferred transition from colluvium to residual soil. Interface is inclined across the test pit and 3.0m at deeper end.</p>	<p><b>Hand auger borehole BH26 core photograph.</b></p> <p>Showing inferred colluvium in upper 2.0 mbgl, with alluvium (Tauranga Group) beneath.</p>

#### **5.2.4 Alluvial Soils (Tauranga Group)**

Alluvial deposits of the Tauranga Group were encountered across the low-lying northern part of the site. CPTs indicate a crustal layer comprising stiff clays typically in the upper 2.5 to 4.0 mbgl, underlain by a thick deposit of soft to firm clays. The depth of soft to firm soils varies between 5.0 and 10.0 mbgl. Below the soft to firm layer, strengths gradually increase with depth until the refusal depth. CPT01, CPT02, CPT03, CPT04 and CPT06 encountered a very dense layer at refusal depths between 11.7 and 17.3 mbgl, whereas CPT05 and CPT09 reached a depth 22.3 mbgl without encountering the very dense layer. The shallow refusal is therefore inferred to be a very dense sand and/or gravel layer within the Tauranga Group unit.

The CPTs carried out closer to the toe of the slopes revealed firm to stiff alluvium to between 2.0 and 5.8 mbgl, underlain by stiff to very stiff residual soils (interpolated from CPT trace and surrounding topography).

#### **5.2.5 Residual Soils (Waipapa Group)**

Fine-grained residual soils were encountered across the elevated/sloping parts of the development site. Vane shear strengths generally indicated of stiff to very stiff soils across the residual slopes. In general the boreholes encountered silty clay within the upper 1.0 m to 2.5 mbgl, underlain by silt and clayey silt. Firm to stiff residual soils were encountered on lot 38 and lot 07 however these slopes were relatively gentle. Boreholes BH14 and BH36 terminated at respective depths of 1.2 and 2.0 mbgl within hard soils. Scala penetrometer testing was carried out at the base of these holes to effective refusal. All other boreholes reached target depths.

The CPTs indicated a deeply weathered soil profile with stiff to hard residual soils to depths of between 10.4 m and 29.8 m, generally increasing in strength with depth. The tests on the eastern and western ridgelines encountered highly weathered greywacke rock near the termination depth however, testing around the central ridgelines (CPT14 to CPT18) did not encounter rock.

CPT17, carried out on the central ridgeline encountered a thin firm band (approx. 100mm thick) at 8.2 mbgl. No other CPTs encountered this weaker layer and it does not topographically align with any of the observed slip features. This is inferred to be an isolated weaker zone, however, has been included in the slope stability modelling for conservatism.

#### **5.2.6 Groundwater Conditions**

Groundwater was mostly encountered the hand auger boreholes and CPTs across the lower parts of the site. Groundwater standpipes were not installed in the hand auger boreholes or CPTs and no further groundwater monitoring has been undertaken. The investigation was carried out following a wet winter season therefore levels are considered to be representative of typical winter conditions. Groundwater levels can and do fluctuate and higher groundwater levels may be encountered following periods of prolonged or heavy rainfall.

### **5.3 Laboratory Testing**

Soil samples were collected from the alluvial and residual soils within BH01, BH03, BH21, BH29 and BH40 at various depths. The samples were sent to an IANZ accredited laboratory to undertake testing to determine the materials Atterberg limits and linear shrinkage. Solid density testing was also undertaken within the residual Waipapa Group samples for earth filling purposes. Laboratory test results are presented in Appendix D.

## 6 Geotechnical Assessment

### 6.1 Geotechnical Design Parameters

Geotechnical design parameters recommended in this report are based on in-situ test results, empirical relationships, and back analysis. Back analyses were carried out along cross section C-C' which runs through the steep slope on the eastern side of the site (lot 05), and cross section I-I' which runs through the old scarp feature above lot 21. Sensitivity analyses was carried out for the residual soil layers to obtain a factor of safety of 1.0 for worst case groundwater conditions.

Refer to Table 4 below for soil parameters adopted within this report. Depths for the units are shown in Table 3 above and on the geological cross sections.

**Table 4: Geotechnical Design Parameters**

Soil Unit	Bulk Unit Weight, $\gamma$ (kN/m <sup>3</sup> )	Peak Undrained Shear Strength $S_u$ (kPa)	Effective Cohesion $c'$ (kPa)	Effective Friction Angle, $\phi'$ (degrees)	Groundwater Conditions ( $R_u$ )*
<b>Non-engineered Fill</b>	17	25	1	26	0.15 (0.3)
<b>Inferred Colluvium</b>	17	25 - 50	5	24	0.3 (0.3)
<b>Soft to Firm Alluvium</b> [TAURANGA GROUP]	17	15 – 35	2	26	0.3 (0.3)
<b>Firm Alluvium</b> [TAURANGA GROUP]	17	25 - 50	3	28	0.3 (0.3)
<b>Stiff Alluvium**</b> [TAURANGA GROUP]	18	50	5	30	N/A
<b>Med. Dense Sand**</b> [TAURANGA GROUP]	18	N/A	0	35	N/A
<b>Stiff Residual Soils</b> [WAIPAPA GROUP]	18	50	5	30	0.15 (0.3)
<b>Very Stiff Residual Soils</b> [WAIPAPA GROUP]	18	100	7	32	0.15 (0.3)
<b>Hard Residual Soils</b> [WAIPAPA GROUP]	18	200	10	34	0.15 (0.3)
<b>Highly Weathered Rock</b> [WAIPAPA GROUP]	20	>500	15	34	0.15 (0.15)

\*Parentheses indicate worst case/elevated groundwater conditions.

\*\*Stiff alluvium and medium dense sand were not used in any of the SLIDE models.

Groundwater has predominantly been modelled using a pore pressure coefficient for each layer ( $R_u$ ). This develops a porewater pressure profile specific to each slip surface and is appropriate for the short term / transient pore water pressures that are expected to develop following rainfall onsite and the groundwater flow conditions that will result due to the sloping topography. Where ground was encountered in the boreholes or CPTs (i.e. around the toe of the ridgelines), a water surface has been modelled, with  $R_u$  applied to the soils above the water surface.

## 6.2 Seismic Hazard

Anticipated peak ground acceleration has been taken from Module 1: Overview of the guidelines – Earthquake geotechnical engineering practice, adopting the mean hazard value of 0.13 g as the principal parameter for pseudo-static analysis (500-year return period). Step-change behaviour response has been assessed adopting the ‘lower-bound’ value of 0.19 g.

## 6.3 Slope Stability Assessment

### 6.3.1 General

There are several historic scarp features, as outlined in section 3.2 and on drawings SP01 to SP05, which are generally at or near the toe of the spur ridges. The residual greywacke slopes can generally stand at moderately steep gradients due to the relatively high strength of the rock mass and residual soils. However, shallow instabilities indicative of soil creep (e.g terracettes and shallow slumping) are often found where gradients begin to exceed 18 - 20°. The building platforms located on or near the moderately slopes of the ridgelines may be susceptible to soil creep which would require mitigation through specific pile foundation design.

Lots 04 and 05 are located adjacent to a very steep slope down into the northernmost gully. Lots 62 and 63 are on flat/cut platforms with steep slopes beyond the southern edge of the platforms. These lots will require building restriction lines from the top of slope. Lots 18 and 19 are situated above a large scarp feature and will require building restrictions. Similarly, lots 26 to 28 along the central ridgeline will require setbacks from the steeper eastern slope.

### 6.3.2 Instability Potential

Slope profile ranges have been used to categorise the potential for instability at the site within the Waipapa Group unit as very low, low, moderate and high, with corresponding slope angles. Gradients less than 18° are generally considered to have a low-risk of soil creep under natural conditions. Historic scarp features were observed around the head of the central gully and neighbouring southern slopes, generally where gradients exceed 25° therefore high-risk. Gradients between 18° and 25° are therefore considered medium risk. Table 5 summarises the slope profile ranges and potential for instability based on the geomorphology and qualitative assessment. Figure 5 shows the slope gradients and corresponding risk across the development area.

**Table 5: Instability Risk Categorisation**

Risk	Gradient	Slope Instability Potential
High	>25 °	Instability can be expected
Medium	18 – 25 °	Instability can be expected if the development does not have due regard for the site conditions
Low	10 – 18 °	Instability not expected unless major site changes occur
Very low	<10 °	Virtually nil



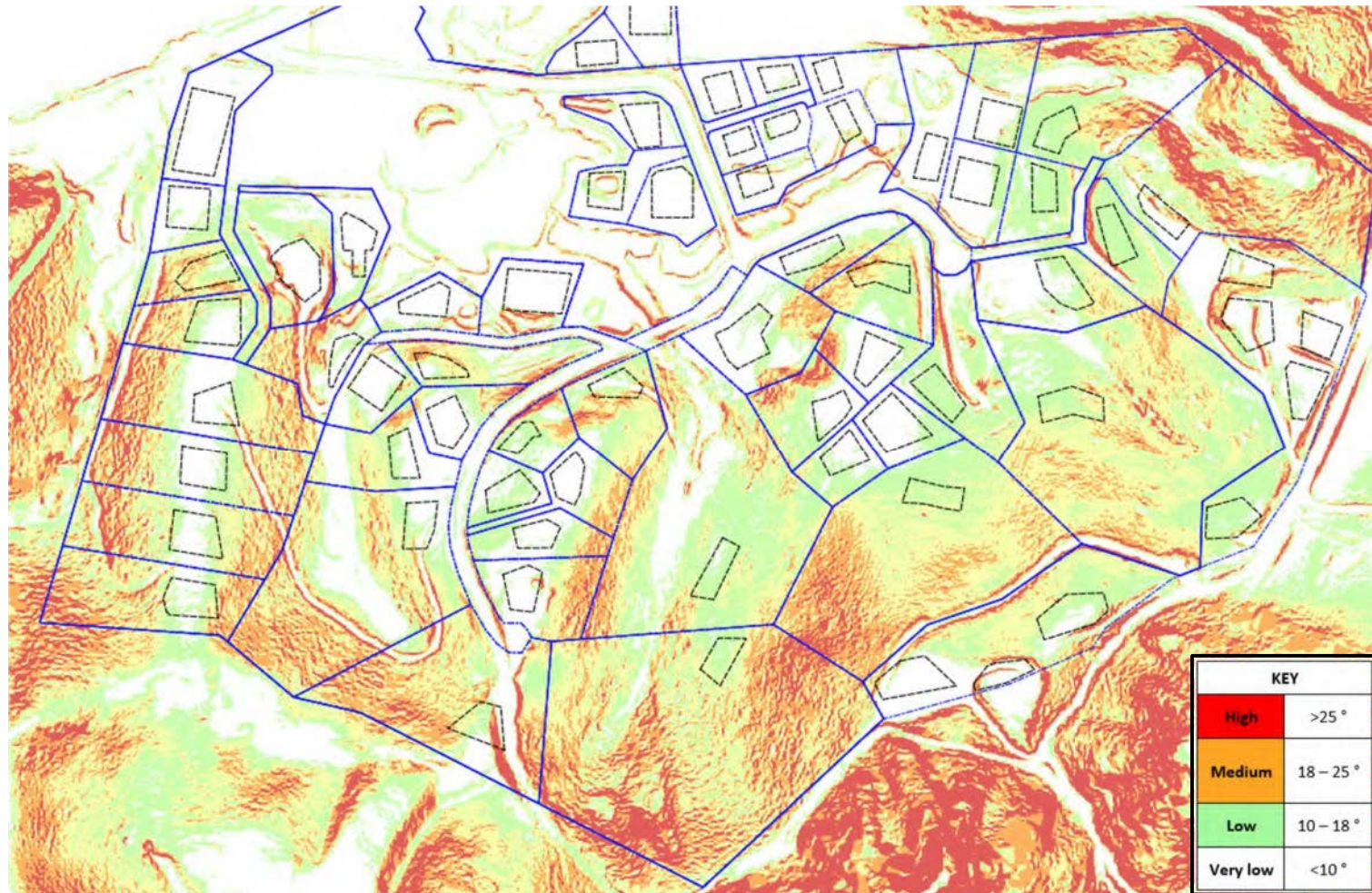


Figure 5: Slope Instability Potential

### 6.3.3 Stability Analyses

Due to the steepness of the slopes, historic slip features surround the site and visual assessment indicating soil creep, slope stability analyses have been carried out to assess the stability of the proposed building platforms and provide building restriction lines where necessary.

Seventeen geotechnical cross sections (C-C' to S-S') have been developed across the site to undertake slope stability analyses using computer software by Rocscience, Slide (Version 9.034). The soil parameters used are presented in Table 4. The purpose of the stability modelling was to assess the overall global stability for the proposed development area, including static groundwater conditions, elevated (worst case) groundwater, and during a ULS seismic event.

The post-development scenarios are based on the earthworks design by Maven Associates dated 11/2024, Rev. A. Iterations of the building platform locations and earthworks design have been made by Maven Associates following initial slope stability analyses and preliminary recommendations from Haigh Workman. The SLIDE models incorporate the earthworks design and building platform locations in the latest civil drawings available.

For modelling purposes, we have adopted a surcharge of 10 kN/m<sup>2</sup> for the assumed future building loads.

The criteria adopted for assessing the global stability is in general accordance with the Auckland Council Code of Practice for Land development and Subdivision\* as outlined in Table 6 below. Stability analyses outputs for all scenarios are attached. In Appendix E.

**Table 6: Design Factors of Safety (FOS)**

Load Case	Design Factor of Safety
Static groundwater	≥ 1.5
Elevated groundwater	≥ 1.3
Seismic loading (ULS)	≥ 1.0

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\* *The Auckland Council Code of Practice for Land Development and Subdivision – Chapter 2: Earthworks and Geotechnical, May 2023, Version 2.0.*

### 6.3.4 Analyses Results

The stability analyses carried out for all scenarios are outlined in Table 7 below.

**Table 7: Analyses Results**

Section I.D.	Scenario	Result	Required	Outcome
C-C'	Back analyses	1.0	1.0	Minimum Factor of Safety provided with a <b>15.0 m building setback from top of steep eastern slope</b>
	Static conditions	1.6	1.5	
	Elevated groundwater	1.3	1.3	
	Seismic case (0.13g)	1.2	1.0	
D-D'	Static conditions	1.6	1.5	Minimum Factor of Safety provided with an <b>8.0 m building setback from top of steep eastern slope</b>
	Elevated groundwater	1.3	1.3	
	Seismic case (0.13g)	1.2	1.0	
F-F'	Static conditions	1.6	1.5	Minimum Factor of Safety provided with a <b>9.0 m building setback from top of steep southern slope</b>
	Elevated groundwater	1.3	1.3	
	Seismic case (0.13g)	1.2	1.0	
G-G'	Static conditions	1.6	1.5	Minimum Factor of Safety provided with a <b>14.0 m building setback from top of steep southern slope</b>
	Elevated groundwater	1.3	1.3	
	Seismic case (0.13g)	1.2	1.0	
H-H'	Static conditions	1.6	1.5	Globally stable. Steeper slopes above building platform are less than required for development but meet F.O.S for amenity area
	Elevated groundwater	1.3	1.3	
	Seismic case (0.13g)	1.2	1.0	
I-I'	Back analyses	1.0	1.0	Lower platform (Lot 21) stable. Upper platforms (Lot 18 and Lot 19) require a <b>minimum 9.0 m setback from top of scarp</b> to meet required F.O.S for residential development
	Static conditions	1.5 [upper sites] 2.5 [lower site]	1.5	
	Elevated groundwater	1.5 [upper sites] 2.5 [lower site]	1.3	
	Seismic case (0.13g)	1.1 [upper sites] 1.6 [lower site]	1.0	
J-J'	Static conditions	1.7	1.5	Globally stable. Leading edge piles may be required if foundations are located close to edge of cut platform
	Elevated groundwater	1.4	1.3	
	Seismic case (0.13g)	1.2	1.0	
K-K'	Static conditions	1.7	1.5	Globally stable. Leading edge piles may be required if foundations are located close to edge of cut platform
	Elevated groundwater	1.4	1.3	
	Seismic case (0.13g)	1.2	1.0	
L-L'	Static conditions	1.6	1.5	Minimum Factor of Safety provided with an <b>8.0 m building setback from 'break in slope'</b>
	Elevated groundwater	1.3	1.3	
	Seismic case (0.13g)	1.2	1.0	
M-M'	Static conditions	1.6	1.5	Minimum Factor of Safety provided with an <b>8.0 m building setback from 'break in slope'</b>
	Elevated groundwater	1.4	1.3	
	Seismic case (0.13g)	1.2	1.0	

**Table 6: Analyses Results (continued)**

Section I.D.	Scenario	Result	Required	Outcome
N-N'	Static conditions	1.5	1.5	Globally stable provided building platform is formed in cut with retaining provided. No filling permitted. <b>Provide 3.0 m setback from top of relic features.</b>
	Elevated groundwater	1.4	1.3	
	Seismic case (0.13g)	1.2	1.0	
O-O'	Static conditions	1.6	1.5	Globally stable. <b>Provide 3.0 m setback from top of relic features.</b> Limit filling to 1.0 m maximum depth
	Elevated groundwater	1.4	1.3	
	Seismic case (0.13g)	1.2	1.0	
P-P'	Static conditions	1.8	1.5	Globally stable. Limit filling to 1.0 m maximum depth
	Elevated groundwater	1.6	1.3	
	Seismic case (0.13g)	1.3	1.0	
Q-Q' [east]	Static conditions	1.8	1.5	Globally stable. Leading edge piles may be required if foundations are located close to edge of cut platform
	Elevated groundwater	1.5	1.3	
	Seismic case (0.13g)	1.3	1.0	
Q-Q' [west]	Static conditions	1.7	1.5	Globally stable. Leading edge piles may be required if foundations are located close to edge of cut platform
	Elevated groundwater	1.4	1.3	
	Seismic case (0.13g)	1.3	1.0	
R-R'	Static conditions	1.5	1.5	Lower platform (Lot 31) stable. Upper platform (Lot 28) requires a <b>minimum 8.0 m setback from top of relic features</b>
	Elevated groundwater	1.3	1.3	
	Seismic case (0.13g)	1.0	1.0	
S-S'	Static conditions	2.4 [Lot 45]	1.5	Globally stable. Leading edge piles may be required if foundations are located close to edge of Lot 45 cut platform
		1.5 [JOAL 1]		
	Elevated groundwater	2.1 [Lot 45]	1.3	
		1.3 [JOAL 1]		
	Seismic case (0.13g)	1.7 [Lot 45]	1.0	
		1.2 [JOAL 1]		

The stability analyses summary sheets for all scenarios are included in Appendix E. Stable building sites have been identified on all lots subject to the recommendations contained in this report. Building restriction lines (BRL) are required for some of the lots as summarised in Table 8 below.

**Table 8: Building Restriction Lines**

I.D.	Minimum setback from slope	Comments
Lot 04	8.0 m	Setback from steep eastern slope
Lot 05	15.0 m	
Lot 18, 19	9.0 m	Setback from old scarp feature
Lot 26, 27, 28	8.0 m	Setback from break in slope (where slopes exceed 10°)
Lot 33, 34	3.0 m	Setback from old scarp features
Lot 62	14.0	Setback from steep southern slopes / edge of cut platform
Lot 63	9.0	



Building Restriction Lines (BRLs) have been set out on the attached site plans SP02 to SP05. If building beyond a BRL is desired, ground improvement will be required (e.g. soldier pile walls), preceded by site-specific analyses and design.

None of the building platforms are located within the 'high-risk' areas. The building platforms located on or near the 'medium risk' areas may be susceptible to soil creep which would require mitigation through specific pile foundation design.

Filling on sloping ground (i.e. sidling fills) or near any historic scarp features are to be avoided. Provided the recommendations are adhered to, it is considered that the proposed development is unlikely to adversely affect the existing stability of the site.

No weaker lenses were observed in the CPTs or boreholes carried out below the old scarp features. Given location of these features and absence of an obvious failure plain, it is assumed that these are relic slip features possibly resulting from toe erosion following the last interglacial period and subsequent higher sea levels.

Whilst the building platforms are considered stable for subdivision purposes, future building on these lots should be subject to further site-specific investigation and slope stability analysis once final development plans are known.

## **6.4 Liquefaction Potential**

### **6.4.1 General**

Liquefaction is the process where, during earthquake shaking, sand and silt grains in wet soil are rearranged and the water in the spaces between the grains is squeezed. Pressure builds up in the water until the silt and sand grains 'float' in the water and the soil behaves more like a liquid than a solid. Buildings, roads, pipes and tanks on or in liquefied soil are often damaged by tilting or sinking into the ground. The underlying alluvial soils comprise recent, unconsolidated to poorly consolidated, non-cohesive alluvial soils with a high groundwater table and are susceptible to liquefaction triggering during a significant seismic event.

The Northland region is considered to be one of the least seismically active regions of New Zealand, and we consider the liquefaction potential at this site is low.

### **6.4.2 Analysis Methodology**

The liquefaction risk assessment for the identification, assessment and mitigation of liquefaction hazard has been conducted based on the recommendations of the New Zealand Geotechnical Society Inc. stated in Module 1 and Module 3 and the guidance document from MBIE (Planning and engineering guidance for potentially liquefaction-prone land, 2017).

The liquefaction susceptibility was analysed using CPT data imported into the GeoLogismiki software package CLiq (Version 2.2.1.7). The following assessment methodologies have been applied:

- Analysis Methods - Boulanger & Idriss (2014)
- Fines Correction Method – Robertson and Wride (1998)
- Settlement Estimates – Zhang at al (2002)

The following design cases have been considered for the liquefaction assessment:

**Serviceability Limit State (SLS)** – loads a building or structure is likely to be subjected to more frequently during its design life. A building should be readily repairable when subjected to SLS loads. SLS loads are based on a one in 25-year earthquake.

**Ultimate Limit State (ULS)** - loads a building or structure may be subjected to during a large (severe), relatively rare event. A building should be designed to lower the risk of collapse, and therefore minimise the risk or protect life safety to human life when subjected to ULS loads. ULS loads are based on a one in 500-year earthquake.

The seismic coefficients for design are based on the NZTA Bridge Manual (NZBM), calculated based on the following formula:  $PGA = C0.1000 * \frac{Ru}{1.3} * f * g$

**Table 9: Earthquake Design Scenarios**

Design Case	Return Period	Magnitude (M)	Peak Ground Acceleration
SLS	25 year (Ru 0.25)	5.8	0.03 g
ULS	500 year (Ru 1.0)	5.8	0.13 g

A lower bound ULS case (0.19 g, Mw 6.5 earthquake) was also used to analyse any step-change behaviour (based on Module 1, NZGS & MBIE). Results are summarised in Table 10, with detailed results presented in Appendix F. The liquefaction severity number has been used to indicate the potential for surface manifestation, with all tests recording a LSN less than 10 (little to no expression of liquefaction, i.e., negligible risk).

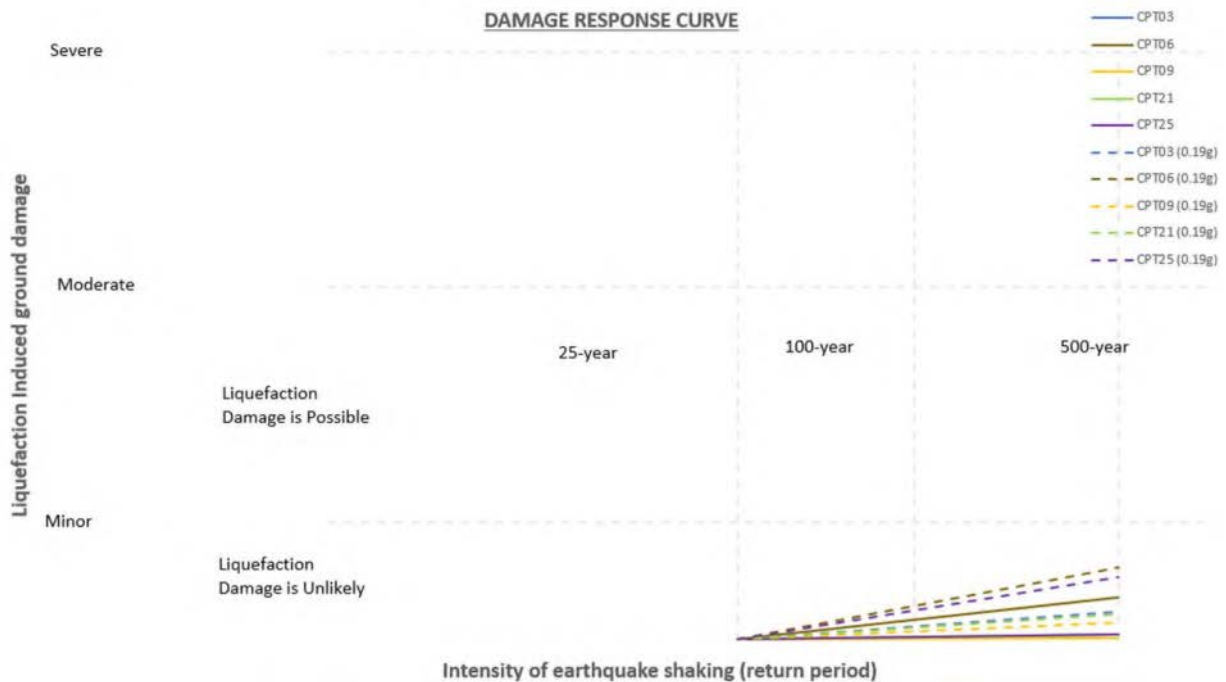
**Table 10: Liquefaction Results Summary**

Test No.	SLS Design Case			ULS Design Case (0.13 g)		
	LPI	LSN	Free field Settlement (mm)	LPI	LSN	Free field Settlement (mm)
CPT01	Low risk	0	0	Low risk	0	1
CPT02	Low risk	0	0	Low risk	0	0
CPT03	Low risk	0	0	Low risk	0.3	5
CPT04	Low risk	0	0	Low risk	0.2	1
CPT05	Low risk	0	0	Low risk	0.3	4
CPT06	Low risk	0	0	Low risk	3.5	27
CPT09	Low risk	0	0	Low risk	0.2	1
CPT21	Low risk	0	0	Low risk	0.4	3
CPT22	Low risk	0	0	Low risk	0	0
CPT25	Low risk	0	0	Low risk	0.5	3
CPT30	Low risk	0	0	Low risk	0.4	3

### 6.4.3 Liquefaction Induced Settlement

The results indicate that during a SLS earthquake event, negligible settlement is predicted. The Liquefaction Potential Index (LPI) for the SLS design case is classified as low risk with the Liquefaction Severity Number (LSN) showing little to no expression of the liquefaction (i.e. sand boils or ejecta) expected at the surface.

For the ULS earthquake event, free field settlement due to liquefaction generally less than 5 mm, however CPT06 predicts up to 27 mm. The liquefaction potential index for ULS is classified as low risk with little to no expression of liquefaction (i.e. sand boils or ejecta). Given the nature of the overburden soils (clayey soils), liquefaction induced settlement at the ground surface is expected to be minor and the risk of liquefaction damage to the site is low and unlikely.



**Figure 6: Damage Response Curve**

Based on our assessment we consider liquefaction induced ground damage for (ULS 0.13 g) is minor and liquefaction damage is unlikely based on 'Planning and engineering guidance for potentially liquefaction-prone land, MBIE, September 2017). Based on the assessment, we consider the effects from excess pore pressure and liquefaction to be between insignificant (L0) to mild (L1) in accordance with Table 5.1 (Module 3), with negligible differential settlements across the site due to limited excess pore water pressures.

The liquefaction potential and free field settlement for the lower bound PGA = 0.19 g case also indicates minor expression of liquefaction. There are thin liquefiable layers at greater depths however, are not continuous through the CPTs. Liquefaction in these layers is unlikely to manifest at the surface given the clayey nature of the overburden soils.

The surrounding area is near flat and given the depth of the non-liquefiable clay soils, the risk of lateral spreading is negligible.

## 6.5 Consolidation Settlement

Consolidation settlement occurs when compressible soils are subject to a change in vertical effective stress, such as from new structures or fill loads. Weak clays and organic soils are most prone to consolidation settlement. The time required for settlement to occur is dependent on the drainage characteristics of the soil.

It is understood that site won material is to be used to fill across some of the lower northern building platforms to raise ground levels. Based on the Maven earthworks design, fill depths up to 1.0 m are proposed beneath the building sites. No filling is proposed for the building platforms on Lots 10, 11, 12, 42, 43, 53, 54, 56, 57, 58, 59 and 60.

A preliminary assessment has been carried out (using CPeT-IT software) to assess settlement potential for the lower/northern building platforms. A 10 kPa surcharge has been assumed for the future building loads, with a fill surcharge of 20 kPa per 1.0 m depth where applicable.

**Table 11: Preliminary settlement estimates**

Test I.D	Lot(s)	Maximum Fill depth (m)	Surcharge (kPa)	CPT settlement estimate (mm)
CPT01	50, 51	1.0	30	55
CPT02	52	1.0	30	120
CPT03	60	0	10	38
CPT04	53, 54, 56, 57	0	10	50
CPT05	55	1.0	30	50
CPT06	58, 59	0	10	15
CPT07	21	1.0	30	45
CPT09	10, 11, 12	0	10	23
CPT21	37	1.0	30	36
CPT22	35	1.0	30	23
CPT25	43	0	10	15
CPT30	61	0.5	20	15

Based on this preliminary assessment, CPT02 indicates excessive settlement from the proposed fill and future building load. Given the amount of settlement predicted in CPT01 and CPT02, it is recommended that Lot 50, Lot 51 and Lot 52 be subject to one of the following mitigation measures:

1. Providing a consolidation period (on hold time) after placing fill before construction of dwelling.
2. Pre-loading to accelerate the rate of settlement and partly replicate the building load.
3. Providing deep pile foundations. Piles would need to be founded in the hard/dense materials to avoid down-drag of the foundations.
4. Removing fill from the site and providing suspended timber floor on piles. This option is only recommended if the land beneath and intimately connected to the dwelling not susceptible to flooding.

Options 1 and 2 would be subject to detailed, site-specific settlement analysis and trial involving the installation of settlement plates and regular surveying of the plates to monitor the settlement.



The rate of settlement has been predicted based on in-situ dissipation testing, carried out in CPT06, CPT09, CPT22 and CPT30. Based on the results and assuming isotropic conditions, i.e.  $k_h = k_v$ , a vertical coefficient of consolidation,  $C_v$  of  $1.37 \text{ m}^2/\text{year}$  has been assumed, based on the worst-case CPT. Due to the depth, strength and hydraulic properties of soft material, the rate of settlement is slow and will take up to 5 years to achieve a tolerable level of settlement for residential development without any ground improvement.

A pre-load settlement design is outside the scope of this report however, based on settlement trials previously carried out on sites with similar ground conditions, we would be expected the time to complete the settlement trial to be between 1 to 2 years.

On all other lots (excluding Lots 50, 51 and 52), we do not consider consolidation settlement to cause any undue risk to the building platforms provided the fill thickness does not exceed 1.0 m beneath the building platform, and the fill is placed to an engineered standard (NZS4431:2022). If fill exceeds 1.0 m thick, ground improvement (i.e. pre-loading) or deep pile foundation would likely be required. Differential settlements on these lots are predicted to be within tolerable limits given in B1/VM4. Residential dwellings should be designed to tolerate angular distortion of up to 1:240 (approximately 25 mm over a 6.0 m length) as required by the New Zealand Building Code (B1/VM4). Filling should not exceed the depths outlined on Maven Associates cut and fill plans numbered C220 to C226, dated 11/2024 without further assessment.

All lots on the lower northern part of the site (underlain by alluvial soils) will however require detailed site-specific geotechnical investigation, settlement analysis and consideration of settlement monitoring at building consent stage.

## 6.6 Acid Sulphate Soils

Acid sulphate soils are soils that were historically deposited when the sea level was around 5.0 m higher than its present level, this occurred approximately 5,000 to 10,000 years ago during the Holocene age. Soils that were deposited during this time fall under one or more of the following descriptors:

- Soil or sediment of recent geological age (Holocene age).
- Marine or estuarine sediments.
- Low-lying coastal wetlands and back swamp areas, waterlogged or scalded areas, stranded beach ridges and adjacent swales, interdune swales or coastal sand dunes.
- Coastal alluvial valleys.
- Areas of peat, or coal deposits.

Water-soluble sulphates are capable of chemically reacting with the components of concrete, causing accelerated corrosion and resulting in a shortened design life. The elevated areas underlain by residual soils are unlikely to contain acid sulphates. Furthermore, the alluvial deposits across the northern part of the site comprise a thick crustal layer of stiff clays of Pleistocene age. The investigations did not encounter any Holocene age organic soils (i.e. peat) or sand deposits and was not discoloured.

On this basis, site specific testing was not found necessary and acid sulphate soils are considered as low risk on this site.

## 7 Building Design Considerations

### 7.1 Shrink/Swell Behaviour

The geotechnical investigations undertaken across the site indicated fine-grained clayey soils. The reactivity and the typical range of movement that could be expected from soils underlying any given building site depends on the amount of clay present, clay mineral type and proportion, depth and distribution of clay throughout the soil profile. Moisture changes tend to occur slowly in clays and produce swelling upon wetting and shrinkage upon drying. In addition, subsequent building damage can be limited by good building practice, including wetting of clay subgrade at least 48 hours ahead of base filling and slab preparation.

During our site investigation, a soil sample was collected from hand auger boreholes within the alluvial and residual soils. The samples were tested for Atterberg Limits and Linear Shrinkage in accordance with NZS4402:1986, to assess the soil expansivity and properties for foundation design. Solid density was also undertaken in residual soil samples to provide information for fill earthworks.

The laboratory test results are presented in Table 12 below.

**Table 12: Laboratory Test Results**

Sample I.D.	Geological Unit	Depth (m)	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	Linear Shrinkage (%)	Solid Density (t/m <sup>3</sup> )
BH01	Alluvial Soils TAURANGA GROUP	0.5 – 1.0	30.7	71	29	42	16	NT
BH03		0.5 – 1.0	34.2	85	31	54	19	NT
BH21	Residual Soils WAIPAPA GROUP	0.5 – 1.0	30.0	69	28	41	16	2.73
BH29		0.8 – 1.3	28.5	59	28	31	13	2.71
BH40		1.2 – 1.9	31.2	67	33	34	15	2.70

\* NT = Not tested.

The results indicate that the soils supporting the foundations are expansive and prone to seasonal volume change, predominantly shrinkage during summer, could result in surface settlements due to volume change. Based on the laboratory test results, it is our opinion that the site should be classified as Class H, highly expansive (in accordance with the New Zealand Building Code) and deeper foundations would be necessary to mitigate the effects of prolonged dry seasons.

Results are plotted on the Casagrande Chart in Figure 7 below, plotting above the A-Line, supporting the classification of Class H soils.

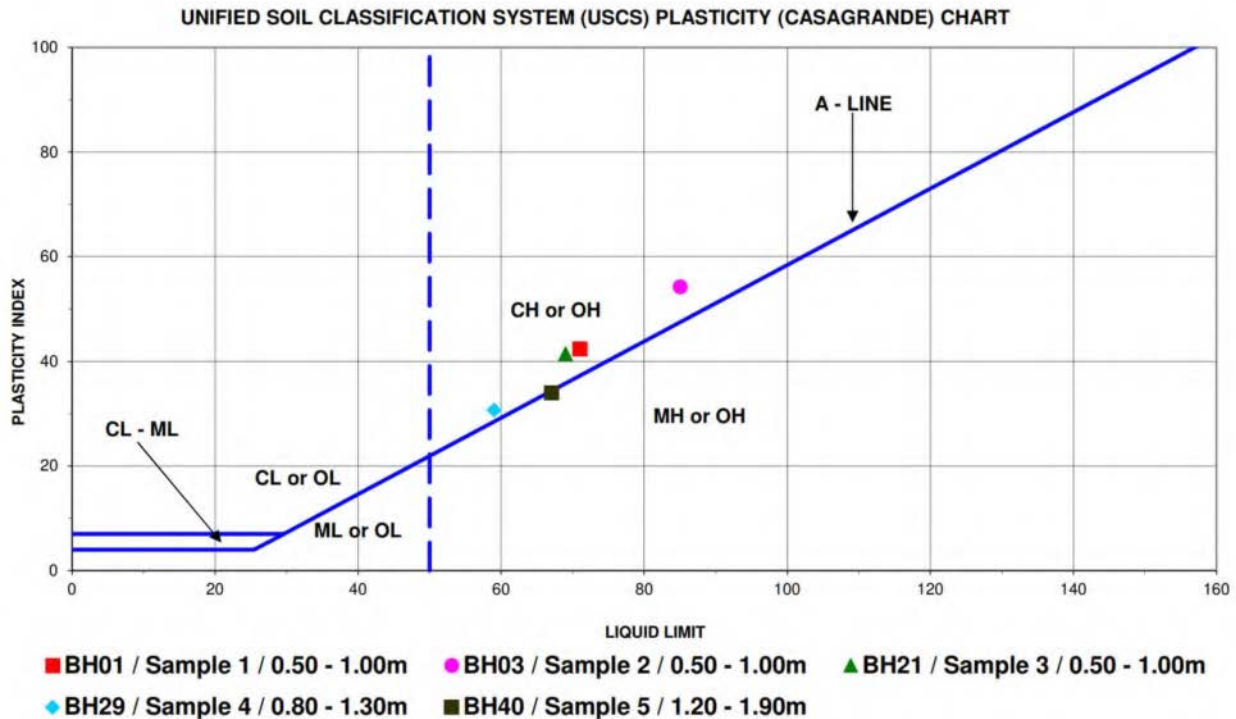


Figure 7: Casagrande Chart

## 7.2 Shallow Foundations

The soils tested across the site generally indicated stiff to very stiff clays and silts within the upper soil layers. Shallow foundations are considered to be generally appropriate for all lots, provided they are within the building restriction lines.

Weaker soils were encountered on some of the alluvial sites and at the toe of ridgelines therefore lower bearing capacities will be available on these sites. Ultimate bearing capacity to be adopted for shallow foundation design are outline in Table 13 for individual lots. A geotechnical strength reduction factor of 0.5 should be applied to these values for limit state design. These recommendations are subject to site specific testing at the building consent stage.

Foundation conditions fall outside the definition of 'good ground' as contained in NZS3604:2011 due to the presence of expansive soils. We recommend the foundations be designed in accordance with B1/AS1 with an allowance for class 'H', 'Highly expansive' soil.

## 7.3 Pile Foundations

Leading edge pile foundations will be required if dwellings are located close to sloping ground due to the reduction in passive support. The earthwork drawings provided by Maven provide near flat building platforms for the majority of the lots (predominantly formed in cut). Consideration should be given to leading edge foundations if buildings are located near sloping ground at the edge of the formed platforms.

Site investigations carried out on Lots 35, 37, 58 and 59 revealed significantly lower bearing strengths than other lots (i.e. 100 kPa). Foundations on these lots may need to be supported on piles for any dwellings of heavy construction. If required, driven piles would be most suited to these sites due to elevated groundwater levels and potential for hole collapse. Site specific testing should be carried out at the building consent stage to inform design foundation depths.

As mentioned in section 6.5, Lot 50, Lot 51 and Lot 52 will require mitigation for fill induced settlement (i.e. Pre-loading) otherwise deep pile foundations would be required. If the piling option is chosen, piles should be driven to effective refusal to avoid any down-drag effects on the piles. Based on CPT01 and CPT02 refusal is expected to be between 12.0 and 14.0 mbgl across these lots.

## **8 Development Recommendations**

### **8.1 Topsoil, Fill and Unsuitable Soils**

All vegetation, topsoil and otherwise unsuitable material should be removed from earthworks areas and/or development area. The topsoil layer was found to be between 100 mm and 300 mm deep in our boreholes but may vary elsewhere across the site. Localised areas of non-engineered fill were encountered across parts of the site, typically less than 0.6 m thick, but up to 1.0m deep on lot 40. All existing fill and otherwise unsuitable material should be removed from the proposed building platforms and areas of intended engineered/certified fill placement. The excavated material should be stockpiled away from the steeper slopes, well clear of earthwork operations, or removed from the site.

### **8.2 Cut Excavations**

Based on the civil design concept provided by Maven Associates cut and fill plans numbered C220 to C226, dated 11/2024, Rev. A, the building platforms on sloping ground / ridgelines are mostly formed in cut, with cut depths up to 3.0 m.

Cuts up to 1.2 m depth can be formed at gradients no steeper than 1V:2H. Cuts greater than 1.2 m depth should be formed at gradients no steeper than 1V:3H, or otherwise retained. Any cuts subject to surcharge loading should be supported by retaining walls OR battered to a suitable angle subject to specific design/assessment.

Design recommendations for retaining walls are outlined in section 8.11.

Cuts on most of the sidling platforms will need to be supported by retaining walls (subject to specific engineered design) as long term stable batters will not be achievable.

Cut platforms along the crest of ridgelines will be daylighted at the eastern and western edges, with battering between platform terraces.

Erosion protection is recommended on all exposed cut/fill batters (i.e. erosion control matting and/or planting).



### 8.3 Fills

Earthworks for the development will predominantly comprise cutting to form building platforms on the sloping ridgelines with filling across some of the lower lying northern area to raise ground levels above the flood hazard.

Filling should be kept to a minimum and limited to 1.0 m beneath all building platform areas. Filling should be avoided on or around the steeper slopes on the ridgelines. Filling beyond the building restriction lines should also be avoided, unless specific engineered design is undertaken to demonstrate it is safe to do so.

All earthworks should be carried out to the requirements of NZS 4404:2010 'Land Development and Subdivision Infrastructure' and NZS 4431:2022 'Engineered Fill Construction for Lightweight Structures'. It is recommended that any unsuitable material identified during excavation be removed and replaced with engineered fill. We recommend that all grass coverings, topsoil layers and unsuitable fill material be removed below any proposed areas of intended fill placement.

Any fill placed near or beneath any proposed dwelling platform, infrastructure or other structures, will need verification of compaction and confirmation by the engineer that settlement caused by filling will not adversely affect the proposed structures. Verification of compaction should be undertaken by a professional engineer at regular lifts, i.e. inspection at preplacement and every 500 mm thereafter (or as agreed between the Client and Engineer).

Laboratory testing undertaken indicated the moisture content of the residual Waipapa Group soils were slightly wet of the plastic limit which is the optimum condition of the soil. Some moisture conditioning may be required for clay fill earthworks (i.e. spreading and drying out before compaction). The fill should not be left to dry for extended periods or conditioning with water carts (wetting) would be required to reduce air voids to specification.

Compaction control of the cohesive fill consists of maximum allowable air voids and minimum allowable shear strengths and outlined in NZS4431:2022. The fill specification outlined below is recommended for earthworks. An outline of the specification details are as follows, to be read in collaboration with NZS4431:2022:

- Vane shear strength testing comprising an average of ten tests of 140 kPa with no single vane shear test of less than 120 kPa.
- Testing shall also include air void testing with a minimum of ten consecutive tests with an average of 10% air voids with no single test greater than 12%, in accordance with NZS4402:1986.

Fill batters (expected to be less than 1.0 m height) should be formed at gradients no steeper than 1V:3H. If greater batter slopes are intended, retaining walls will be required to support the fill. Fills of any height that are to be subject to surcharge loading of any sort should be supported using specifically designed retaining walls or battered to a suitable slope angle subject to specific geotechnical design recommendations.

The proposed excavations will generate a significant amount of excess fill material. Given the historic instability features identified on the surrounding slopes and steepness of the slopes, filling on sloping ground (i.e. sidling fills) should be avoided unless further investigations (machine testing) and slope stability analyses is undertaken to demonstrate that it is safe to do so. Furthermore, no fill should be placed within, or near any historic slip features identified on drawings SP01 to SP05.

Suitable fill disposal site(s) should be nominated well away from the development areas to avoid any detrimental effects on site stability. The preferred disposal area for excess fill would be the low-lying communal areas to the north-west of the ponds (if permitted).

No additional filling is recommended on any of the proposed building platforms, other than that indicated on Maven Associates cut and fill plans numbered C220 to C226, dated 11/2024, Rev. A.

#### **8.4 Erosion and Sediment Control**

Prior to commencing earthworks, a sediment control system needs to be constructed to ensure the Territorial and Regional Authority requirements are met. Typical details can be found in the Auckland Council publication GD05. Erosion and sediment control should be undertaken as early as possible before soil particles become dislodged and mobilised. The use of contour drains, mulching and earth bunds to control erosion during the construction phase is recommended, as is maintaining vegetation cover where possible to reduce erosion potential.

#### **8.5 Unexpected Ground Conditions**

Based on the site investigations carried out and excavations proposed in Maven Associates cut and fill plans, excavation to the finished cut levels should be achievable by direct excavation with no rock breaking/ripping expected.

Given the inherent variable nature of alluvial soils, weaker areas may be uncovered across the low-lying northern part of the site when excavating subgrades for building platforms or fill placement.

If unexpected ground conditions are encountered the engineer responsible for providing certification of the earthworks and Geotechnical Completion Report should be contacted immediately to provide advice.

#### **8.6 Pavement Design**

Vegetation, organic and deleterious material, topsoil and otherwise unsuitable material should be removed from the site under pavement areas prior to aggregate placement. Based on our observations during site investigations we consider the stiff natural ground at the site should provide an adequate subgrade for any proposed asphaltic or concrete paved access, parking and turning areas.

No specific testing was undertaken for pavement design. For preliminary design purposes, a design CBR of no greater than 4.0% may be assumed for the elevated roads / JOALs. For the low-lying JOALs (i.e. JOAL 3, the start of ROAD 2 and JOAL 1), softer zones could be encountered and may need to be undercut during construction. A design CBR of 2.0% should be adopted for these lots, and we also recommend a geotextile and geogrid is installed between subgrade and pavement to minimise the ingress of fines into the pavement from dynamic loading.

It is recommended that in-situ testing of all road subgrades is conducted by a suitably qualified and experienced engineer.

## 8.7 Stormwater Control

Controlling stormwater is imperative to the stability of the site. Concentrated stormwater flows from all impermeable areas must be collected, conveyed in sealed pipes, and discharged in a manner that will not affect the stability of the ground. Concentrated stormwater flows must not be allowed to discharge onto or into the ground close to the development area or on sloping ground as this would be detrimental to site stability. Stormwater soakage devices are not considered appropriate for this development given the steepness of slopes coupled with low permeability soils.

Stormwater reticulation is envisaged for some of the smaller lots with a combined outlet into the existing ponds or overland flow paths. For the lots on the ridgelines and sidlings, stormwater should be collected and discharged in a dispersive manner (i.e. 'T-bar' spreader) in a location that will not adversely affect the subject building platform or any downslope properties. The discharge point should be at least 30 m downslope of the building platform OR preferably at the base of the slope if possible. Consideration should also be given to having a combined outlet point for these lots site conditions suit.

The final outlet method(s) and locations should be subject to geotechnical review.

## 8.8 Wastewater Disposal

A detailed wastewater disposal assessment is not within the scope of this report and should be carried out by a suitably qualified wastewater specialist.

Based on the soils encountered during our investigation, the soils are considered to be Category 5 in accordance with AS/NZS1547:2012.

No wastewater disposal is permitted within any of the historic slip features outlined on drawings SP01 to SP05. Once the wastewater disposal areas have been sized, Haigh Workman should be engaged to provide geotechnical comment on the field location and any impacts on the site stability.

## 8.9 Service Connections

All external service connections (power, water supply, stormwater, sewer, telecom and others) for the lower northern lots should be detailed for seasonal movement such as the use of rubber ring joints for stormwater or wastewater, or looped power and water connections.

Building foundations within a 45-degree zone of influence from the invert level of any service pipe shall adopt the standard engineering details within the Far North District Council plan and NZS4404:2010.

## 8.10 Subsoil Drainage

A geological boundary between Waipapa Group and Tauranga Group (alluvium) passes through some of the sites along the toe of the ridgelines and there is a potential for groundwater to exist between the geological units. Consequently, provision for subsoil drainage should be considered for any earthworks over these lithological boundaries. The approximate boundary, inferred from our site investigation, is shown on Figure 4, section 3.2.

### 8.11 Retaining Walls

The New Zealand Building Act (Schedule 1) states that a retaining wall is exempt from consent when the retained height is less than 1.5 m and it does not support any surcharge load or any load additional to the load of that ground (i.e. loading from vehicles, sloping ground above and below the wall, or boundary walls). Further guidance is provided on this exemption by MBIE which states the exemption does not apply to retaining walls supporting vehicle driveways, parking spaces, swimming pools, buildings, other retaining walls (e.g. tiered walls), or sloping ground above or below the wall.

Given the nature of the site, all future retaining walls will be subject to site specific testing and design by a Chartered Professional Engineer (CPEng Geotechnical). Earth pressure coefficients ( $K_p$  or  $k_a$ ) needs to account for the sloping ground at the toe of the wall and can be estimated using the charts after NAVAC (DM7, 1971). Consideration should also be given to slope stability driving forces for walls cut into sidlings. Walls that are incorporated within the structures should be designed for at-rest earth pressures ( $k_0$ ).

### 8.12 Safety in Design

The recommendations made in this report have been made with regards to Safety in Design, which should be taken into account during the design phase. The following points were raised during planning for safety in design:

- Construction monitoring needs to be considered;
- Trench construction for services should be benched to ensure the vertical height does not exceed 1.0 m without shoring / trench shields;
- Temporary battering of excavations and fills.

### 8.13 Construction Monitoring

A Chartered Professional Engineer familiar with the findings of this report should be engaged to carry out construction monitoring during subdivision development and earthworks to confirm soil conditions are consistent with those adopted within this report.

The recommendations given in this report are based on limited site data from discrete locations. Variations in ground conditions could exist across the site. It is in the interests of all parties that a Chartered Professional Engineer inspect excavations and foundation conditions exposed during construction, so that ground conditions can be compared with those assumed in formulating this report. In any event, we should be notified of any variations in ground conditions from those described or assumed to exist.

A geotechnical completion report should be prepared at the completion of subdivision works, with as-builts provided by the Contractor of all earthworks and drainage works undertaken.



## 9 Conclusion

Geotechnical investigations indicate that the proposed development area is stable subject to the recommendations herein and the subsoil properties are appropriate for residential development. The extent of the geotechnical investigations are outlined within this report.

The development will need to be undertaken in accordance with current best engineering practice and the following guidelines are applicable to the site:

- The natural ground within the specified building platform areas is considered generally suitable for residential development of residential buildings, subject to the following conditions:
  - All lots will be subject to site-specific geotechnical investigations and foundation design by a Chartered Professional Engineer.
  - Building Restriction Lines (BRL) have been set out as shown on the attached site plans SP02 to SP05. The proposed development on Lots 04, 05, 18, 19, 26, 27, 28, 30, 33, 34, 62, 63 will require a setback from the top of steep slope, scarp feature and/or edge of cut platforms. Setback distances are outlined in Table 13.
  - Foundation soils lie outside the definition of 'good ground' in NZS3604:2011 due to the presence of expansive clay soils. Based upon Atterberg limits and linear shrinkage testing the soils are considered highly expansive (Class H). Confirmation of the site reactivity class is to be conducted within the geotechnical completion report.
  - Foundation design for sites underlain by residual Waipapa Group soils should limit the geotechnical ultimate bearing capacity to 300 kPa for flat ground building sites. Specific design will need to be undertaken where foundations are on or near sloping ground. For sites underlain by Tauranga Group alluvial soils (excluding Lot 35, Lot 37, Lot 58 and Lot 59), an ultimate bearing capacity of 200 kPa should be adopted. A geotechnical strength reduction factor of 0.5 for limit state design. Specific design for expansive soils may be undertaken by first principles or by reference to AS2870:2011, with return periods from B1/AS1. A lower ultimate bearing capacity of 100 kPa is available on Lots 35, Lot 37, Lot 58 and Lot 59. Alternatively, pile foundations should be adopted on these lots.
  - Leading edge pile foundations will be required if dwellings are located on or close to sloping ground. The earthwork drawings show flat cut platforms for the majority of the sloping sites. Consideration should be given to leading edge foundations if buildings are located near sloping ground at the edge of the formed platforms.
  - Lot 50, Lot 51 and Lot 52 require mitigation for fill induced settlement (i.e. Pre-loading) otherwise deep pile foundations would be required. If the piling option is chosen, piles should be driven to effective refusal to avoid any down-drag effects on the piles. Refer to section 7.3.

- No earthworks involving fills in excess of 1.0 m should take place beneath any building platforms unless endorsed by a suitable design undertaken by a Chartered Professional Engineer with suitable geotechnical experience familiar with the contents of this report. If filling exceeds the depths indicated on Maven Associates cut-fill plans dated 11/2024, further settlement assessment OR slope stability analyses would be required.
- All earthworks should be carried out to the requirements of NZS 4404:2010 'Land Development and Subdivision Infrastructure' and NZS 4431:2022 'Engineered Fill Construction for Lightweight Structures', and in accordance with the recommendations outlined in Section 8. Any unsuitable material identified during excavation shall be removed and replaced with engineered fill.
- No fill should be placed within, or near any historic slip features identified on drawing SP01 to SP05. A suitable fill disposal site should be nominated well away from the development area to avoid any detrimental effects on site stability. Filling on sloping ground (i.e. sidling fills) should be avoided unless further investigations and slope stability analyses is undertaken to demonstrate that it is safe to do so.
- Cuts up to 1.2 m depth can be formed at gradients no steeper than 1V:2H. Cuts greater than 1.2 m depth should be formed at gradients no steeper than 1V:3H, or otherwise retained. Fill batters (expected to be up to 1.0 m in height) should be formed at gradients no steeper than 1V:3H.
- For pavement design, we recommend a design CBR of 3% for the elevated roads / JOALs. For the low-lying JOALs (i.e. JOAL 3, the start of ROAD 2 and JOAL 1), a design CBR of 2.0% should be adopted (subject to subgrade testing during construction).
- Concentrated stormwater flows from all impermeable areas must be collected, carried in sealed pipes and discharged in a manner that will not affect the stability of the ground. Design of devices to collect, transport and discharge concentrated flows should be engineered.
- Our assessment is based on interpolation between borehole positions and site observations. Local variations in ground conditions may occur. Unfavourable ground conditions may be encountered during earthworks. It is important that we are contacted in this eventuality or in the event that any variation in subsoil conditions from this described in this report are found. Design assistance is available as required to accommodate any unforeseen ground conditions present.

Provided the recommendations provided in this report are followed, the subject site is capable of being developed as proposed. All works should be carried under the guidance of a Chartered Professional Engineer familiar with the contents of this report. A geotechnical completion report is recommended at the completion of the earthworks to confirm the findings in this report and document the work undertaken, e.g. earthworks compaction certification.

This report is not intended to be used for foundation design, other than provide general framework for building platform suitability. Future specific geotechnical investigations are recommended to confirm the subsoil conditions, confirm the soil expansivity, and provide site specific geotechnical assessment for foundation design within each lot.

## 10 Lot Specific Geotechnical Recommendations

Table 13: Summary of Lot Specific Geotechnical Recommendations

Lot No.	Comments on nominated building platform	Lot Specific Geotechnical Recommendations
<b>Lot 01 – Lot 03</b>	Gently sloping building platforms. No building restriction lines.	Shallow foundations with 300 kPa ultimate bearing capacity, Class H soils. Lot 03 may require deeper foundations if located on non-engineered fill or near edge of cut platform. Site specific geotechnical report required at time of building.
<b>Lot 04, Lot 05</b>	Gently sloping building platforms. 8.0 m setback required for Lot 04 15.0 m setback required for Lot 05 Building Restriction Line shown on SPO3	Shallow foundations with 300 kPa ultimate bearing capacity, Class H soils. Site specific geotechnical report required at time of building.
<b>Lot 06</b>	Cut building platform with retaining wall envisaged. Gentle to moderate slope below platform.	Shallow foundations with 300 kPa ultimate bearing capacity, Class H soils. Deeper foundations required if located near edge of cut platform. Site specific geotechnical report required at time of building.
<b>Lot 07</b>	Cut building platform with retaining wall envisaged. Gentle slope below platform.	Shallow foundations with 250 kPa ultimate bearing capacity, Class H soils. Site specific geotechnical report required at time of building.
<b>Lot 08, Lot 09</b>	Cut building platforms with retaining walls envisaged. Gentle to moderate slope below platforms.	Shallow foundations with 300 kPa ultimate bearing capacity, Class H soils. Deeper foundations required if located near edge of cut platform. Site specific geotechnical report required at time of building.
<b>Lot 10 – Lot 12</b>	Near flat platforms. No filling proposed.	Shallow foundations with 200 kPa ultimate bearing capacity, Class H soils. Site specific geotechnical report (including settlement analyses) required at time of building.
<b>Lot 13, Lot 14</b>	Cut building platforms with retaining walls envisaged. Gentle to moderate slope below platforms.	Shallow foundations with 300 kPa ultimate bearing capacity, Class H soils. Deeper foundations required if located near edge of cut platform. Site specific geotechnical report required at time of building.
<b>Lot 15, Lot 16</b>	Cut building platforms envisaged. Gentle slope below platforms.	Shallow foundations with 300 kPa ultimate bearing capacity, Class H soils. Site specific geotechnical report required at time of building.
<b>Lot 17</b>	Cut building platform with retaining wall envisaged. Moderate slope below platform.	Shallow foundations with 300 kPa ultimate bearing capacity, Class H soils. Deeper foundations required if located near edge of cut platform. Site specific geotechnical report required at time of building.

**Table 13 (cont.): Summary of Lot Specific Geotechnical Recommendations**

Lot No.	Comments on nominated building platform	Lot Specific Geotechnical Recommendations
<b>Lot 18, Lot 19</b>	Gently sloping building platforms. 9.0 m setback required from old scarp feature. Building Restriction Line shown on SP02 and SP03.	Shallow foundations with 300 kPa ultimate bearing capacity, Class H soils. Lot 19 may require deeper foundations if located near edge of cut platform. Site specific geotechnical report required at time of building.
<b>Lot 20</b>	Gentle slopes. Filled building platform, up to 1.0 m depth.	Shallow foundations with 300 kPa ultimate bearing capacity, Class H soils. Filling to be limited to 1.0m maximum depth. Site specific geotechnical report required at time of building.
<b>Lot 21</b>	Platform located below old slip feature. Underlain by old colluvium and alluvium. Gentle slopes. Filled building platform, up to 1.0 m depth.	Shallow foundations with 200 kPa ultimate bearing capacity, Class H soils. Filling to be limited to 1.0m maximum depth. Site specific geotechnical report required at time of building.
<b>Lot 22 – Lot 24</b>	Cut building platforms with retaining walls envisaged. Moderate slope below platforms.	Shallow foundations with 300 kPa ultimate bearing capacity, Class H soils. May require deeper foundations if located near edge of cut platform. Site specific geotechnical report required at time of building.
<b>Lot 25</b>	Building platform in cut (up to 3.0m) with 1V:3H batter on southern side. Moderate slopes with evidence of soil creep to north-west and east.	Shallow foundations with 300 kPa ultimate bearing capacity, Class H soils. Leading edge piles required if located near edge of cut platform. Site specific geotechnical report required at time of building.
<b>Lot 26 – Lot 28</b>	Building platforms in cut on crest of ridgeline. Gentle slopes to west and moderate slopes to east of platform. Provide 8.0 m setback from 'break in slope' defined as point where slopes exceed 10°. Building Restriction Line shown on SP05.	Shallow foundations with 300 kPa ultimate bearing capacity, Class H soils. Site specific geotechnical report required at time of building.
<b>Lot 29</b>	Cut building platform with cut batters. Gentle slope below platforms.	Shallow foundations with 300 kPa ultimate bearing capacity, Class H soils. Site specific geotechnical report required at time of building.
<b>Lot 30</b>	Cut building platform with retaining walls envisaged. Provide setback from old scarp feature on the eastern side. Building Restriction Line.	Shallow foundations with 300 kPa ultimate bearing capacity, Class H soils. Site specific geotechnical report required at time of building.
<b>Lot 31</b>	Cut building platform with retaining walls envisaged. Located below old slip feature but no colluvium encountered.	Shallow foundations with 300 kPa ultimate bearing capacity, Class H soils. Site specific geotechnical report required at time of building.



**Table 13 (cont.): Summary of Lot Specific Geotechnical Recommendations**

Lot No.	Comments on nominated building platform	Lot Specific Geotechnical Recommendations
<b>Lot 32</b>	Cut building platform with cut batters. Gentle slope below platforms.	Shallow foundations with 300 kPa ultimate bearing capacity, Class H soils. Site specific geotechnical report required at time of building.
<b>Lot 33, Lot 34</b>	Cut building platform with cut batters envisaged. Gentle slope below platforms. Provide setback from old scarp features on the northern side. Building Restriction Line shown on SP02 and SP05.	Shallow foundations with 300 kPa ultimate bearing capacity, Class H soils. Site specific geotechnical report required at time of building.
<b>Lot 35 &amp; Lot 37</b>	Gentle slopes. Filled building platforms, up to 1.0 m depth. Unsuitable fill from old golf green to be removed.	Shallow foundations with 100 kPa ultimate bearing capacity, Class H soils. Alternatively, foundation to be supported on driven piles. Site specific geotechnical report (including settlement analyses) required at time of building.
<b>Lot 36</b>	Platform located below an old slip feature, but no colluvium encountered. Building platform must be cut down with cut batters retained (for slope stability)	Shallow foundations with 300 kPa ultimate bearing capacity, Class H soils. Building must be formed in cut. Deeper foundations required if located sloping ground. Site specific geotechnical report required at time of building.
<b>Lot 38</b>	Platform located below an old slip feature, but no colluvium encountered. Gentle slopes. Filled building platform, up to 1.0 m depth.	Shallow foundations with 200 kPa ultimate bearing capacity, Class H soils. Site specific geotechnical report required at time of building.
<b>Lot 39</b>	Gentle slopes. Building platform mostly in cut with minor filling at northern edge. Unsuitable fill to be removed/ replaced with engineered fill.	Shallow foundations with 200 kPa ultimate bearing capacity, Class H soils. Site specific geotechnical report required at time of building.
<b>Lot 40</b>	Gentle slopes. Cut to fill with filling up to 1.0m maximum depth. Unsuitable fill from old golf green to be removed.	Shallow foundations with 300 kPa ultimate bearing capacity, Class H soils. Site specific geotechnical report required at time of building.
<b>Lot 41</b>	Contains existing dwelling. Site specific geotechnical report required if a new dwelling is proposed in the future. Recommendations would be similar to Lot 40.	
<b>Lot 42</b>	Contains existing cottage/dwelling. Site specific geotechnical report required if a new dwelling is proposed in the future. Recommendations would be similar to Lot 43	

**Table 13 (cont.): Summary of Lot Specific Geotechnical Recommendations**

Lot No.	Comments on nominated building platform	Lot Specific Geotechnical Recommendations
<b>Lot 43</b>	Gently sloping platform. No filling proposed. Unsuitable fill from old golf green to be removed.	Shallow foundations with 200 kPa ultimate bearing capacity, Class H soils. Site specific geotechnical report required at time of building.
<b>Lot 44</b>	Cut building platform in cut with retaining walls. Moderate slope below platform. No filling proposed.	Shallow foundations with 300 kPa ultimate bearing capacity, Class H soils. Deeper foundations required if located near edge of cut platform. Site specific geotechnical report required at time of building.
<b>Lot 45 &amp; Lot 49</b>	Building platforms in cut on crest of ridgeline. Moderate slopes to west and east of platforms. Cut batter between platforms and along JOAL adjacent to platforms	Shallow foundations with 300 kPa ultimate bearing capacity, Class H soils. Deeper foundations required if located near edge of cut platform. Site specific geotechnical report required at time of building.
<b>Lot 50 – Lot 52</b>	Gentle slopes. Filled building platforms, up to 1.0 m depth.	Ground improvement required to facilitate shallow foundation construction (refer section 6.5). Otherwise, provide deep driven pile foundations to effective refusal. Site specific geotechnical report (including settlement analyses) required at time of building.
<b>Lot 53 – Lot 57</b>	Gentle slopes. Filling up to 1.0 m depth on Lot 55. No filling proposed on other lots.	Shallow foundations with 200 kPa ultimate bearing capacity, Class H soils. Site specific geotechnical report (including settlement analyses) required at time of building.
<b>Lot 58, Lot 59</b>	Gentle slopes. No filling proposed. Unsuitable fill to be removed/ replaced with engineered fill.	Shallow foundations with 120 kPa ultimate bearing capacity, Class H soils. Alternatively, foundation to be supported on driven piles. Site specific geotechnical report (including settlement analyses) required at time of building.
<b>Lot 60, Lot 61</b>	Gentle slopes. Filling up to 0.5 m depth on Lot 61. No filling Lot 60.	Shallow foundations with 200 kPa ultimate bearing capacity, Class H soils. Site specific geotechnical report (including settlement analyses) required at time of building.
<b>Lot 62, Lot 63</b>	Gently sloping building platform on crest of ridge. 14.0 m setback required for Lot 62 9.0 m setback required for Lot 63 Building Restriction Lines shown on SP04	Shallow foundations with 300 kPa ultimate bearing capacity, Class H soils. Site specific geotechnical report required at time of building.

**Table 13 (cont.): Summary of Lot Specific Geotechnical Recommendations**

Lot No.	Comments on nominated building platform	Lot Specific Geotechnical Recommendations
<b>Lot 64</b>	Cut building platform on crest of ridgeline with cut batters. Gentle to moderate slope below platform.	Shallow foundations with 300 kPa ultimate bearing capacity, Class H soils. May require deeper foundations if located near edge of cut platform. Site specific geotechnical report required at time of building.
<b>Lot 65</b>	Cut building platforms with retaining walls envisaged. Gentle to moderate slope below platforms.	Shallow foundations with 300 kPa ultimate bearing capacity, Class H soils. Deeper foundations required if located near edge of cut platform. Site specific geotechnical report required at time of building.
<b>All Lots</b>	Suitable building platforms are available or can be made available provided the recommendation in this report are followed.	Site specific investigations, assessment and reporting required for all lots at building consent stage.
<b>All Lots</b>	Earthworks	All earthworks to be under supervision by a Chartered Professional Engineer (CPEng Geotechnical)

## **11 Limitations**

This report has been prepared for the use of Willowridge Developments Ltd with respect to the particular brief outlined to us. This letter report is to be used by our Client and their Consultants only and may be relied upon when considering geotechnical advice. Furthermore, this report may be utilised in the preparation of resource consent applications with local authorities. The information and opinions contained within this report shall not be used in other context for any other purpose without prior review and agreement by Haigh Workman Ltd.

The recommendations given in this report are based on site data from discrete locations. If any changes are made, we must be allowed to review the new development proposal to ensure that the recommendations of this report remain valid. Inferences about the subsoil conditions away from the test locations have been made but cannot be guaranteed. We have inferred an appropriate geotechnical model that can be applied for our analyses. However, variations in ground conditions from those described in this report could exist across the site. Should conditions encountered differ to those outlined in this report we ask that we be given the opportunity to review the continued applicability of our recommendations.



## ***Appendix A – Drawings***

Drawing No.	Title
SP01	Site Overview Plan
SP02 – SP05	Site Investigation Plans 1 to 4
CS01 – CS19	Geological Section A-A' to S-S'

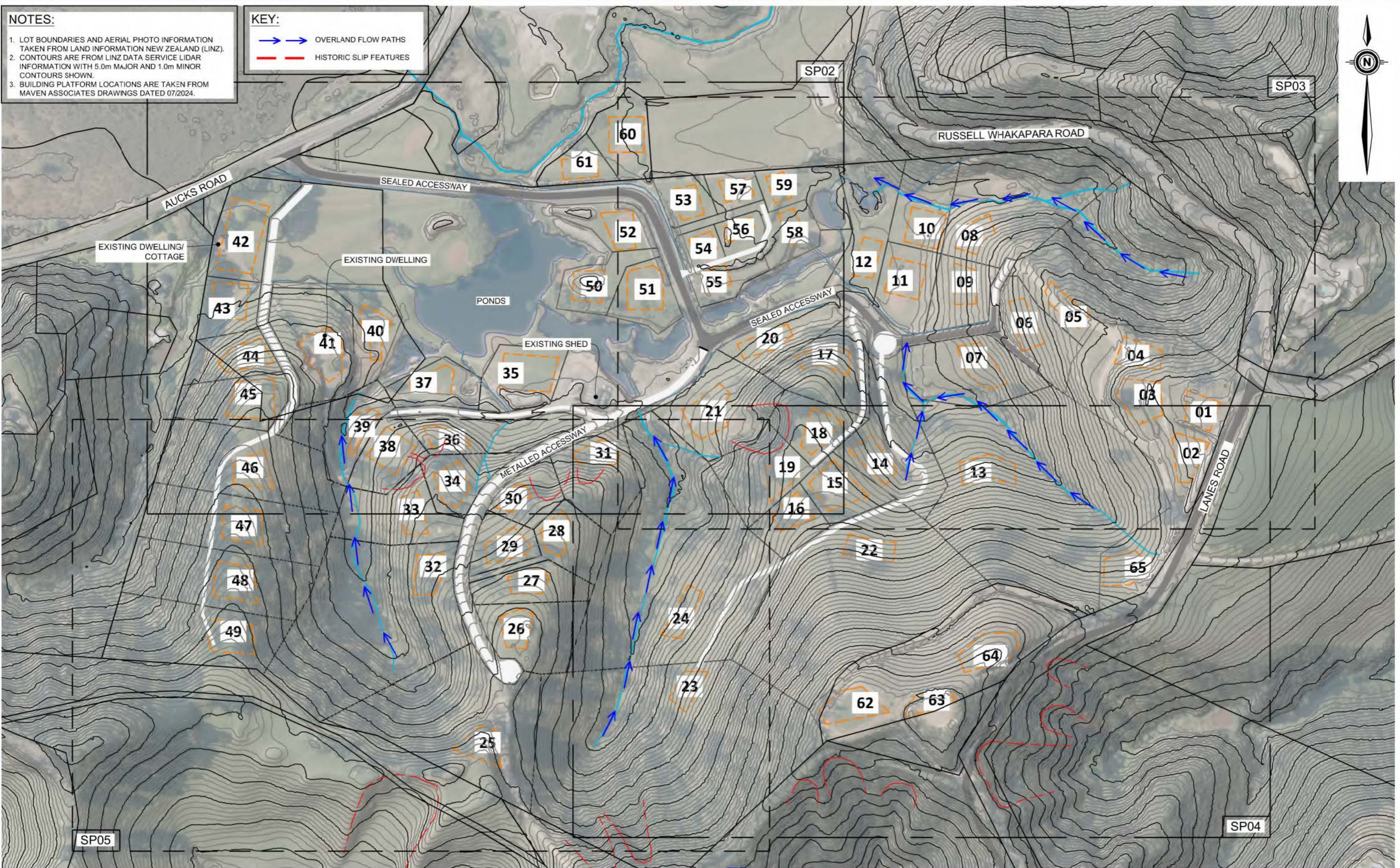


**NOTES:**

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3. BUILDING PLATFORM LOCATIONS ARE TAKEN FROM MAVEN ASSOCIATES DRAWINGS DATED 07/2024.

**KEY:**

- OVERLAND FLOW PATHS
- HISTORIC SLIP FEATURES



Issue	Date	Revision
A	12/09/2024	FIRST ISSUE
B	6/12/2024	REVISED SCHEME PLAN

DWG	<b>SITE OVERVIEW PLAN</b>		
Scale	1:3000 @A3	Date	NOV 2024
Drawn	JMC	Checked	WT
File		Approved	JP

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DWG No.	<b>SP01</b>
Sheet No.	<b>1 of 24</b>

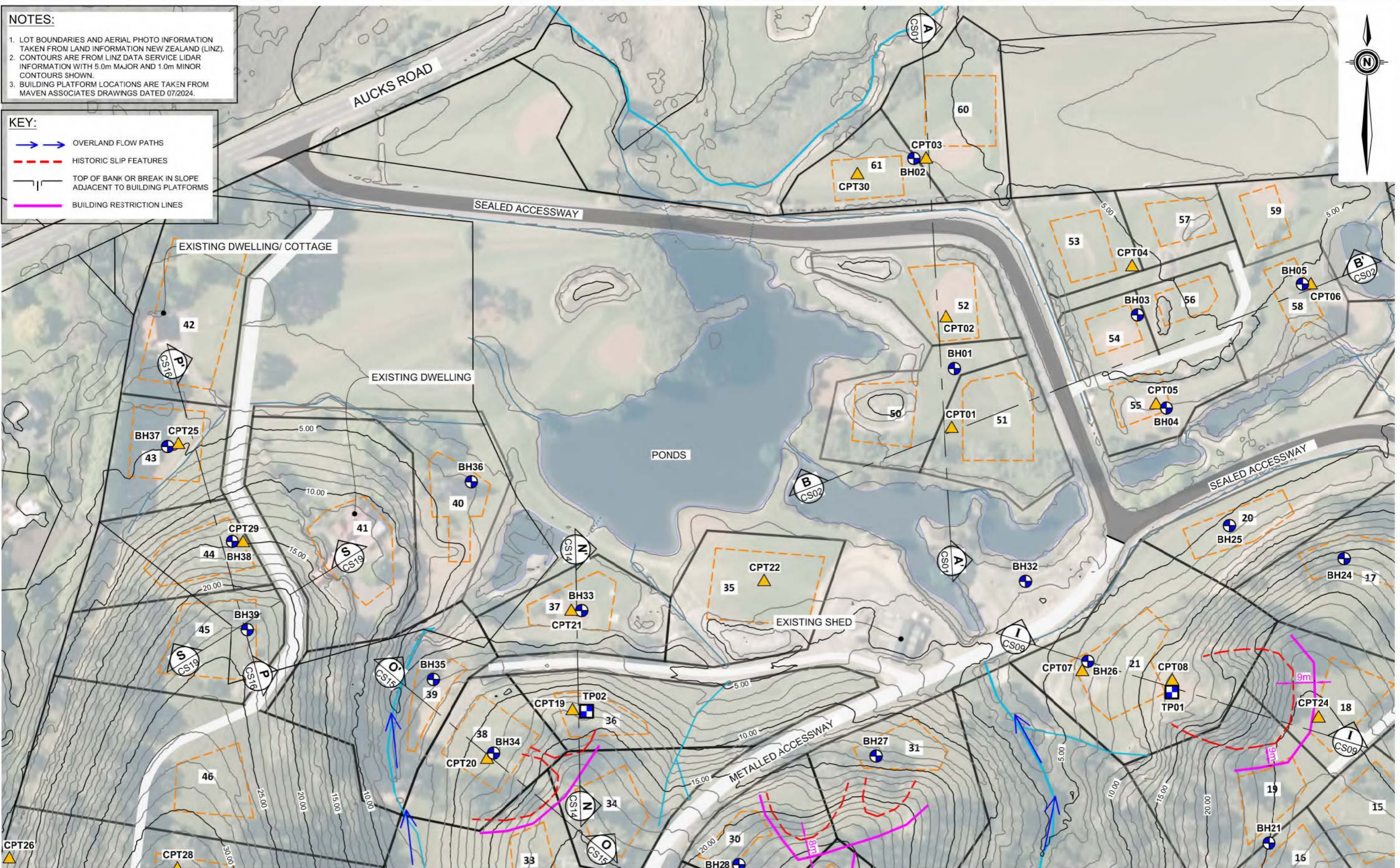


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**KEY:**

- OVERLAND FLOW PATHS
- - - HISTORIC SLIP FEATURES
- TOP OF BANK OR BREAK IN SLOPE ADJACENT TO BUILDING PLATFORMS
- BUILDING RESTRICTION LINES



Issue	Date	Revision
A	12/09/2024	FIRST ISSUE
B	6/12/2024	REVISED SCHEME PLAN

DWG	<b>SITE INVESTIGATION PLAN 1</b>		
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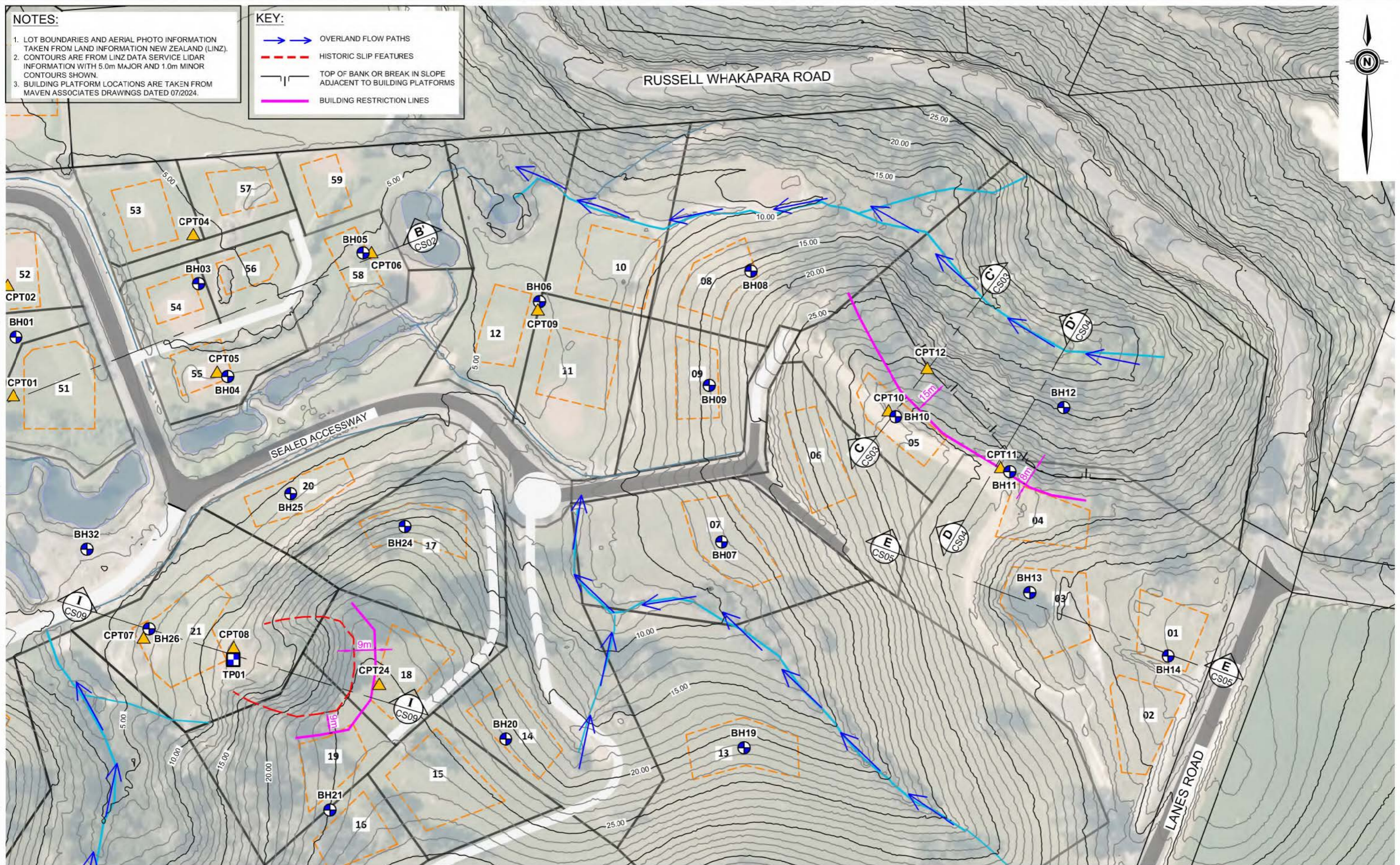
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DWG No.	<b>SP02</b>
Sheet No.	<b>2 of 24</b>





Issue	Date	Revision
A	12/09/2024	FIRST ISSUE
B	6/12/2024	REVISED SCHEME PLAN

DWG	<b>SITE INVESTIGATION PLAN 2</b>		
Scale	1:1500 @A3	Date	NOV 2024
Drawn	JMC	Checked	WT
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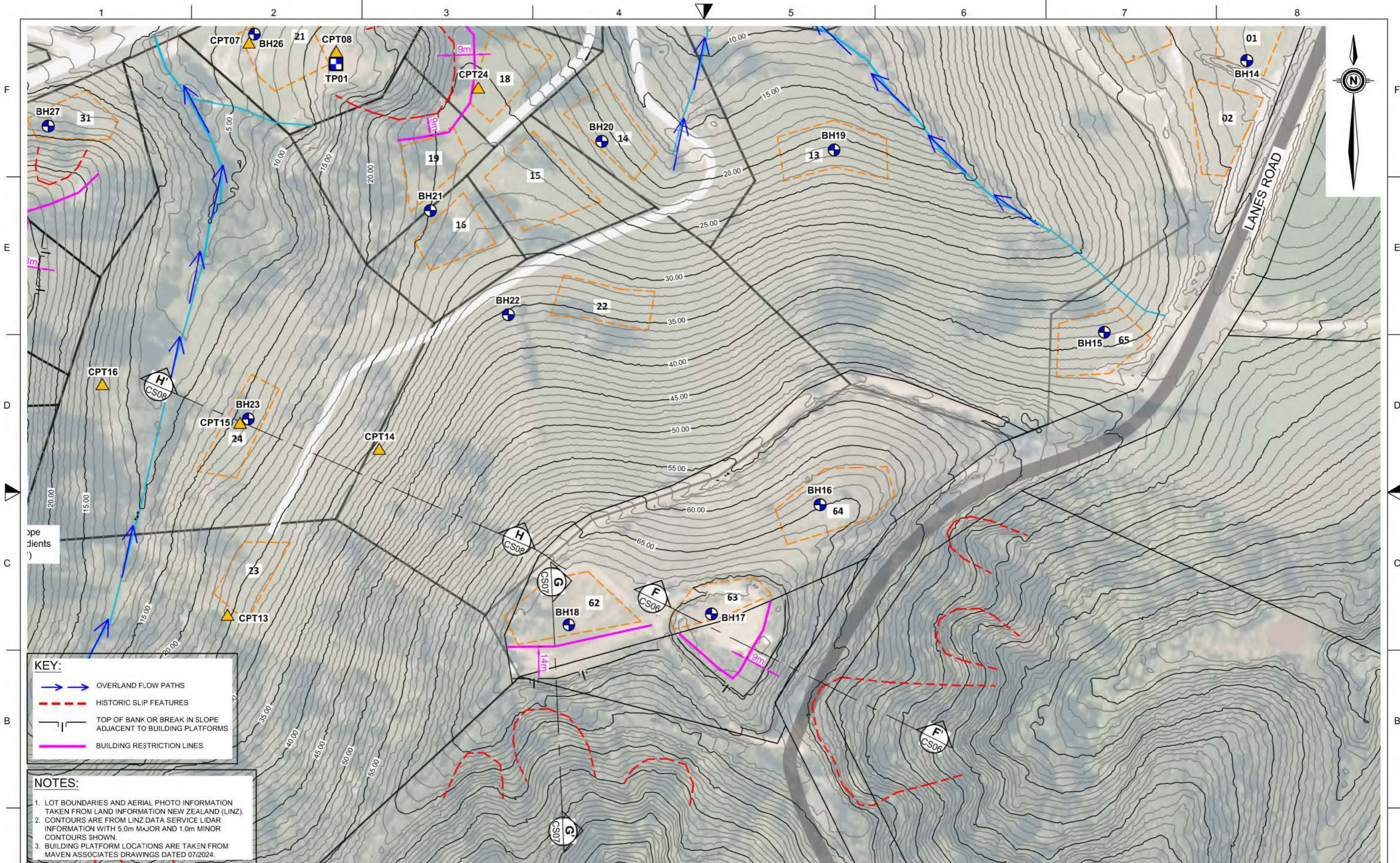
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DWG No.	<b>SP03</b>
Sheet No.	<b>3 of 24</b>





Issue	Date	Revision
A	12/09/2024	FIRST ISSUE
B	6/12/2024	REVISED SCHEME PLAN

DWG	<b>SITE INVESTIGATION PLAN 3</b>		
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File		Approved	JP

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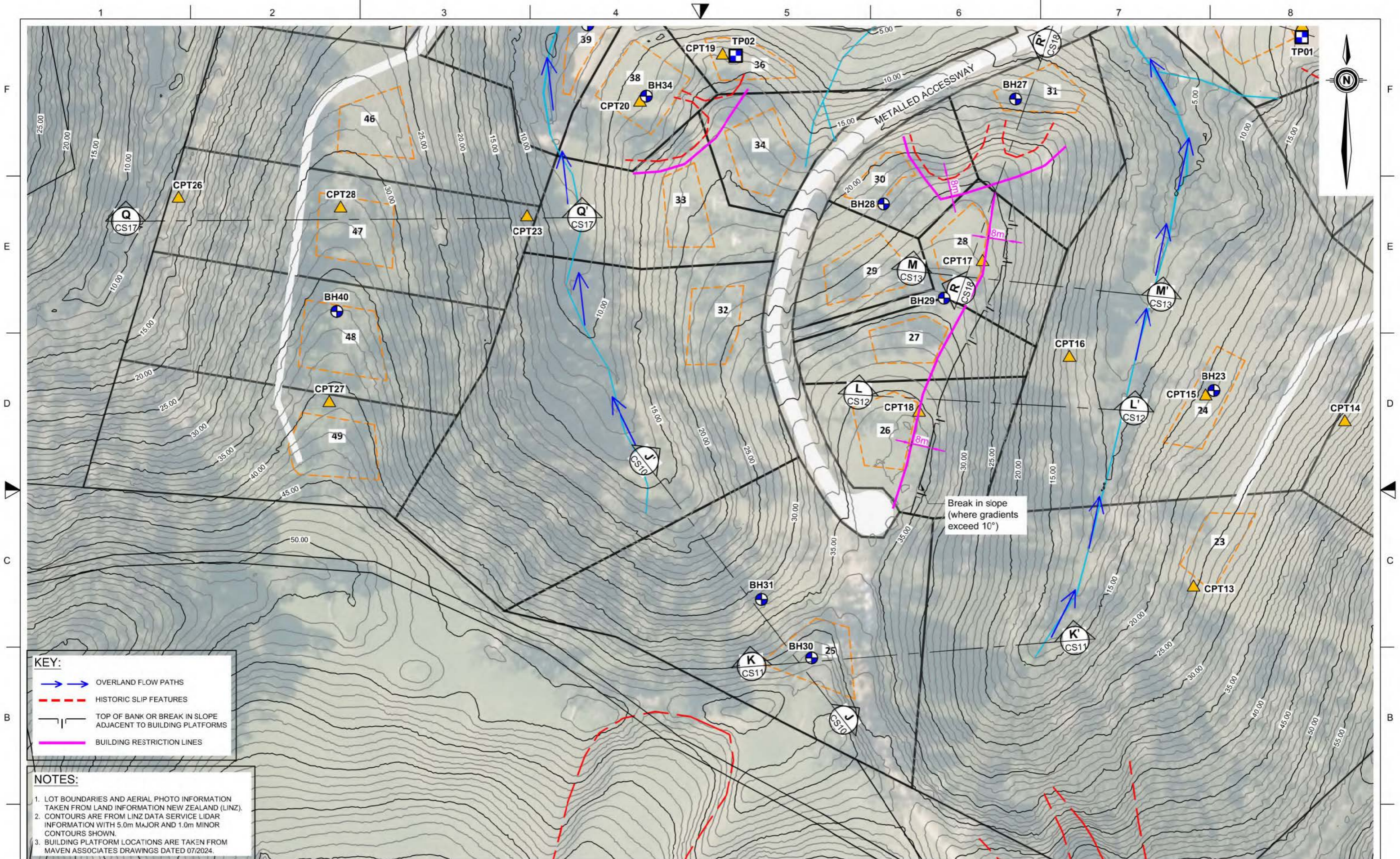
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DWG No.	<b>SP04</b>
Sheet No.	<b>4 of 24</b>





Issue	Date	Revision
A	12/09/2024	FIRST ISSUE
B	6/12/2024	REVISED SCHEME PLAN

DWG		<b>SITE INVESTIGATION PLAN 4</b>	
Scale	1:1500 @A3	Date	NOV 2024
Drawn	JMC	Checked	WT
File		Approved	JP

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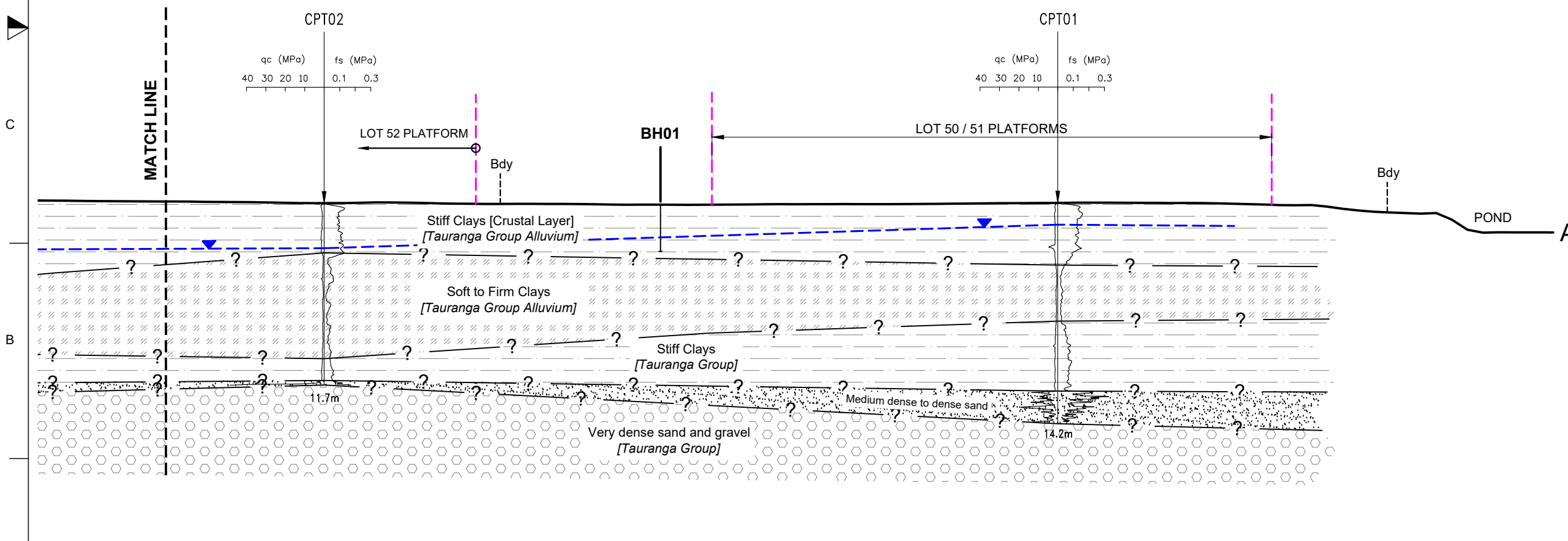
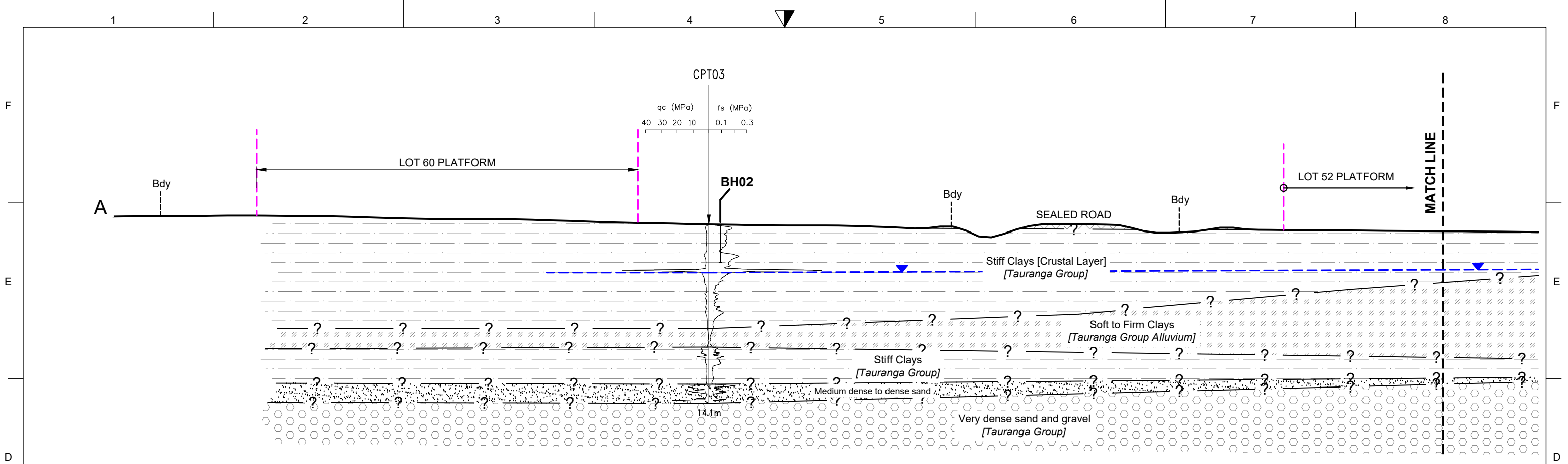
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




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DWG No.	<b>SP05</b>
Sheet No.	<b>5 of 24</b>





**KEY:**

-  NON-ENGINEERED FILL
-  STIFF CLAYS - Crustal Layer [TAURANGA GROUP]
-  SOFT TO FIRM CLAYS [TAURANGA GROUP]
-  MEDIUM DENSE TO DENSE SANDS [TAURANGA GROUP]
-  VERY DENSE - Inferred sand/gravel [TAURANGA GROUP]

- NOTES:**
- THIS DRAWING IS BASED ON LIDAR SURVEY DATA AND IS APPROXIMATE ONLY.
  - THE GROUND MODEL HAS BEEN INFERRED FROM THE BOREHOLE AND CPT DATA. INFERENCES ABOUT THE SOILS CONDITIONS BETWEEN TEST LOCATIONS HAVE BEEN MADE BUT CANNOT BE GUARANTEED.
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Issue	Date	Revision
A	12/09/2024	FIRST ISSUE
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DWG **GEOLOGICAL CROSS SECTION A-A'**

Scale 1:300 @A3 Date NOV 2024

Drawn JMC Checked WT Approved JP

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DWG No. **CS01**

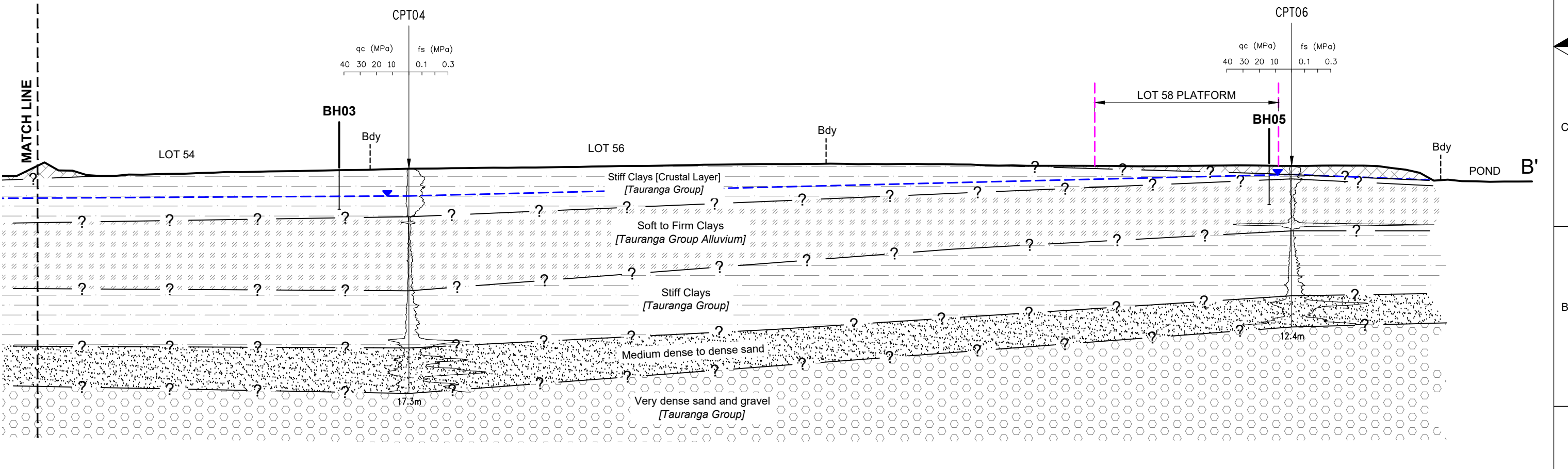
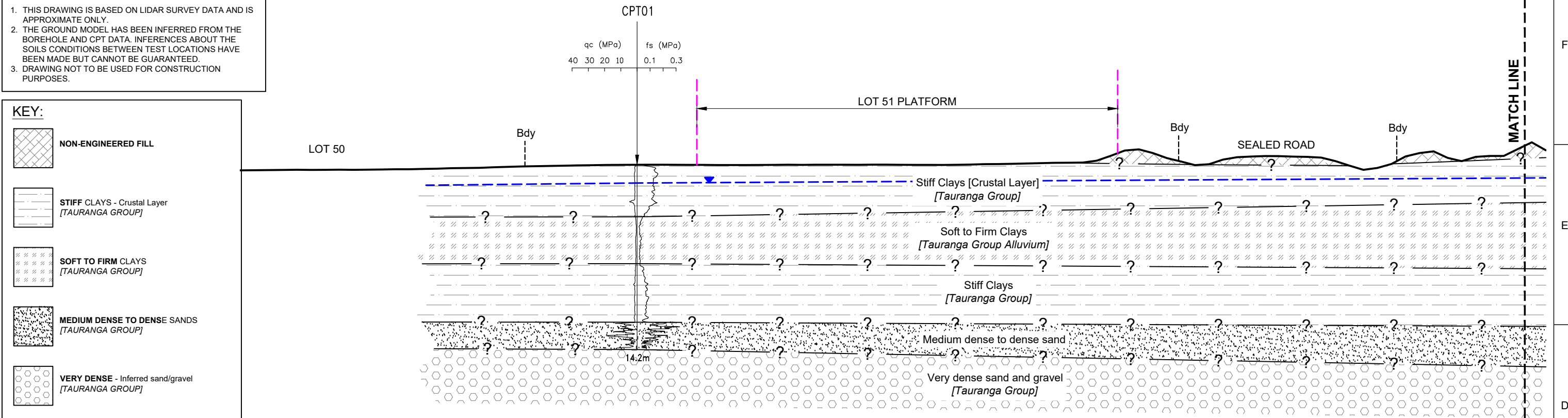
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**KEY:**

- NON-ENGINEERED FILL
- STIFF CLAYS - Crustal Layer [TAURANGA GROUP]
- SOFT TO FIRM CLAYS [TAURANGA GROUP]
- MEDIUM DENSE TO DENSE SANDS [TAURANGA GROUP]
- VERY DENSE - Inferred sand/gravel [TAURANGA GROUP]



Issue	Date	Revision
A	12/09/2024	FIRST ISSUE
B	28/11/2024	REVISED SCHEME PLAN

DWG <b>GEOLOGICAL CROSS SECTION B-B'</b>			
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File	Approved JP		

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




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Sheet No.	<b>7 of 24</b>

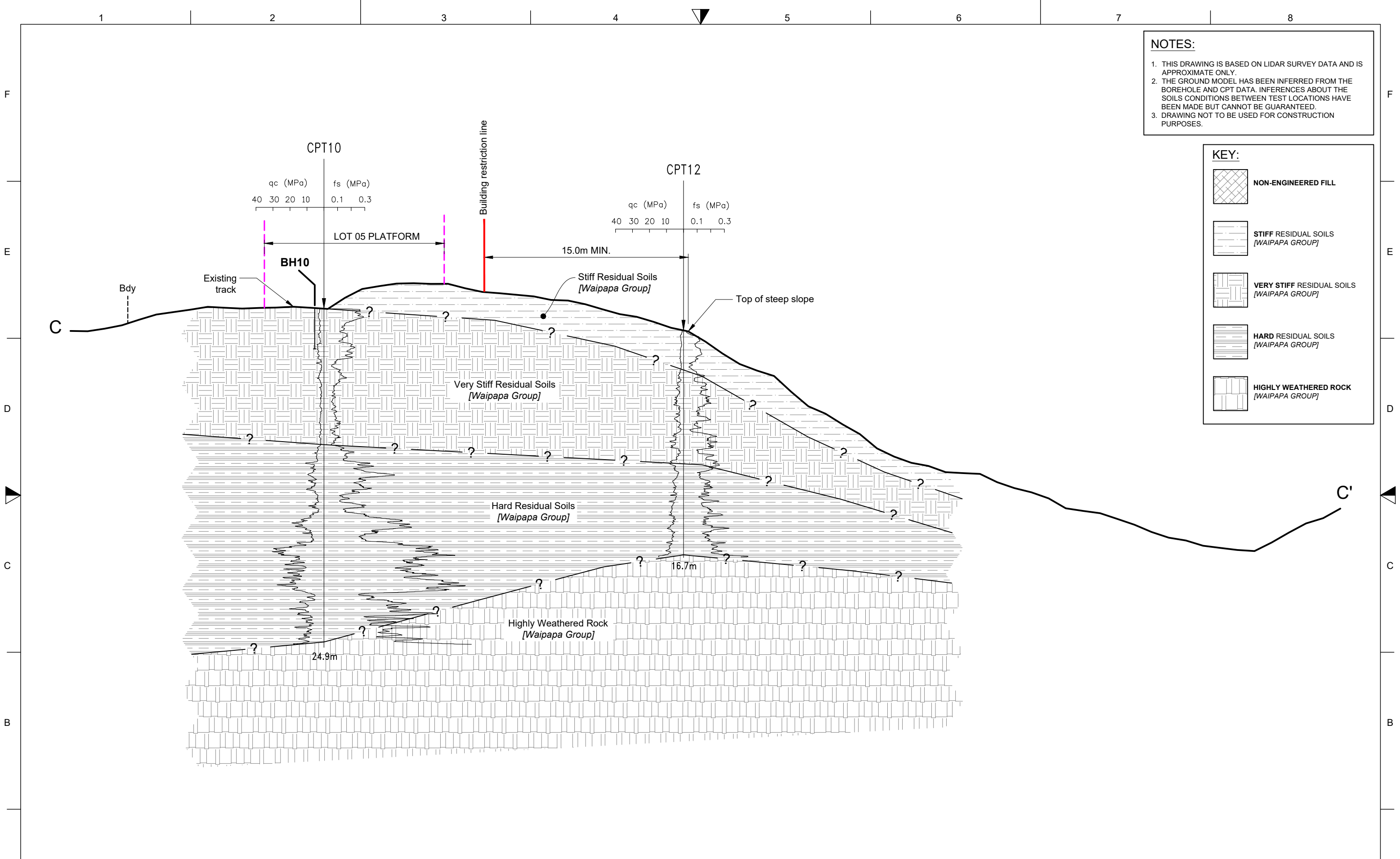


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**KEY:**

-  NON-ENGINEERED FILL
-  STIFF RESIDUAL SOILS [WAIPAPA GROUP]
-  VERY STIFF RESIDUAL SOILS [WAIPAPA GROUP]
-  HARD RESIDUAL SOILS [WAIPAPA GROUP]
-  HIGHLY WEATHERED ROCK [WAIPAPA GROUP]








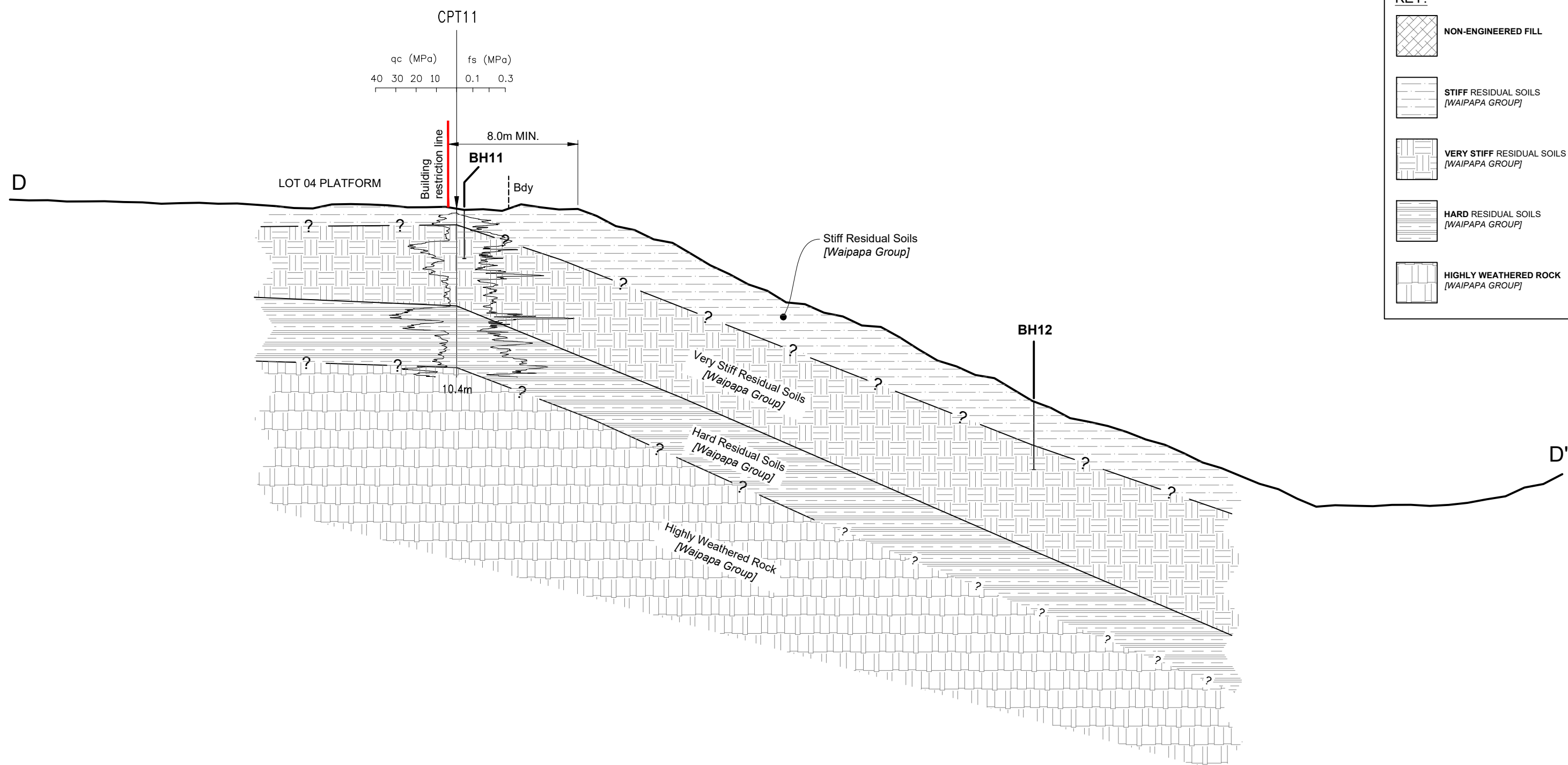
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3. DRAWING NOT TO BE USED FOR CONSTRUCTION PURPOSES.

**KEY:**

-  **NON-ENGINEERED FILL**
-  **STIFF RESIDUAL SOILS [WAIPAPA GROUP]**
-  **VERY STIFF RESIDUAL SOILS [WAIPAPA GROUP]**
-  **HARD RESIDUAL SOILS [WAIPAPA GROUP]**
-  **HIGHLY WEATHERED ROCK [WAIPAPA GROUP]**



Issue	Date	Revision
A	12/09/2024	FIRST ISSUE
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DWG <b>GEOLOGICAL CROSS SECTION D-D'</b>			
Scale	1:250 @A3	Date	NOV 2024
Drawn	JMC	Checked	WT
Approved	JP		
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
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DWG No.	<b>CS04</b>
Sheet No.	<b>9 of 24</b>

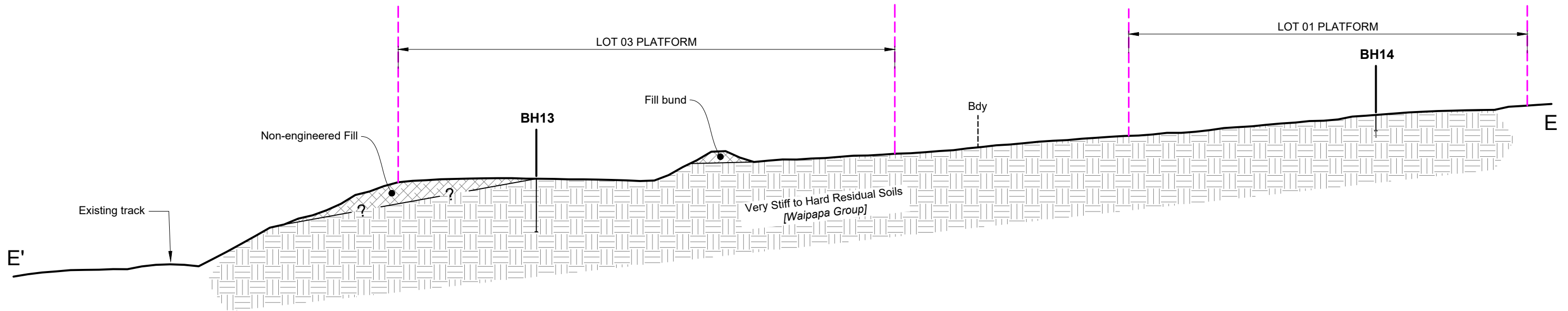
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**KEY:**

 **NON-ENGINEERED FILL**

 **VERY STIFF RESIDUAL SOILS [WAIPAPA GROUP]**



Issue	Date	Revision
A	12/09/2024	FIRST ISSUE
B	28/11/2024	REVISED SCHEME PLAN

DWG <b>GEOLOGICAL CROSS SECTION E-E'</b>			
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


DWG No.	<b>CS05</b>
Sheet No.	<b>10 of 24</b>

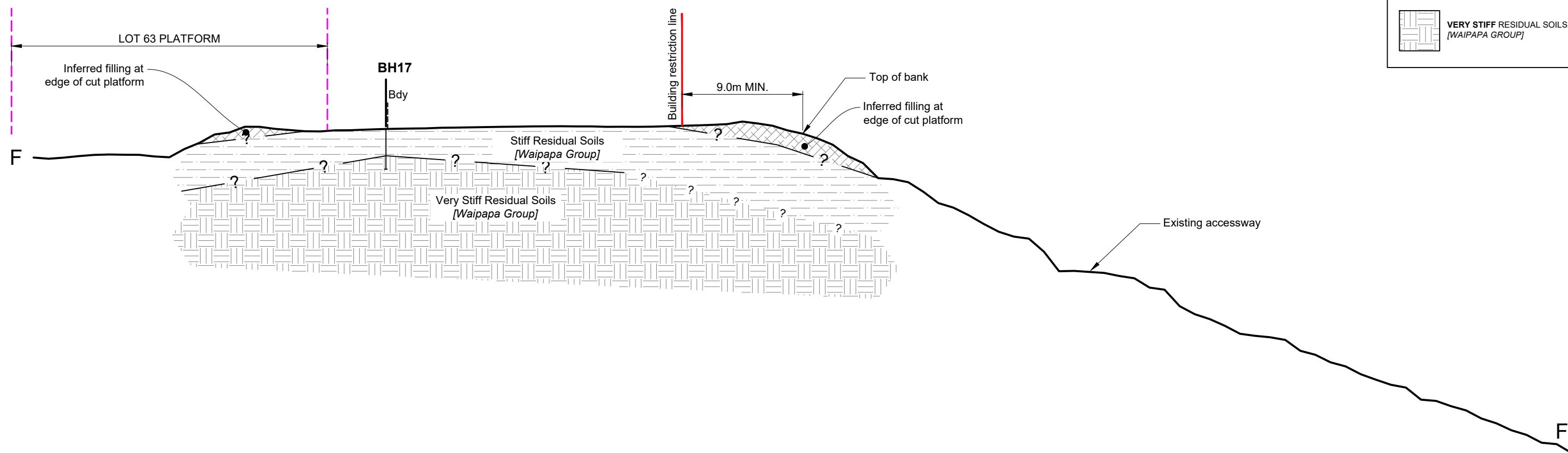


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3. DRAWING NOT TO BE USED FOR CONSTRUCTION PURPOSES.

**KEY:**

-  **NON-ENGINEERED FILL**
-  **STIFF RESIDUAL SOILS [WAIPAPA GROUP]**
-  **VERY STIFF RESIDUAL SOILS [WAIPAPA GROUP]**



Issue	Date	Revision
A	12/09/2024	FIRST ISSUE
B	28/11/2024	REVISED SCHEME PLAN

DWG <b>GEOLOGICAL CROSS SECTION F-F'</b>			
Scale	1:300 @A3	Date	NOV 2024
Drawn	JMC	Checked	WT
Approved	JP		
File	T:\CLIENTS\WILLOWRIDGE DEVELOPMENTS LTD\JOBS\23 020 - 39 AUCKS ROAD, RUSSELL ( LOT 1, DP187577)\ENGINEERING\GEOTECH\DRAWINGS\23 020 SECTIONS_RC REPORT_REV B.DWG		

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


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Client	WILLOWRIDGE DEVELOPMENTS	
Project No.	23 020	RC no. N/A

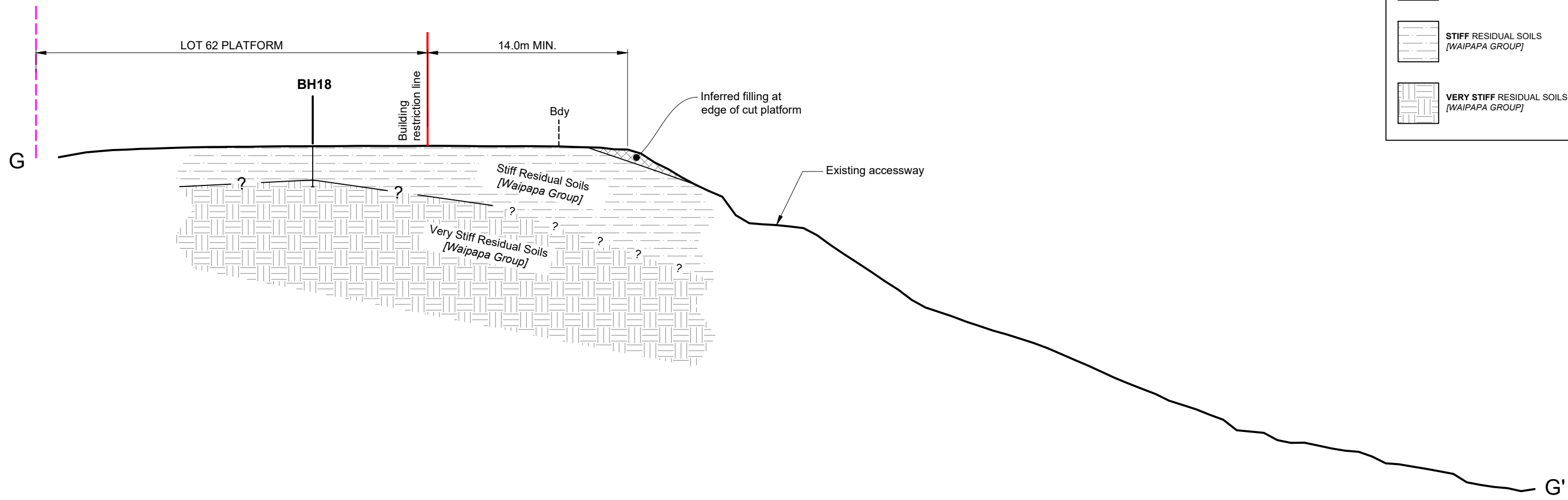
DWG No.	<b>CS06</b>
Sheet No.	<b>11 of 24</b>

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- DRAWING NOT TO BE USED FOR CONSTRUCTION PURPOSES.

**KEY:**

-  NON-ENGINEERED FILL
-  STIFF RESIDUAL SOILS [WAIPAPA GROUP]
-  VERY STIFF RESIDUAL SOILS [WAIPAPA GROUP]



Issue	Date	Revision
A	12/09/2024	FIRST ISSUE
B	28/11/2024	REVISED SCHEME PLAN

DWG <b>GEOLOGICAL CROSS SECTION G-G'</b>			
Scale	1:300 @A3	Date	NOV 2024
Drawn	JMC	Checked	WT
Approved	JP	File	

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



Project	GEOTECHNICAL INVESTIGATION 39 AUCKS ROAD, RUSSELL	
Client	WILLOWRIDGE DEVELOPMENTS	
Project No.	23 020	RC no. N/A

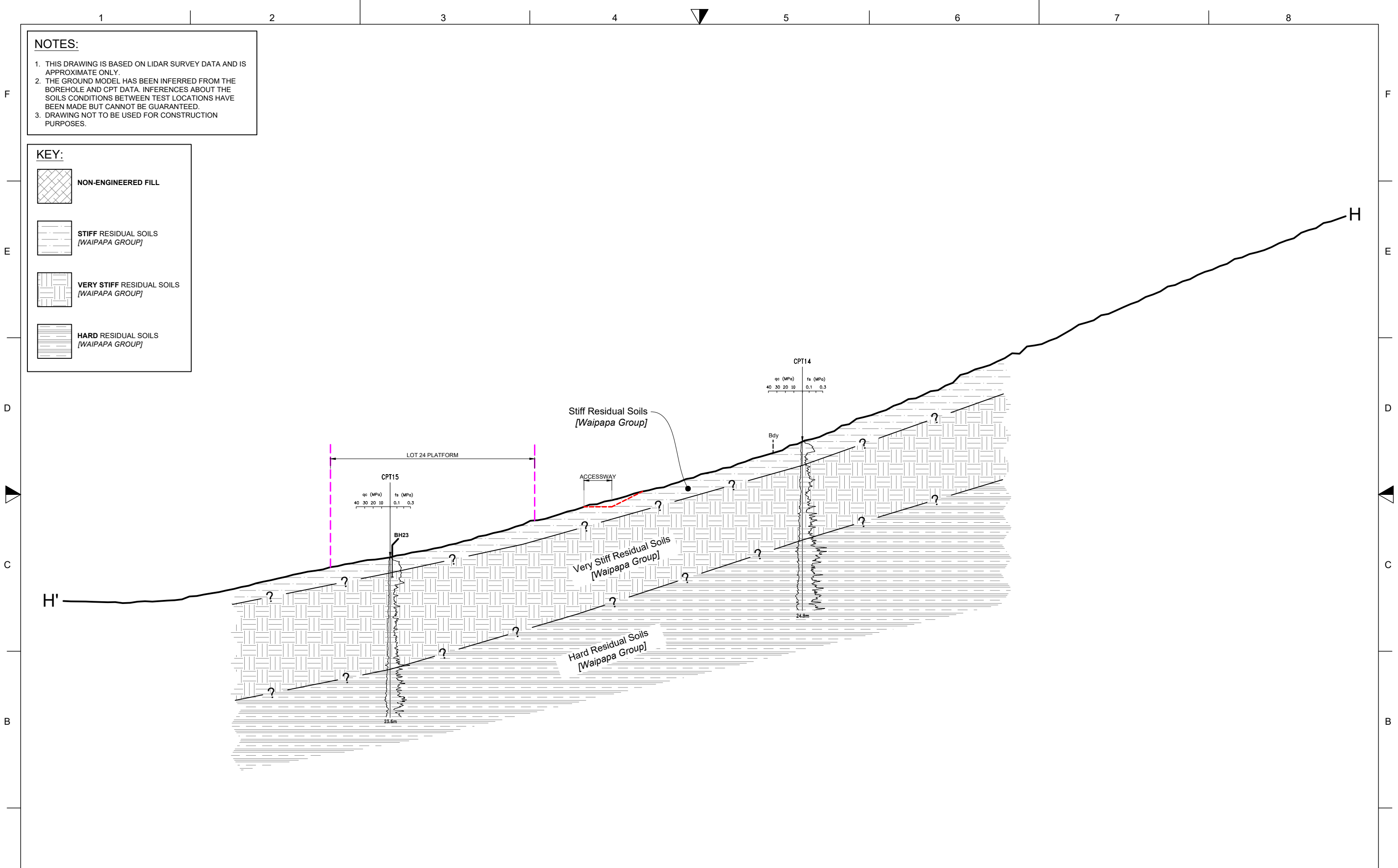
DWG No.	<b>CS07</b>
Sheet No.	<b>12 of 24</b>

**NOTES:**

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3. DRAWING NOT TO BE USED FOR CONSTRUCTION PURPOSES.

**KEY:**

-  NON-ENGINEERED FILL
-  STIFF RESIDUAL SOILS [WAIPAPA GROUP]
-  VERY STIFF RESIDUAL SOILS [WAIPAPA GROUP]
-  HARD RESIDUAL SOILS [WAIPAPA GROUP]



Issue	Date	Revision
A	12/09/2024	FIRST ISSUE
B	28/11/2024	REVISED SCHEME PLAN

DWG <b>GEOLOGICAL CROSS SECTION H-H'</b>			
Scale	1:500 @A3	Date	NOV 2024
Drawn	JMC	Checked	WT
File	Approved JP		

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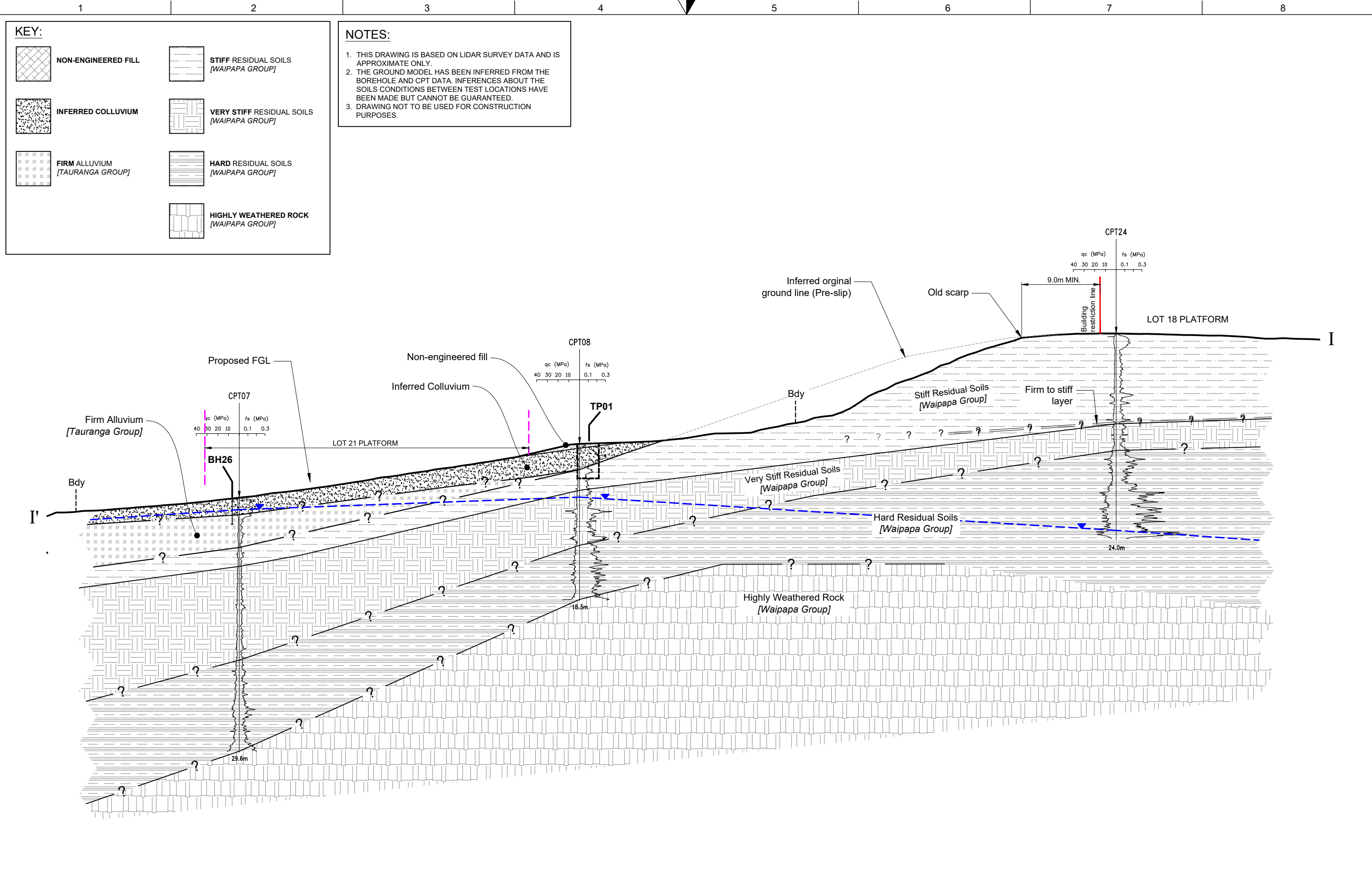
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Client	WILLOWRIDGE DEVELOPMENTS	
Project No.	23 020	RC no. N/A

DWG No.	<b>CS08</b>
Sheet No.	<b>13 of 24</b>





**KEY:**

	NON-ENGINEERED FILL		STIFF RESIDUAL SOILS [WAIPAPA GROUP]
	INFERRED COLLUVIUM		VERY STIFF RESIDUAL SOILS [WAIPAPA GROUP]
	FIRM ALLUVIUM [TAURANGA GROUP]		HARD RESIDUAL SOILS [WAIPAPA GROUP]
			HIGHLY WEATHERED ROCK [WAIPAPA GROUP]

**NOTES:**

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Issue	Date	Revision
A	12/09/2024	FIRST ISSUE
B	28/11/2024	REVISED SCHEME PLAN

DWG <b>GEOLOGICAL CROSS SECTION I-I'</b>			
Scale	1:400 @A3	Date	NOV 2024
Drawn	JMC	Checked	WT
File	Approved JP		

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


Project	GEOTECHNICAL INVESTIGATION 39 AUCKS ROAD, RUSSELL	
Client	WILLOWRIDGE DEVELOPMENTS	
Project No.	23 020	RC no. N/A

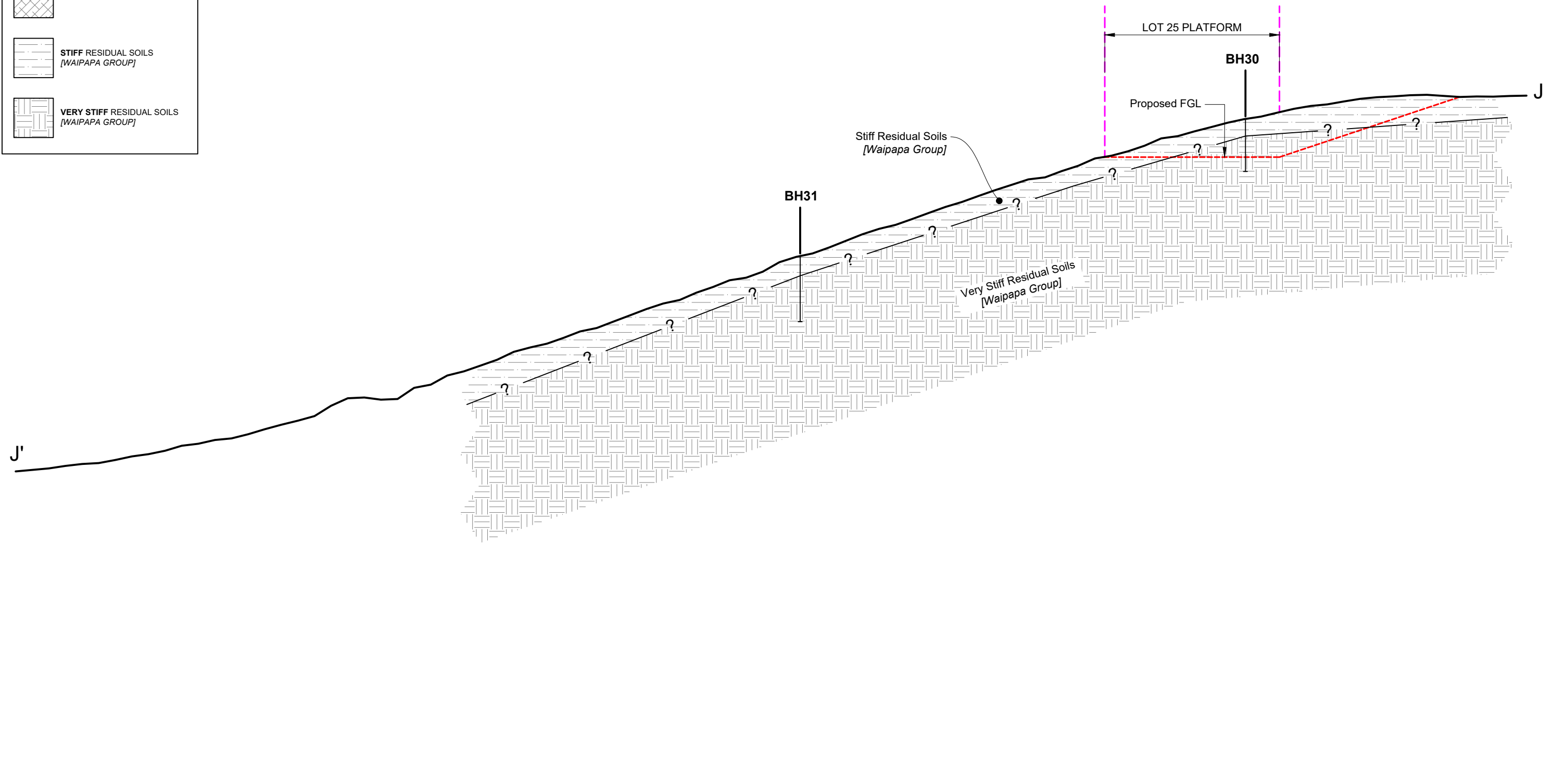
DWG No.	<b>CS09</b>
Sheet No.	<b>14 of 24</b>

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3. DRAWING NOT TO BE USED FOR CONSTRUCTION PURPOSES.

**KEY:**

-  **NON-ENGINEERED FILL**
-  **STIFF RESIDUAL SOILS [WAIPAPA GROUP]**
-  **VERY STIFF RESIDUAL SOILS [WAIPAPA GROUP]**



Issue	Date	Revision
A	12/09/2024	FIRST ISSUE
B	28/11/2024	REVISED SCHEME PLAN

DWG <b>GEOLOGICAL CROSS SECTION J-J'</b>			
Scale	1:300 @A3	Date	NOV 2024
Drawn	JMC	Checked	WT
Approved	JP	File	

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


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Client	WILLOWRIDGE DEVELOPMENTS	
Project No.	23 020	RC no. N/A

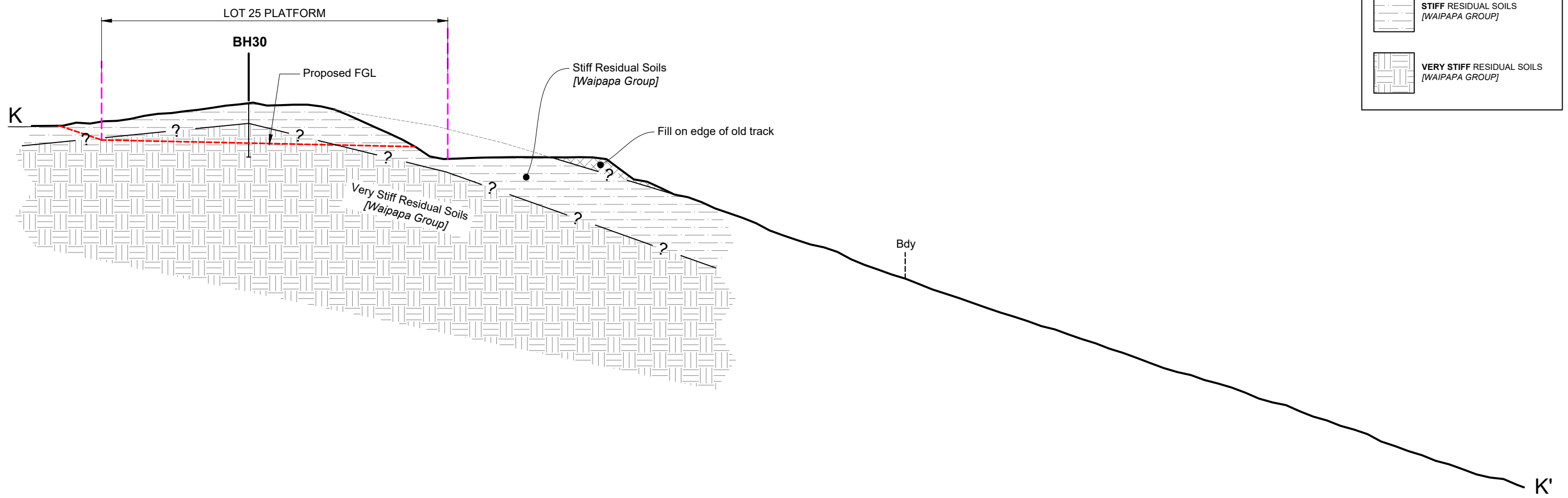
DWG No.	<b>CS10</b>
Sheet No.	<b>15 of 24</b>

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**KEY:**

-  **NON-ENGINEERED FILL**
-  **STIFF RESIDUAL SOILS [WAIPAPA GROUP]**
-  **VERY STIFF RESIDUAL SOILS [WAIPAPA GROUP]**



Issue	Date	Revision
A	12/09/2024	FIRST ISSUE
B	28/11/2024	REVISED SCHEME PLAN

DWG <b>GEOLOGICAL CROSS SECTION K-K'</b>			
Scale	1:300 @A3	Date	NOV 2024
Drawn	JMC	Checked	WT
Approved	JP		
File	T:\CLIENTS\WILLOWRIDGE DEVELOPMENTS LTD\JOBS\23 020 - 39 AUCKS ROAD, RUSSELL (LOT 1, DP187577)\ENGINEERING\GEOTECH\DRAWINGS\23 020 SECTIONS_RC REPORT_REV B.DWG		

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Client	WILLOWRIDGE DEVELOPMENTS	
Project No.	23 020	RC no. N/A





DWG No.	<b>CS11</b>
Sheet No.	<b>16 of 24</b>

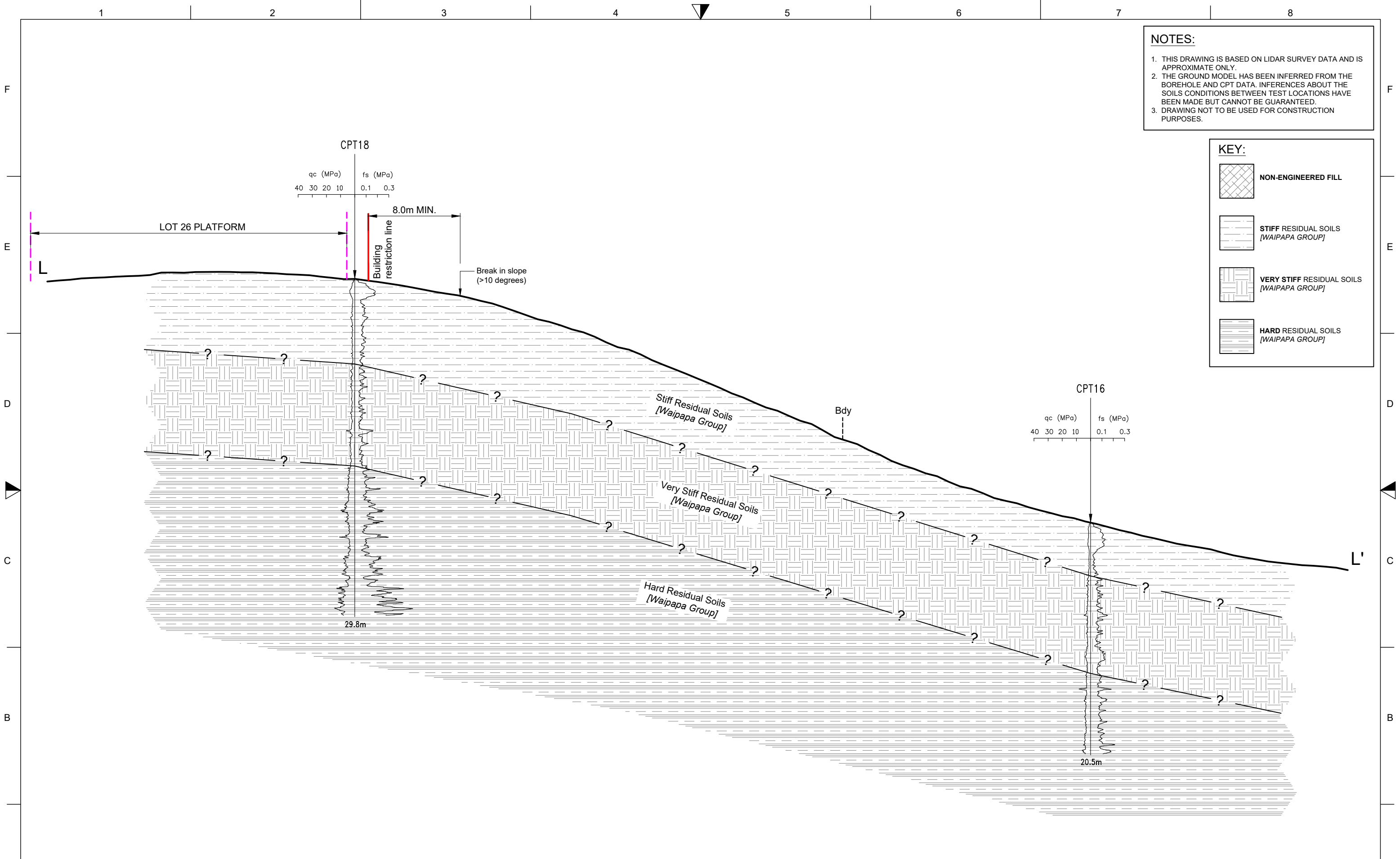


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- DRAWING NOT TO BE USED FOR CONSTRUCTION PURPOSES.

**KEY:**

-  NON-ENGINEERED FILL
-  STIFF RESIDUAL SOILS [WAIPAPA GROUP]
-  VERY STIFF RESIDUAL SOILS [WAIPAPA GROUP]
-  HARD RESIDUAL SOILS [WAIPAPA GROUP]



Issue	Date	Revision
A	12/09/2024	FIRST ISSUE
B	28/11/2024	REVISED SCHEME PLAN

DWG <b>GEOLOGICAL CROSS SECTION L-L'</b>			
Scale	1:300 @A3	Date	NOV 2024
Drawn	JMC	Checked	WT
File	Approved JP		

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



Project	GEOTECHNICAL INVESTIGATION 39 AUCKS ROAD, RUSSELL	
Client	WILLOWRIDGE DEVELOPMENTS	
Project No.	23 020	RC no. N/A

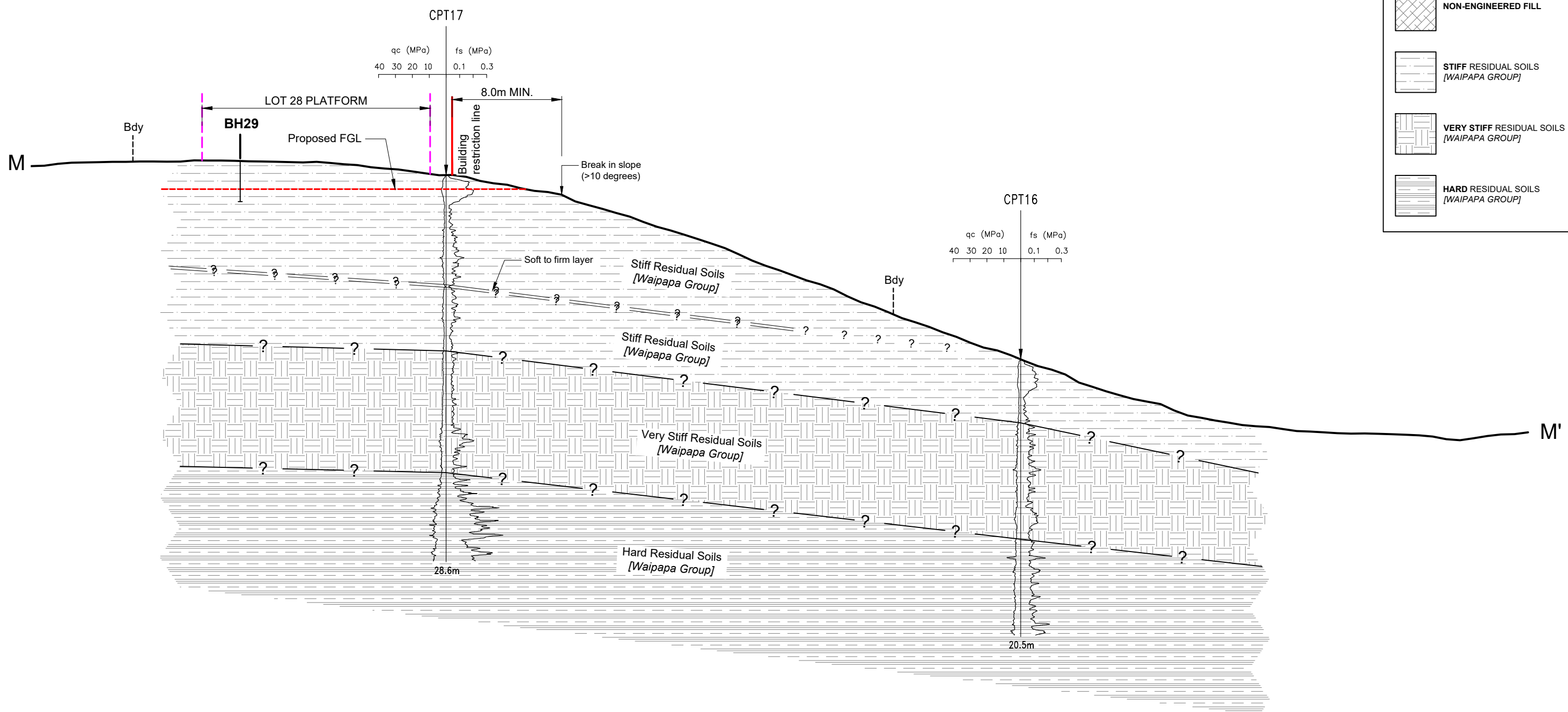
DWG No.	<b>CS12</b>
Sheet No.	<b>17 of 24</b>

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**KEY:**

-  NON-ENGINEERED FILL
-  STIFF RESIDUAL SOILS [WAIPAPA GROUP]
-  VERY STIFF RESIDUAL SOILS [WAIPAPA GROUP]
-  HARD RESIDUAL SOILS [WAIPAPA GROUP]



Issue	Date	Revision
A	12/09/2024	FIRST ISSUE
B	28/11/2024	REVISED SCHEME PLAN

DWG <b>GEOLOGICAL CROSS SECTION M-M'</b>			
Scale	1:300 @A3	Date	NOV 2024
Drawn	JMC	Checked	WT
File	Approved JP		

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






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Client	WILLOWRIDGE DEVELOPMENTS	
Project No.	23 020	RC no. N/A

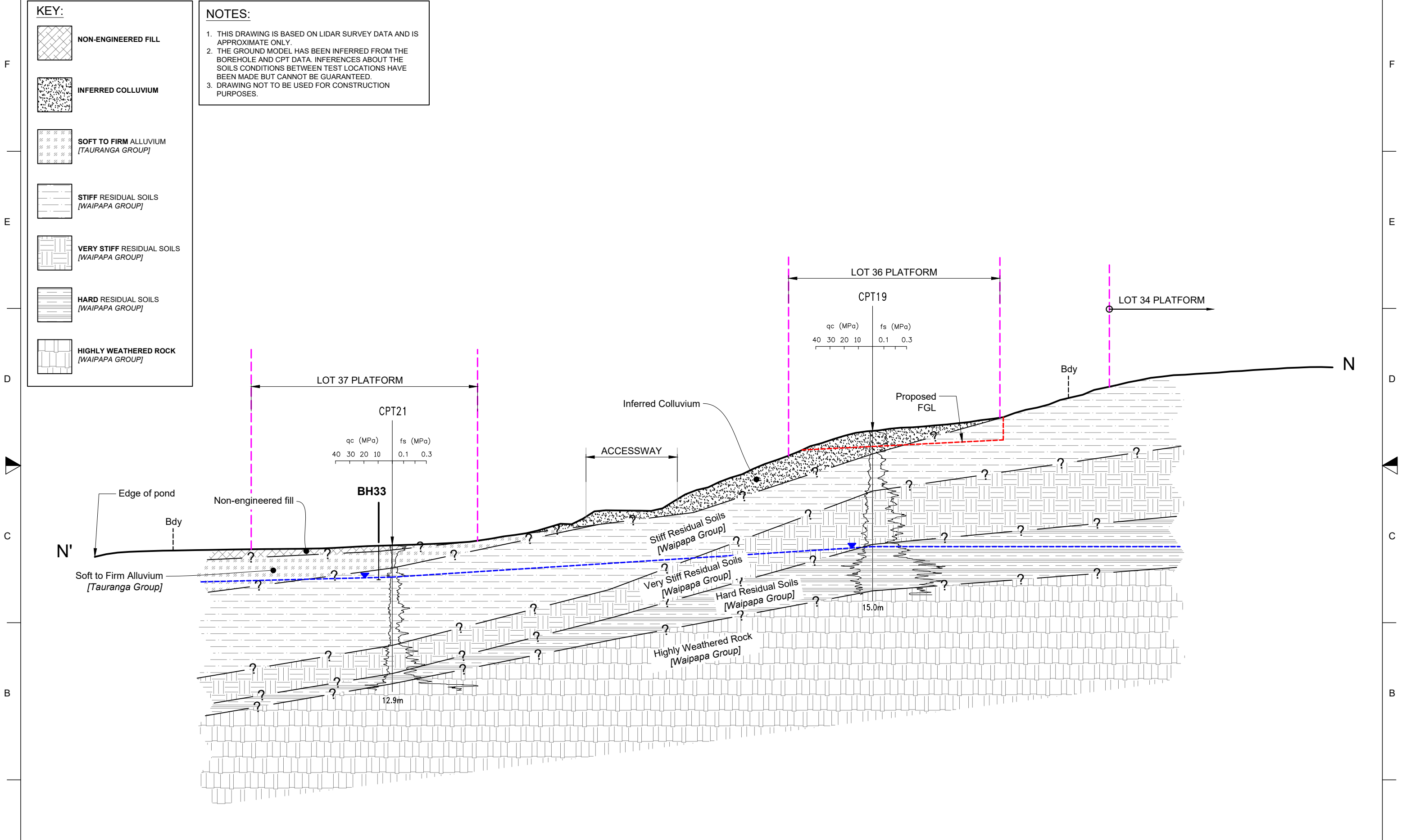
DWG No.	<b>CS13</b>
Sheet No.	<b>18 of 24</b>

**KEY:**

-  **NON-ENGINEERED FILL**
-  **INFERRED COLLUVIUM**
-  **SOFT TO FIRM ALLUVIUM [TAURANGA GROUP]**
-  **STIFF RESIDUAL SOILS [WAIPAPA GROUP]**
-  **VERY STIFF RESIDUAL SOILS [WAIPAPA GROUP]**
-  **HARD RESIDUAL SOILS [WAIPAPA GROUP]**
-  **HIGHLY WEATHERED ROCK [WAIPAPA GROUP]**

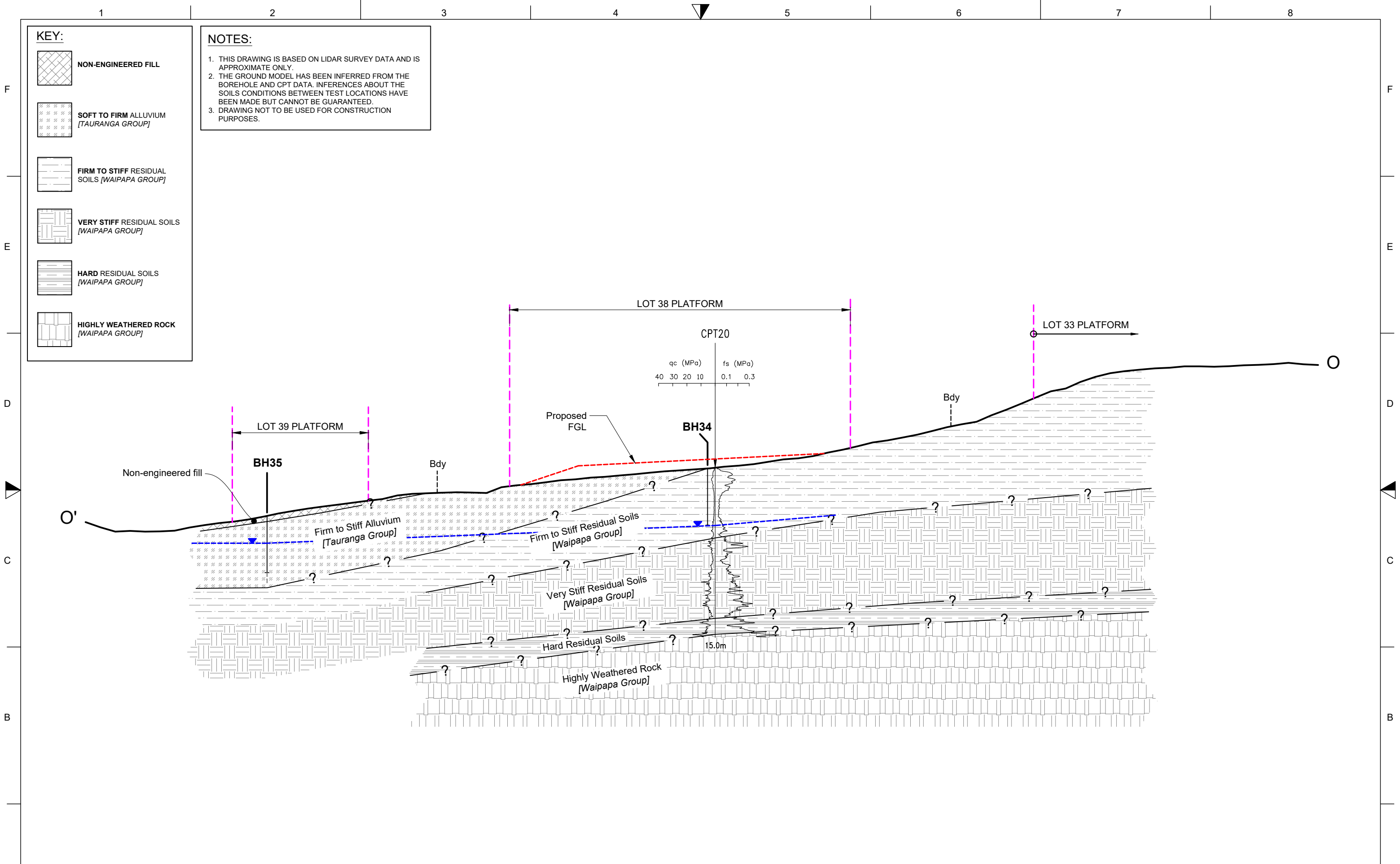
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<b>Issue</b>	<b>Date</b>	<b>Revision</b>	<b>DWG</b>	<b>GEOLOGICAL CROSS SECTION N-N'</b>		<b>Project</b>	<b>GEOTECHNICAL INVESTIGATION 39 AUCKS ROAD, RUSSELL</b>		<b>DWG No.</b>	<b>CS14</b>		
A	12/09/2024	FIRST ISSUE	Scale 1:300 @A3			Date NOV 2024		<b>Client</b> WILLOWRIDGE DEVELOPMENTS		<b>Sheet No.</b> 19 of 24		
B	28/11/2024	REVISED SCHEME PLAN										
			<b>Drawn</b>	JMC	<b>Checked</b>	WT	<b>Approved</b>	JP	<b>Project No.</b>	23 020	<b>RC no.</b>	N/A
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A	12/09/2024	FIRST ISSUE
B	28/11/2024	REVISED SCHEME PLAN

DWG <b>GEOLOGICAL CROSS SECTION O-O'</b>			
Scale	1:300 @A3	Date	NOV 2024
Drawn	JMC	Checked	WT
File	Approved JP		

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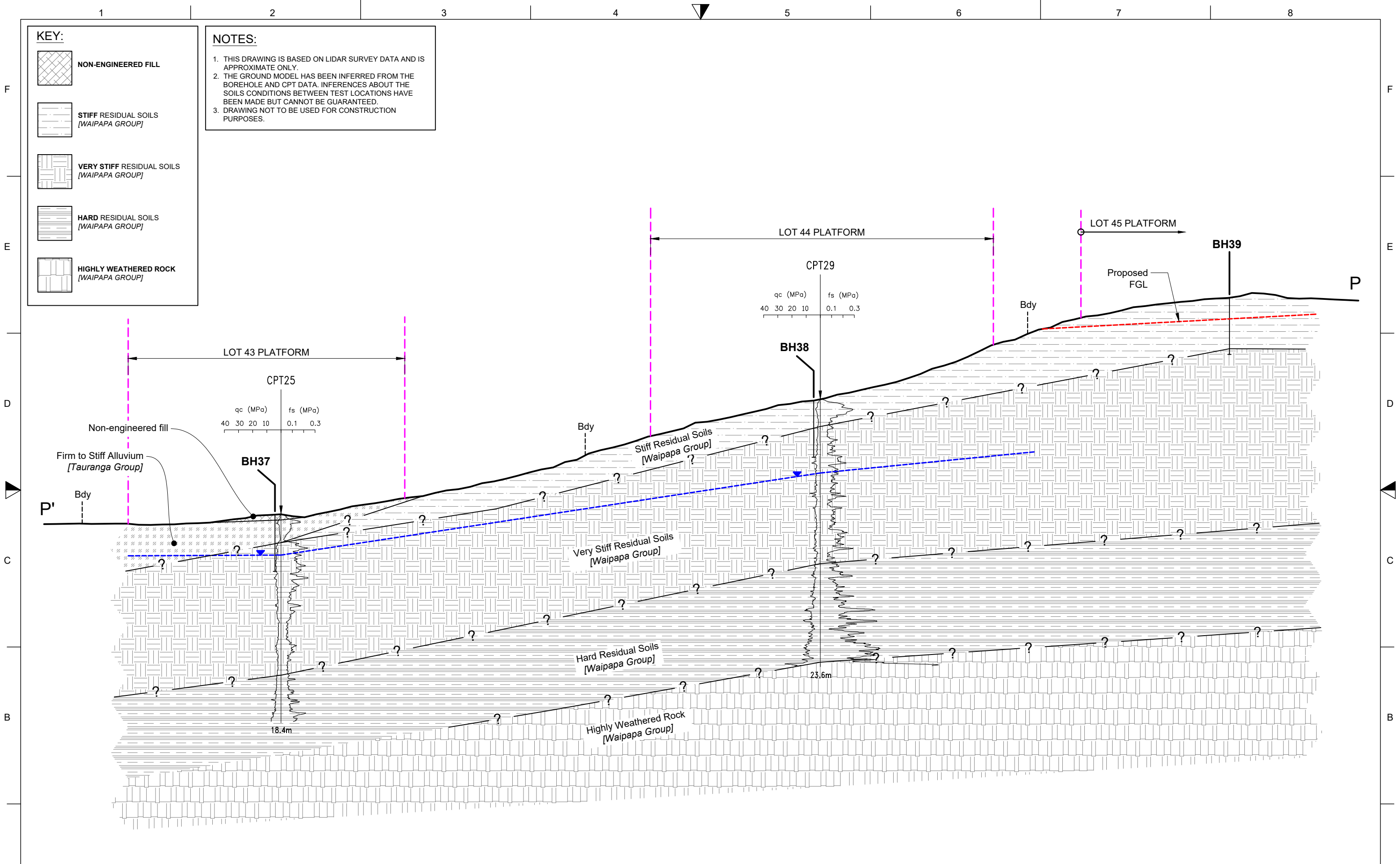
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Client	WILLOWRIDGE DEVELOPMENTS	
Project No.	23 020	RC no. N/A

DWG No.	<b>CS15</b>
Sheet No.	<b>20 of 24</b>








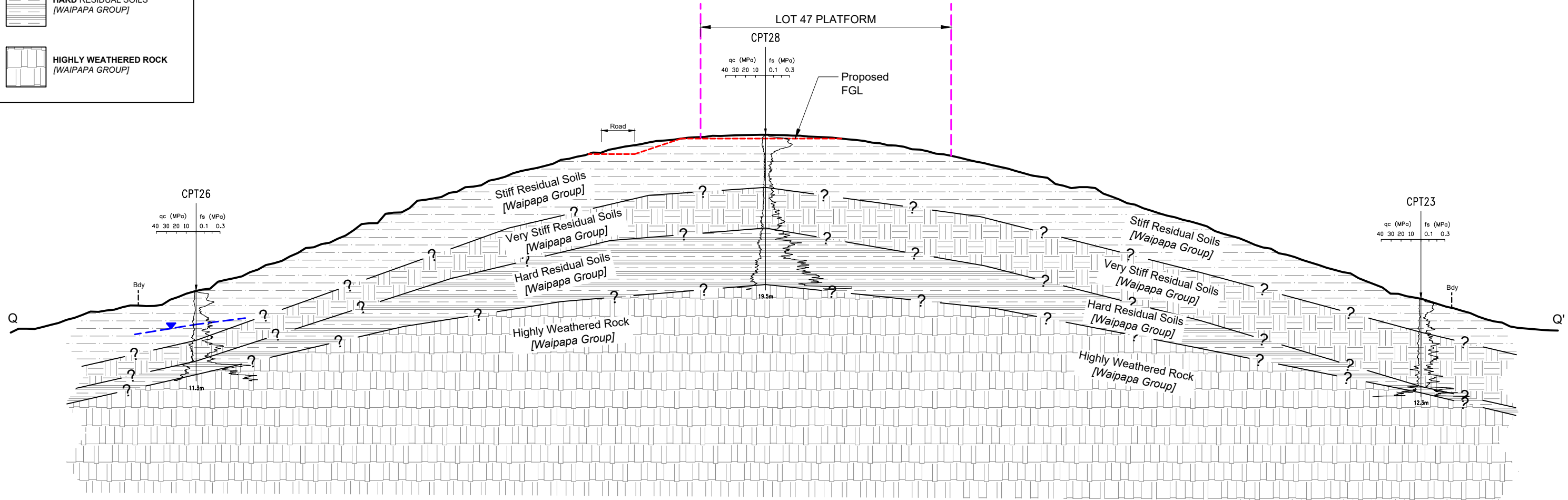
A	Issue	Date	Revision	DWG	GEOLOGICAL CROSS SECTION P-P'			 Civil & Structural Engineers	Project		GEOTECHNICAL INVESTIGATION		DWG No.	CS16
	A	12/09/2024	FIRST ISSUE						Client		WILLOWRIDGE DEVELOPMENTS			
B	28/11/2024	REVISED SCHEME PLAN		Scale	1:300 @A3	Date	NOV 2024	Project No.		23 020	RC no.	N/A		
				Drawn	JMC	Checked	WT	Approved	JP	<small>           DIMENSIONS MUST NOT BE SCALE MEASURED FROM THESE DRAWINGS. THE CONTRACTOR SHALL CHECK &amp; VERIFY ALL DIMENSIONS INCLUDING SITE LEVELS, HEIGHTS AND ANGLES ON SITE PRIOR TO COMMENCING ANY WORK. THE COPYRIGHT TO THESE DRAWINGS AND ALL PARTS THERE OF REMAIN THE PROPERTY OF HAIGH WORKMAN LTD. ©2020         </small>				

**NOTES:**

1. THIS DRAWING IS BASED ON LIDAR SURVEY DATA AND IS APPROXIMATE ONLY.
2. THE GROUND MODEL HAS BEEN INFERRED FROM THE BOREHOLE AND CPT DATA. INFERENCES ABOUT THE SOILS CONDITIONS BETWEEN TEST LOCATIONS HAVE BEEN MADE BUT CANNOT BE GUARANTEED.
3. DRAWING NOT TO BE USED FOR CONSTRUCTION PURPOSES.

**KEY:**

-  **NON-ENGINEERED FILL**
-  **STIFF RESIDUAL SOILS [WAIPAPA GROUP]**
-  **VERY STIFF RESIDUAL SOILS [WAIPAPA GROUP]**
-  **HARD RESIDUAL SOILS [WAIPAPA GROUP]**
-  **HIGHLY WEATHERED ROCK [WAIPAPA GROUP]**



Issue	Date	Revision
A	12/09/2024	FIRST ISSUE
B	28/11/2024	REVISED SCHEME PLAN

DWG <b>GEOLOGICAL CROSS SECTION Q-Q'</b>			
Scale	1:500 @A3	Date	NOV 2024
Drawn	JMC	Checked	WT
File	Approved JP		

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Project	GEOTECHNICAL INVESTIGATION 39 AUCKS ROAD, RUSSELL	
Client	WILLOWRIDGE DEVELOPMENTS	
Project No.	23 020	RC no. N/A

DWG No.	<b>CS17</b>
Sheet No.	<b>22 of 24</b>

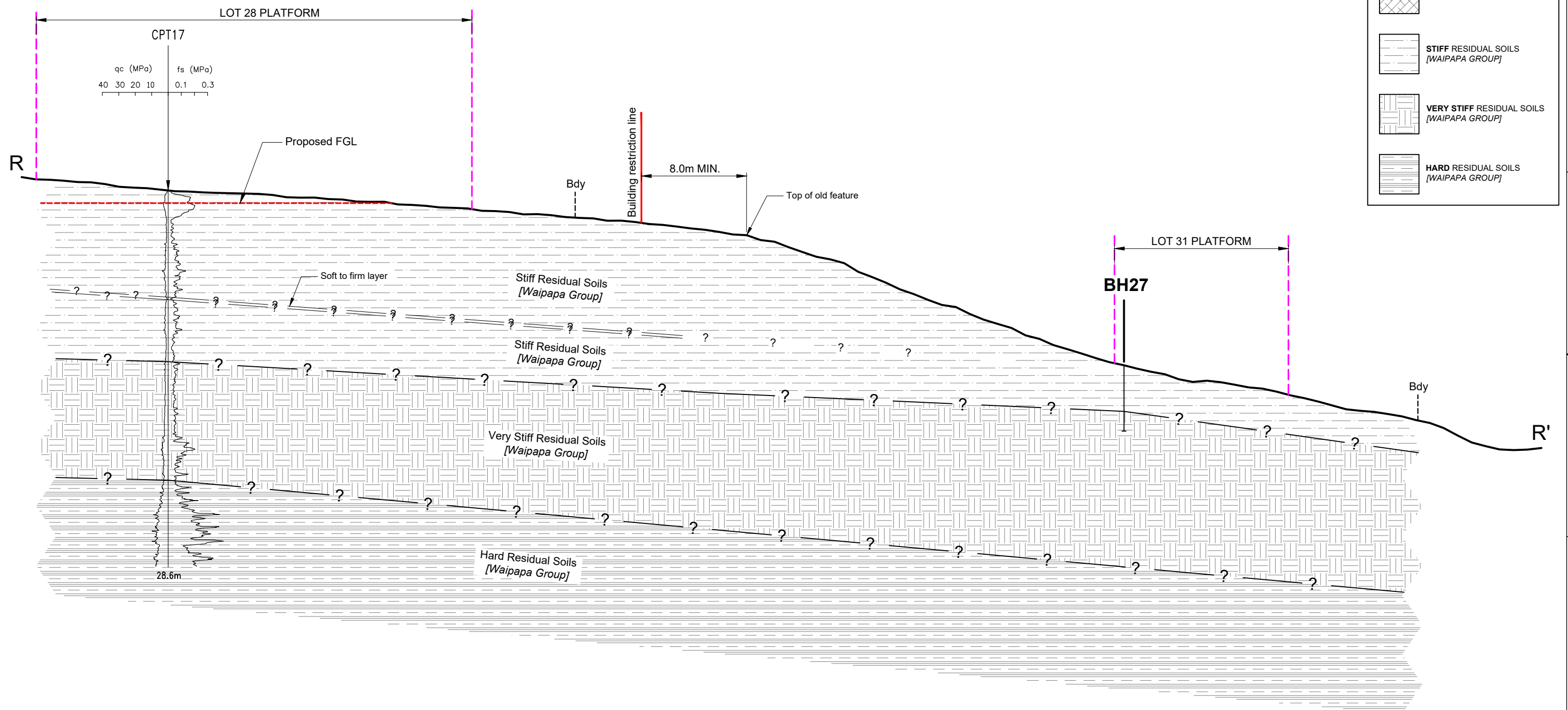


**NOTES:**

1. THIS DRAWING IS BASED ON LIDAR SURVEY DATA AND IS APPROXIMATE ONLY.
2. THE GROUND MODEL HAS BEEN INFERRED FROM THE BOREHOLE AND CPT DATA. INFERENCES ABOUT THE SOILS CONDITIONS BETWEEN TEST LOCATIONS HAVE BEEN MADE BUT CANNOT BE GUARANTEED.
3. DRAWING NOT TO BE USED FOR CONSTRUCTION PURPOSES.

**KEY:**

	NON-ENGINEERED FILL
	STIFF RESIDUAL SOILS [WAIPAPA GROUP]
	VERY STIFF RESIDUAL SOILS [WAIPAPA GROUP]
	HARD RESIDUAL SOILS [WAIPAPA GROUP]



Issue	Date	Revision
A	12/09/2024	FIRST ISSUE
B	28/11/2024	REVISED SCHEME PLAN

DWG				<b>GEOLOGICAL CROSS SECTION R-R'</b>			
Scale 1:300 @A3		Date NOV 2024		Drawn JMC		Checked WT	
Approved JP		File		T:\CLIENTS\WILLOWRIDGE DEVELOPMENTS LTD\JOBS\23 020 - 39 AUCKS ROAD, RUSSELL ( LOT 1, DP187577)\ENGINEERING\GEOTECH\DRAWINGS\23 020 SECTIONS_RC REPORT_REV B.DWG			

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Project	GEOTECHNICAL INVESTIGATION 39 AUCKS ROAD, RUSSELL	
Client	WILLOWRIDGE DEVELOPMENTS	
Project No.	23 020	RC no. N/A

DWG No.	<b>CS18</b>
Sheet No.	<b>23 of 24</b>

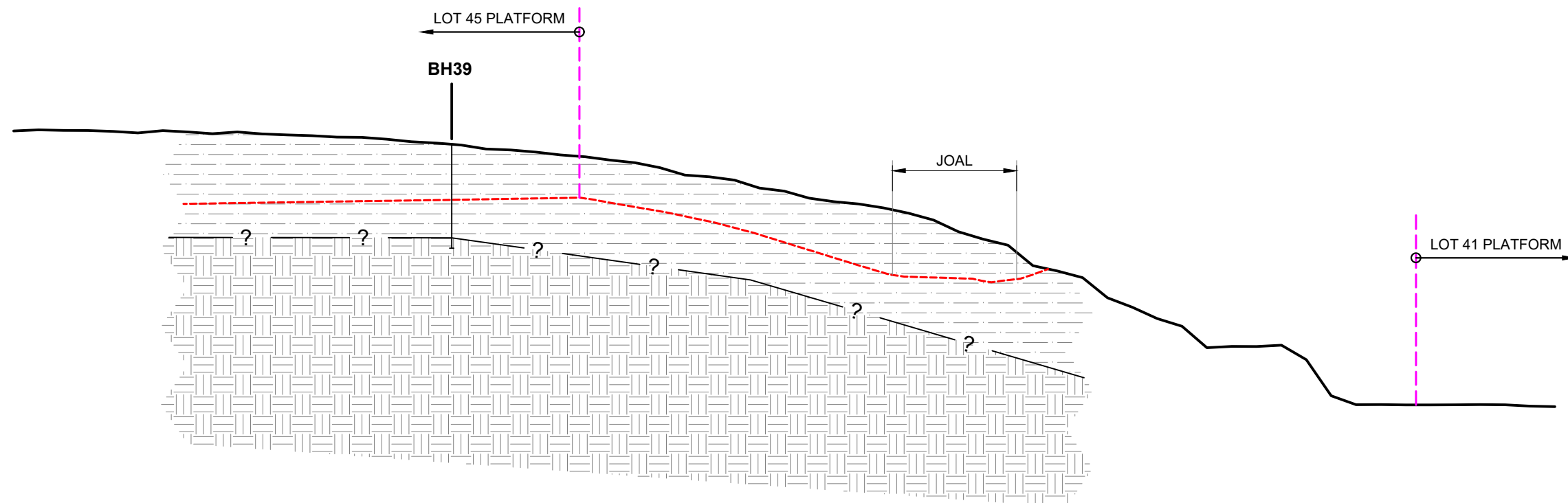
**NOTES:**

1. THIS DRAWING IS BASED ON LIDAR SURVEY DATA AND IS APPROXIMATE ONLY.
2. THE GROUND MODEL HAS BEEN INFERRED FROM THE BOREHOLE AND CPT DATA. INFERENCES ABOUT THE SOILS CONDITIONS BETWEEN TEST LOCATIONS HAVE BEEN MADE BUT CANNOT BE GUARANTEED.
3. DRAWING NOT TO BE USED FOR CONSTRUCTION PURPOSES.

**KEY:**

 **STIFF RESIDUAL SOILS**  
[WAIPAPA GROUP]

 **VERY STIFF RESIDUAL SOILS**  
[WAIPAPA GROUP]



Issue	Date	Revision
A	12/09/2024	FIRST ISSUE
B	28/11/2024	REVISED SCHEME PLAN

DWG <b>GEOLOGICAL CROSS SECTION S-S'</b>			
Scale	1:250 @A3	Date	NOV 2024
Drawn	JMC	Checked	WT
Approved	JP	File	

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Project	GEOTECHNICAL INVESTIGATION 39 AUCKS ROAD, RUSSELL	
Client	WILLOWRIDGE DEVELOPMENTS	
Project No.	23 020	RC no. N/A

DWG No.	<b>CS19</b>
Sheet No.	<b>24 of 24</b>

## ***Appendix B – Hand Auger Logs***



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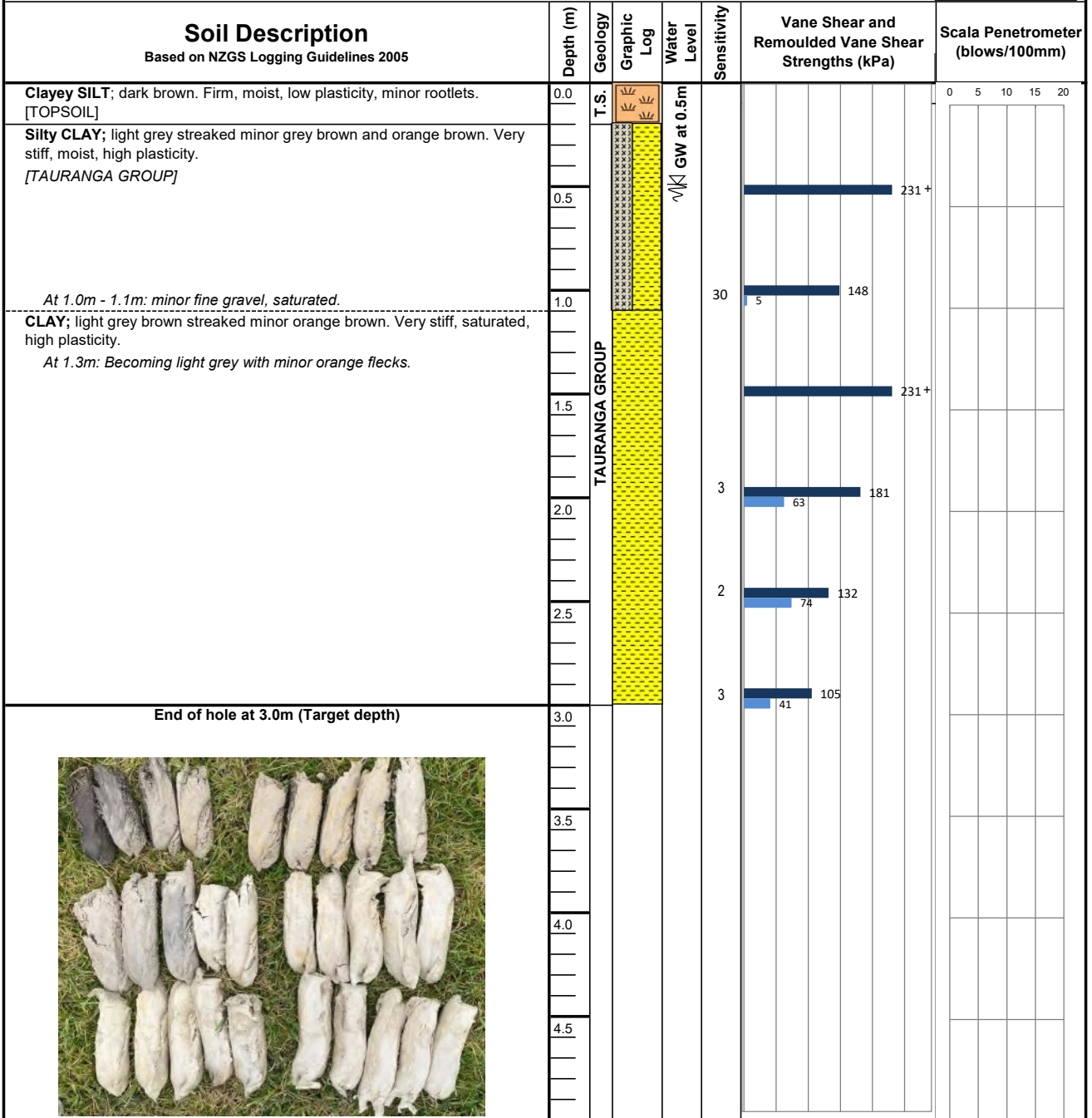
## Borehole Log - BH01

Hole Location: Refer to Site Plan

JOB No. 23 020

CLIENT: Willowridge Developments SITE: 39 Aucks Road, Russell  
Date Started: 29/07/2024 DRILLING METHOD: Hand Auger  
Date Completed: 29/07/2024 HOLE DIAMETER (mm) 50mm

LOGGED BY: JMC  
CHECKED BY: WT



**LEGEND**

TOPSOIL  
 CLAY  
 SILT  
 SAND  
 GRAVEL  
 FILL

Corrected shear vane reading  
 Remoulded shear vane reading  
 Scala Penetrometer

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 440  
Scala penetrometer testing not undertaken.

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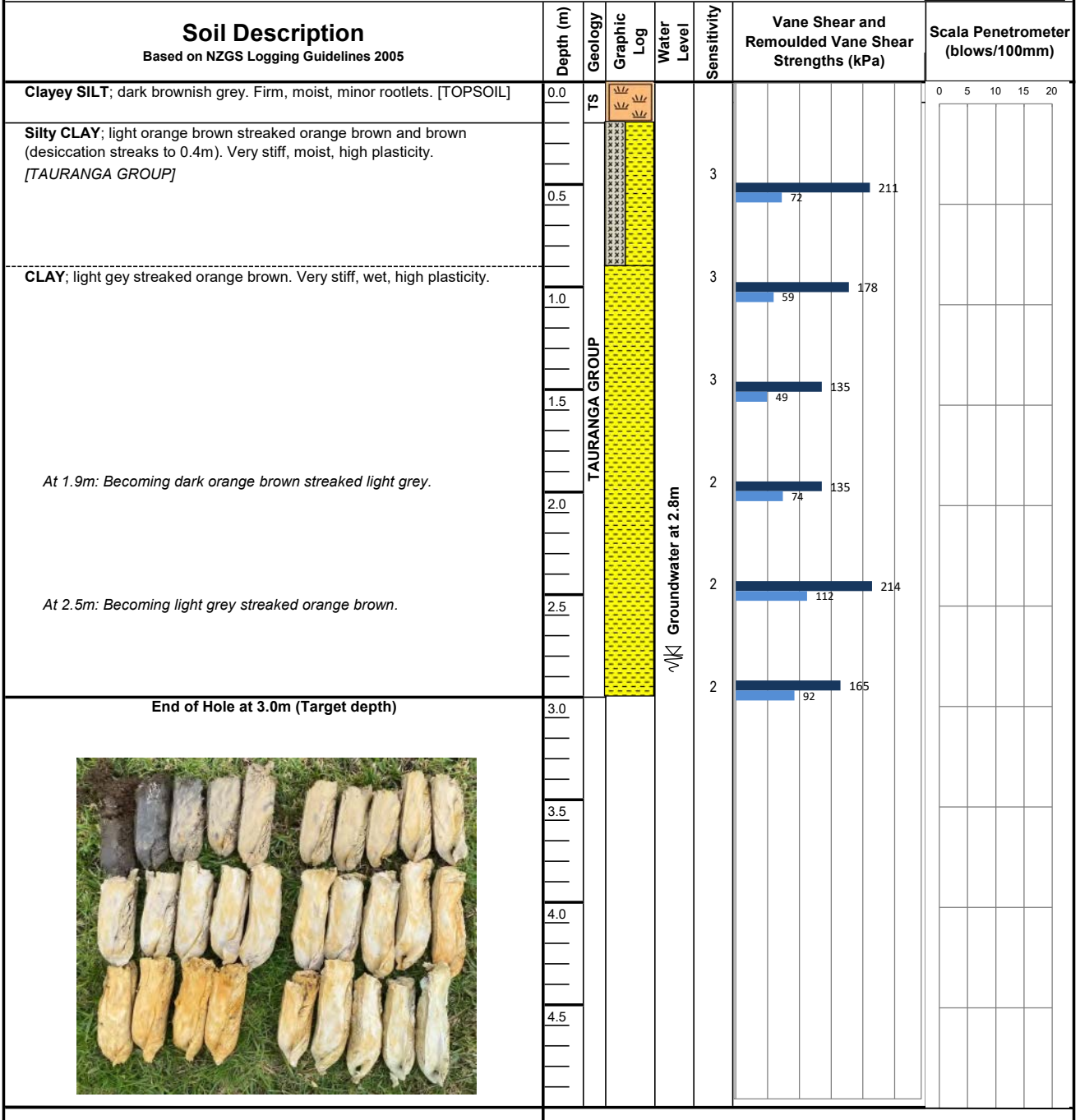
## Borehole Log - BH02

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 29/07/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 29/07/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** JMC  
**CHECKED BY:** WT



**LEGEND**

**TOPSOIL**  
 **CLAY**  
 **SILT**  
 **SAND**  
 **GRAVEL**  
 **FILL**

Corrected shear vane reading  
 Remoulded shear vane reading  
 Scala Penetrometer

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 440  
Scala penetrometer testing not undertaken.

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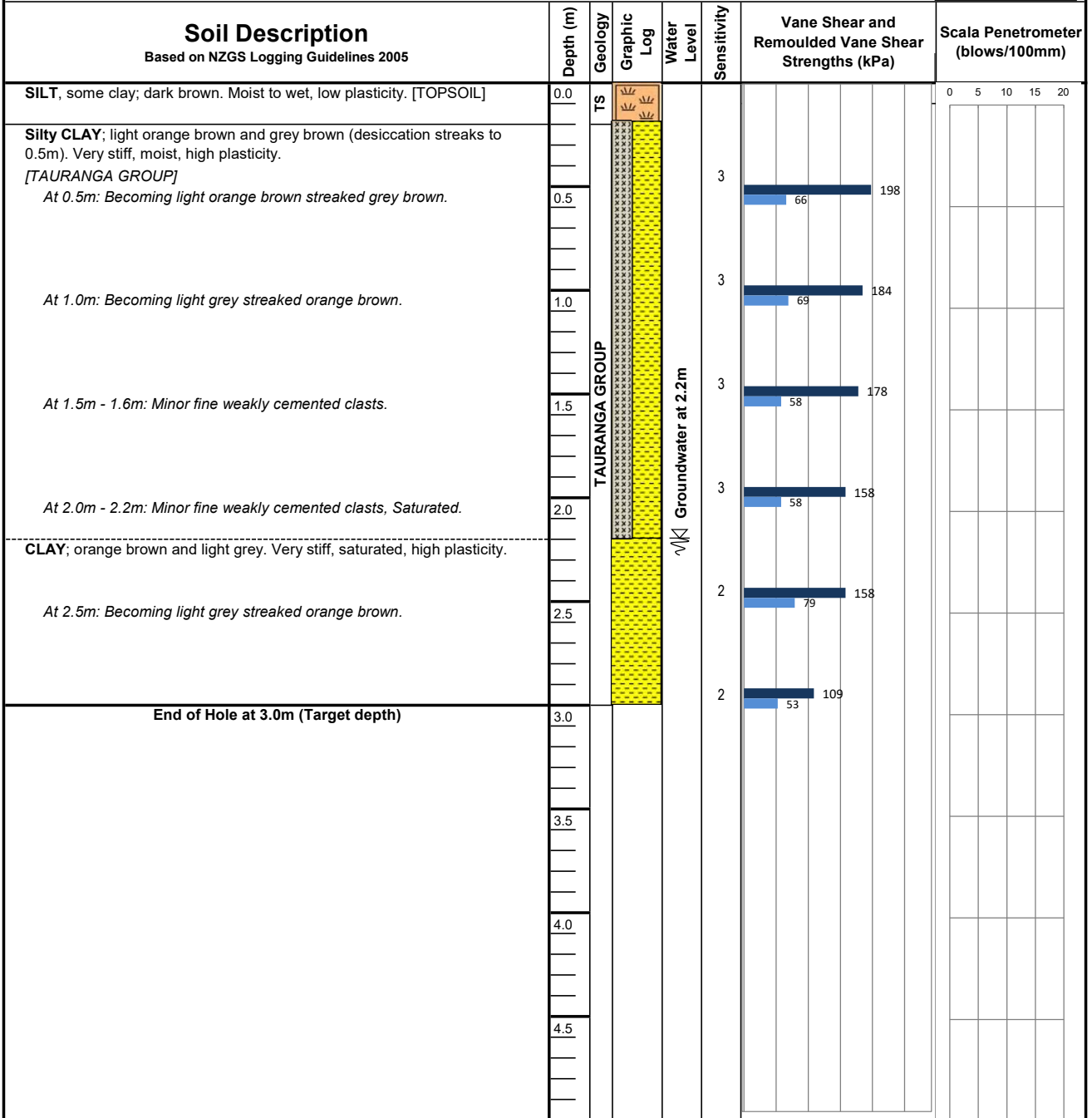
## Borehole Log - BH03

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 29/07/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 29/07/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** JMC  
**CHECKED BY:** WT



**LEGEND**

**TOPSOIL**  
 **CLAY**  
 **SILT**  
 **SAND**  
 **GRAVEL**  
 **FILL**

Corrected shear vane reading  
 Remoulded shear vane reading  
 Scala Penetrometer

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 440  
Scala penetrometer testing not undertaken.

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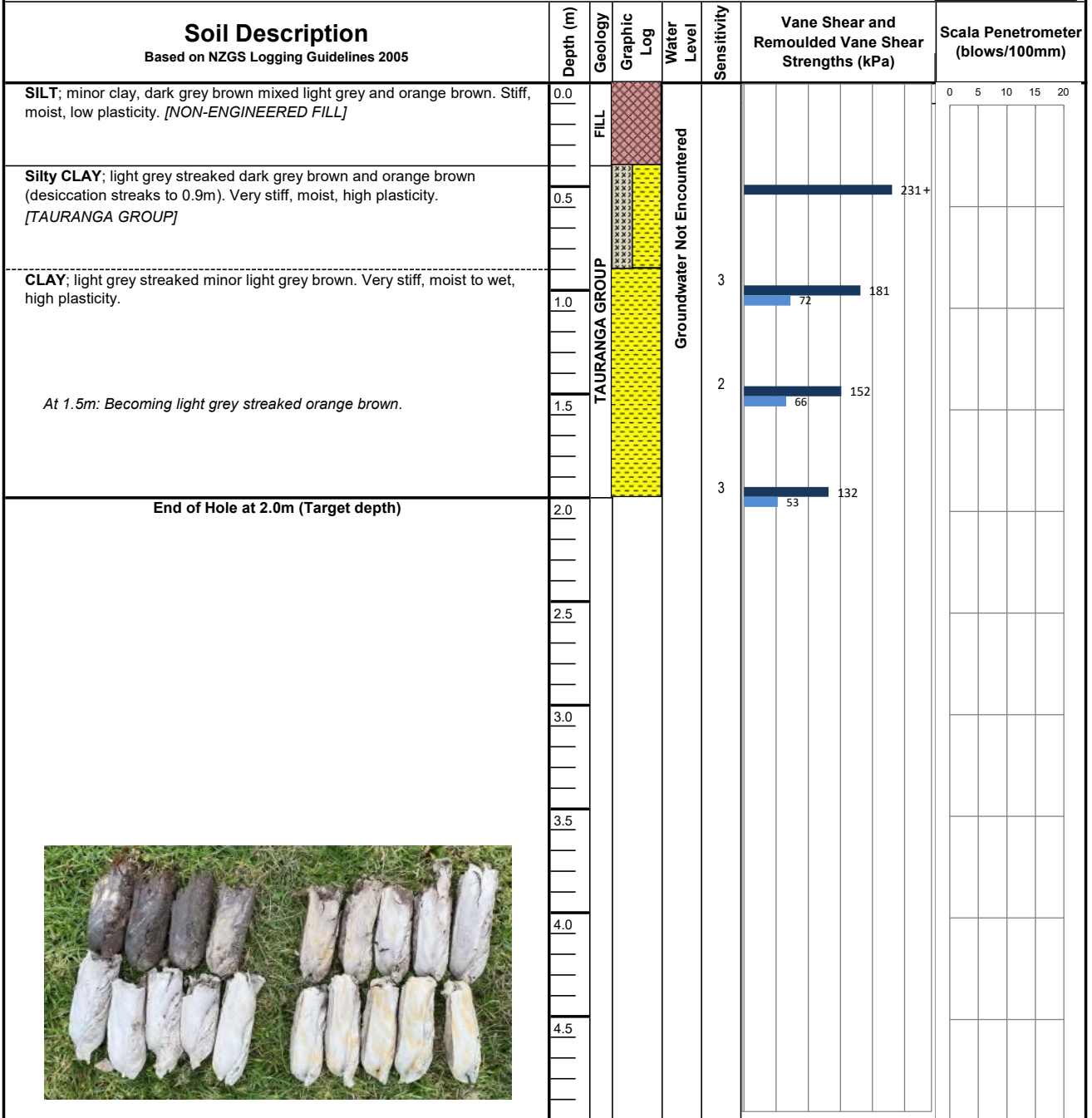
## Borehole Log - BH04

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 29/07/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 29/07/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** JMC  
**CHECKED BY:** WT



**LEGEND**

**TOPSOIL**
 **CLAY**
 **SILT**
 **SAND**
 **GRAVEL**
 **FILL**

Corrected shear vane reading  
 Remoulded shear vane reading  
 Scala Penetrometer

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 440  
Scala penetrometer testing not undertaken.



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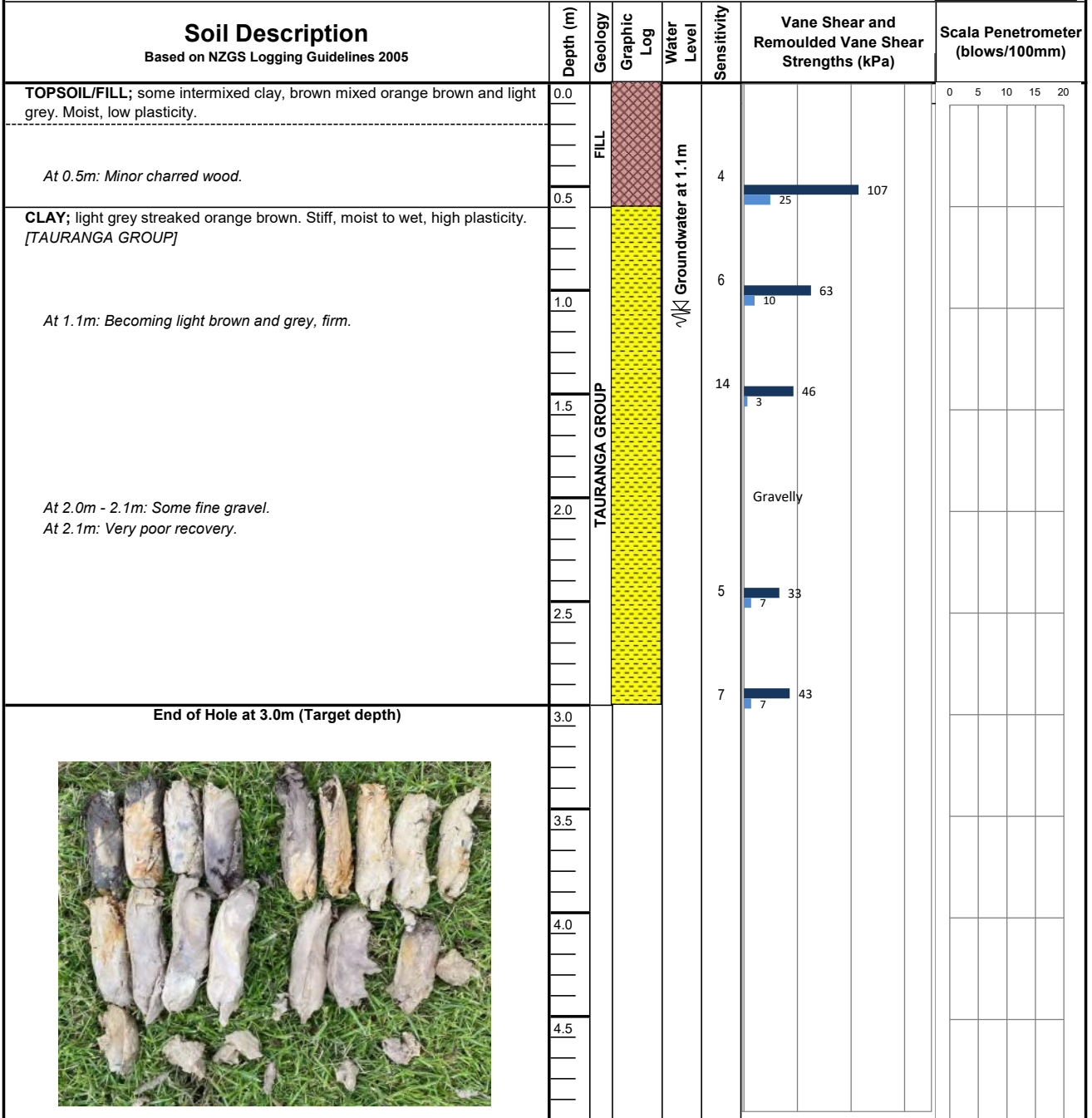
**Borehole Log - BH05**

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 29/07/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 29/07/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** JMC  
**CHECKED BY:** WT



**LEGEND**

**TOPSOIL** **CLAY** **SILT** **SAND** **GRAVEL** **FILL**

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 440  
Scala penetrometer testing not undertaken.

Corrected shear vane reading   
Remoulded shear vane reading   
Scala Penetrometer

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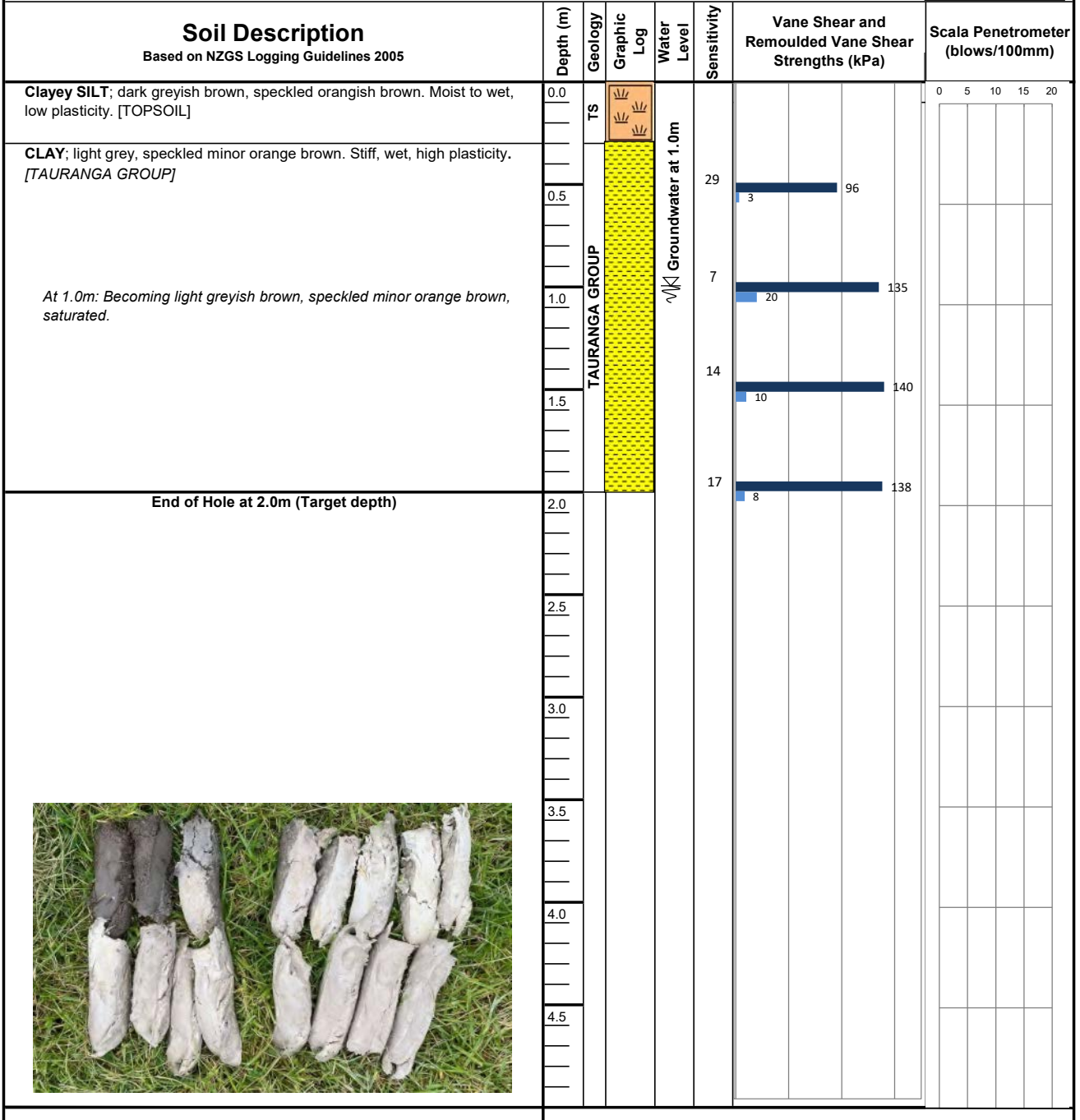
**Borehole Log - BH06**

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 29/07/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 29/07/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** JMC  
**CHECKED BY:** WT



**LEGEND**

**TOPSOIL**   **CLAY**   **SILT**   **SAND**   **GRAVEL**   **FILL**

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
 Hand Held Shear Vane S/N: 440  
 Scala penetrometer testing not undertaken.

Corrected shear vane reading   
 Remoulded shear vane reading   
 Scala Penetrometer

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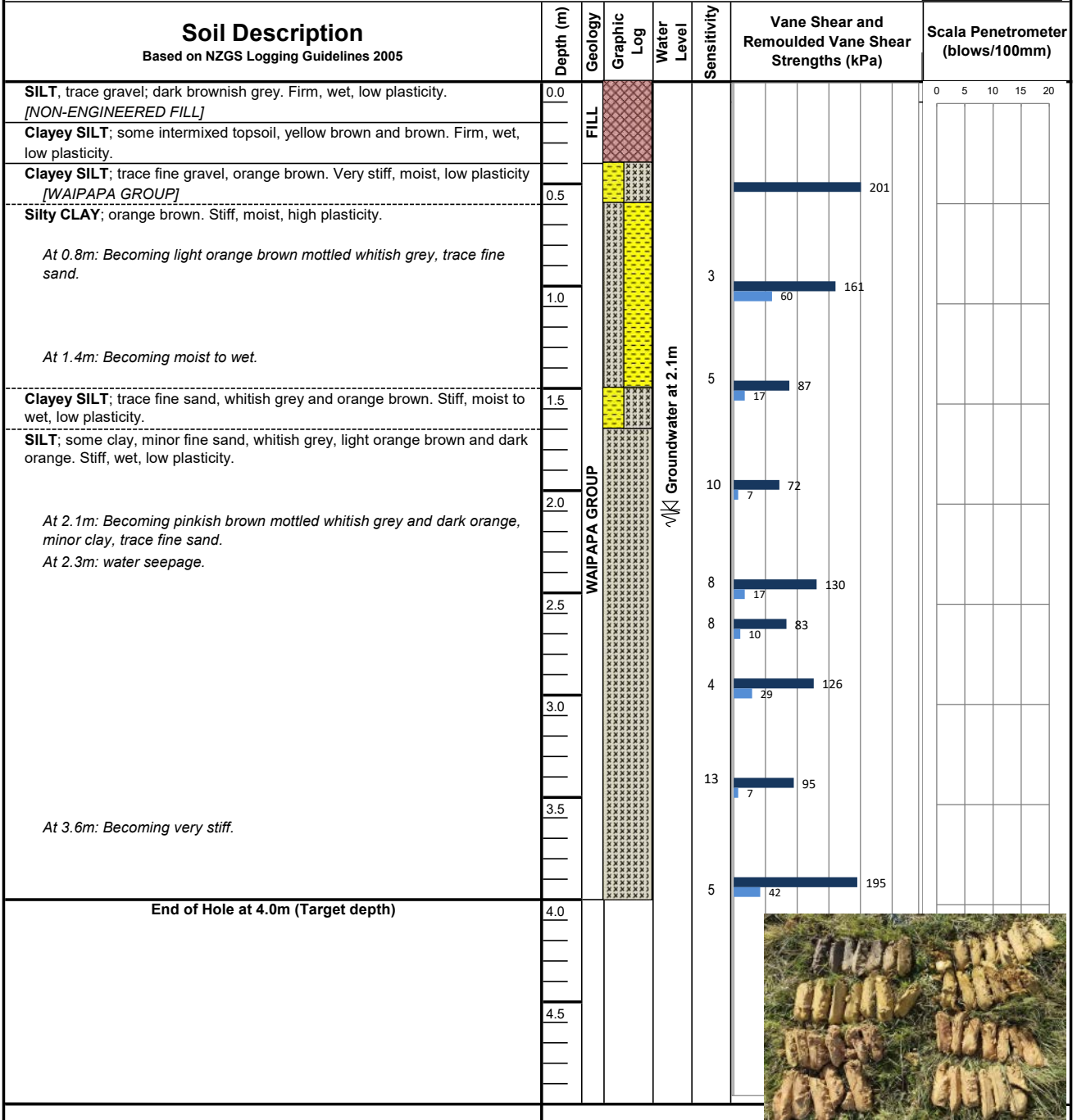
## Borehole Log - BH07

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 05/08/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 05/08/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** CN  
**CHECKED BY:** WT



**LEGEND**

**TOPSOIL**
 **CLAY**
 **SILT**
 **SAND**
 **GRAVEL**
 **FILL**

Corrected shear vane reading  
 Remoulded shear vane reading  
 Scala Penetrometer

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 2220  
Scala penetrometer testing not undertaken.

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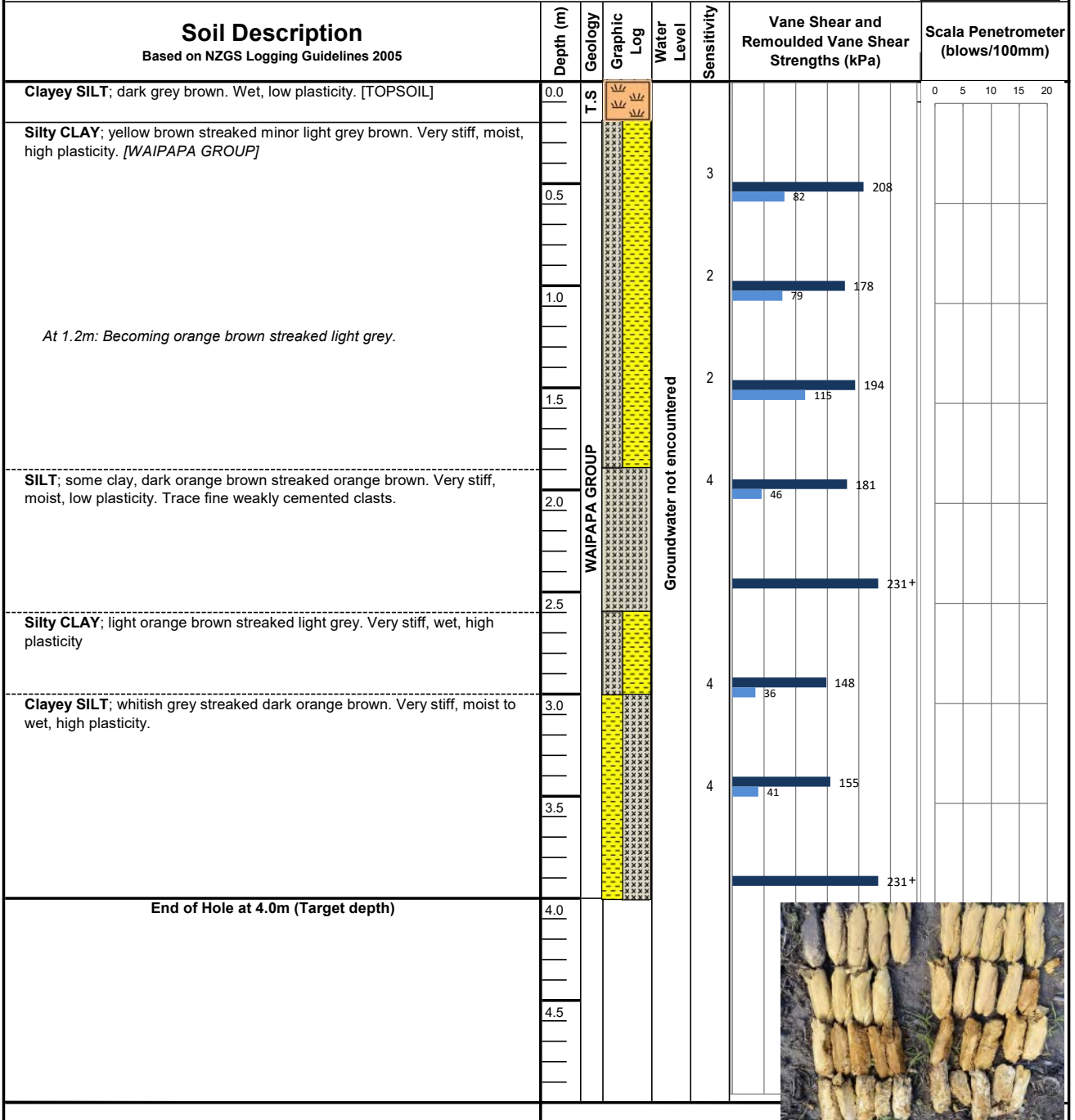
## Borehole Log - BH08

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 05/08/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 05/08/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** JMC  
**CHECKED BY:** WT



**LEGEND**

**TOPSOIL**  
 **CLAY**  
 **SILT**  
 **SAND**  
 **GRAVEL**  
 **FILL**

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 440  
Scala penetrometer testing not undertaken.

Corrected shear vane reading  
 Remoulded shear vane reading  
 Scala Penetrometer



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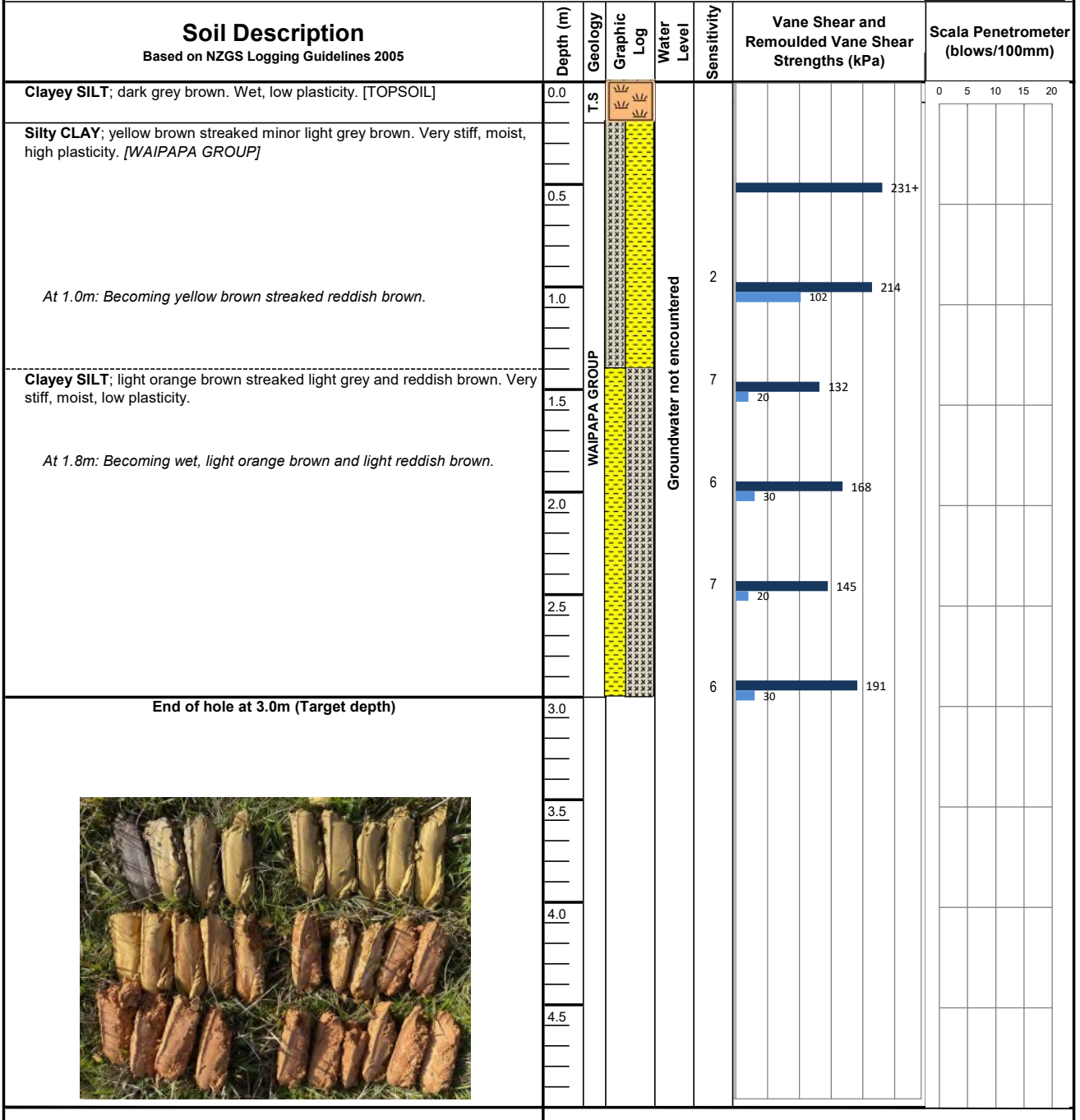
## Borehole Log - BH09

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 05/08/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 05/08/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** JMC  
**CHECKED BY:** WT



**LEGEND**

**TOPSOIL**  
 **CLAY**  
 **SILT**  
 **SAND**  
 **GRAVEL**  
 **FILL**

Corrected shear vane reading  
 Remoulded shear vane reading  
 Scala Penetrometer

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 440  
Scala penetrometer testing not undertaken.



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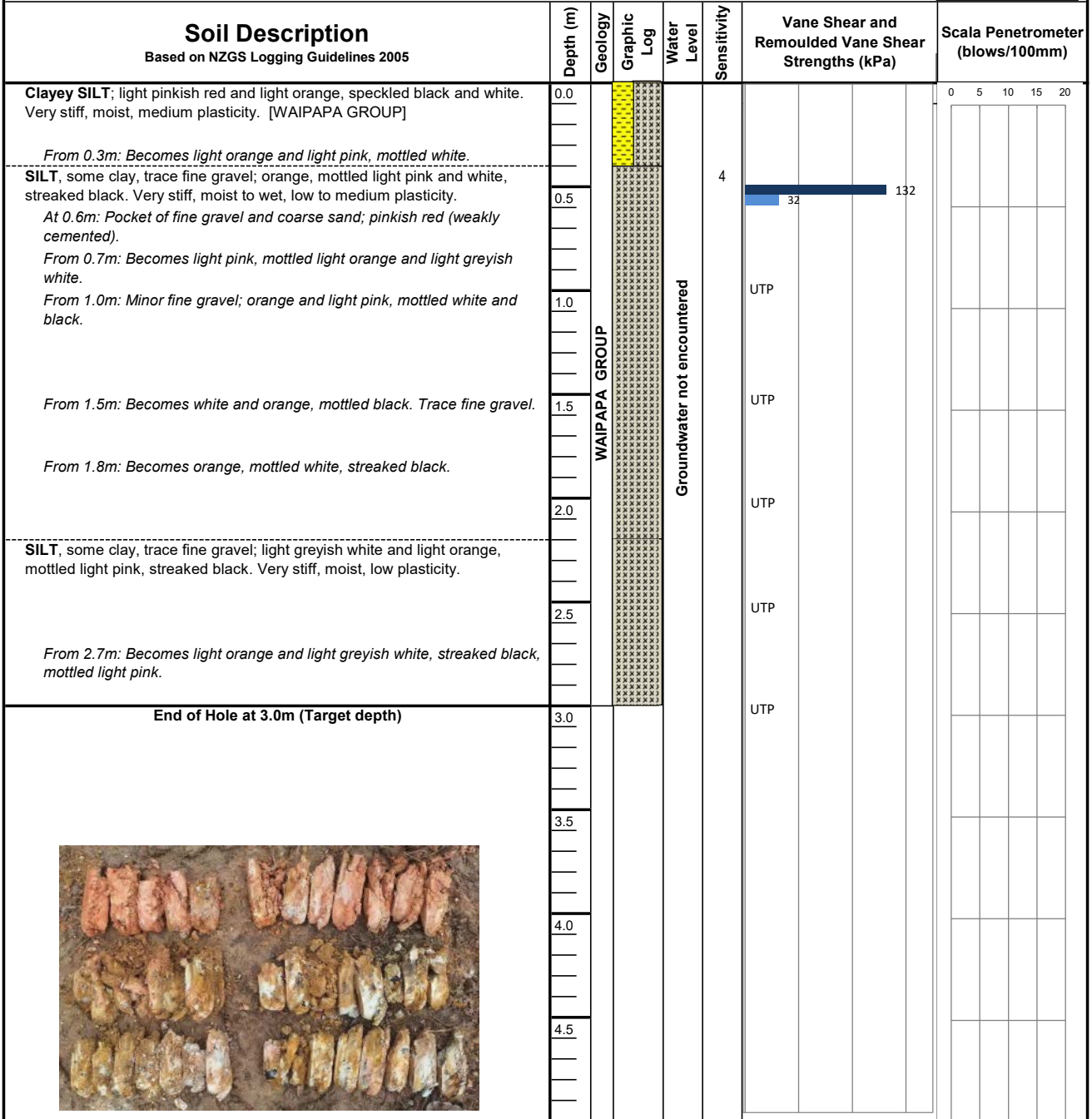
**Borehole Log - BH11**

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 31/07/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 31/07/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** JP  
**CHECKED BY:** WT



**LEGEND**

**TOPSOIL**  
 **CLAY**  
 **SILT**  
 **SAND**  
 **GRAVEL**  
 **FILL**

Corrected shear vane reading  
 Remoulded shear vane reading  
 Scala Penetrometer

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
 Hand Held Shear Vane S/N: 2220  
 Scala penetrometer testing not undertaken. Groundwater not encountered.

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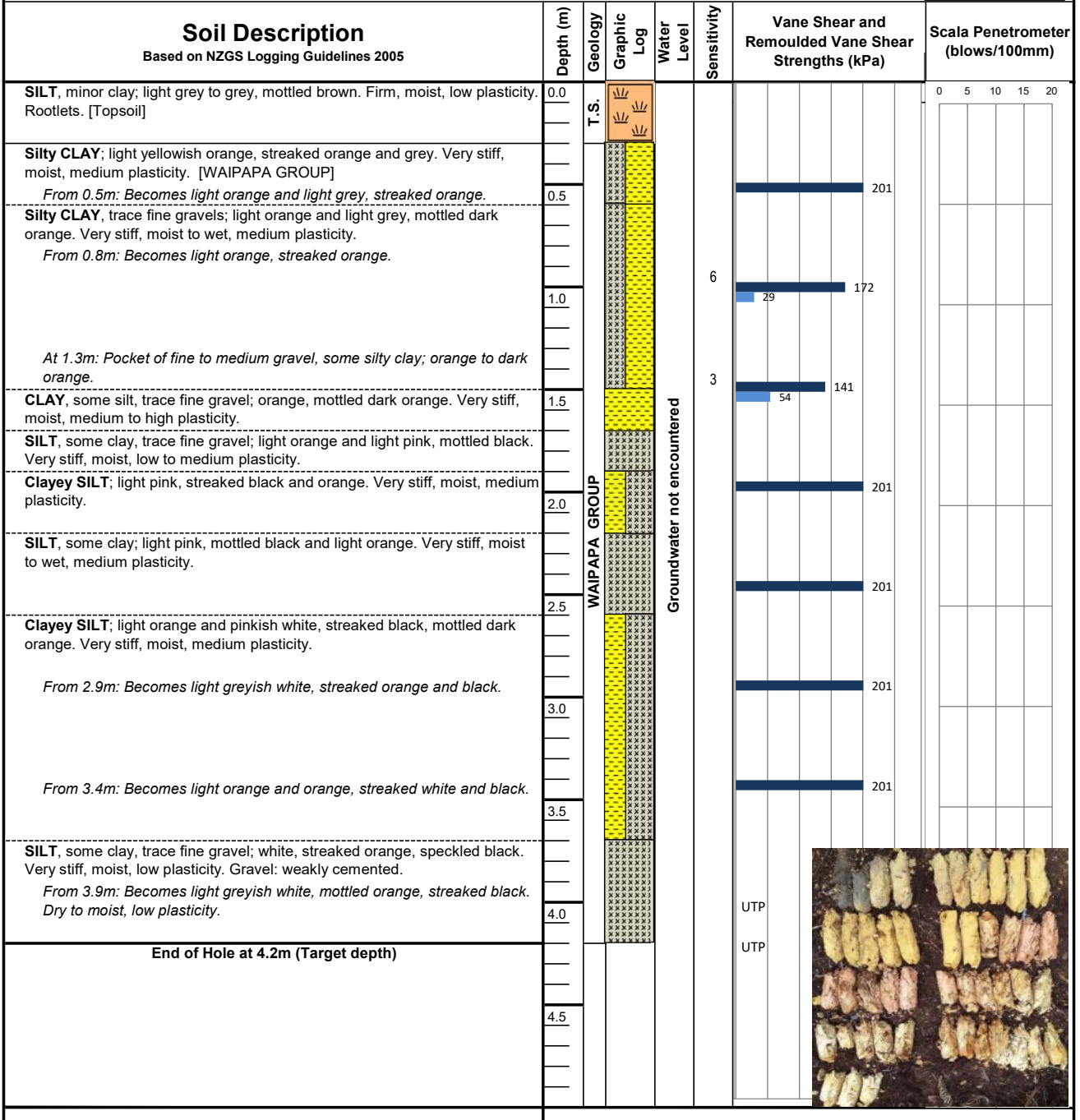
**Borehole Log - BH12**

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 31/07/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 31/07/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** JP  
**CHECKED BY:** WT



**LEGEND**

**TOPSOIL** **CLAY** **SILT** **SAND** **GRAVEL** **FILL**

Corrected shear vane reading   
Remoulded shear vane reading   
Scala Penetrometer

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 2220  
Scala penetrometer testing not undertaken. Groundwater not encountered.





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## Borehole Log - BH14

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 01/08/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 01/08/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** JP  
**CHECKED BY:** WT

Soil Description <small>Based on NZGS Logging Guidelines 2005</small>	Depth (m)	Geology	Graphic Log	Water Level	Sensitivity	Vane Shear and Remoulded Vane Shear Strengths (kPa)	Scala Penetrometer (blows/100mm)
<b>Gravelly SILT</b> , minor clay; light orange and light grey, streaked orange. Very stiff, dry to moist, low plasticity. Gravel: fine, weakly cemented. [Fill]	0.0	FILL		Groundwater not encountered			0 5 10 15 20
<b>SILT</b> , some fine gravel, minor clay; light grey and bluish grey, streaked orange. Very stiff, moist, low plasticity. [WAIPAPA GROUP]		WAIPAPA GROUP				UTP	
<i>From 0.5m: Becomes bluish grey and light pink, streaked orange. From 0.6m: Becomes mottled orange to dark orange.</i>	0.5						
<b>SILT</b> , some fine gravel, trace clay; light bluish grey, streaked orange and light pink. Very stiff, dry to moist, no plasticity. Gravel: weakly cemented.						UTP	
<i>From 0.9m: Becomes moist. From 1.1m: Becomes light pink and pinkish orange, mottled grey.</i>	1.0				UTP		
<b>End of Hole at 1.2m (Unable to Penetrate)</b>							
	1.5						
	2.0						
	2.5						
	3.0						
	3.5						
	4.0						
	4.5						



**LEGEND**

**TOPSOIL**
 **CLAY**
 **SILT**
 **SAND**
 **GRAVEL**
 **FILL**

Corrected shear vane reading  
 Remoulded shear vane reading  
 Scala Penetrometer

**Note:** UTP = Unable to penetrate.

Hand Held Shear Vane S/N: 2220

Scala penetrometer testing undertaken from 0.9m to 1.5m during advancement of auger. Groundwater not encountered.

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## Borehole Log - BH15

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 01/08/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 01/08/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** JMC  
**CHECKED BY:** WT

Soil Description <small>Based on NZGS Logging Guidelines 2005</small>	Depth (m)	Geology	Graphic Log	Water Level	Sensitivity	Vane Shear and Remoulded Vane Shear Strengths (kPa)	Scala Penetrometer (blows/100mm)
<b>Clayey SILT</b> ; dark greyish brown. Firm, wet, low plasticity. Trace rootlets. [TOPSOIL]	0.0	T.S.					0 5 10 15 20
<b>Silty CLAY</b> ; yellowish brown, streaked light greyish brown. Very stiff, moist, high plasticity. [WAIPAPA GROUP]  <i>From 0.5m: Becomes yellowish brown.</i>	0.5	WAIPAPA GROUP		Groundwater not encountered		231	
 <i>At 1.5m: Becomes yellowish brown, streaked light grey.</i>	1.0					231	
 <i>At 1.9m: Becomes yellowish brown, streaked reddish brown and light grey.</i>	1.5					231	
	2.0					231	
<b>Clayey SILT</b> ; light grey, streaked orange. Very stiff, moist, low plasticity.	2.5					UTP	
<b>Silty CLAY</b> ; yellowish brown, minor reddish brown streaks. Very stiff to hard, moist, high plasticity.						UTP	
<b>End of Hole at 3.0m (Target depth)</b>	3.0						
	3.5						
	4.0						
	4.5						

**LEGEND**

**TOPSOIL**  
 **CLAY**  
 **SILT**  
 **SAND**  
 **GRAVEL**  
 **FILL**

Corrected shear vane reading  
 Remoulded shear vane reading  
 Scala Penetrometer

**Note:** UTP = Unable to penetrate.  
Hand Held Shear Vane S/N: 440  
Scala penetrometer testing not undertaken. Groundwater not encountered.

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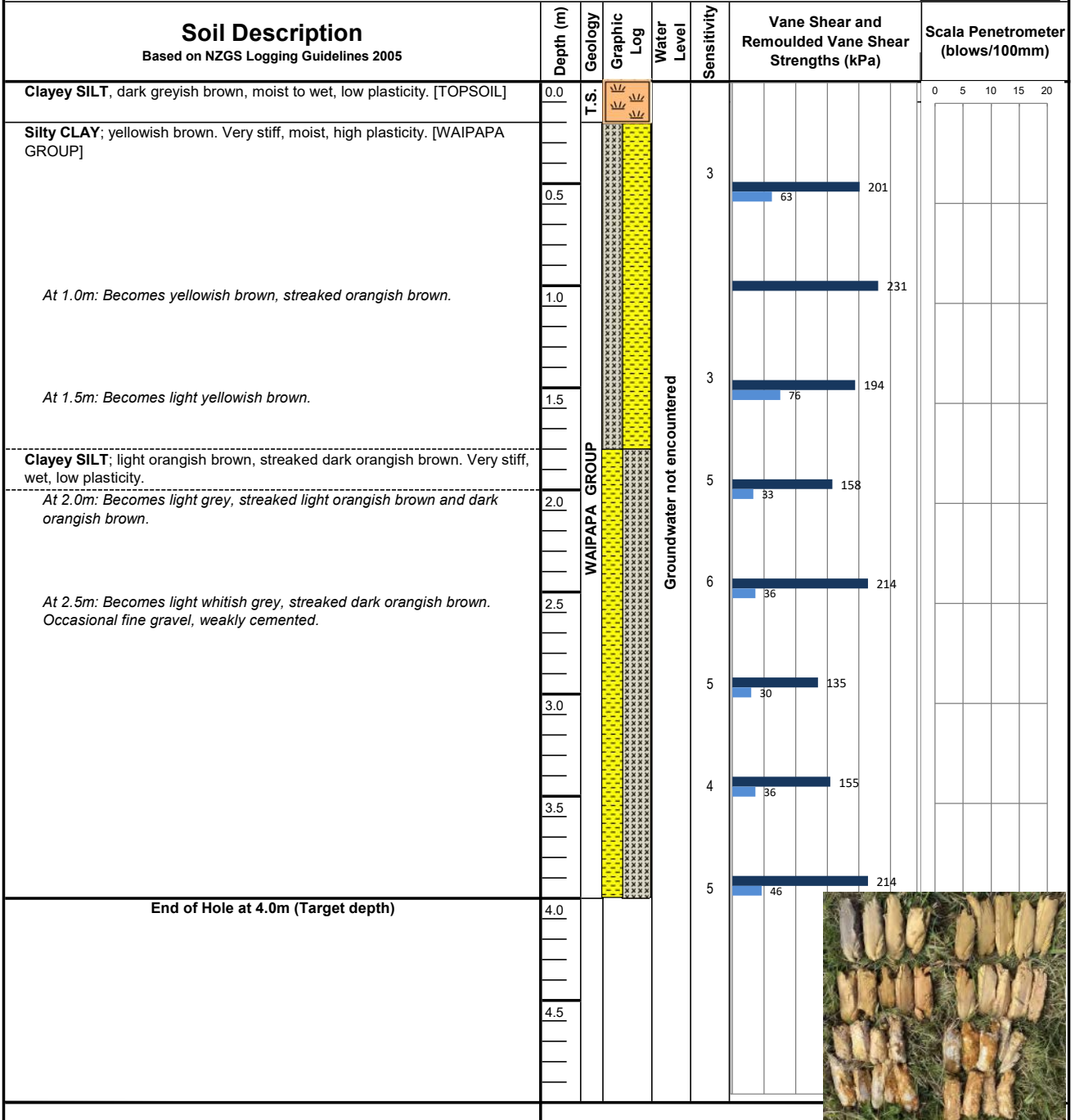
## Borehole Log - BH16

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 01/08/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 01/08/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** JMC  
**CHECKED BY:** WT



**LEGEND**

**TOPSOIL**  
 **CLAY**  
 **SILT**  
 **SAND**  
 **GRAVEL**  
 **FILL**

Corrected shear vane reading  
 Remoulded shear vane reading  
 Scala Penetrometer

**Note:** UTP = Unable to penetrate.  
Hand Held Shear Vane S/N: 440  
Scala penetrometer testing not undertaken. Groundwater not encountered.



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**Borehole Log - BH17**

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 01/08/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 01/08/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** JP  
**CHECKED BY:** WT

Soil Description Based on NZGS Logging Guidelines 2005	Depth (m)	Geology	Graphic Log	Water Level	Sensitivity	Vane Shear and Remoulded Vane Shear Strengths (kPa)		Scala Penetrometer (blows/100mm)					
						Corrected	Remoulded	0	5	10	15	20	
<b>Silty CLAY</b> ; light orange. Very stiff, moist, medium plasticity. [WAIPAPA GROUP]  <i>From 0.3m: Becomes light orange to orange, streaked light pinkish red.</i>	0.0 0.5	WAIPAPA GROUP		Groundwater not encountered	3	63	184						
<i>From 0.7m: Becomes light orange to orange, streaked orange and light grey.</i>	0.5					23	175						
<b>SILT</b> , some clay, orange and whitish grey. Very stiff, moist, low plasticity.  <i>From 1.1m: Becomes moist to wet.</i>	1.0					201							
<b>Clayey SILT</b> ; light orange to orange, mottled whitish grey, streaked dark orange. Very stiff, moist, low to medium plasticity.	1.5					UTP							
<b>SILT</b> , some clay; light grey and light orange, streaked orange. Very stiff, moist to wet, low plasticity.  <i>From 1.9m: Becomes light orange, streaked light grey.</i>	2.0					UTP							
<b>SILT</b> , some clay, minor fine gravel; light grey and orange, mottled dark orange. Very stiff, moist, low plasticity. Minor fine gravel weakly cemented clasts.  <i>From 2.5m: Becomes light grey and light orange, mottled black. Trace fine gravel.</i>	2.5					UTP							
<b>SILT</b> , minor fine gravel and coarse sand, trace clay; brownish orange, speckled black. Very stiff, moist, no plasticity. Gravel: weakly cemented.	3.0	UTP											
<b>End of Hole at 3.0m (Target depth)</b>	3.0												
	3.5												
	4.0												
	4.5												

**LEGEND**

**TOPSOIL** **CLAY** **SILT** **SAND** **GRAVEL** **FILL**

Corrected shear vane reading   
Remoulded shear vane reading   
Scala Penetrometer

**Note:** UTP = Unable to penetrate.  
Hand Held Shear Vane S/N: 2220  
Scala penetrometer testing not undertaken. Groundwater not encountered.

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## Borehole Log - BH18

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 01/08/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 01/08/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** JMC  
**CHECKED BY:** WT

Soil Description <small>Based on NZGS Logging Guidelines 2005</small>	Depth (m)	Geology	Graphic Log	Water Level	Sensitivity	Vane Shear and Remoulded Vane Shear Strengths (kPa)	Scala Penetrometer (blows/100mm)
<b>SILT</b> ; brown, wet, low plasticity. Trace fine gravel. [FILL]	0.0						0 5 10 15 20
<b>Silty CLAY</b> ; light yellowish brown, mottled light grey. Very stiff, moist, low plasticity. [WAIPAPA GROUP]	0.5					5 23 112	
<b>SILT</b> , some clay; light grey, mottled dark orangish brown. Very stiff to hard, moist to wet, low plasticity. Occasional fine weakly cemented clasts.	1.0					11 231	
	1.5					11 13 145	
	2.0					231	
<i>From 2.5m: Trace clay. Very hard to drill.</i>	2.5					UTP	
<b>End of Hole at 3.0m (Target depth)</b>	3.0					UTP	
	3.5						
	4.0						
	4.5						

**LEGEND**

**TOPSOIL**
 **CLAY**
 **SILT**
 **SAND**
 **GRAVEL**
 **FILL**

Corrected shear vane reading	█
Remoulded shear vane reading	█
Scala Penetrometer	●

**Note:** UTP = Unable to penetrate.  
Hand Held Shear Vane S/N: 440  
Scala penetrometer testing not undertaken. Groundwater not encountered.

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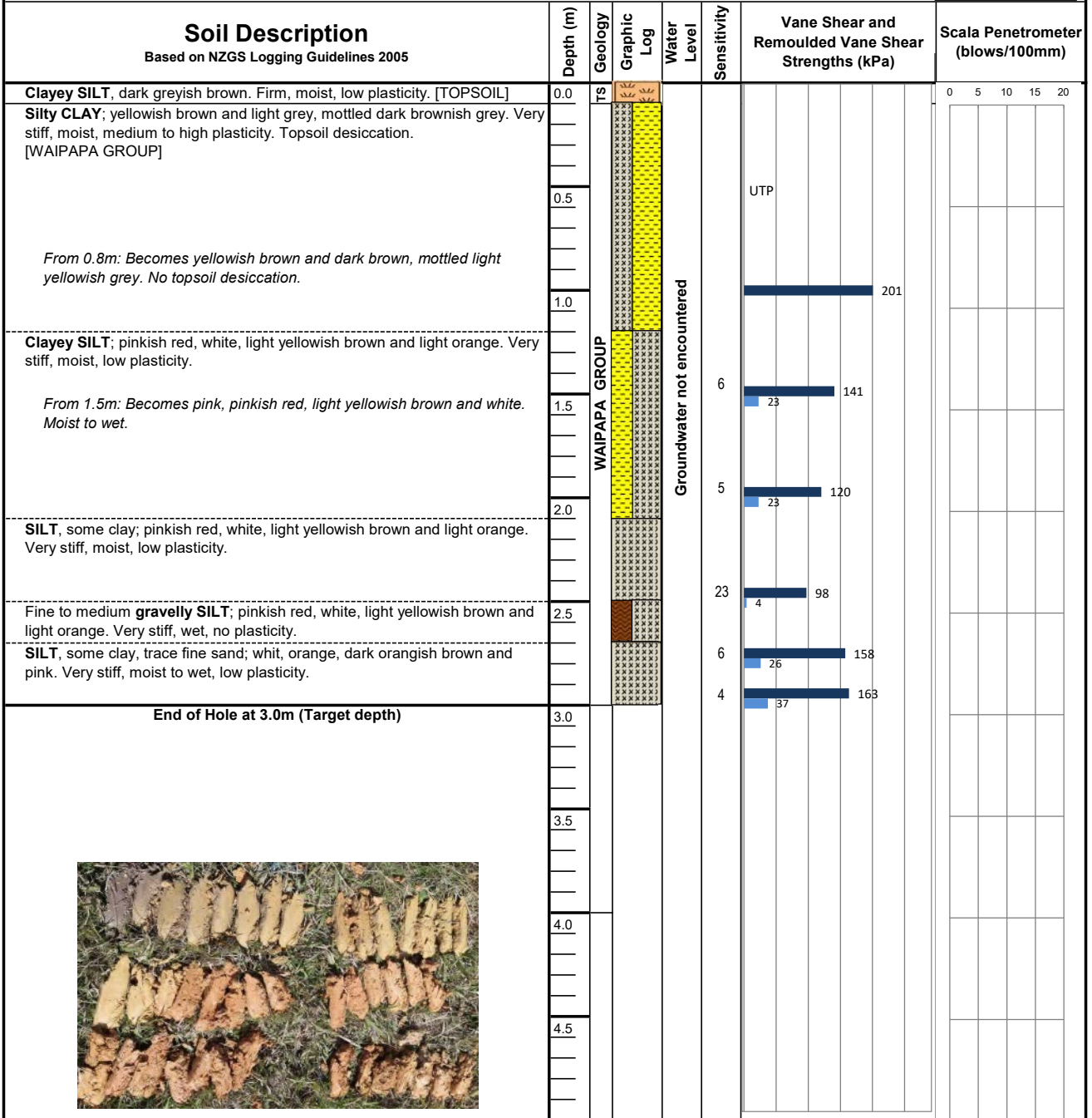
**Borehole Log - BH19**

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 01/08/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 01/08/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** CN  
**CHECKED BY:** WT



**LEGEND**

**TOPSOIL** **CLAY** **SILT** **SAND** **GRAVEL** **FILL**

Corrected shear vane reading   
Remoulded shear vane reading   
Scala Penetrometer

**Note:** UTP = Unable to penetrate.  
Hand Held Shear Vane S/N: 2220  
Scala penetrometer testing not undertaken. Groundwater not encountered.

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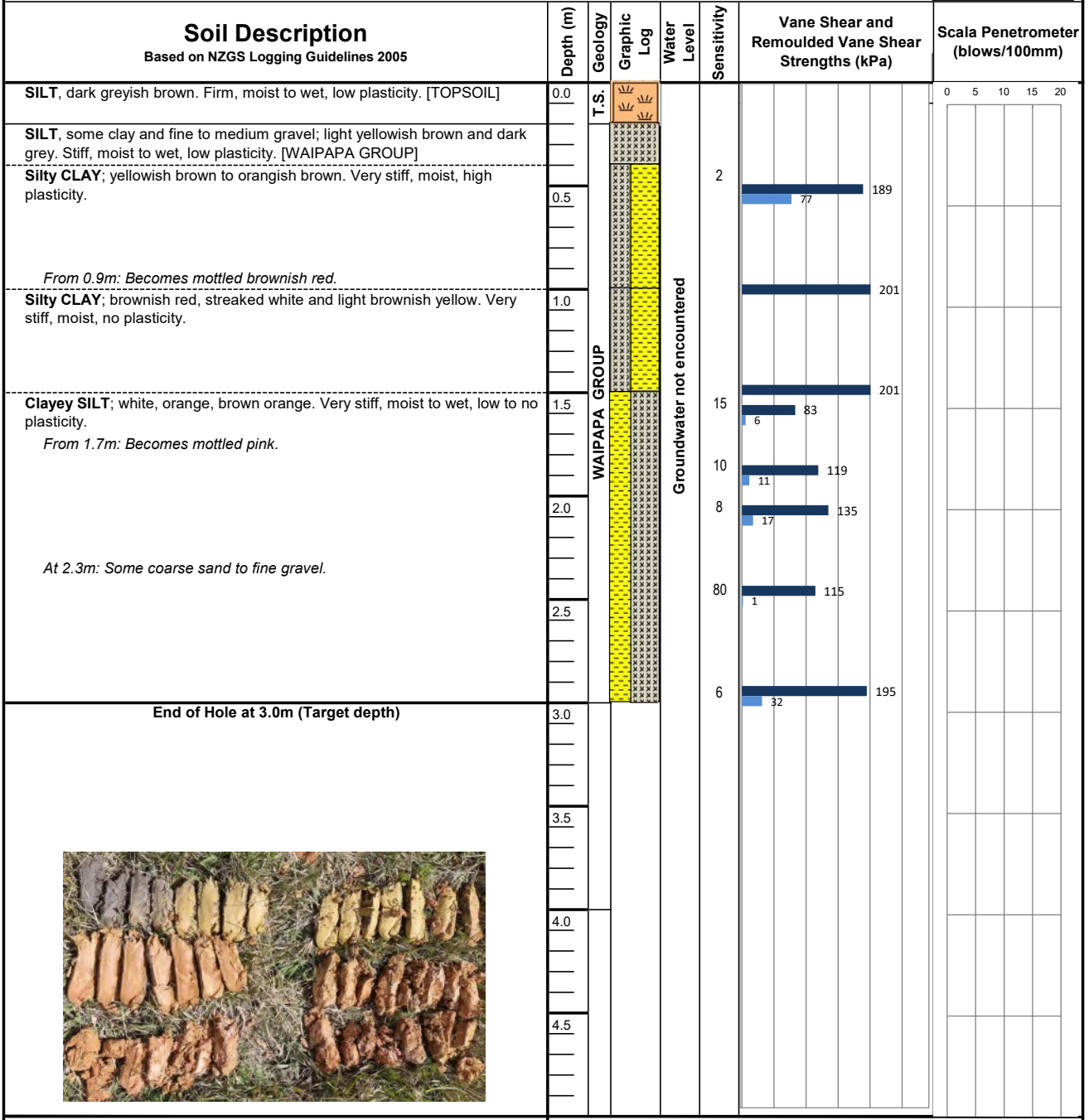
## Borehole Log - BH20

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 01/08/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 01/08/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** CN  
**CHECKED BY:** WT



**LEGEND**

- TOPSOIL**    **CLAY**    **SILT**    **SAND**    **GRAVEL**    **FILL**

Corrected shear vane reading	
Remoulded shear vane reading	
Scala Penetrometer	

**Note:** UTP = Unable to penetrate.  
Hand Held Shear Vane S/N: 2220  
Scala penetrometer testing not undertaken. Groundwater not encountered.



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## Borehole Log - BH21

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 01/08/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 01/08/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** JP  
**CHECKED BY:** WT

Soil Description <small>Based on NZGS Logging Guidelines 2005</small>	Depth (m)	Geology	Graphic Log	Water Level	Sensitivity	Vane Shear and Remoulded Vane Shear Strengths (kPa)	Scala Penetrometer (blows/100mm)
<b>SILT</b> , minor clay; dark brown to dark greyish brown. Firm, wet, low plasticity. Rootlets. [Topsoil]	0.0	T.S.					0 5 10 15 20
<b>Clayey SILT</b> ; light orange and light brown, streaked orange. Very stiff, moist, medium plasticity. [WAIPAPA GROUP]		WAIPAPA GROUP		Groundwater not encountered	UTP		
<b>Silty CLAY</b> ; light orange to orange. Very stiff, moist, medium plasticity.	0.5						
<i>From 0.9m: Becomes grey, streaked light pinkish red.</i>							
<b>Clayey SILT</b> ; light orange and orangish red, streaked red. Very stiff, moist, medium plasticity.	1.0						
<i>From 1.3m: Becomes light orange and light red, streaked red and white.</i>							
<b>SILT</b> , some clay; light pinkish red and red, mottled white. Very stiff, moist to wet, low plasticity.	1.5						
<i>From 2.0m: Becomes pinkish red.</i>	2.0						
<b>SILT</b> , some clay, trace fine gravel; pinkish red, streaked orange and white. Very stiff, moist, low plasticity.							
<i>From 2.6m: Becomes light pink and white, streaked orangish red.</i>	2.5						
<b>End of Hole at 3.0m (Target depth)</b>	3.0						
	3.5						
	4.0						
	4.5						

**LEGEND**

**TOPSOIL**  
 **CLAY**  
 **SILT**  
 **SAND**  
 **GRAVEL**  
 **FILL**

Corrected shear vane reading  
 Remoulded shear vane reading  
 Scala Penetrometer

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 2220  
Scala penetrometer testing not undertaken. Groundwater not encountered.

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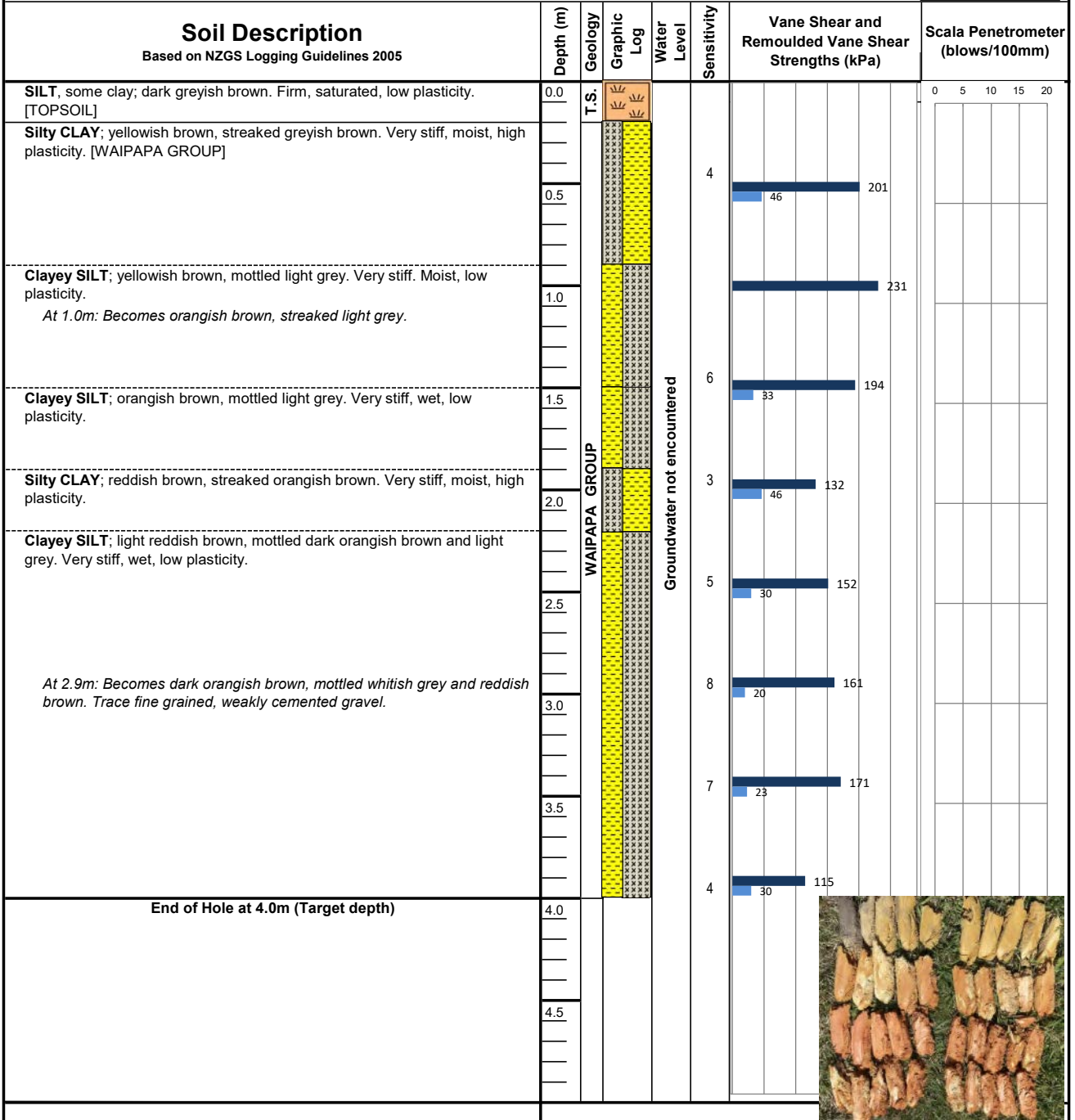
## Borehole Log - BH22

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 05/08/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 05/08/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** JMC  
**CHECKED BY:** WT



**LEGEND**

**TOPSOIL**  
 **CLAY**  
 **SILT**  
 **SAND**  
 **GRAVEL**  
 **FILL**

Corrected shear vane reading  
 Remoulded shear vane reading  
 Scala Penetrometer

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 440  
Scala penetrometer testing not undertaken. Groundwater not encountered.

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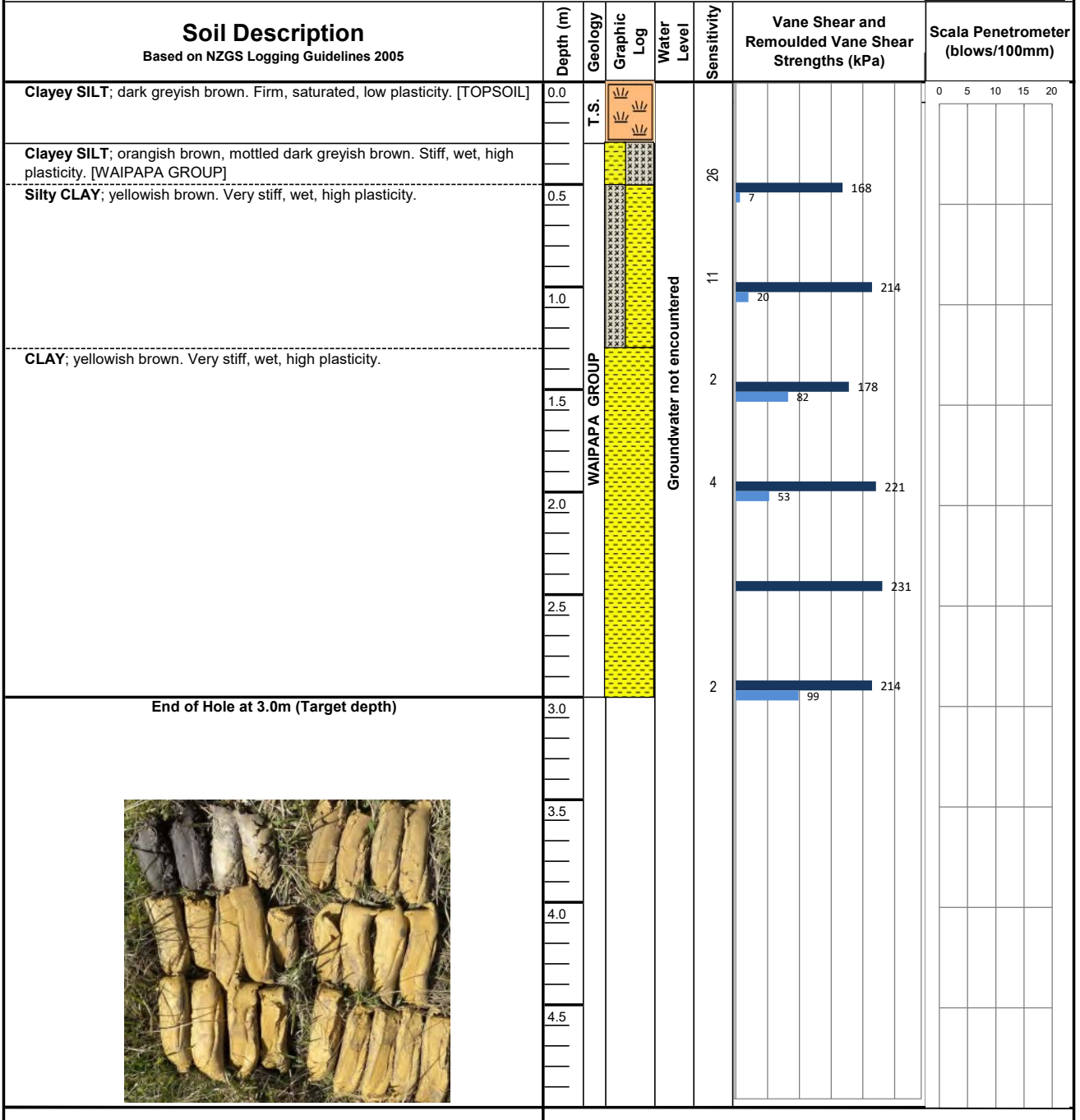
## Borehole Log - BH23

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 01/08/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 01/08/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** JMC  
**CHECKED BY:** WT



**LEGEND**

**TOPSOIL**  
 **CLAY**  
 **SILT**  
 **SAND**  
 **GRAVEL**  
 **FILL**

Corrected shear vane reading  
 Remoulded shear vane reading  
 Scala Penetrometer

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 440  
Scala penetrometer testing not undertaken. Groundwater not encountered.

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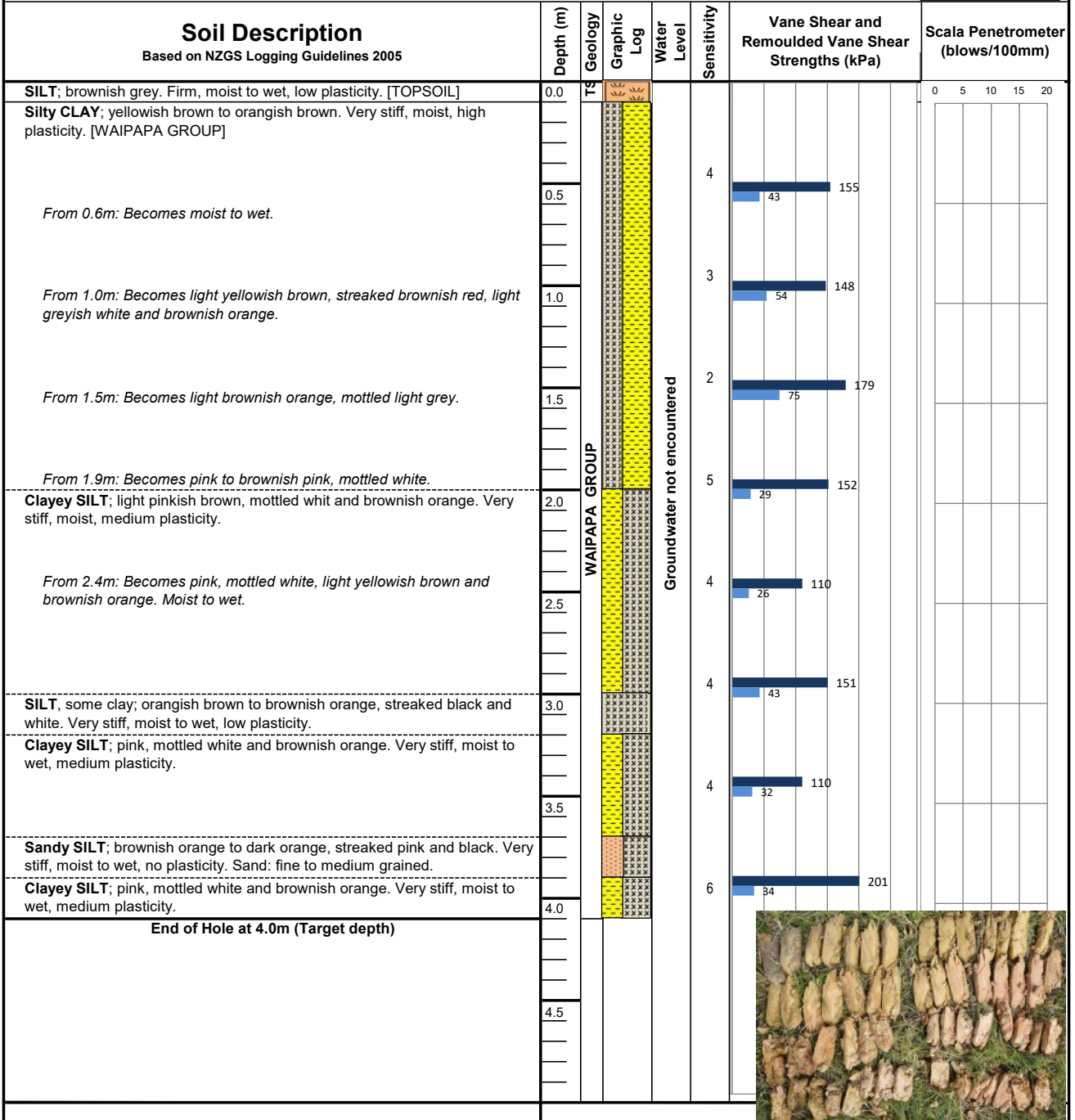
**Borehole Log - BH24**

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 05/08/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 05/08/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** CN  
**CHECKED BY:** WT



**LEGEND**

- TOPSOIL**
- CLAY**
- SILT**
- SAND**
- GRAVEL**
- FILL**

Corrected shear vane reading   
Remoulded shear vane reading   
Scala Penetrometer

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 2220  
Scala penetrometer testing not undertaken. Groundwater not encountered.



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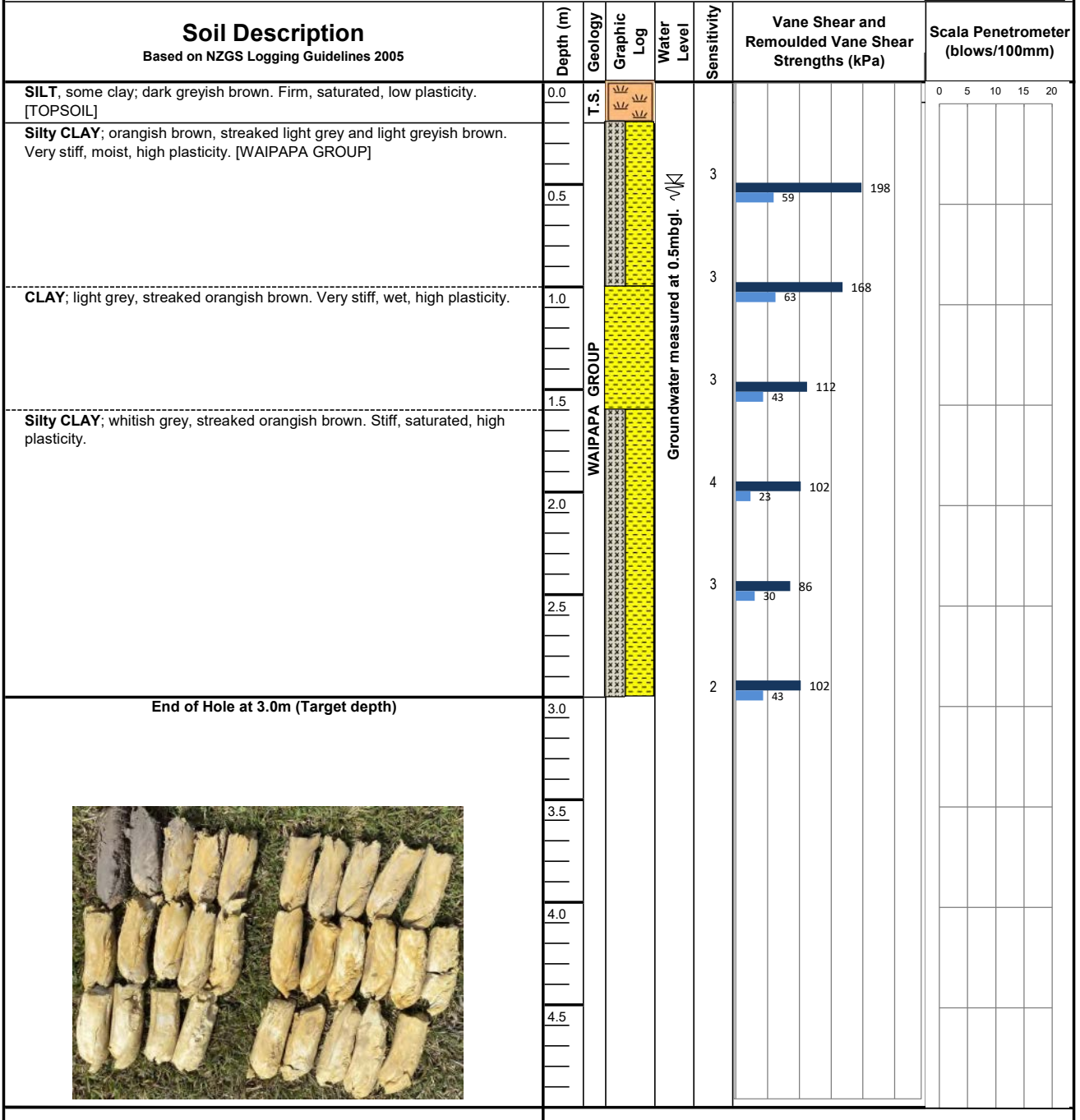
## Borehole Log - BH25

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 05/08/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 05/08/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** JMC  
**CHECKED BY:** WT



**LEGEND**

<b>TOPSOIL</b>	<b>CLAY</b>	<b>SILT</b>	<b>SAND</b>	<b>GRAVEL</b>	<b>FILL</b>	Corrected shear vane reading
						Remoulded shear vane reading
						Scala Penetrometer

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 440  
Scala penetrometer testing not undertaken. Groundwater measured at 0.5mbgl. Water seepage from 2.0m.

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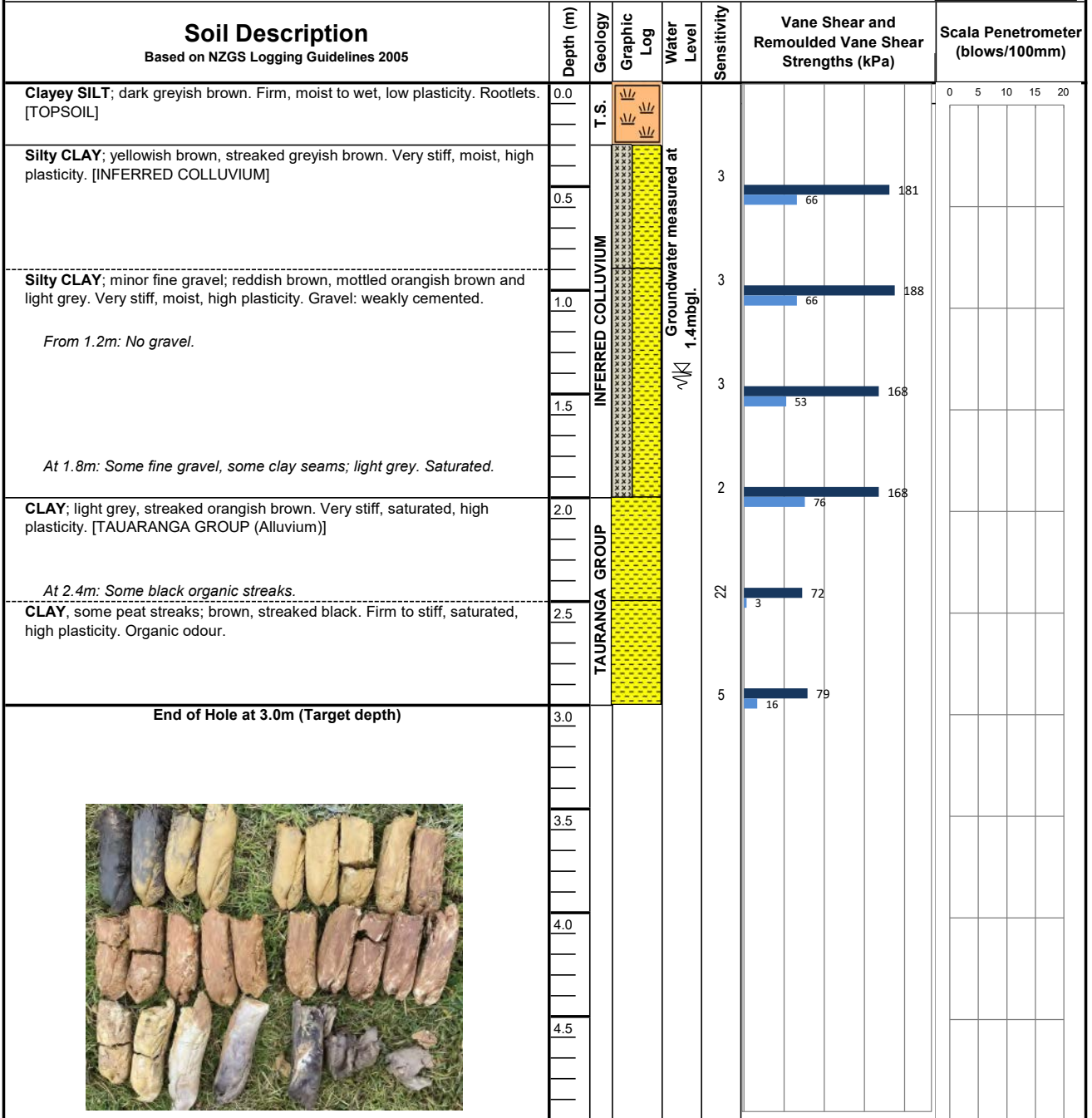
**Borehole Log - BH26**

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 31/07/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 31/07/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** JMC  
**CHECKED BY:** WT



**LEGEND**

**TOPSOIL** **CLAY** **SILT** **SAND** **GRAVEL** **FILL**

Corrected shear vane reading   
Remoulded shear vane reading   
Scala Penetrometer

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 440  
Scala penetrometer testing not undertaken. Groundwater measured at 1.4mbgl.

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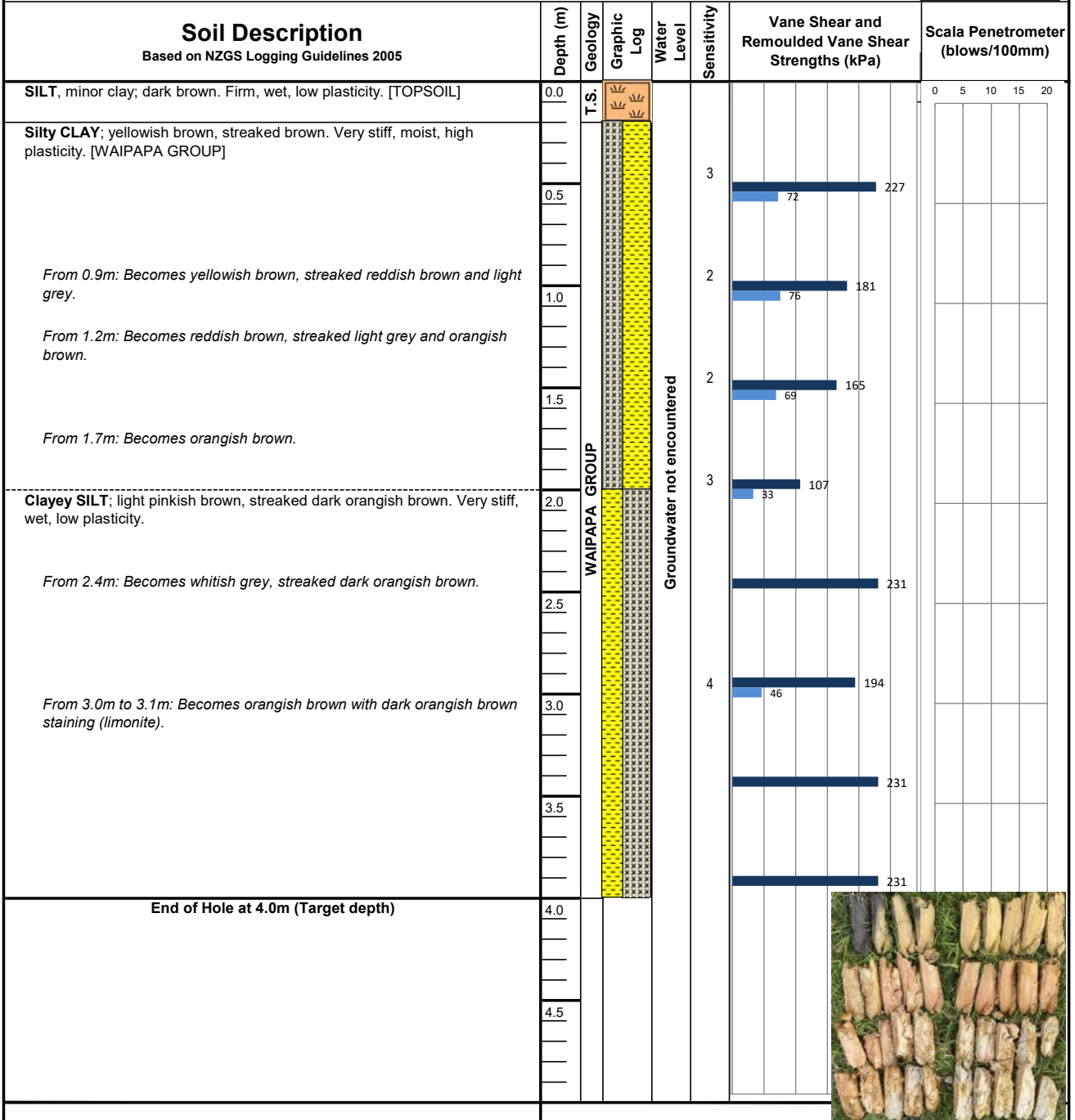
## Borehole Log - BH27

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 05/08/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 05/08/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** JMC  
**CHECKED BY:** WT



**LEGEND**

**TOPSOIL**  
 **CLAY**  
 **SILT**  
 **SAND**  
 **GRAVEL**  
 **FILL**

Corrected shear vane reading  
 Remoulded shear vane reading  
 Scala Penetrometer

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 440  
Scala penetrometer testing not undertaken. Groundwater not encountered.

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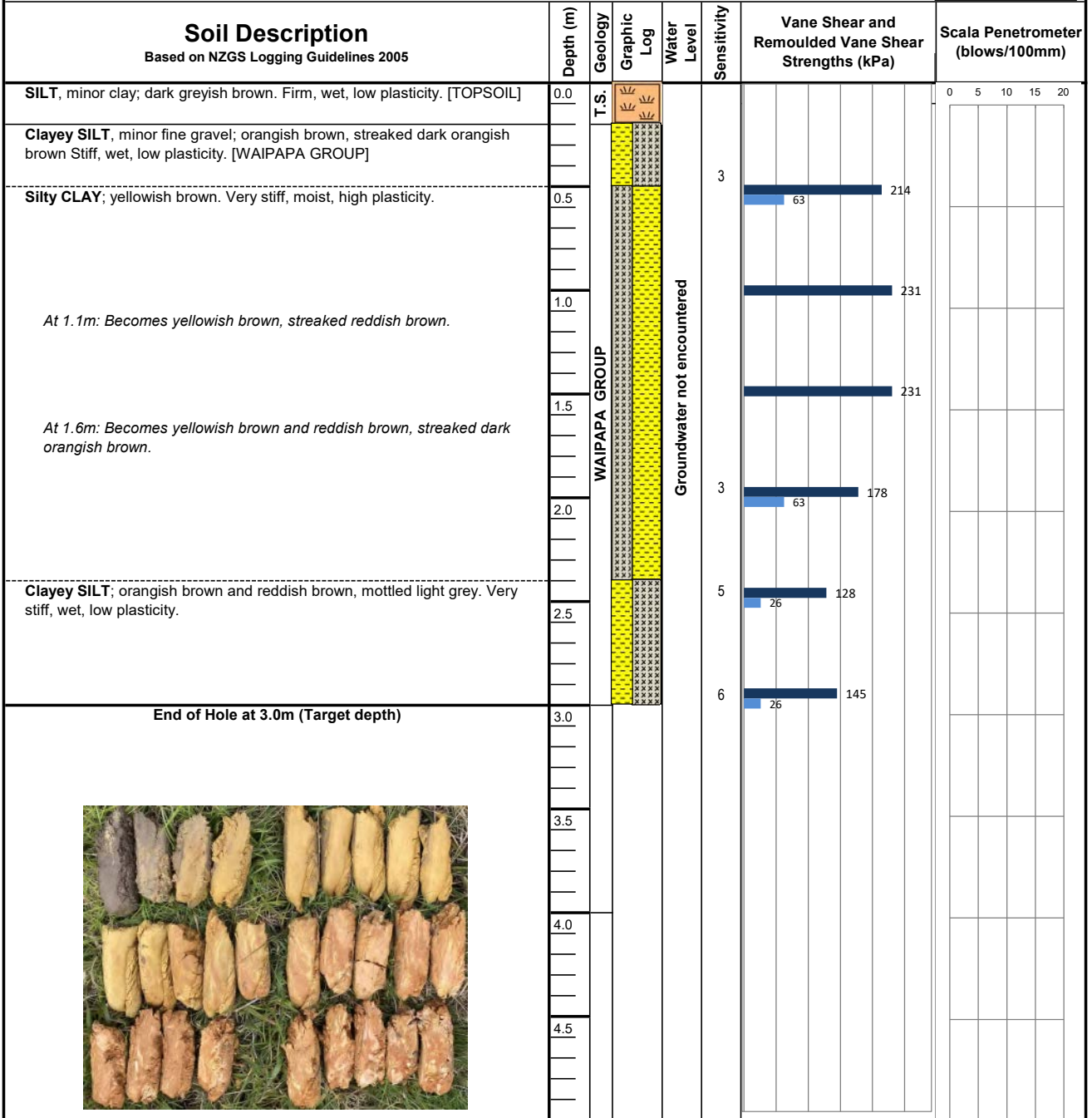
## Borehole Log - BH28

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 01/08/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 01/08/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** JMC  
**CHECKED BY:** WT



**LEGEND**

**TOPSOIL**  
 **CLAY**  
 **SILT**  
 **SAND**  
 **GRAVEL**  
 **FILL**

Corrected shear vane reading  
 Remoulded shear vane reading  
 Scala Penetrometer

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 440  
Scala penetrometer testing not undertaken. Groundwater not encountered.



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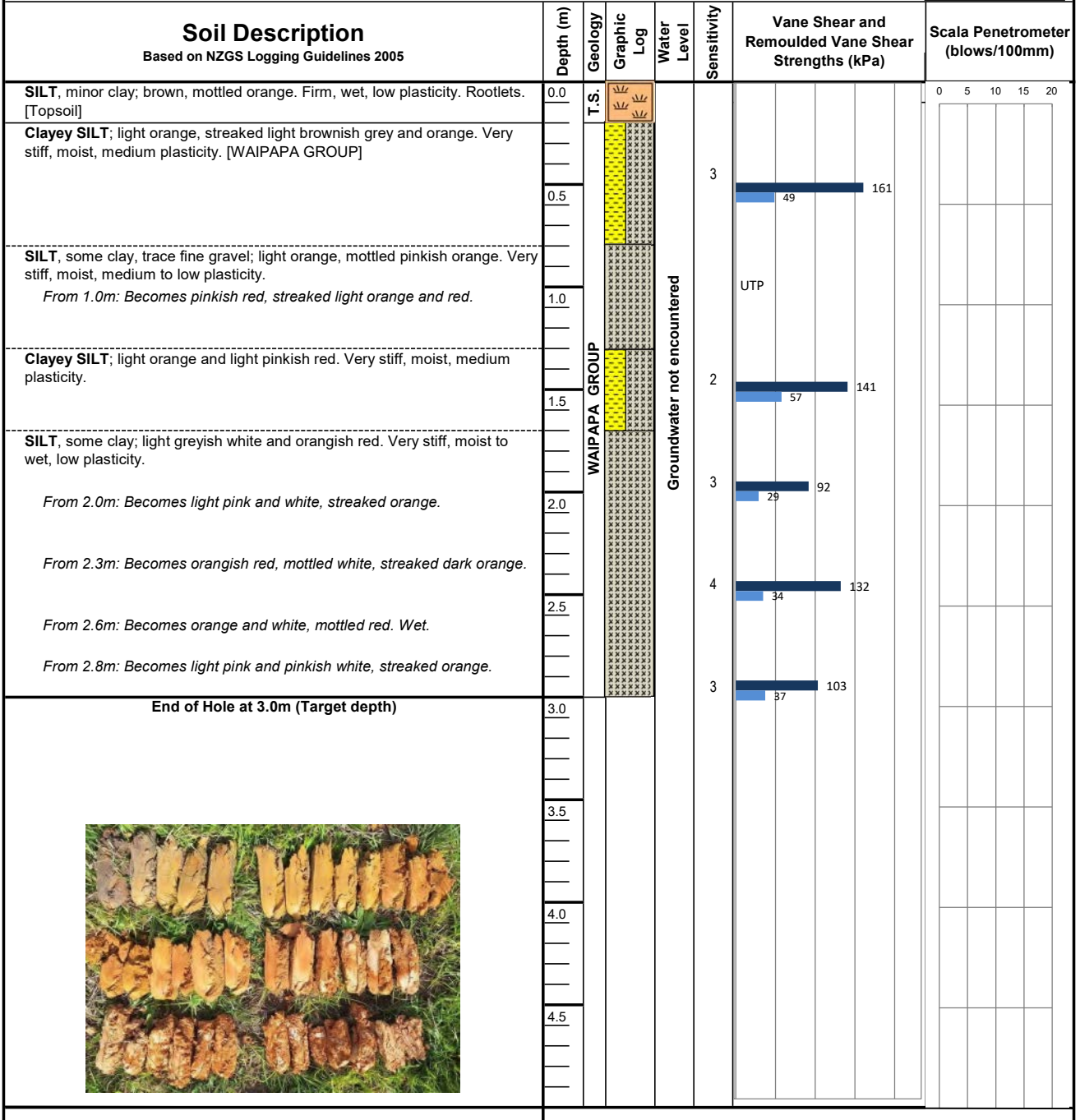
## Borehole Log - BH29

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 01/08/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 01/08/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** JP  
**CHECKED BY:** WT



**LEGEND**

**TOPSOIL**  
 **CLAY**  
 **SILT**  
 **SAND**  
 **GRAVEL**  
 **FILL**

Corrected shear vane reading  
 Remoulded shear vane reading  
 Scala Penetrometer

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 2220  
Scala penetrometer testing not undertaken. Groundwater not encountered.

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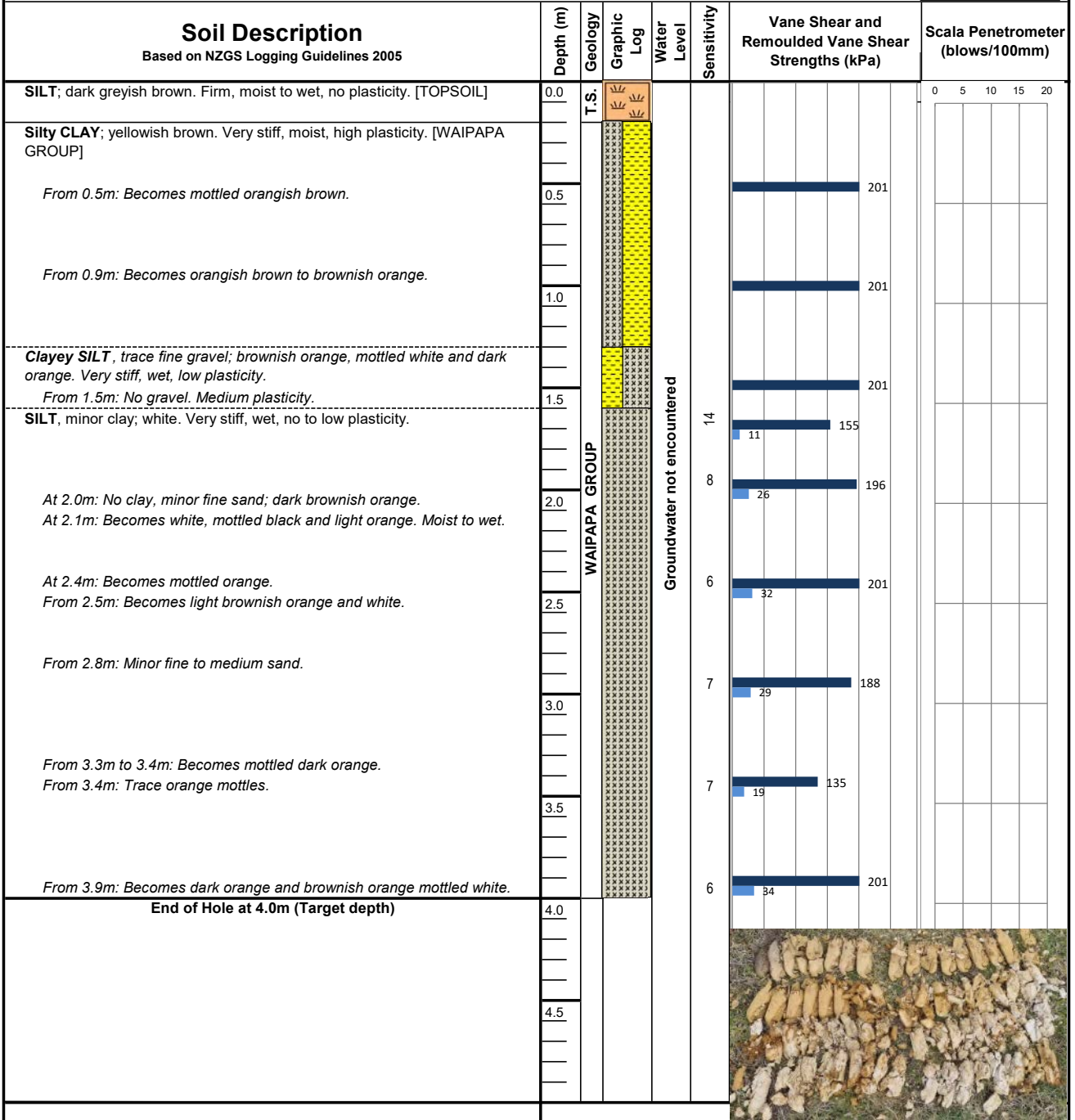
## Borehole Log - BH30

Hole Location: Refer to Site Plan

JOB No. 23 020

CLIENT: Willowridge Developments SITE: 39 Aucks Road, Russell  
Date Started: 05/08/2024 DRILLING METHOD: Hand Auger  
Date Completed: 05/08/2024 HOLE DIAMETER (mm) 50mm

LOGGED BY: CN  
CHECKED BY: WT



**LEGEND**

**TOPSOIL**  
 **CLAY**  
 **SILT**  
 **SAND**  
 **GRAVEL**  
 **FILL**

Corrected shear vane reading  
 Remoulded shear vane reading  
 Scala Penetrometer

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 2220  
Scala penetrometer testing not undertaken. Groundwater not encountered.

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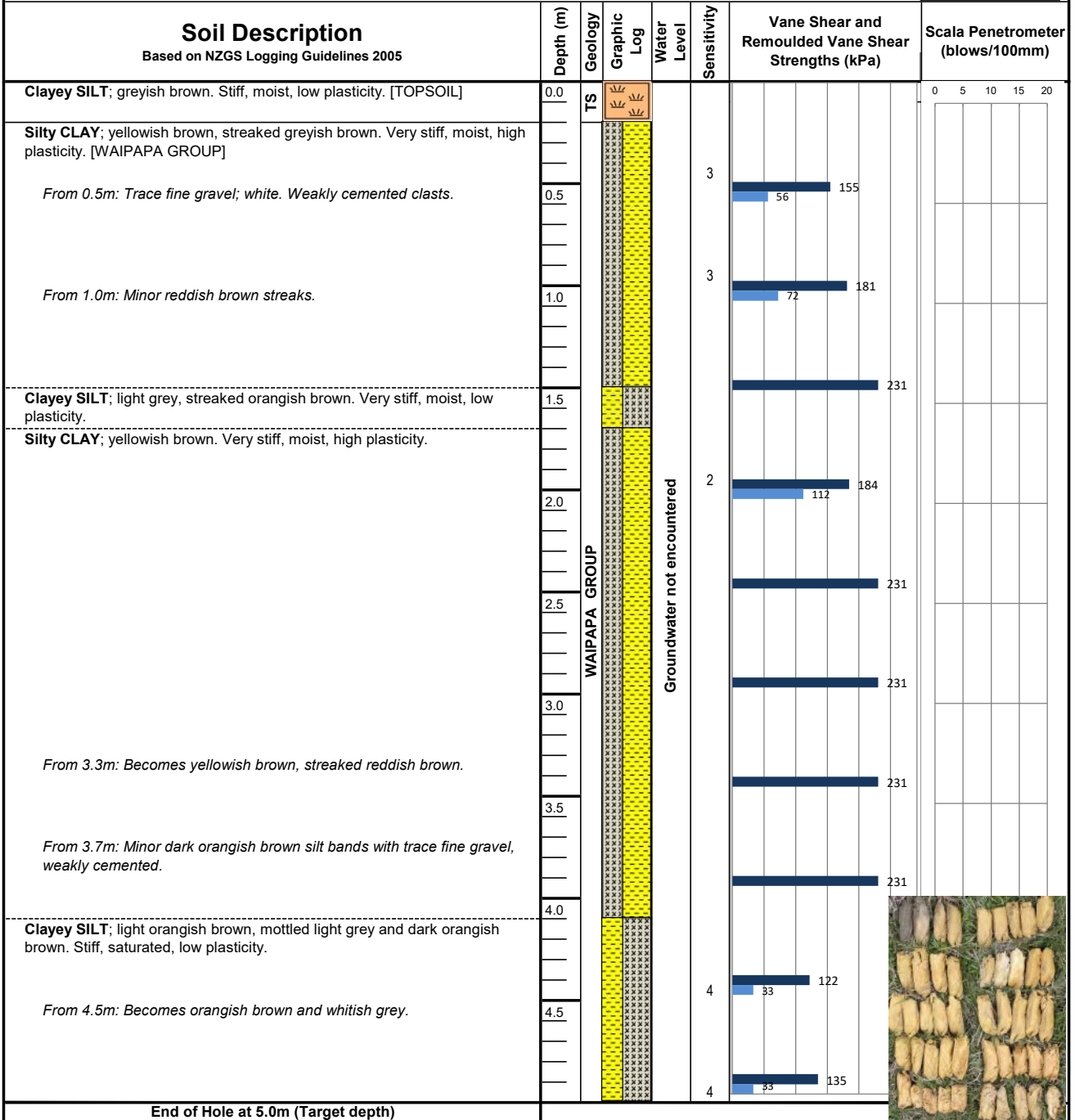
## Borehole Log - BH31

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 05/08/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 05/08/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** JMC  
**CHECKED BY:** WT



**LEGEND**

- TOPSOIL**
- CLAY**
- SILT**
- SAND**
- GRAVEL**
- FILL**

- Corrected shear vane reading
- Remoulded shear vane reading
- Scala Penetrometer

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 440  
Scala penetrometer testing not undertaken. Groundwater not encountered.

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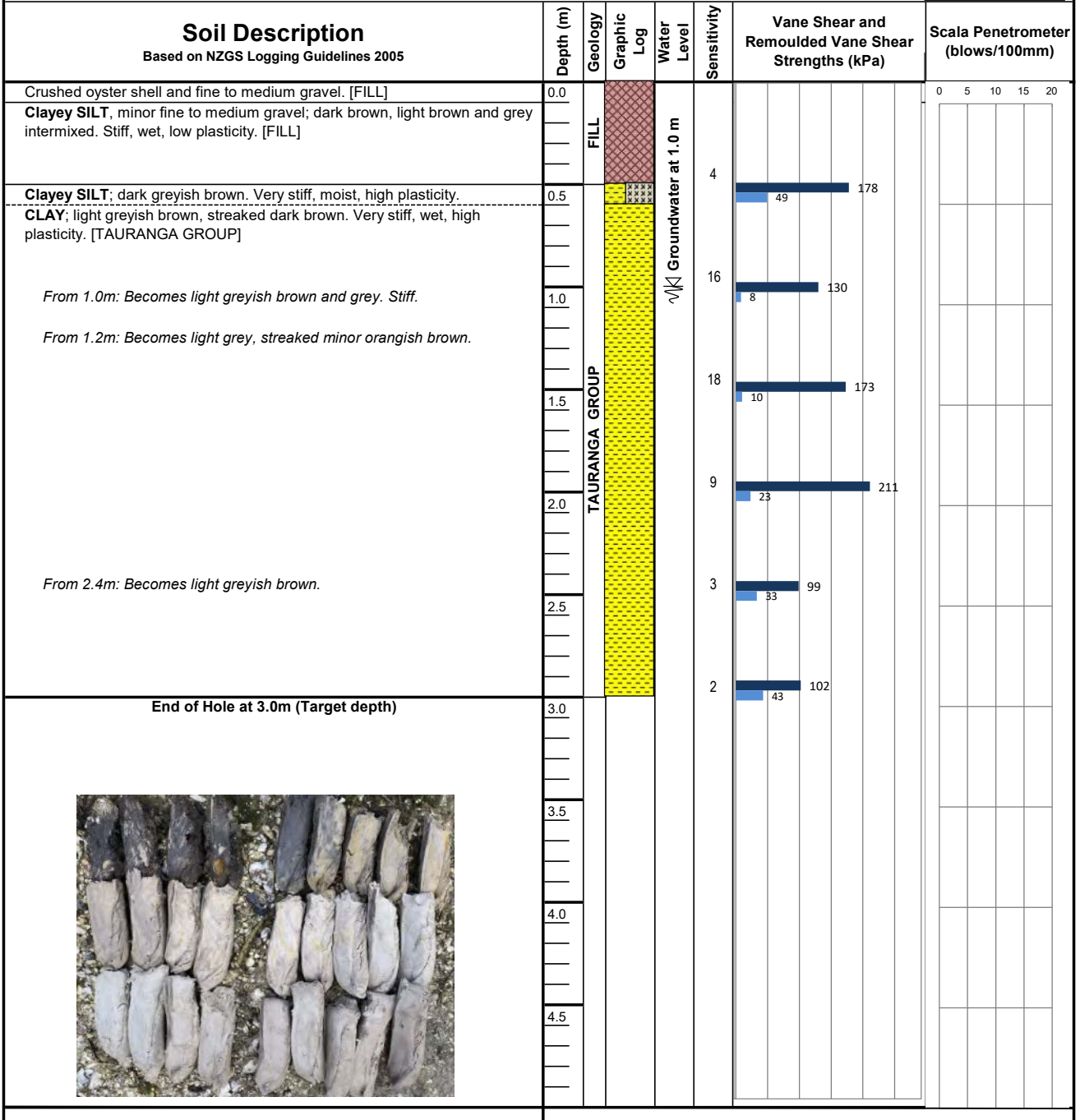
## Borehole Log - BH32

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 05/08/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 05/08/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** JMC  
**CHECKED BY:** WT



**LEGEND**

**TOPSOIL**  
 **CLAY**  
 **SILT**  
 **SAND**  
 **GRAVEL**  
 **FILL**

Corrected shear vane reading  
 Remoulded shear vane reading  
 Scala Penetrometer

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 440  
Scala penetrometer testing not undertaken. Groundwater not encountered.



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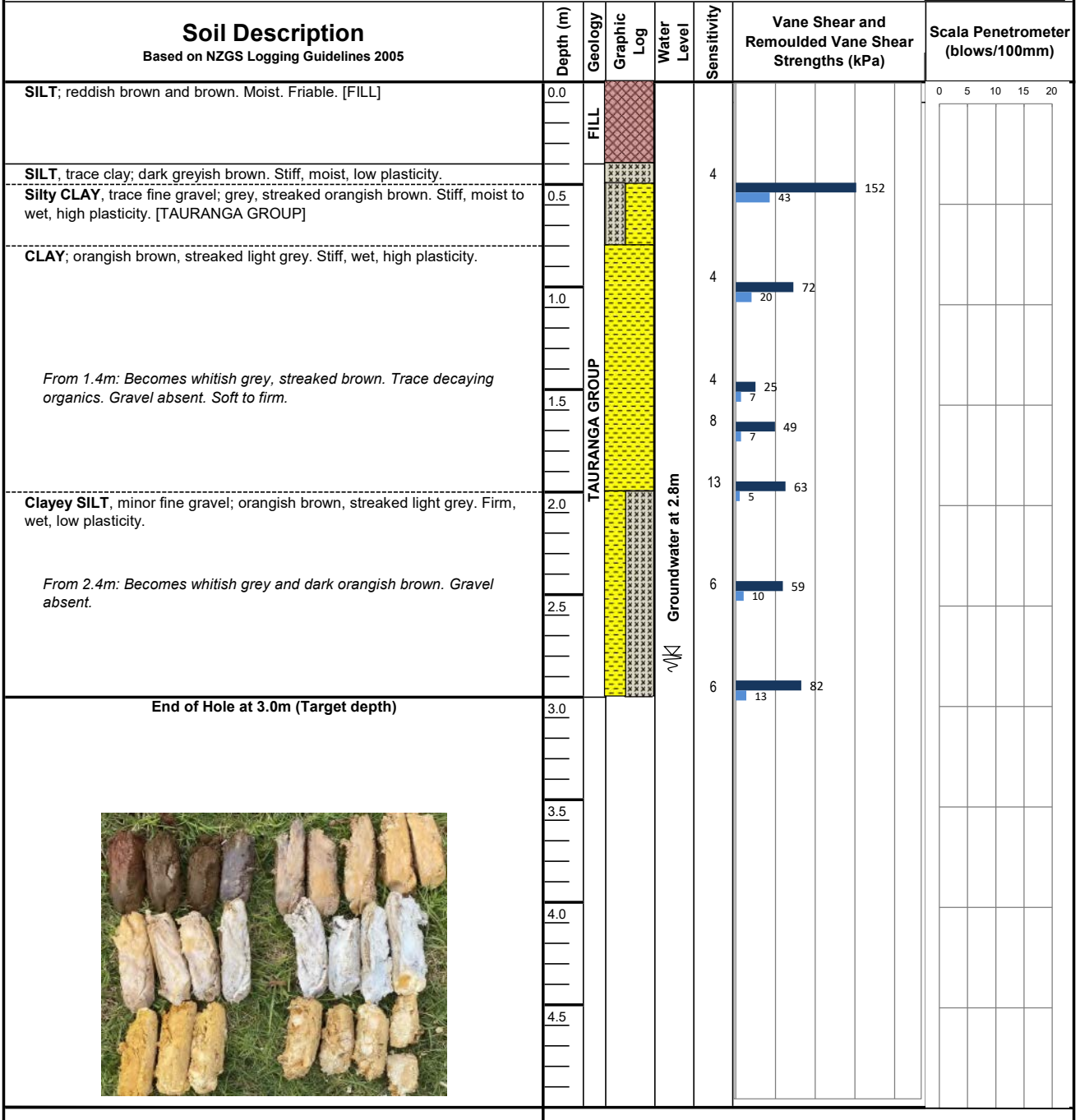
## Borehole Log - BH33

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 01/08/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 01/08/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** JMC  
**CHECKED BY:** WT



**LEGEND**

**TOPSOIL**
 **CLAY**
 **SILT**
 **SAND**
 **GRAVEL**
 **FILL**

Corrected shear vane reading  
 Remoulded shear vane reading  
 Scala Penetrometer

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 440  
Scala penetrometer testing not undertaken. Groundwater not encountered.

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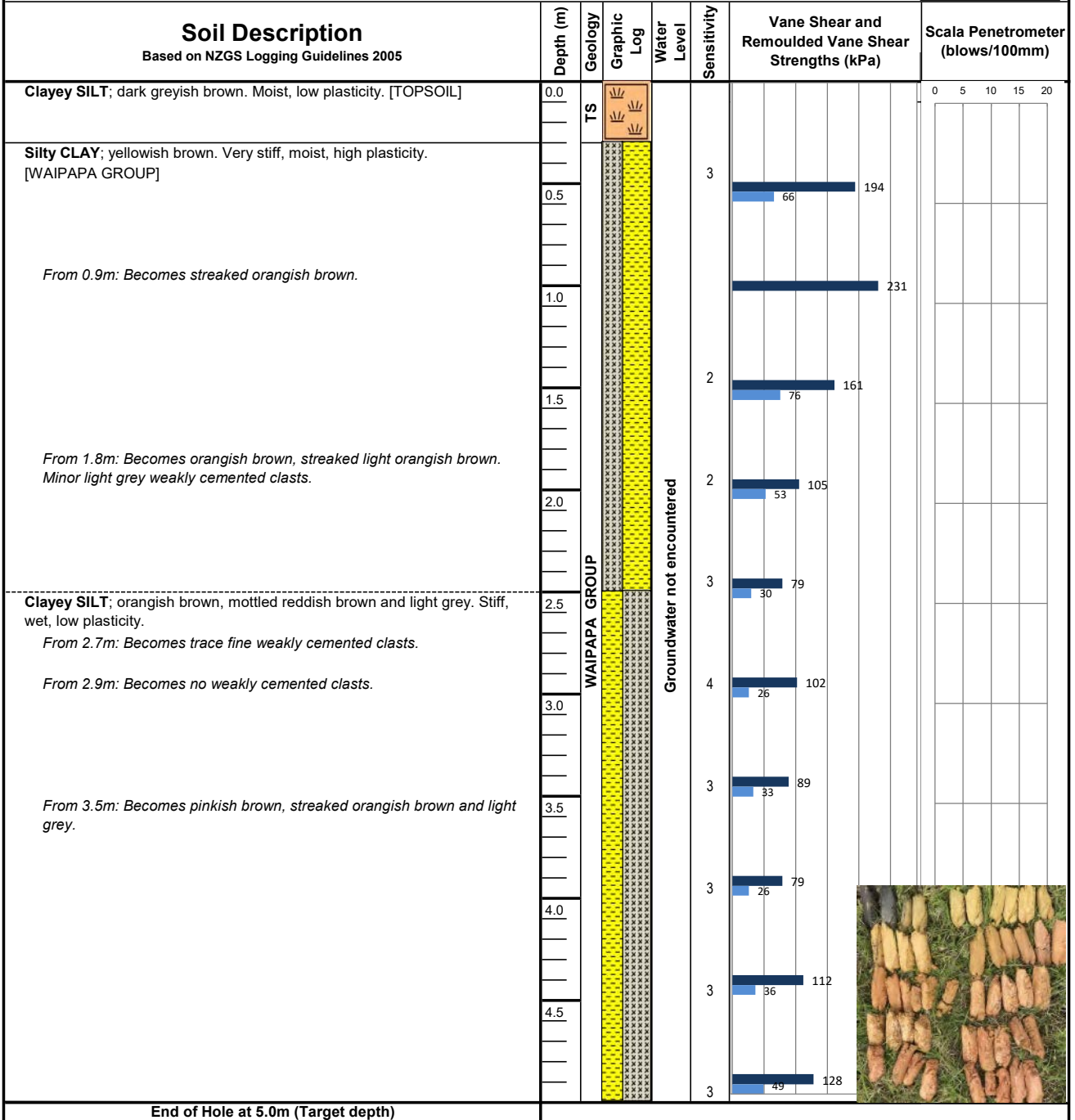
## Borehole Log - BH34

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 31/07/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 31/07/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** JMC  
**CHECKED BY:** WT



**LEGEND**

**TOPSOIL**   **CLAY**   **SILT**   **SAND**   **GRAVEL**   **FILL**

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 440  
Scala penetrometer testing not undertaken. Groundwater not encountered.

Corrected shear vane reading   
Remoulded shear vane reading   
Scala Penetrometer

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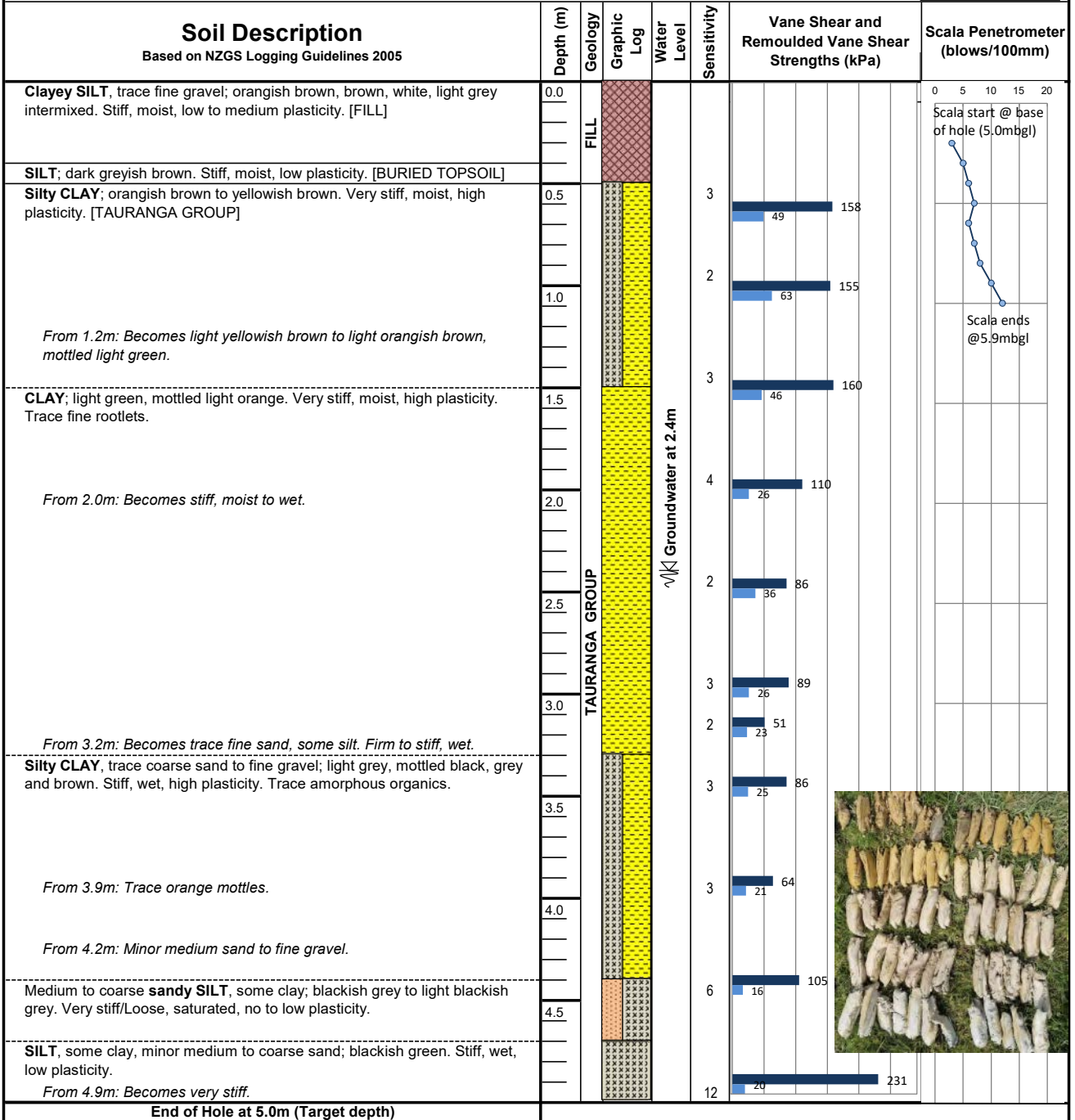
**Borehole Log - BH35**

Hole Location: Refer to Site Plan

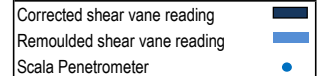
**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 06/08/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 06/08/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** CN  
**CHECKED BY:** WT



**LEGEND**



**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 440  
Scala penetrometer testing not undertaken. Groundwater not encountered.

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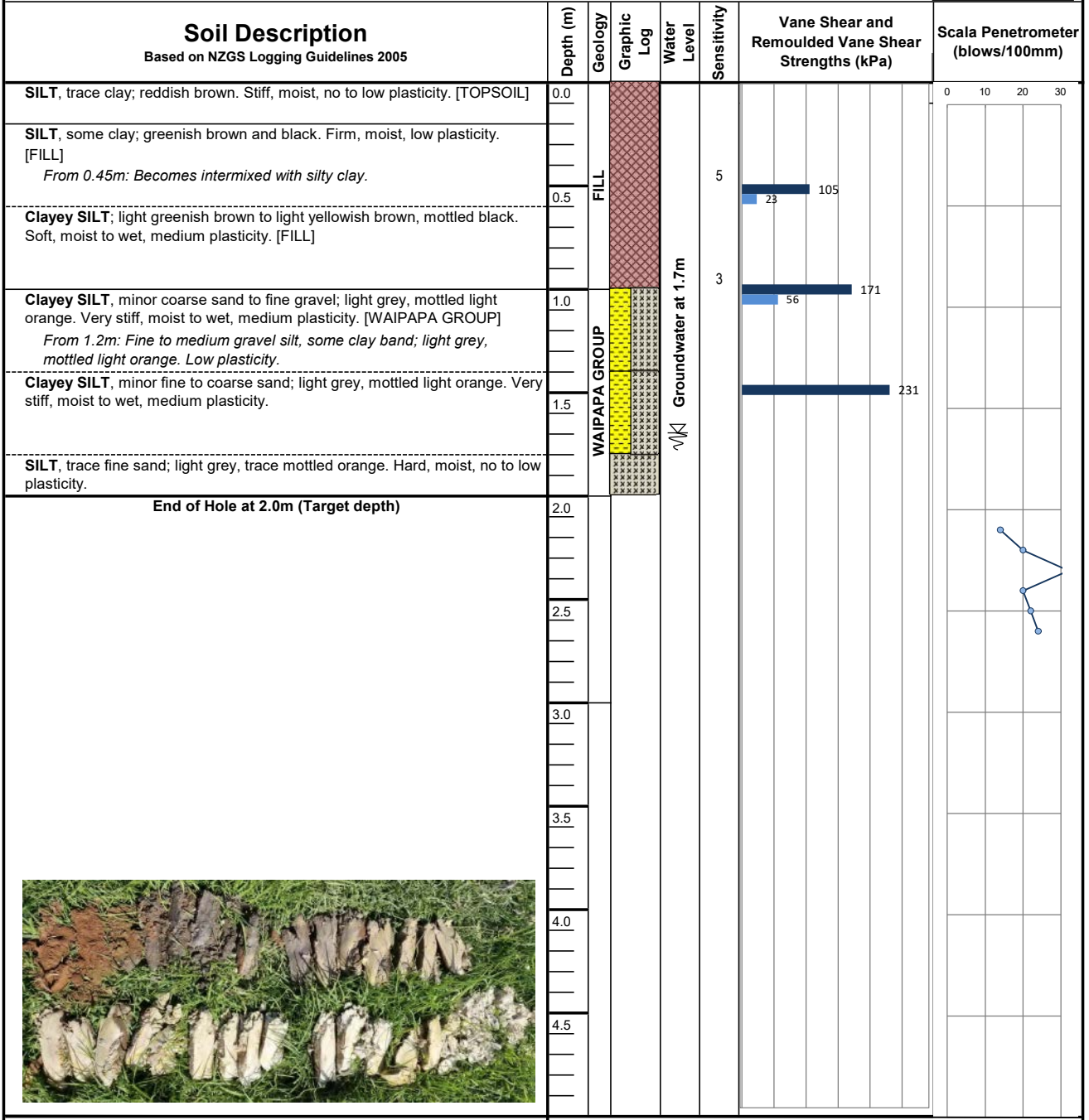
## Borehole Log - BH36

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 06/08/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 06/08/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** CN  
**CHECKED BY:** WT



**LEGEND**

**TOPSOIL**  
 **CLAY**  
 **SILT**  
 **SAND**  
 **GRAVEL**  
 **FILL**

Corrected shear vane reading  
 Remoulded shear vane reading  
 Scala Penetrometer

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 440  
Scala penetrometer testing not undertaken. Groundwater not encountered.



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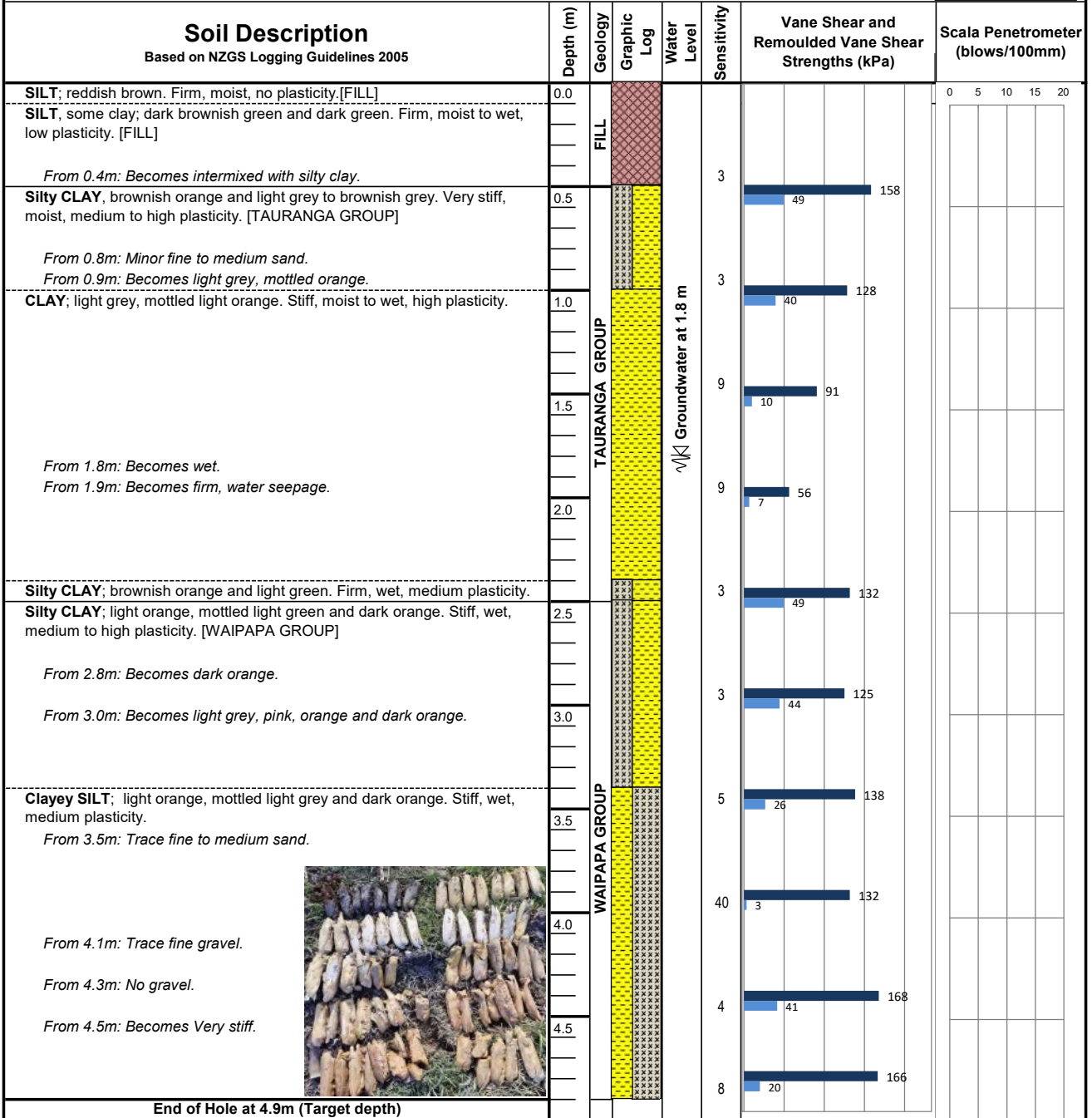
## Borehole Log - BH37

Hole Location: Refer to Site Plan

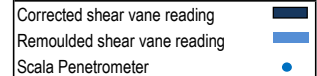
**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 06/08/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 06/08/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** CN  
**CHECKED BY:** WT



**LEGEND**



**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 440  
Scala penetrometer testing not undertaken. Groundwater not encountered.

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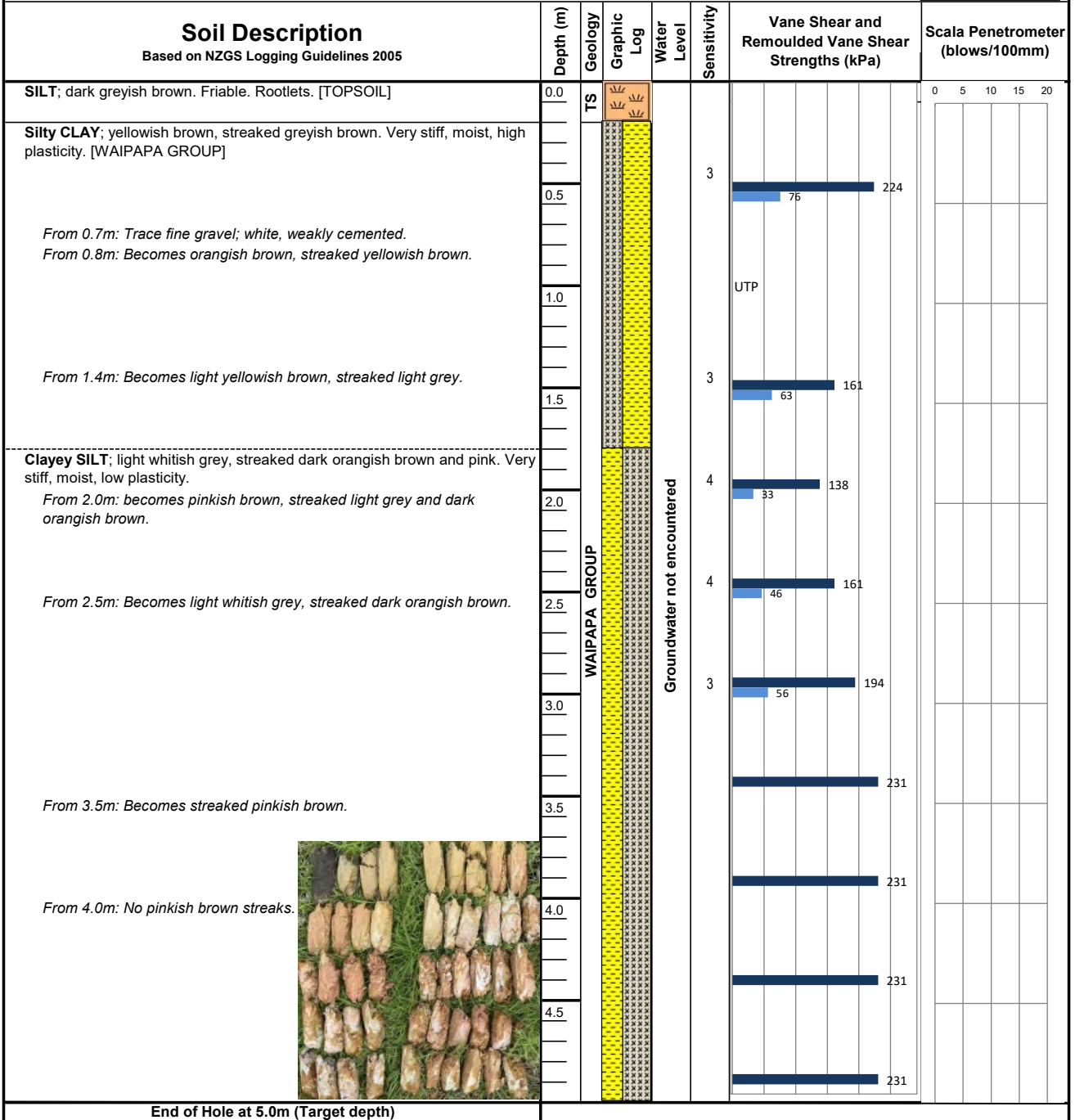
## Borehole Log - BH38

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 01/08/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 01/08/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** JMC  
**CHECKED BY:** WT



**LEGEND**

- TOPSOIL**    **CLAY**    **SILT**    **SAND**    **GRAVEL**    **FILL**

Corrected shear vane reading	
Remoulded shear vane reading	
Scala Penetrometer	

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 440  
Scala penetrometer testing not undertaken. Groundwater not encountered.

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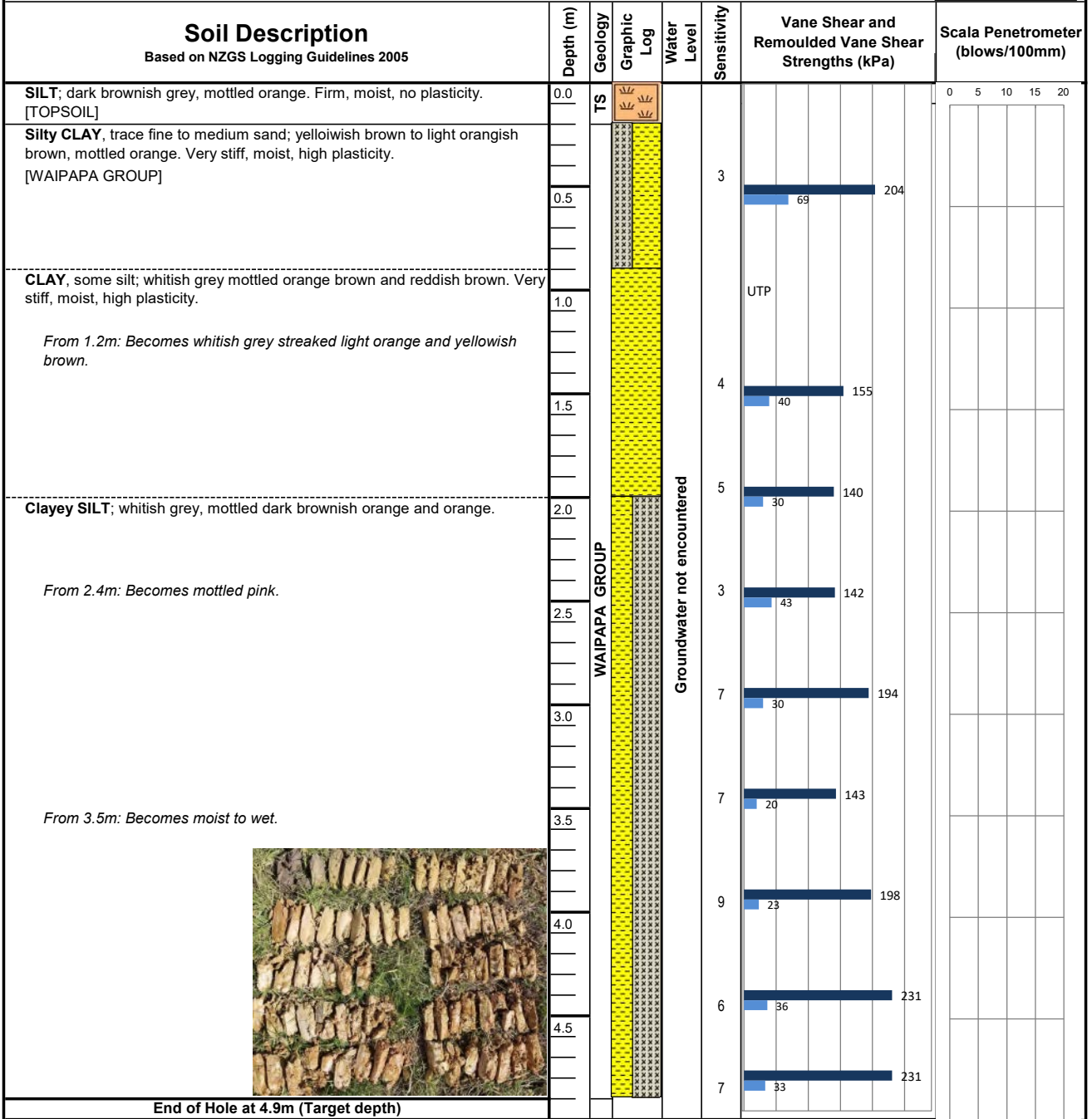
## Borehole Log - BH39

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 06/08/2024 **DRILLING METHOD:** Hand Auger  
**Date Completed:** 06/08/2024 **HOLE DIAMETER (mm)** 50mm

**LOGGED BY:** CN  
**CHECKED BY:** WT



**LEGEND**

- TOPSOIL**    **CLAY**    **SILT**    **SAND**    **GRAVEL**    **FILL**

Corrected shear vane reading	
Remoulded shear vane reading	
Scala Penetrometer	

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 440  
Scala penetrometer testing not undertaken. Groundwater not encountered.

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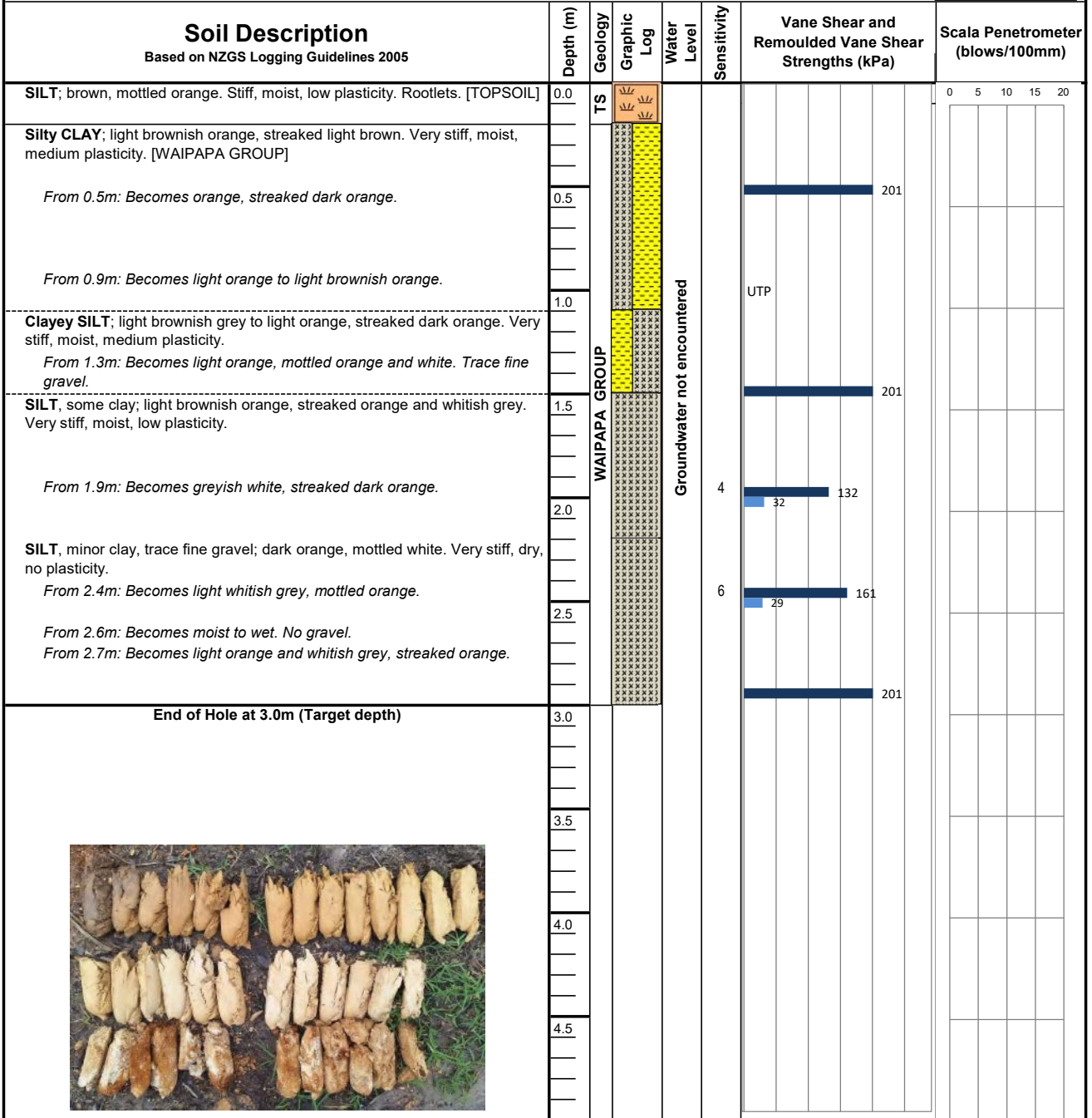
## Borehole Log - BH40

Hole Location: Refer to Site Plan

JOB No. 23 020

CLIENT: Willowridge Developments SITE: 39 Aucks Road, Russell  
Date Started: 01/08/2024 DRILLING METHOD: Hand Auger  
Date Completed: 01/08/2024 HOLE DIAMETER (mm) 50mm

LOGGED BY: JP  
CHECKED BY: WT



**LEGEND**

**TOPSOIL**   
 **CLAY**   
 **SILT**   
 **SAND**   
 **GRAVEL**   
 **FILL**

Corrected shear vane reading  
 Remoulded shear vane reading  
 Scala Penetrometer

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 2220  
Scala penetrometer testing not undertaken. Groundwater not encountered.



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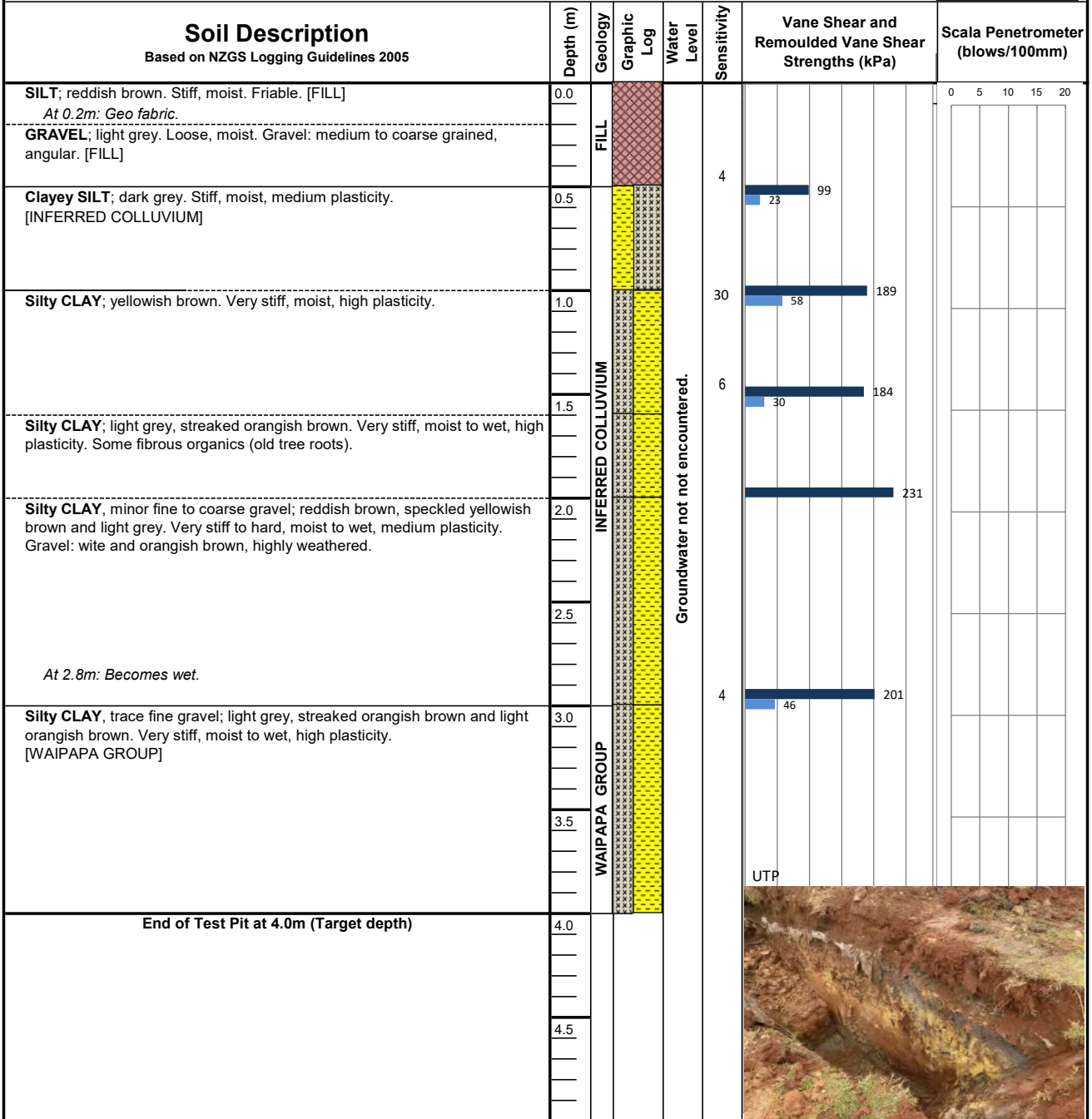
**Test Pit Log - TP01**

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 31/07/2024 **DRILLING METHOD:** 16 Tonne Excavator  
**Date Completed:** 31/07/2024 **TEST PIT SIZE (m):** 2.5m x 0.9m

**LOGGED BY:** JMC  
**CHECKED BY:** WT



**LEGEND**

**TOPSOIL** **CLAY** **SILT** **SAND** **GRAVEL** **FILL**

Corrected shear vane reading   
Remoulded shear vane reading   
Scala Penetrometer

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 440  
Scala penetrometer testing not undertaken.

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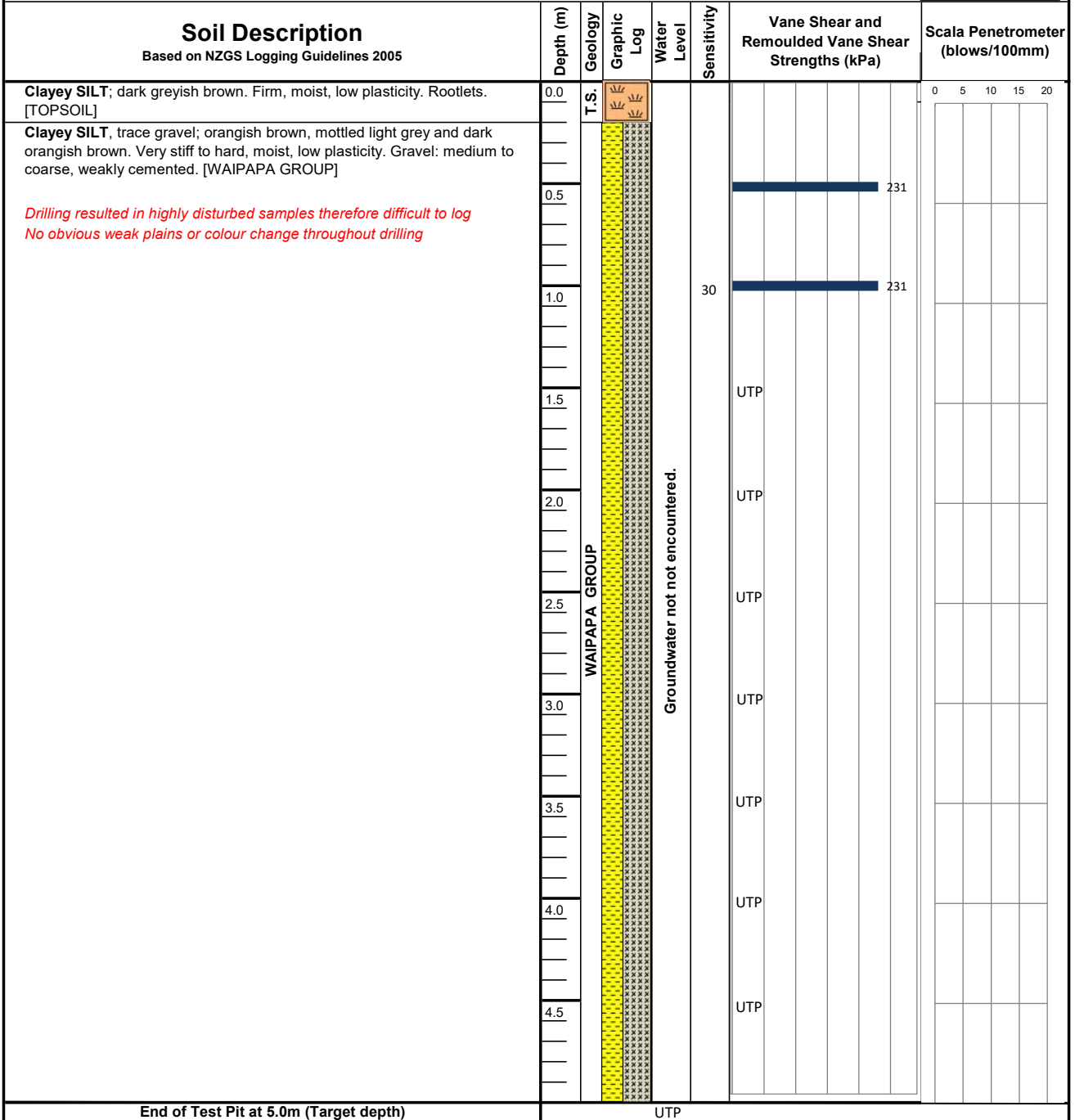
## Test Pit Log - TP02

Hole Location: Refer to Site Plan

**JOB No. 23 020**

**CLIENT:** Willowridge Developments **SITE:** 39 Aucks Road, Russell  
**Date Started:** 31/07/2024 **DRILLING METHOD:** 3 Tonne Excavator  
**Date Completed:** 31/07/2024 **TEST HOLE SIZE:** 350mm dia. Auger

**LOGGED BY:** JMC  
**CHECKED BY:** WT



**LEGEND**

**TOPSOIL**  
 **CLAY**  
 **SILT**  
 **SAND**  
 **GRAVEL**  
 **FILL**

**Note:** UTP = Unable to penetrate. T.S. = Topsoil.  
Hand Held Shear Vane S/N: 440  
Scala penetrometer testing not undertaken.

Corrected shear vane reading  
 Remoulded shear vane reading  
 Scala Penetrometer

## ***Appendix C – Cone Penetration Test Records***



# CPT Test Information

Test Hole Number	CPT01	Job Identifier	HW Willowridge
Test Date	29/07/2024	Operator	Craig Greenfield
Cone Serial Number	5681	Battery Voltage Start	6.14
Cone Area Ratio	0.865	Start Recording	10:21:00 AM
Probe Radius	0.0177	Finish Recording	10:44:00 AM
Date of First Push Current Calibration	14/09/2023	Measured Ground Water Depth	1.4
Metres To Next Calibration	260	Total Penetration Depth (m)	14.197
Depth of Predrill	0	Test ended due to:	<input checked="" type="checkbox"/> High Tilt
Depth at Start of Test	0		<input type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input checked="" type="checkbox"/> Anchor Failure

### Zero Value Change % FSO

	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.06%	0.08%	0.04%
End of test with tip loosened	0.08%	0.02%	0.32%

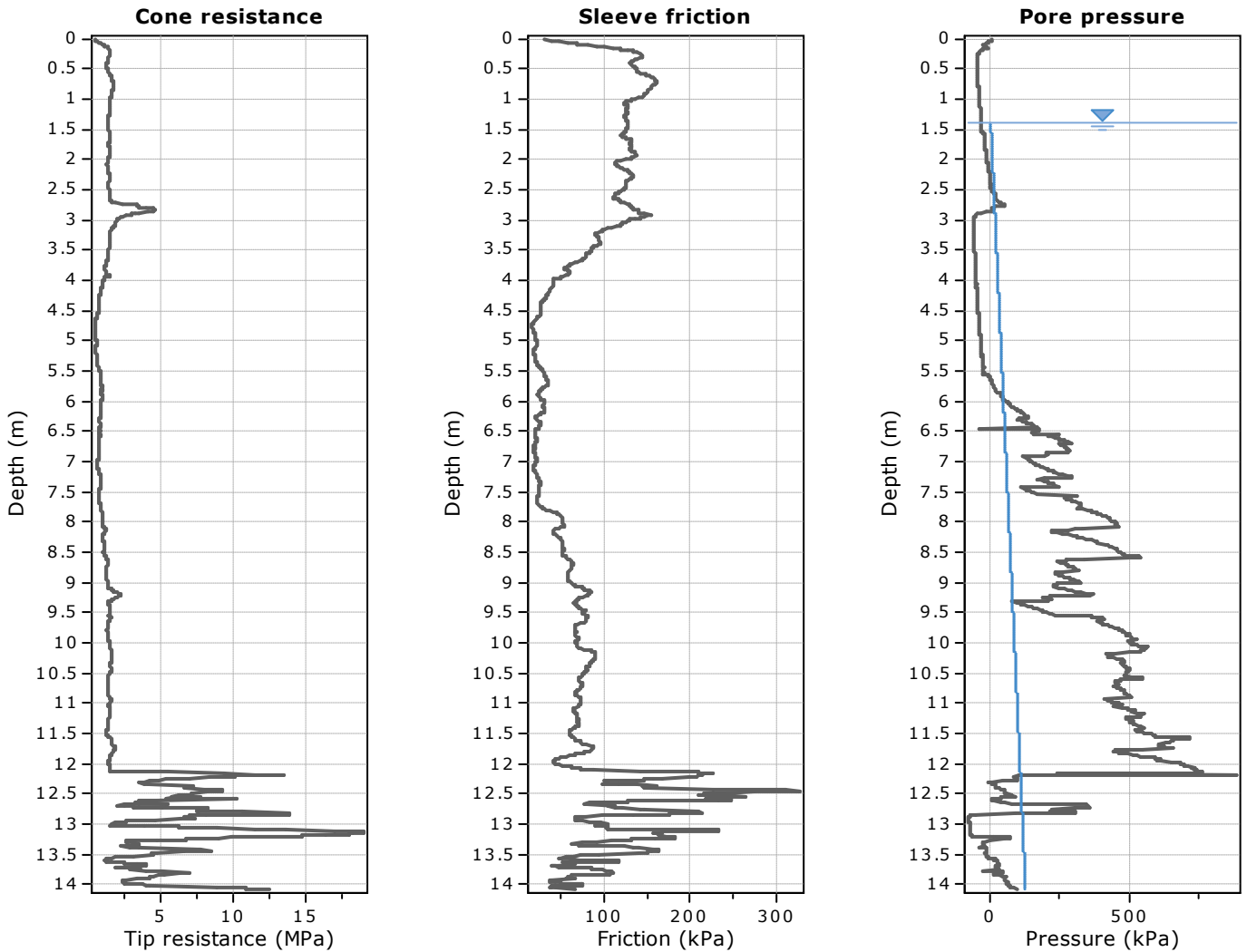
### Dissipation Testing

Test No	Depth (m)	Duration (secs)	Comments

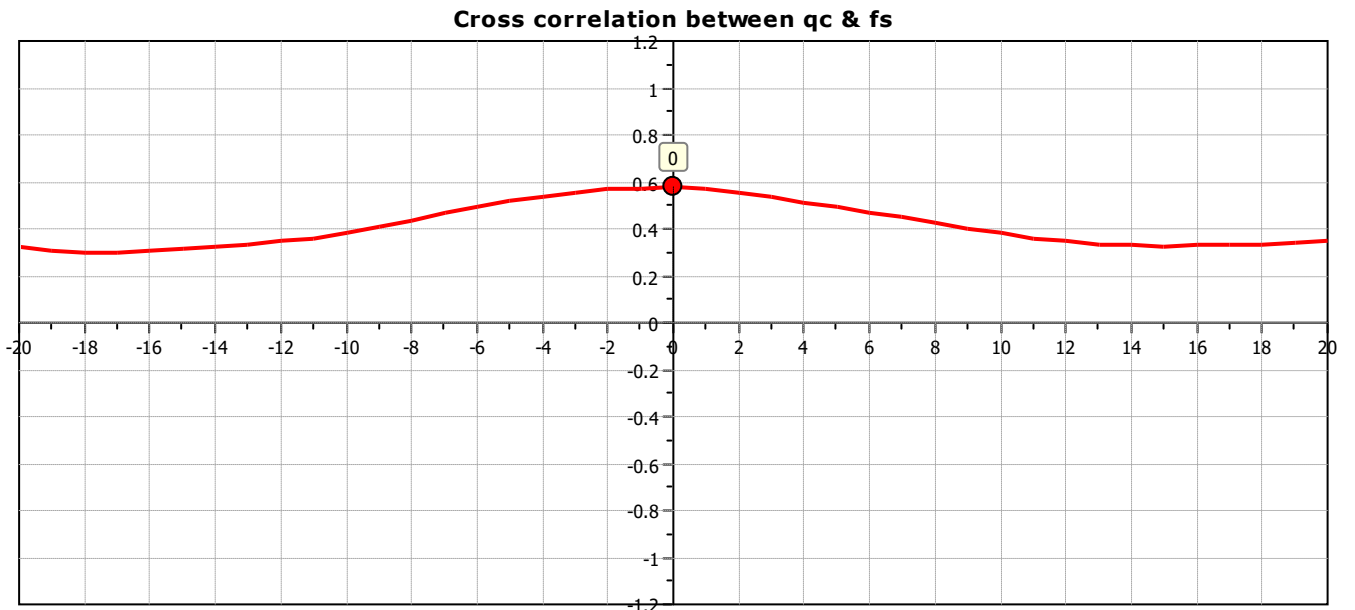
### Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u
--	----	----	---





The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT02	Job Identifier	HW Willowridge
Test Date	29/07/2024	Operator	Craig Greenfield
Cone Serial Number	5708	Battery Voltage Start	6.05
Cone Area Ratio	0.862	Start Recording	11:11:00 AM
Probe Radius	0.0178	Finish Recording	11:29:00 AM
Date of First Push Current Calibration	9/11/2023	Measured Ground Water Depth	2.9
Metres To Next Calibration	596	Total Penetration Depth (m)	11.71
Depth of Predrill	0	Test ended due to:	<input type="checkbox"/> High Tilt
Depth at Start of Test	0		<input checked="" type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input checked="" type="checkbox"/> Anchor Failure

### Zero Value Change % FSO

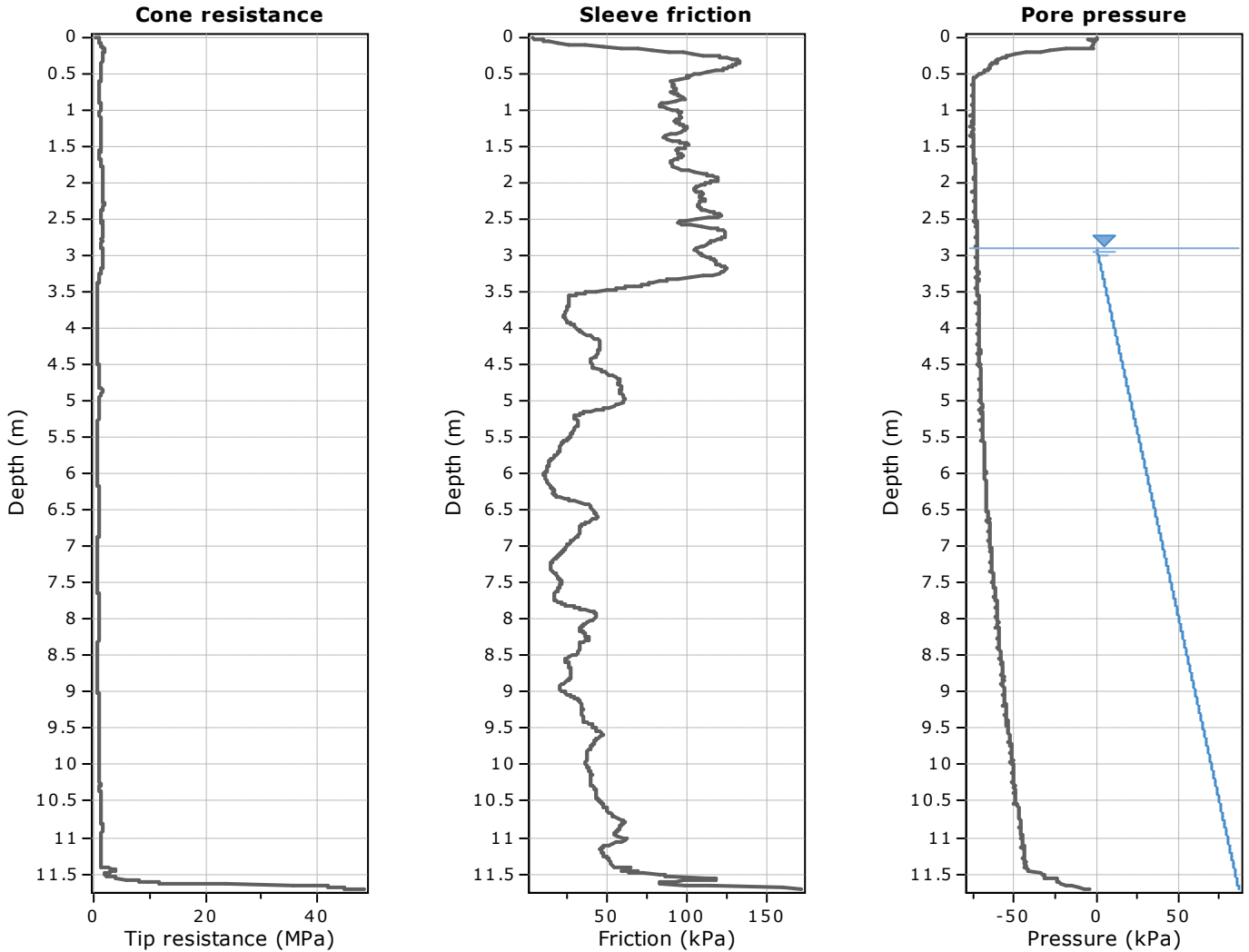
	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.05%	0.02%	0.28%
End of test with tip loosened	0.07%	0.00%	0.48%

### Dissipation Testing

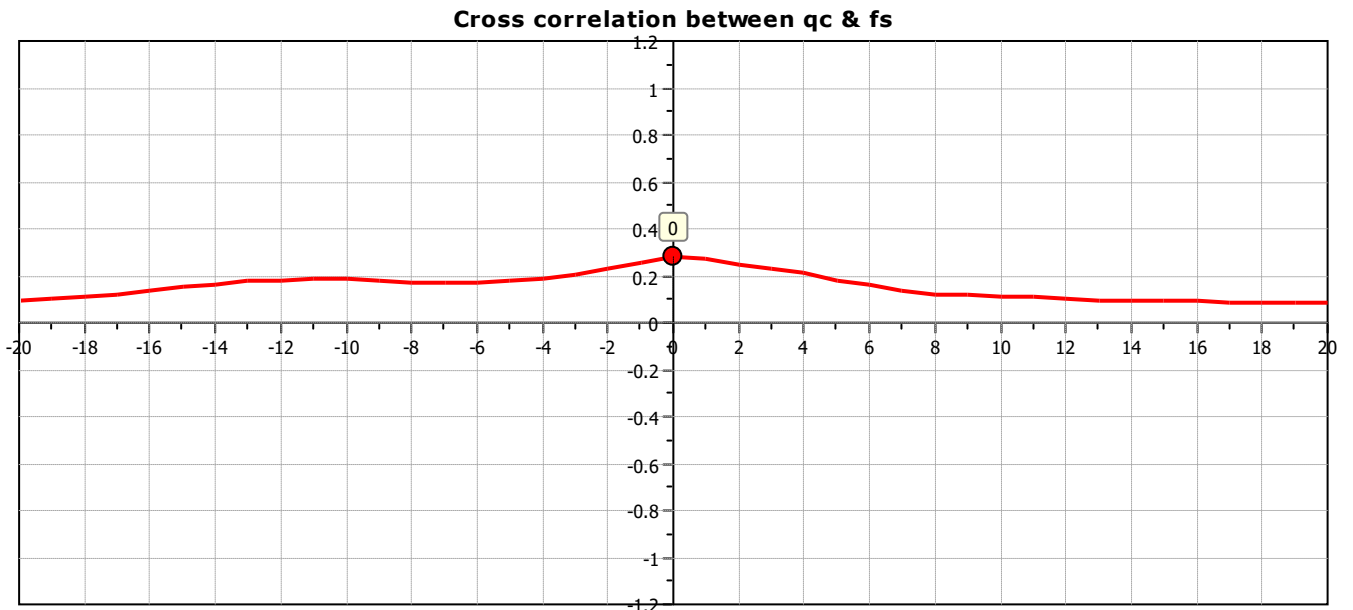
Test No	Depth (m)	Duration (secs)	Comments

### Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u
--	----	----	---



The plot below presents the cross correlation coefficient between the raw  $q_c$  and  $f_s$  values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT03	Job Identifier	HW Willowridge
Test Date	29/07/2024	Operator	Craig Greenfield
Cone Serial Number	5801	Battery Voltage Start	5.99
Cone Area Ratio	0.843	Start Recording	11:52:00 AM
Probe Radius	0.0178	Finish Recording	12:15:00 PM
Date of First Push Current Calibration	9/01/2024	Measured Ground Water Depth	3.8
Metres To Next Calibration	880	Total Penetration Depth (m)	14.097
Depth of Predrill	0	Test ended due to:	<input checked="" type="checkbox"/> High Tilt
Depth at Start of Test	0		<input type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input type="checkbox"/> Anchor Failure

## Zero Value Change % FSO

	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.01%	0.02%	1.00%
End of test with tip loosened	0.07%	0.01%	0.56%

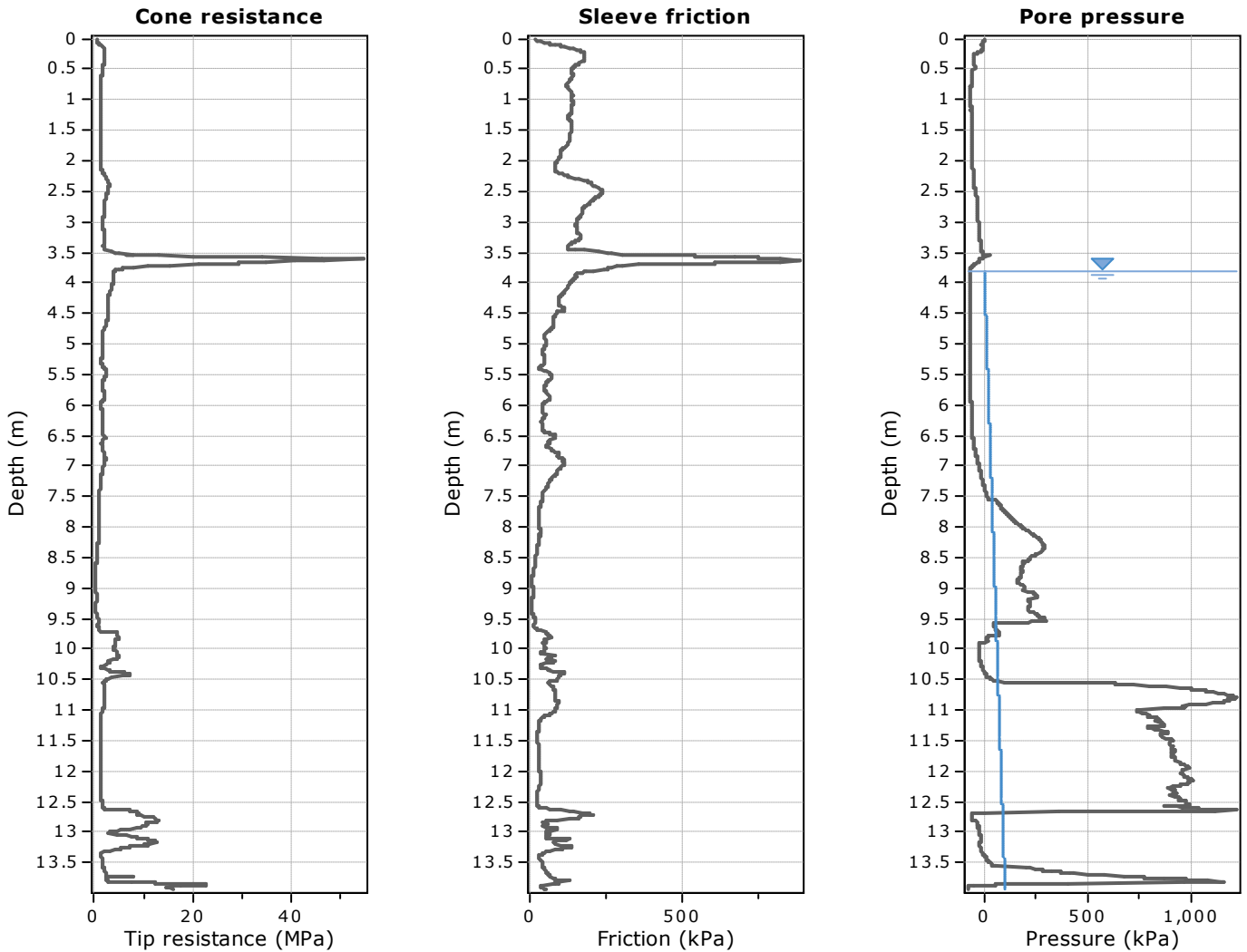
## Dissipation Testing

Test No	Depth (m)	Duration (secs)	Comments

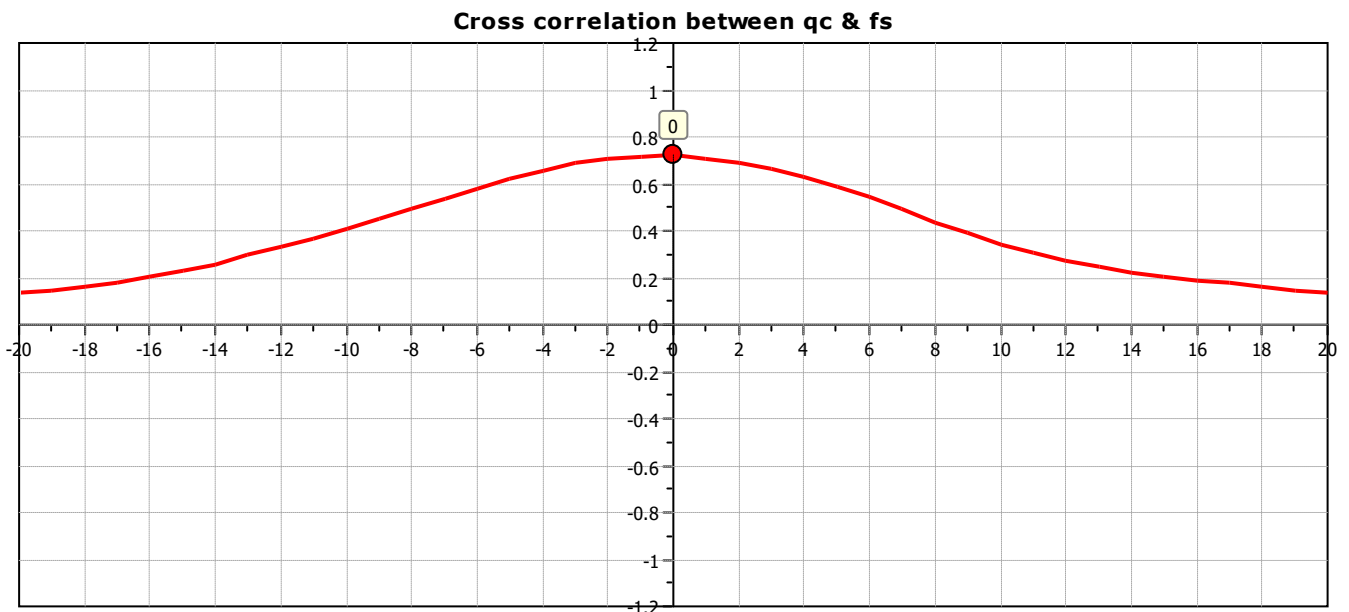
## Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u
--	----	----	---





The plot below presents the cross correlation coefficient between the raw  $q_c$  and  $f_s$  values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT04	Job Identifier	HW Willowridge
Test Date	29/07/2024	Operator	Craig Greenfield
Cone Serial Number	5845	Battery Voltage Start	5.97
Cone Area Ratio	0.85	Start Recording	1:08:00 PM
Probe Radius	0.0179	Finish Recording	1:34:00 PM
Date of First Push Current Calibration	13/03/2024	Measured Ground Water Depth	2.1
Metres To Next Calibration	1165	Total Penetration Depth (m)	17.325
Depth of Predrill	0	Test ended due to:	<input type="checkbox"/> High Tilt
Depth at Start of Test	0		<input type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input checked="" type="checkbox"/> Anchor Failure

## Zero Value Change % FSO

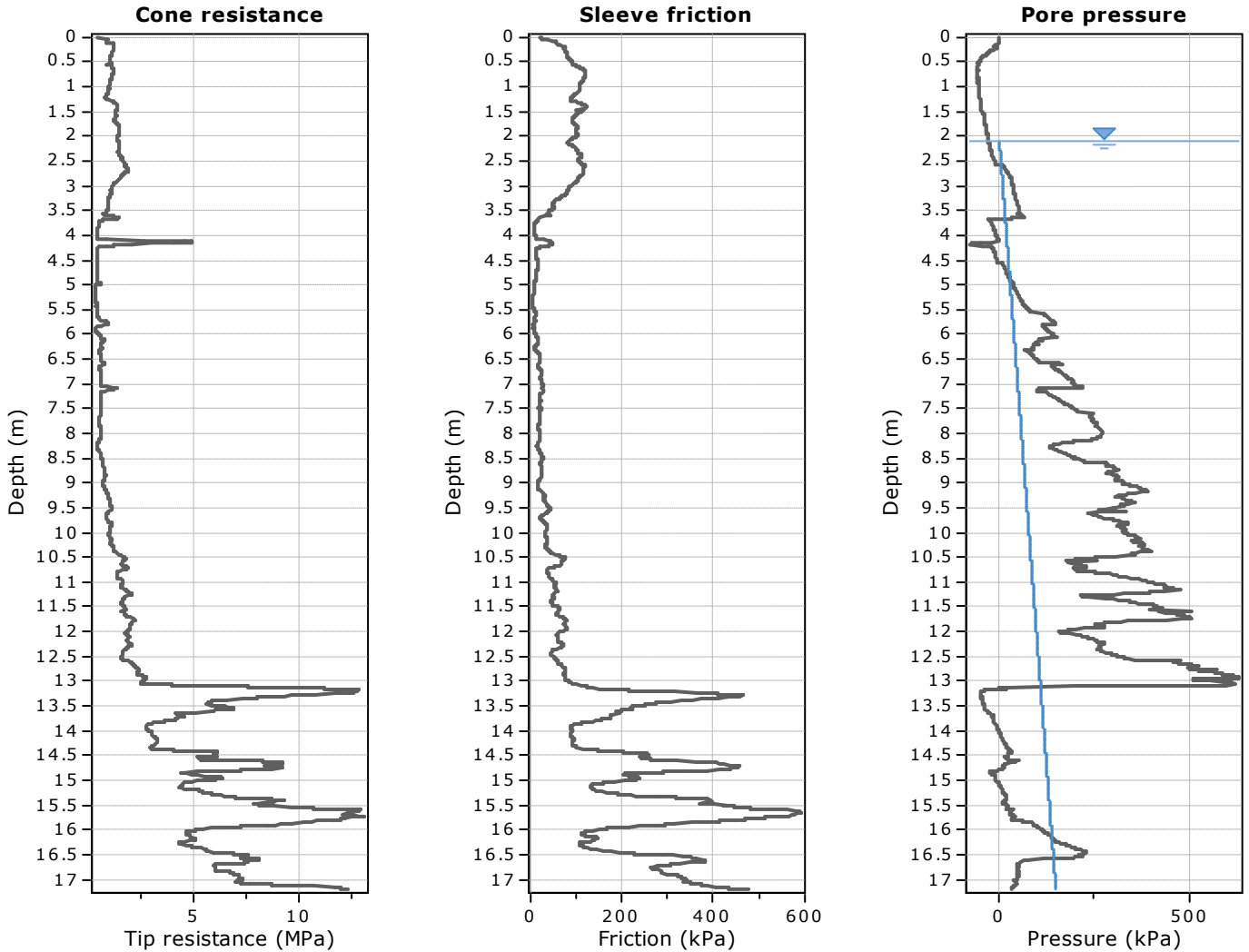
	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.03%	0.08%	0.16%
End of test with tip loosened	0.06%	0.00%	0.70%

## Dissipation Testing

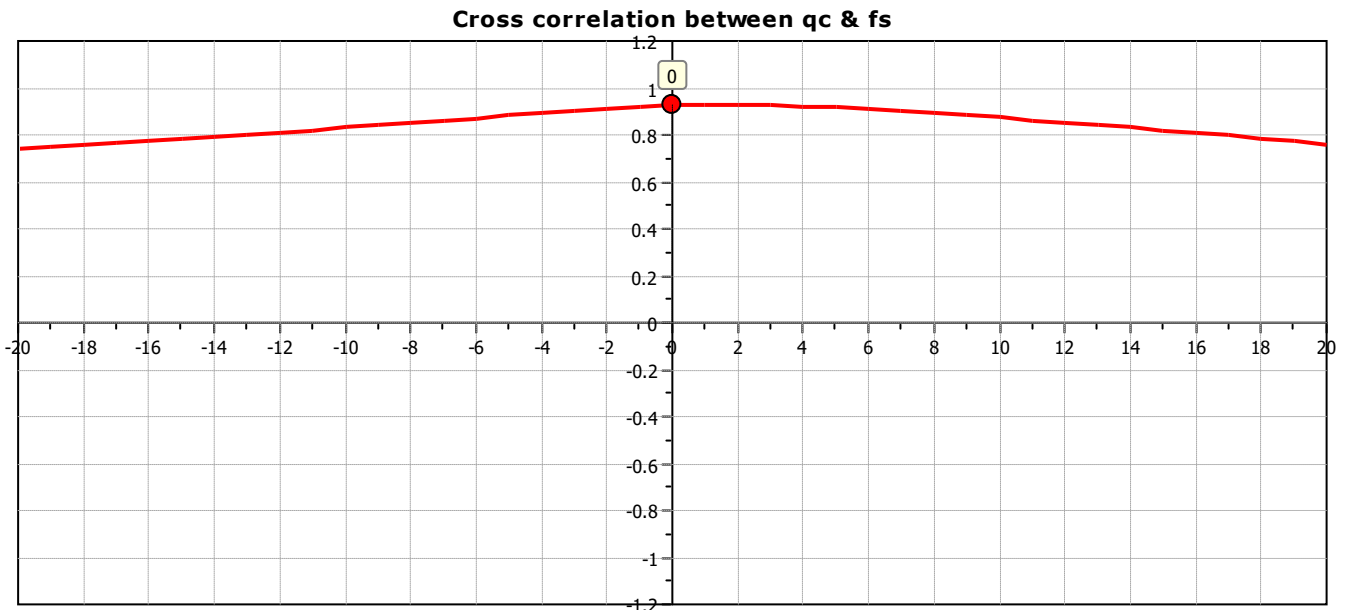
Test No	Depth (m)	Duration (secs)	Comments

## Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u
--	----	----	---



The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT05	Job Identifier	HW Willowridge
Test Date	29/07/2024	Operator	Craig Greenfield
Cone Serial Number	5959	Battery Voltage Start	5.89
Cone Area Ratio	0.869	Start Recording	1:47:00 PM
Probe Radius	0.0179	Finish Recording	2:21:00 PM
Date of First Push Current Calibration	26/06/2024	Measured Ground Water Depth	2.7
Metres To Next Calibration	1397	Total Penetration Depth (m)	22.102
Depth of Predrill	0	Test ended due to:	<input type="checkbox"/> High Tilt
Depth at Start of Test	0		<input type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input checked="" type="checkbox"/> Anchor Failure

## Zero Value Change % FSO

	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.04%	0.01%	0.76%
End of test with tip loosened	0.10%	0.03%	1.26%

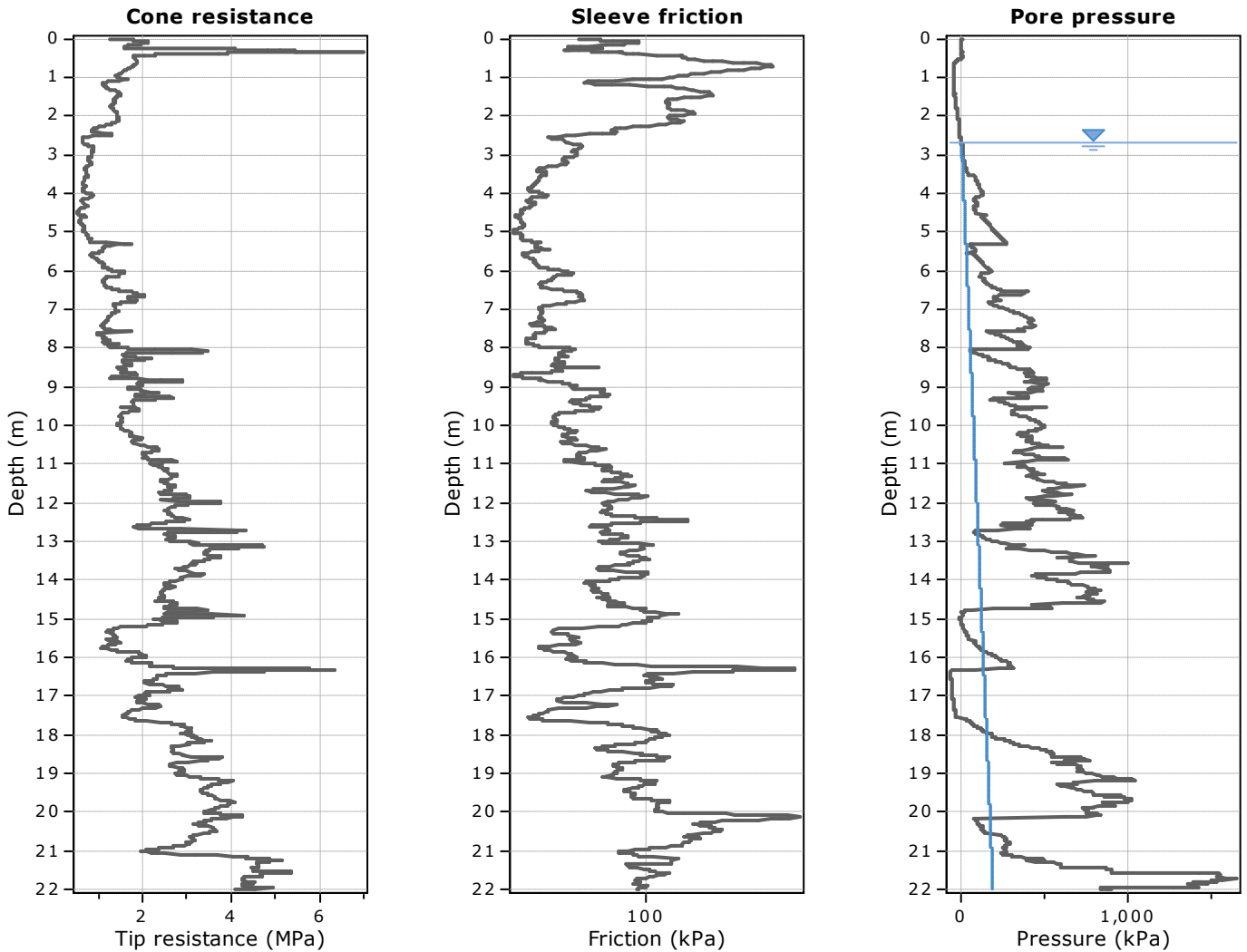
## Dissipation Testing

Test No	Depth (m)	Duration (secs)	Comments

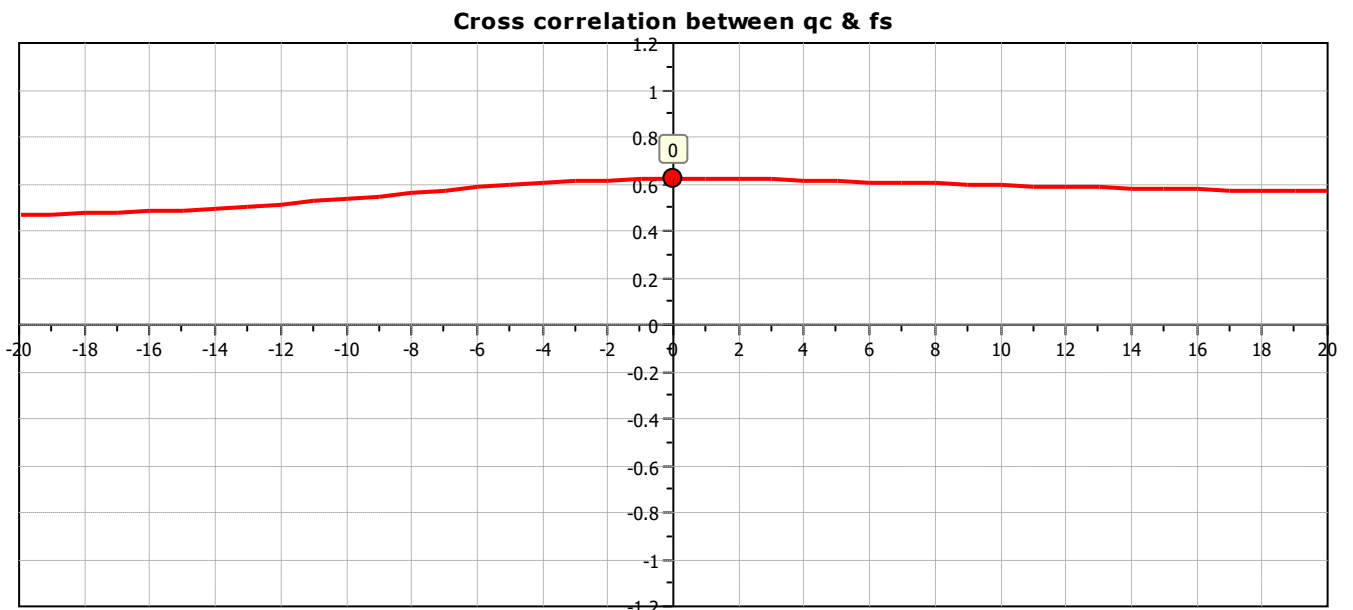
## Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u 8.6
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The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT06	Job Identifier	HW Willowridge
Test Date	29/07/2024	Operator	Craig Greenfield
Cone Serial Number	5681	Battery Voltage Start	5.83
Cone Area Ratio	0.865	Start Recording	2:38:00 PM
Probe Radius	0.0177	Finish Recording	4:02:00 PM
Date of First Push Current Calibration	14/09/2023	Measured Ground Water Depth	0.5
Metres To Next Calibration	246	Total Penetration Depth (m)	12.367
Depth of Predrill	0	Test ended due to:	<input type="checkbox"/> High Tilt
Depth at Start of Test	0		<input checked="" type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input checked="" type="checkbox"/> Anchor Failure

## Zero Value Change % FSO

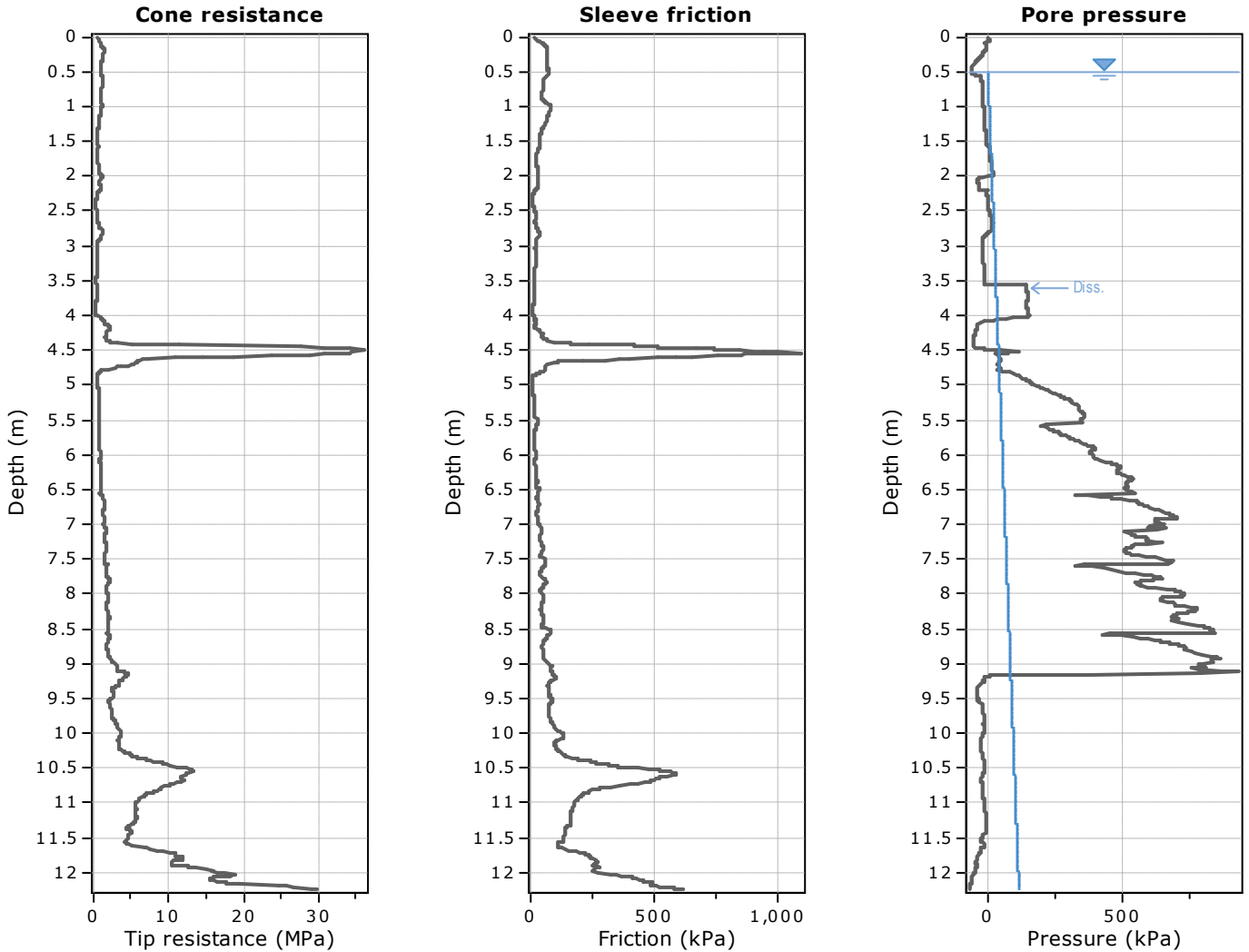
	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.05%	0.09%	0.50%
End of test with tip loosened	0.06%	0.00%	0.94%

## Dissipation Testing

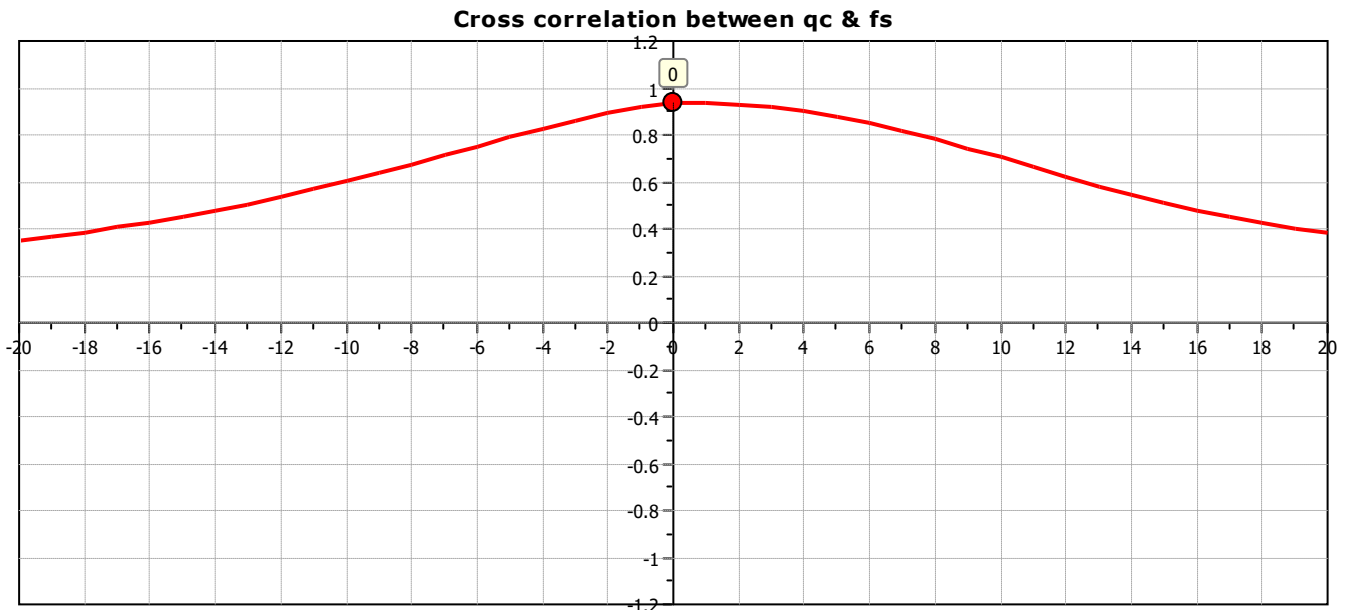
Test No	Depth (m)	Duration (secs)	Comments
CPT06-D1	3.555	3648	0.14

## Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u
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The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT07	Job Identifier	HW Willowridge
Test Date	30/07/2024	Operator	Craig Greenfield
Cone Serial Number	5681	Battery Voltage Start	5.93
Cone Area Ratio	0.865	Start Recording	9:50:00 AM
Probe Radius	0.0177	Finish Recording	10:35:00 AM
Date of First Push Current Calibration	14/09/2023	Measured Ground Water Depth	0.6
Metres To Next Calibration	234	Total Penetration Depth (m)	29.6
Depth of Predrill	0	Test ended due to:	<input type="checkbox"/> High Tilt
Depth at Start of Test	0		<input type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input checked="" type="checkbox"/> Anchor Failure

## Zero Value Change % FSO

	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.03%	0.06%	0.16%
End of test with tip loosened	0.07%	0.00%	0.70%

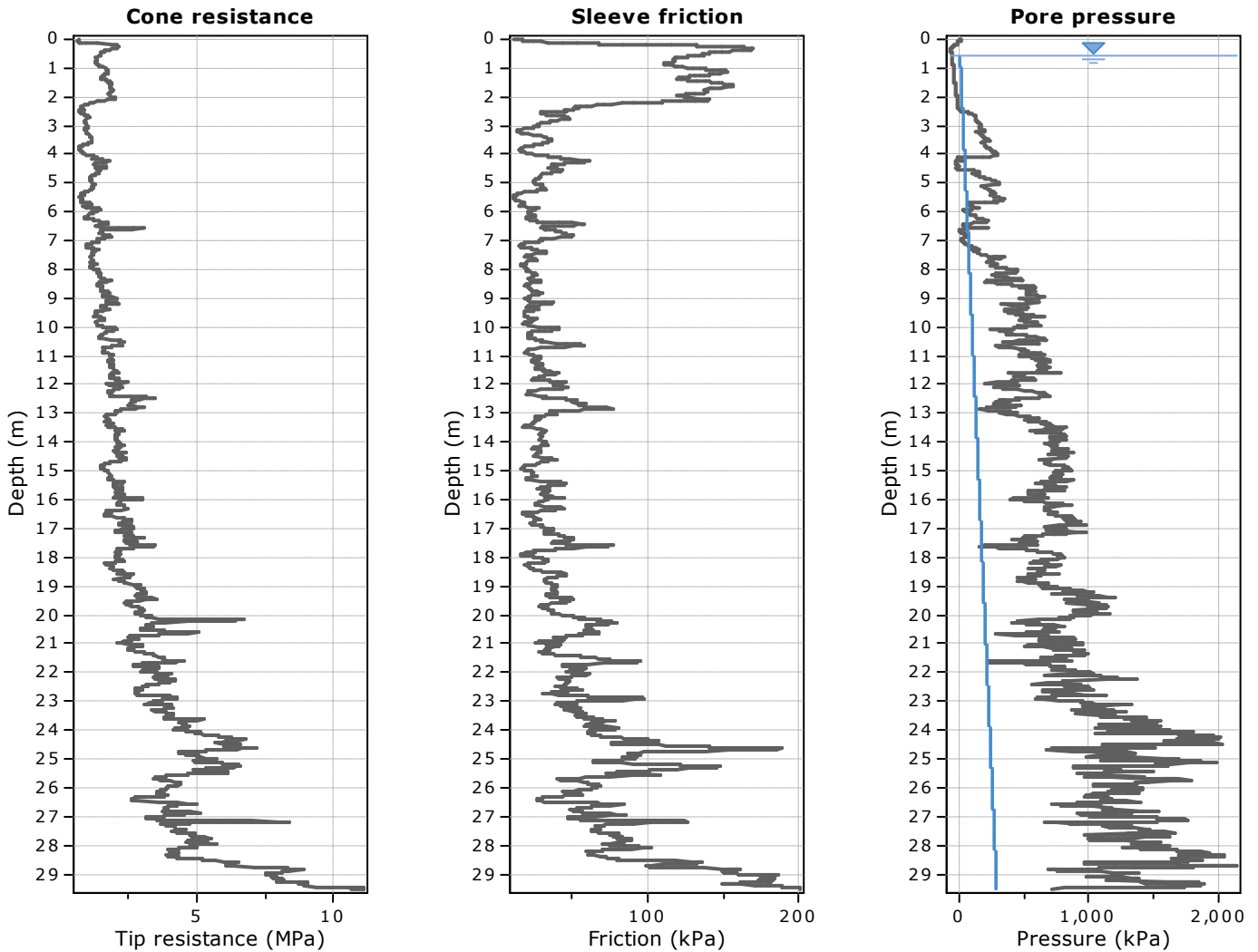
## Dissipation Testing

Test No	Depth (m)	Duration (secs)	Comments

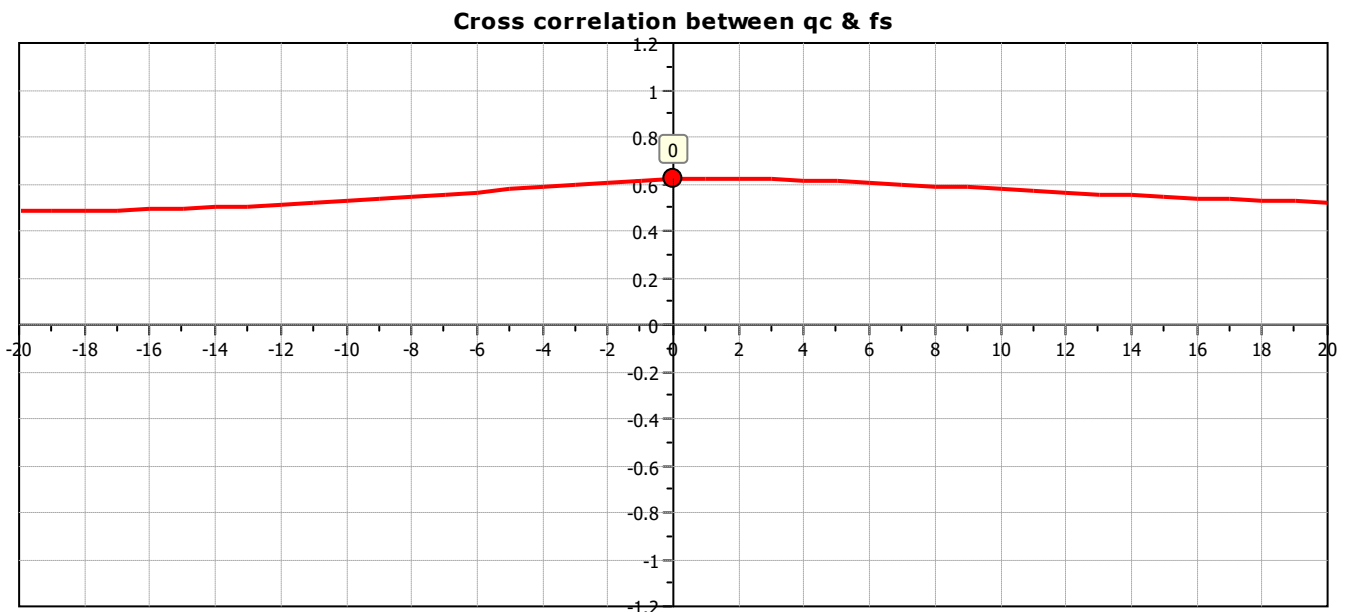
## Notes and Comments

	qc	fs	u
Data loss (typically at rod change points). Either deleted or averaged	22.3-22.34		22.31 23.57





The plot below presents the cross correlation coefficient between the raw  $q_c$  and  $f_s$  values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT08	Job Identifier	HW Willowridge
Test Date	30/07/2024	Operator	Craig Greenfield
Cone Serial Number	5708	Battery Voltage Start	5.81
Cone Area Ratio	0.862	Start Recording	10:55:00 AM
Probe Radius	0.0178	Finish Recording	11:27:00 AM
Date of First Push Current Calibration	9/11/2023	Measured Ground Water Depth	6.2
Metres To Next Calibration	584	Total Penetration Depth (m)	18.285
Depth of Predrill	0	Test ended due to:	<input type="checkbox"/> High Tilt
Depth at Start of Test	0		<input type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input checked="" type="checkbox"/> Anchor Failure

## Zero Value Change % FSO

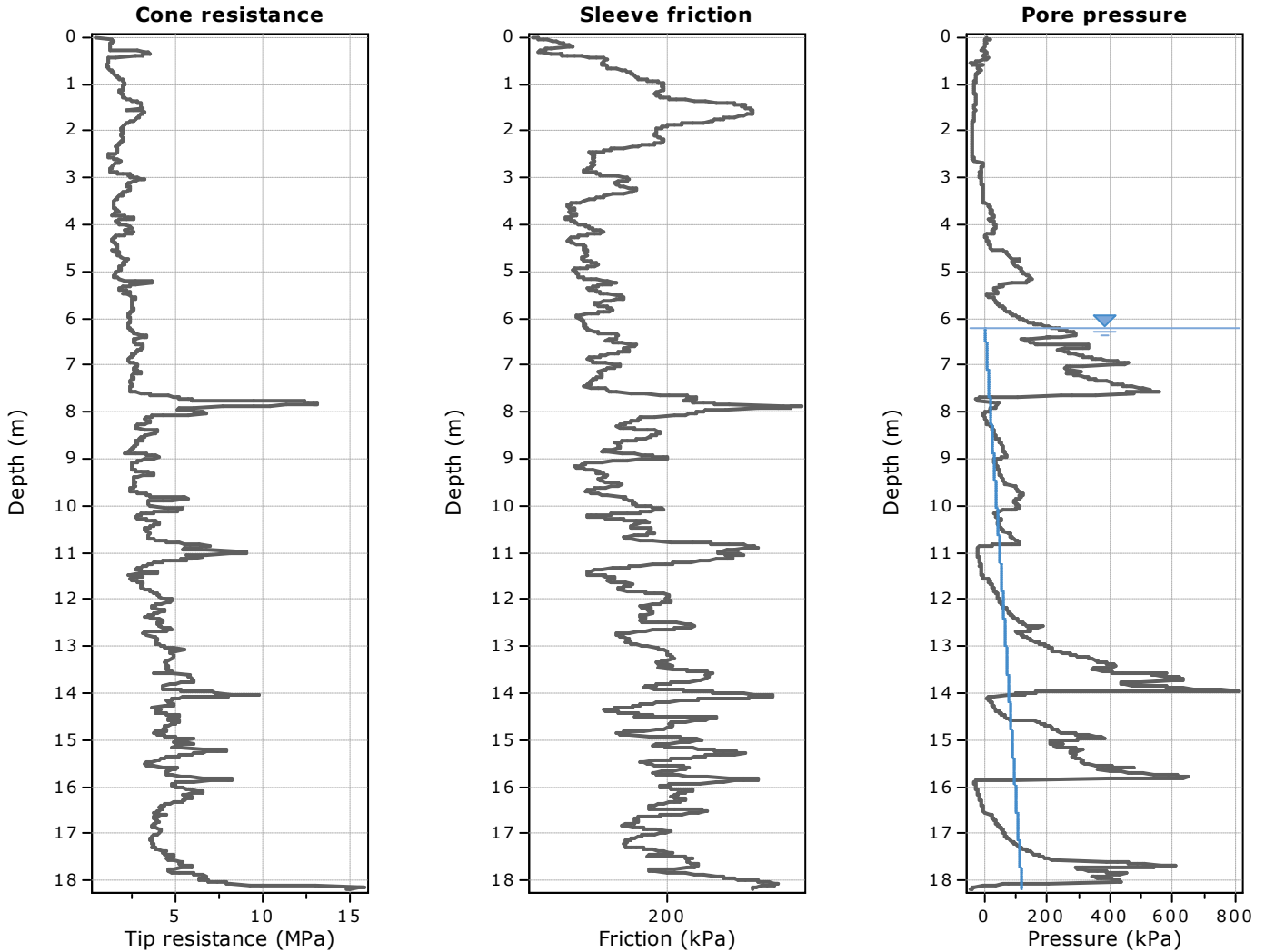
	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.00%	0.01%	0.56%
End of test with tip loosened	0.02%	0.02%	0.12%

## Dissipation Testing

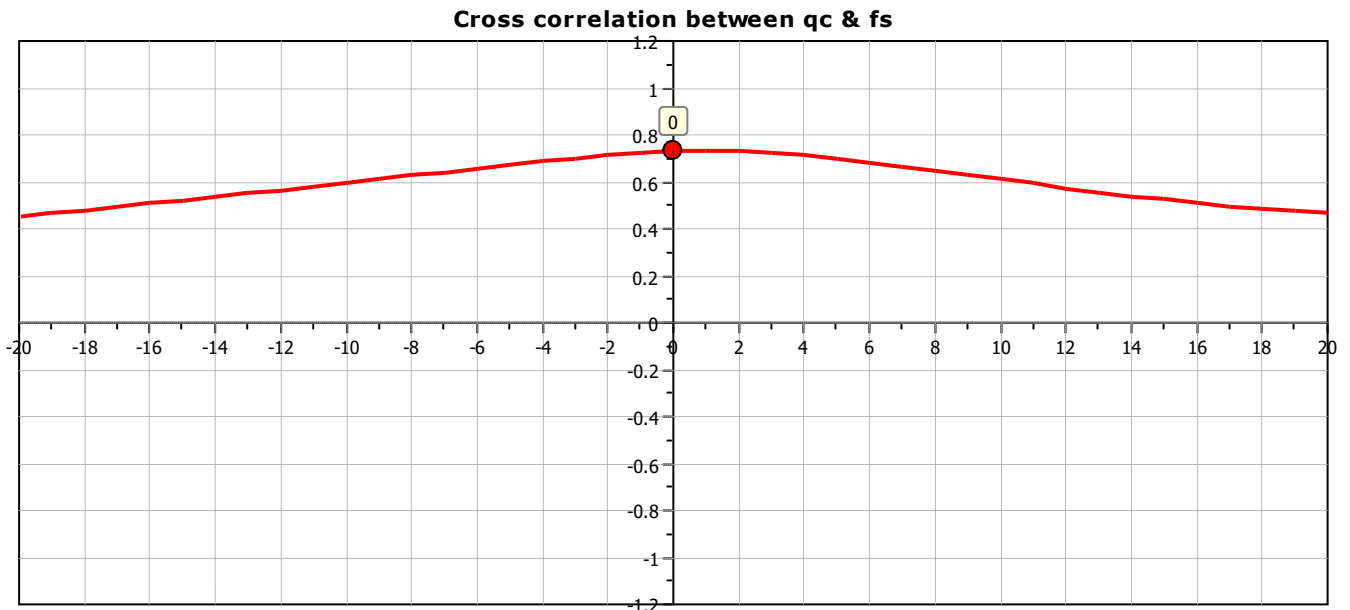
Test No	Depth (m)	Duration (secs)	Comments

## Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u
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The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT09	Job Identifier	HW Willowridge
Test Date	30/07/2024	Operator	Craig Greenfield
Cone Serial Number	5801	Battery Voltage Start	5.79
Cone Area Ratio	0.843	Start Recording	11:59:00 AM
Probe Radius	0.0178	Finish Recording	1:37:00 PM
Date of First Push Current Calibration	9/01/2024	Measured Ground Water Depth	collapsed at 3.9m
Metres To Next Calibration	866	Total Penetration Depth (m)	22.322
Depth of Predrill	0	Test ended due to:	<input type="checkbox"/> High Tilt
Depth at Start of Test	0		<input type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input checked="" type="checkbox"/> Anchor Failure

### Zero Value Change % FSO

	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.00%	0.04%	0.86%
End of test with tip loosened	0.09%	0.00%	0.46%

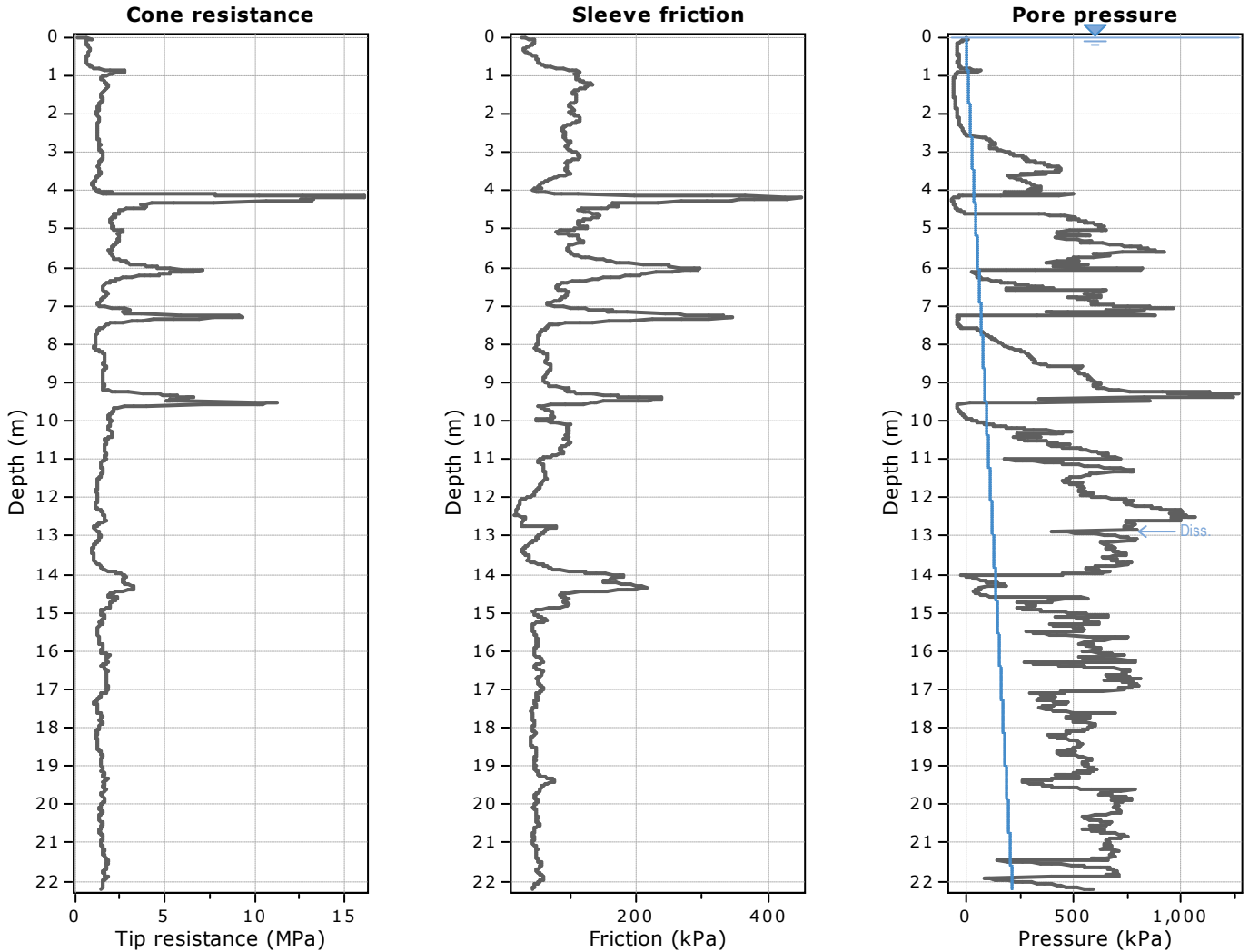
### Dissipation Testing

Test No	Depth (m)	Duration (secs)	Comments
CPT09-D1	12.865	12860	0

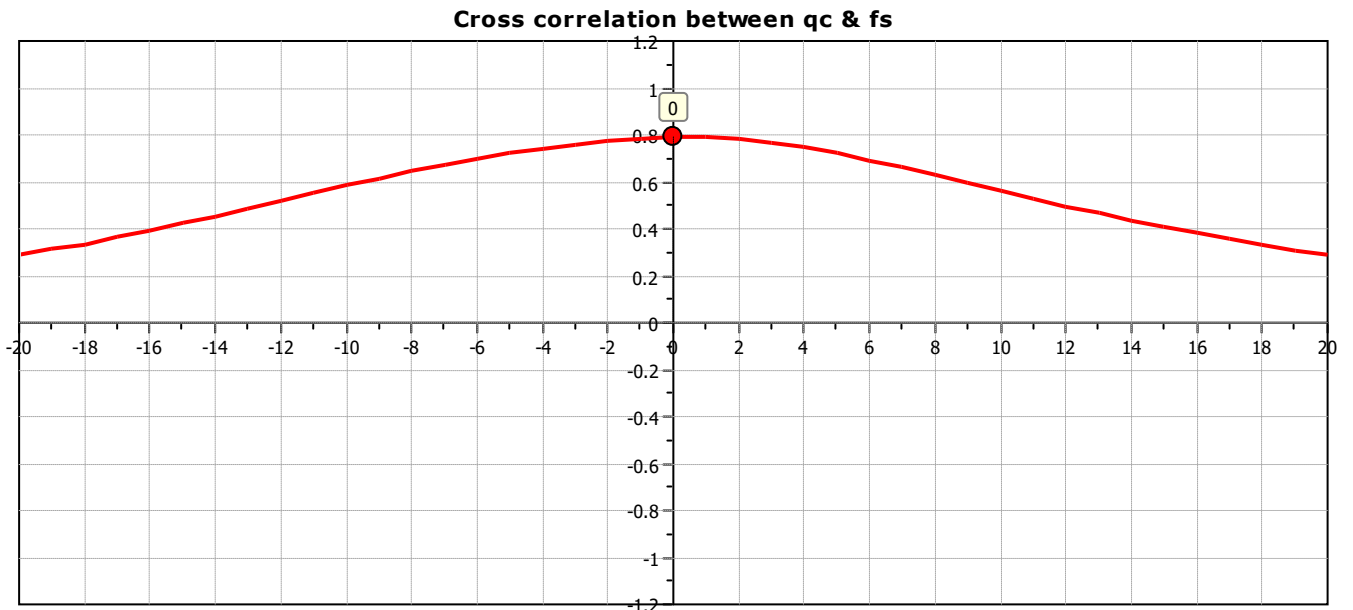
### Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u
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The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT10	Job Identifier	HW Willowridge
Test Date	30/07/2024	Operator	Craig Greenfield
Cone Serial Number	5845	Battery Voltage Start	6.49
Cone Area Ratio	0.85	Start Recording	2:04:00 PM
Probe Radius	0.0179	Finish Recording	2:43:00 PM
Date of First Push Current Calibration	13/03/2024	Measured Ground Water Depth	19.3
Metres To Next Calibration	1148	Total Penetration Depth (m)	24.887
Depth of Predrill	0	Test ended due to:	<input type="checkbox"/> High Tilt
Depth at Start of Test	0		<input type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input checked="" type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input type="checkbox"/> Anchor Failure

## Zero Value Change % FSO

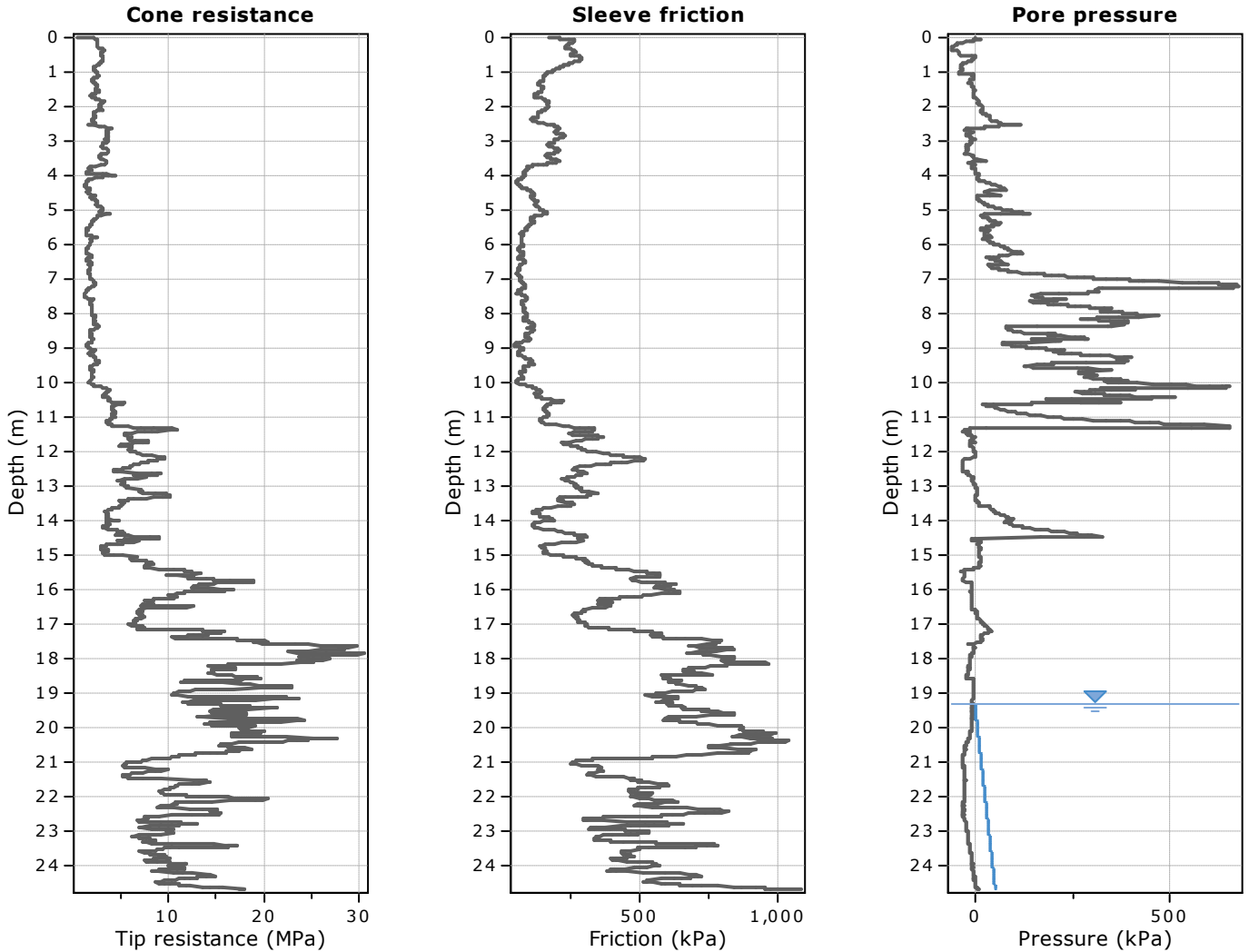
	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.03%	0.04%	0.24%
End of test with tip loosened	0.05%	0.02%	0.60%

## Dissipation Testing

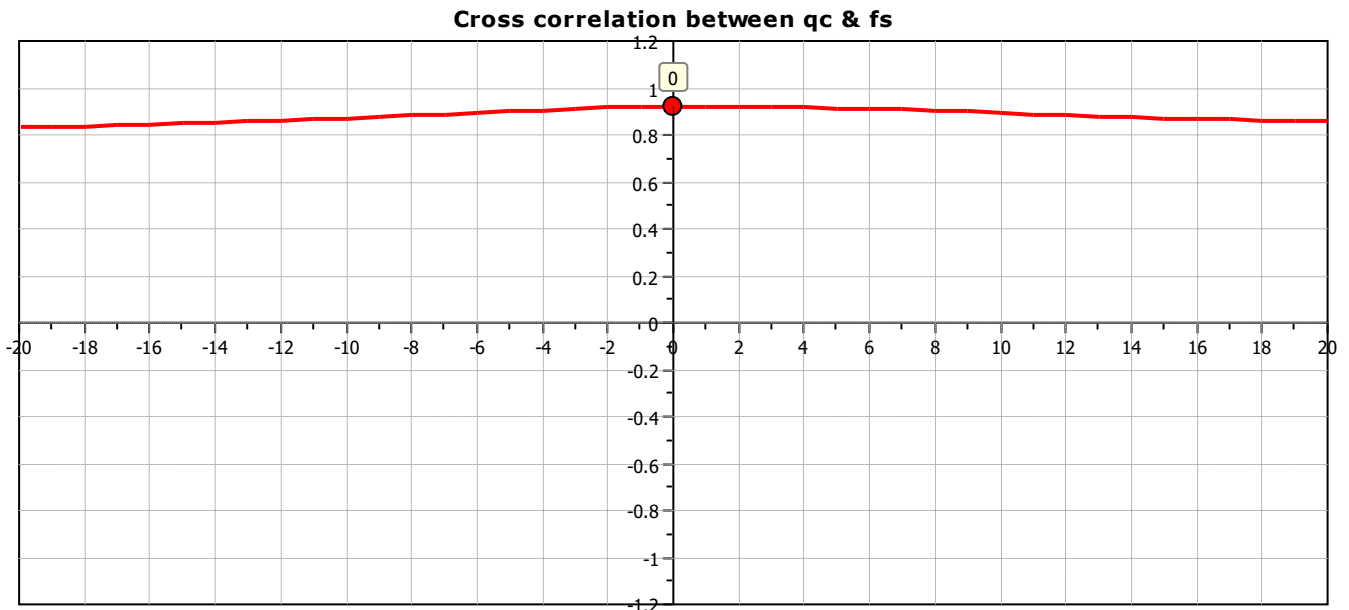
Test No	Depth (m)	Duration (secs)	Comments

## Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u
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The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT11	Job Identifier	HW Willowridge
Test Date	30/07/2024	Operator	Craig Greenfield
Cone Serial Number	5959	Battery Voltage Start	6.29
Cone Area Ratio	0.869	Start Recording	3:07:00 PM
Probe Radius	0.0179	Finish Recording	3:27:00 PM
Date of First Push Current Calibration	26/06/2024	Measured Ground Water Depth	collapsed at 10m dry
Metres To Next Calibration	1375	Total Penetration Depth (m)	10.405
Depth of Predrill	0	Test ended due to:	<input checked="" type="checkbox"/> High Tilt
Depth at Start of Test	0		<input type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input type="checkbox"/> Anchor Failure

### Zero Value Change % FSO

	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.01%	0.04%	0.00%
End of test with tip loosened	0.08%	0.00%	0.76%

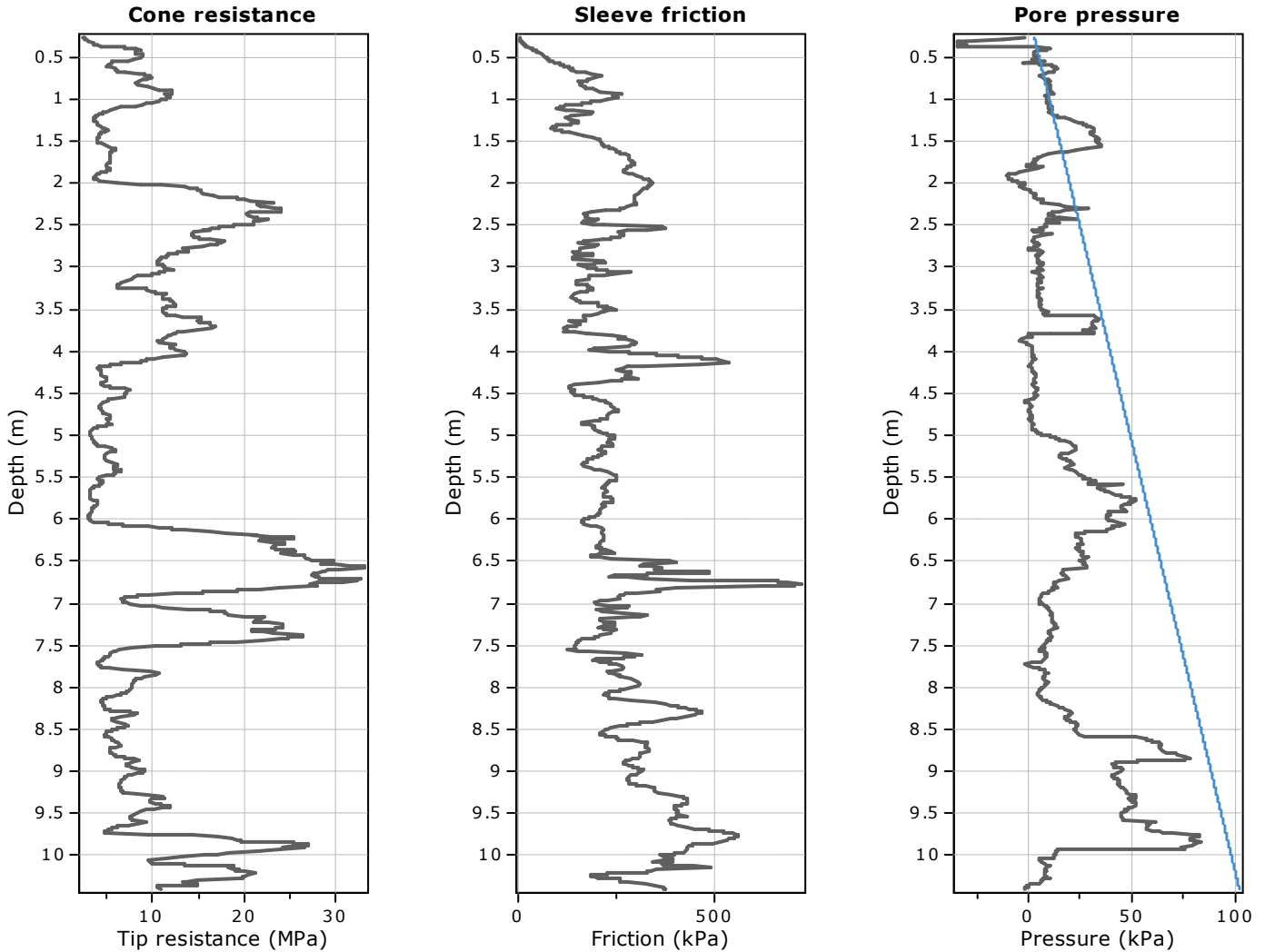
### Dissipation Testing

Test No	Depth (m)	Duration (secs)	Comments

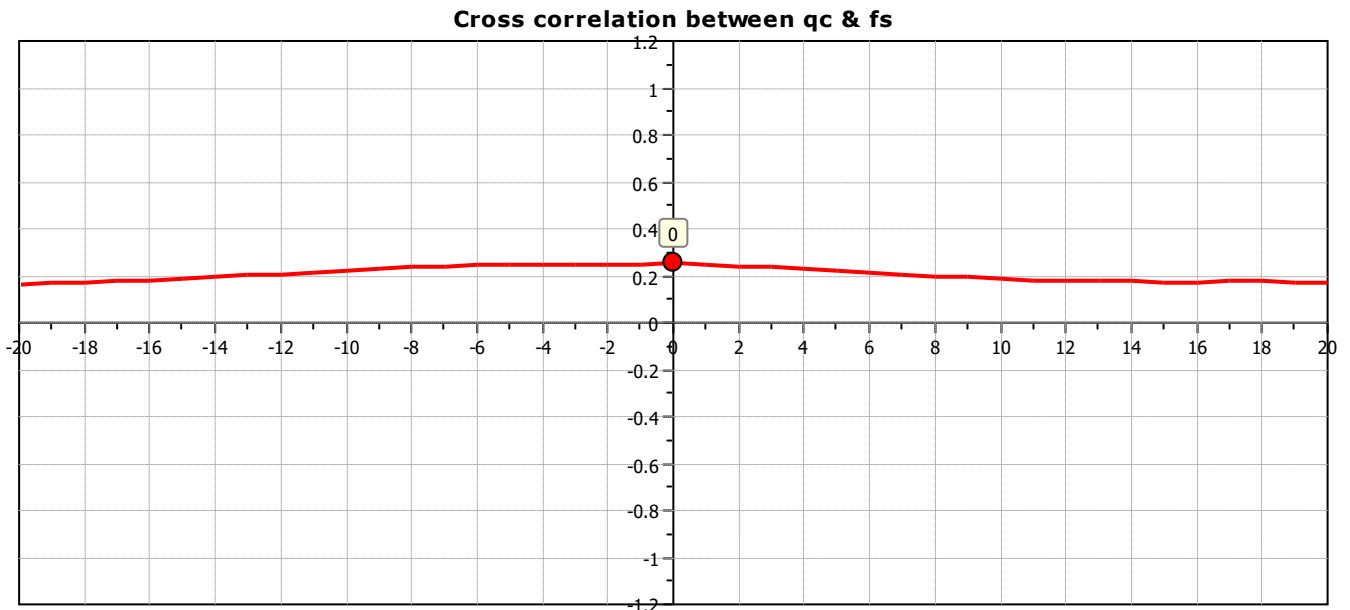
### Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u
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The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT12	Job Identifier	HW Willowridge
Test Date	30/07/2024	Operator	Craig Greenfield
Cone Serial Number	5681	Battery Voltage Start	6.23
Cone Area Ratio	0.865	Start Recording	4:06:00 PM
Probe Radius	0.0177	Finish Recording	4:32:00 PM
Date of First Push Current Calibration	14/09/2023	Measured Ground Water Depth	EOB 16.5m dry
Metres To Next Calibration	204	Total Penetration Depth (m)	16.735
Depth of Predrill	0	Test ended due to:	<input type="checkbox"/> High Tilt
Depth at Start of Test	0		<input type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input checked="" type="checkbox"/> Anchor Failure

### Zero Value Change % FSO

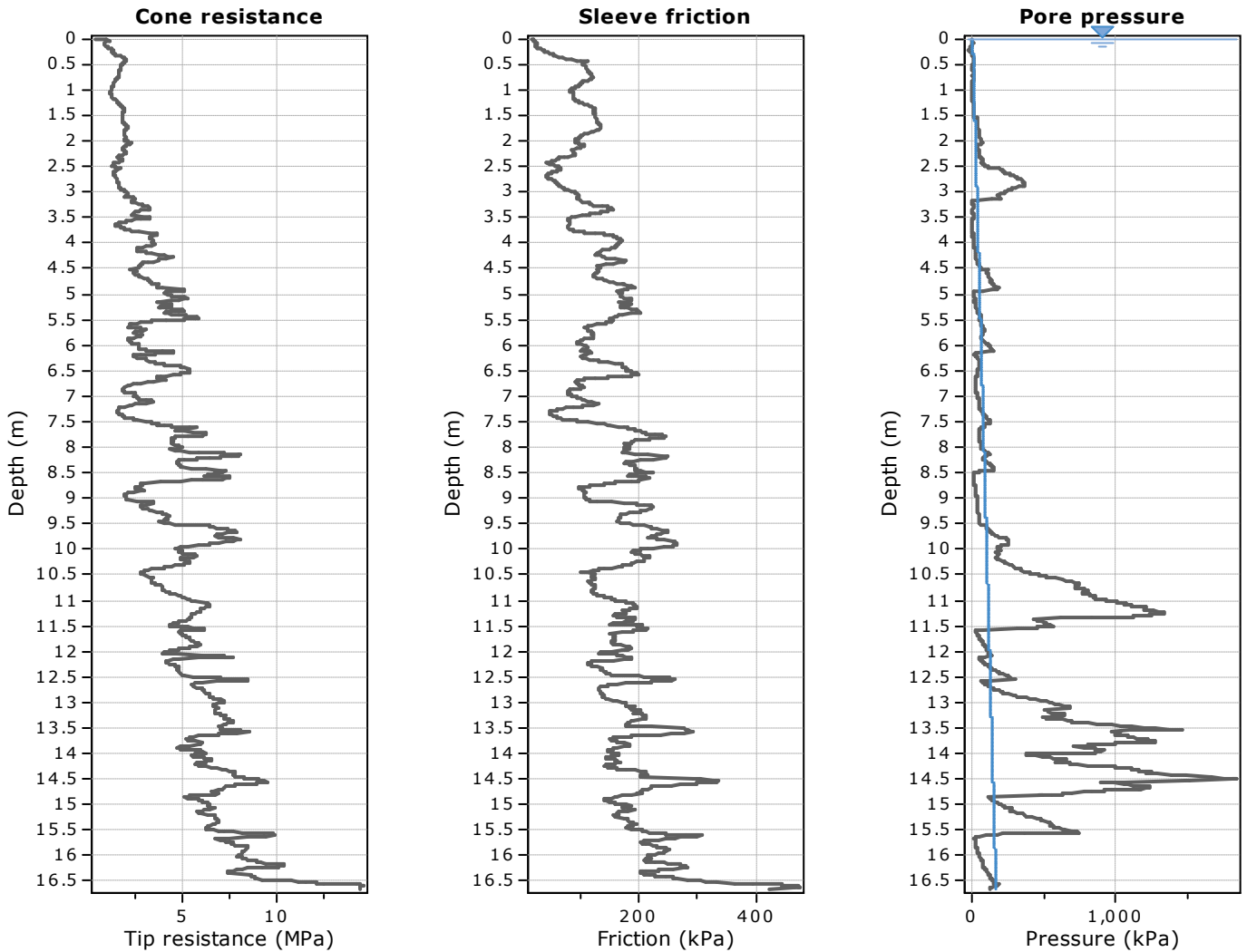
	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.04%	0.05%	0.06%
End of test with tip loosened	0.06%	0.01%	0.88%

### Dissipation Testing

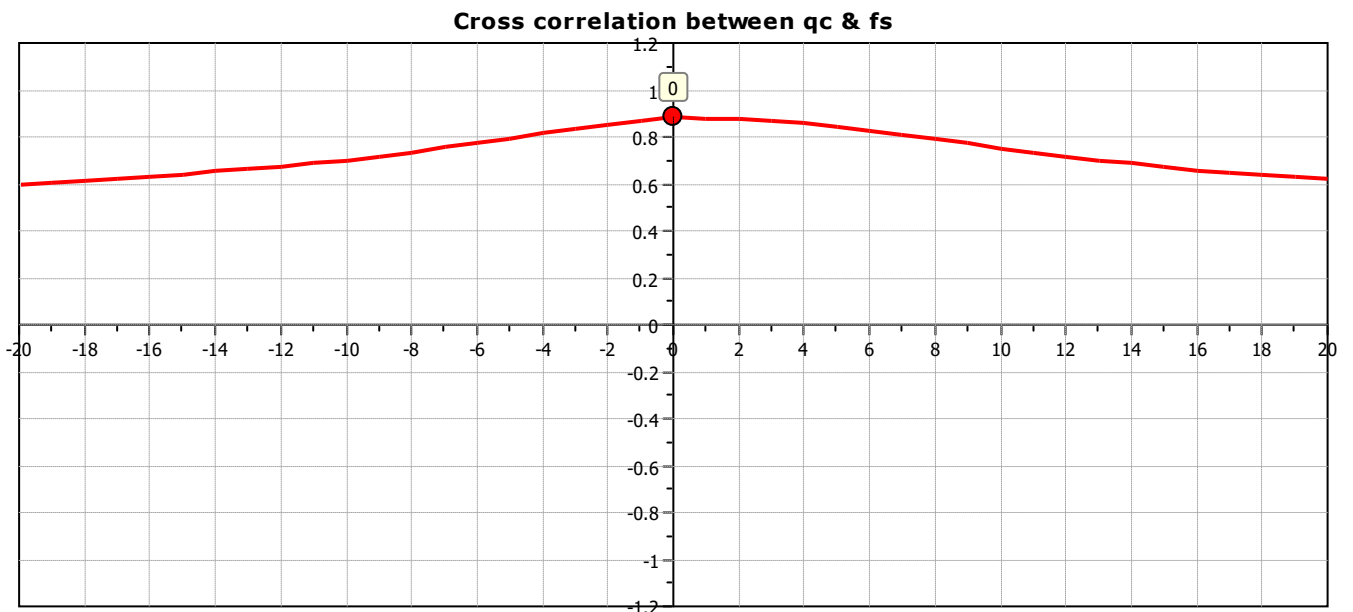
Test No	Depth (m)	Duration (secs)	Comments

### Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u
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The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT13	Job Identifier	HW Willowridge
Test Date	31/07/2024	Operator	Craig Greenfield
Cone Serial Number	5681	Battery Voltage Start	6.24
Cone Area Ratio	0.865	Start Recording	9:43:00 AM
Probe Radius	0.0177	Finish Recording	10:28:00 AM
Date of First Push Current Calibration	14/09/2023	Measured Ground Water Depth	18.3
Metres To Next Calibration	187	Total Penetration Depth (m)	26.445
Depth of Predrill	0	Test ended due to:	<input type="checkbox"/> High Tilt
Depth at Start of Test	0		<input type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input checked="" type="checkbox"/> Anchor Failure

## Zero Value Change % FSO

	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.05%	0.08%	0.18%
End of test with tip loosened	0.05%	0.06%	0.74%

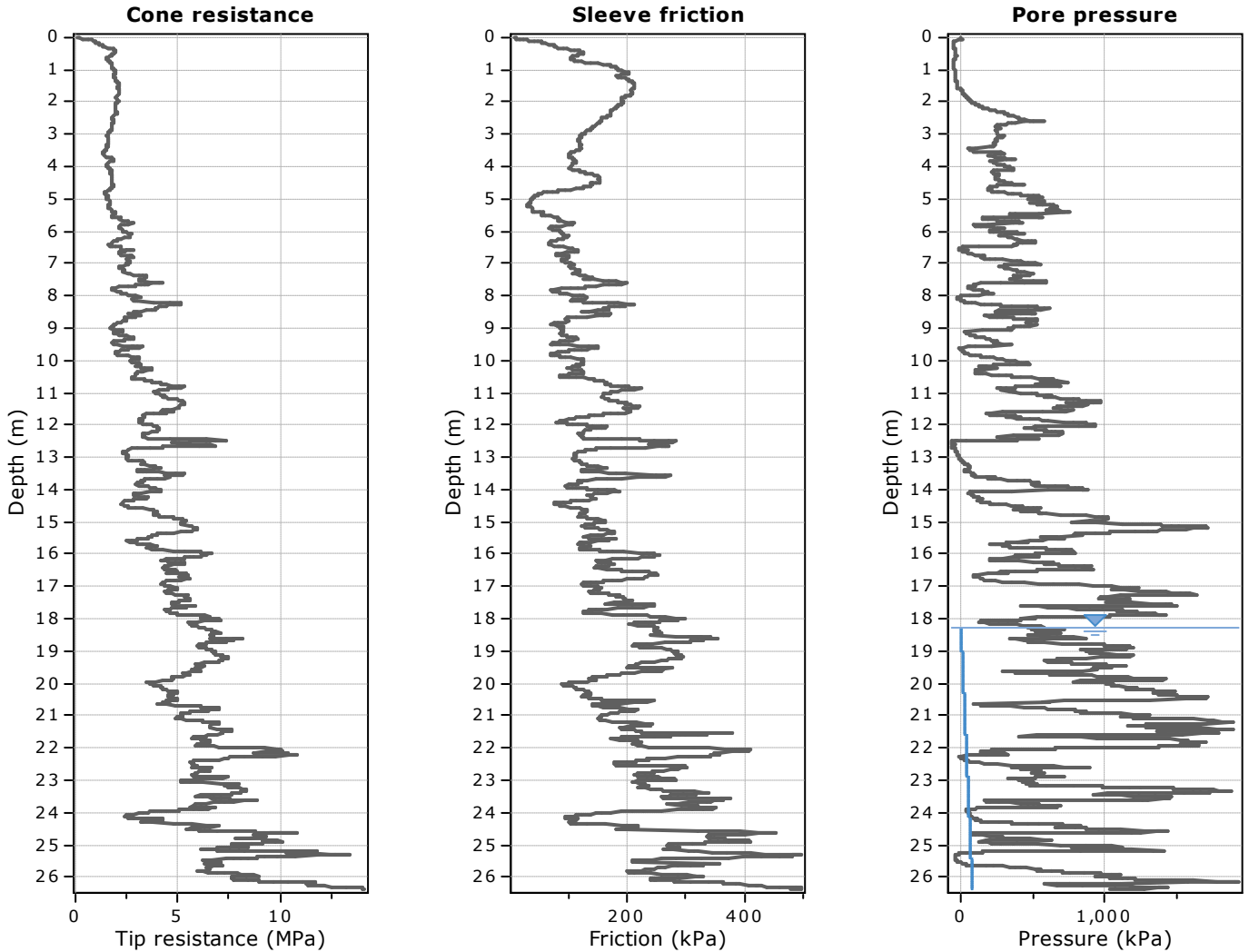
## Dissipation Testing

Test No	Depth (m)	Duration (secs)	Comments

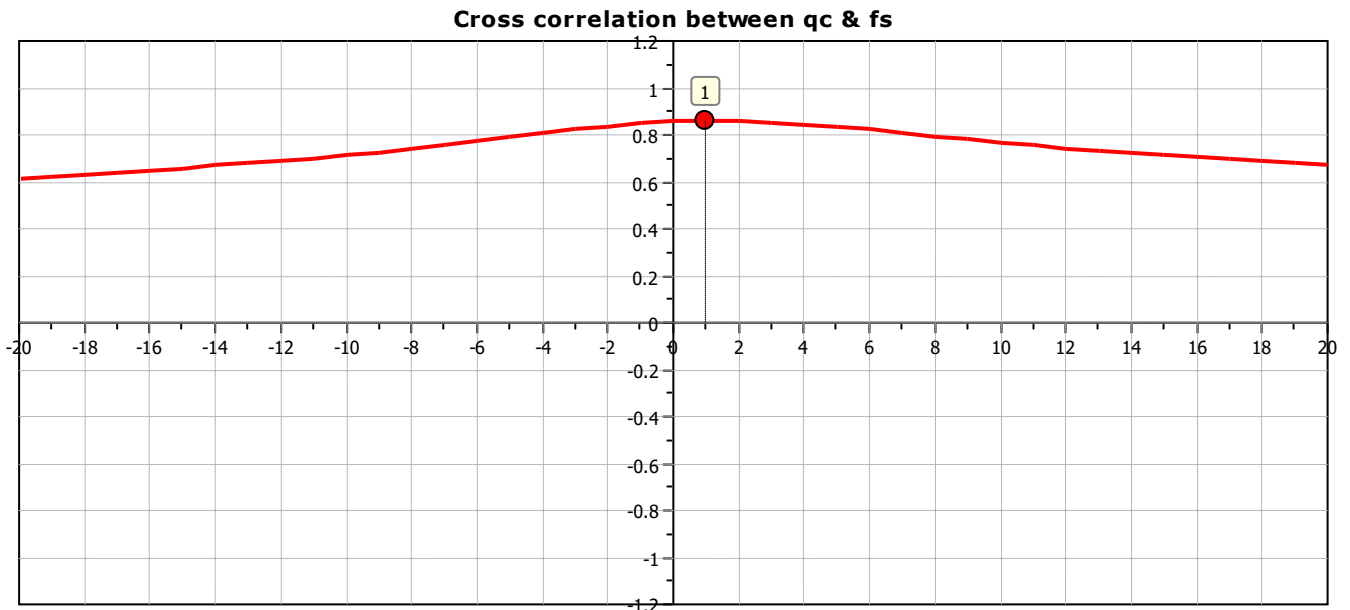
## Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc 23.8	fs	u
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The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT14	Job Identifier	HW Willowridge
Test Date	31/07/2024	Operator	Craig Greenfield
Cone Serial Number	5708	Battery Voltage Start	6.1
Cone Area Ratio	0.862	Start Recording	11:19:00 AM
Probe Radius	0.0178	Finish Recording	11:57:00 AM
Date of First Push Current Calibration	9/11/2023	Measured Ground Water Depth	collapsed at 18.8m dry
Metres To Next Calibration	566	Total Penetration Depth (m)	24.917
Depth of Predrill	0	Test ended due to:	<input type="checkbox"/> High Tilt
Depth at Start of Test	0		<input type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input checked="" type="checkbox"/> Anchor Failure

## Zero Value Change % FSO

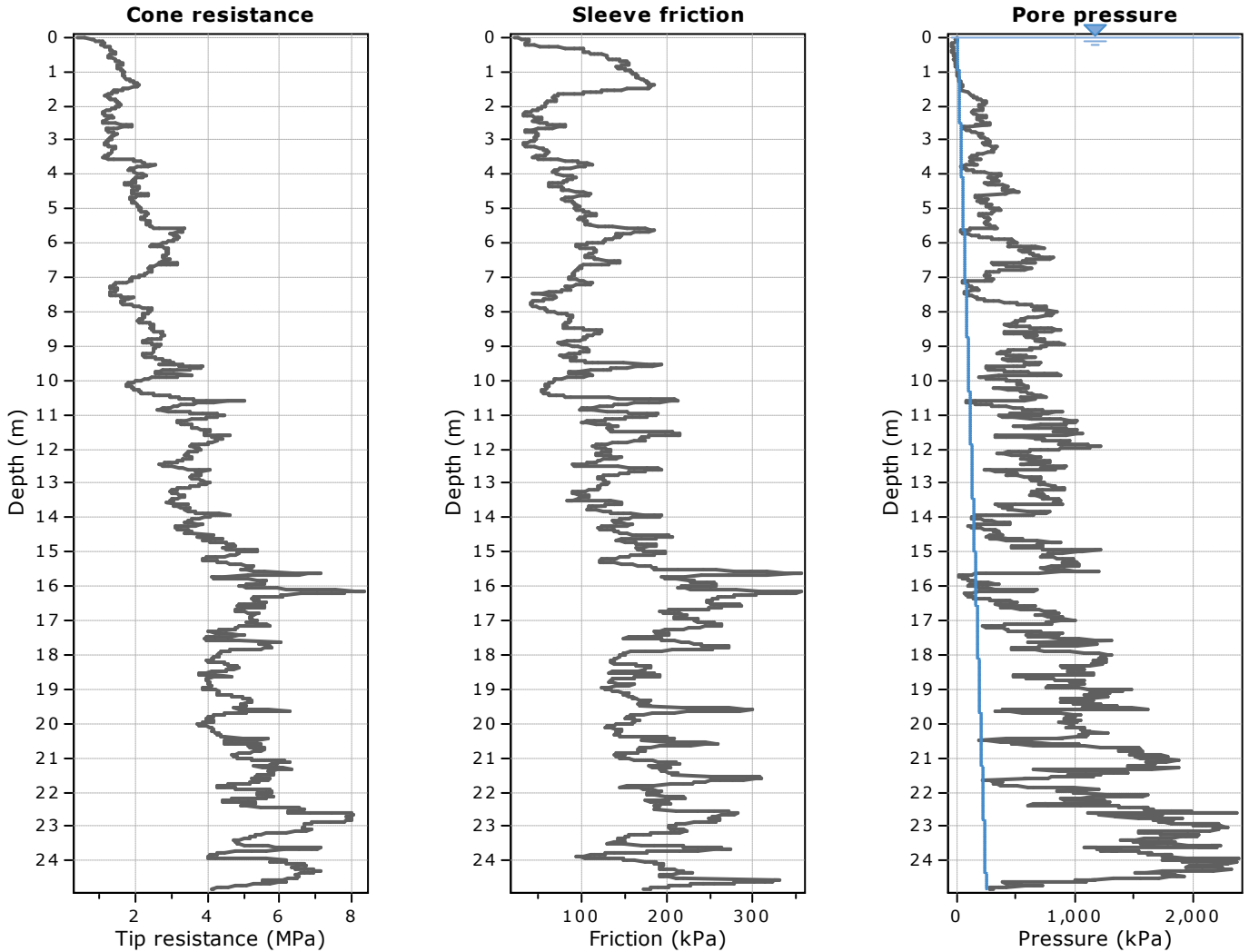
	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.07%	0.02%	0.26%
End of test with tip loosened	0.09%	0.00%	0.94%

## Dissipation Testing

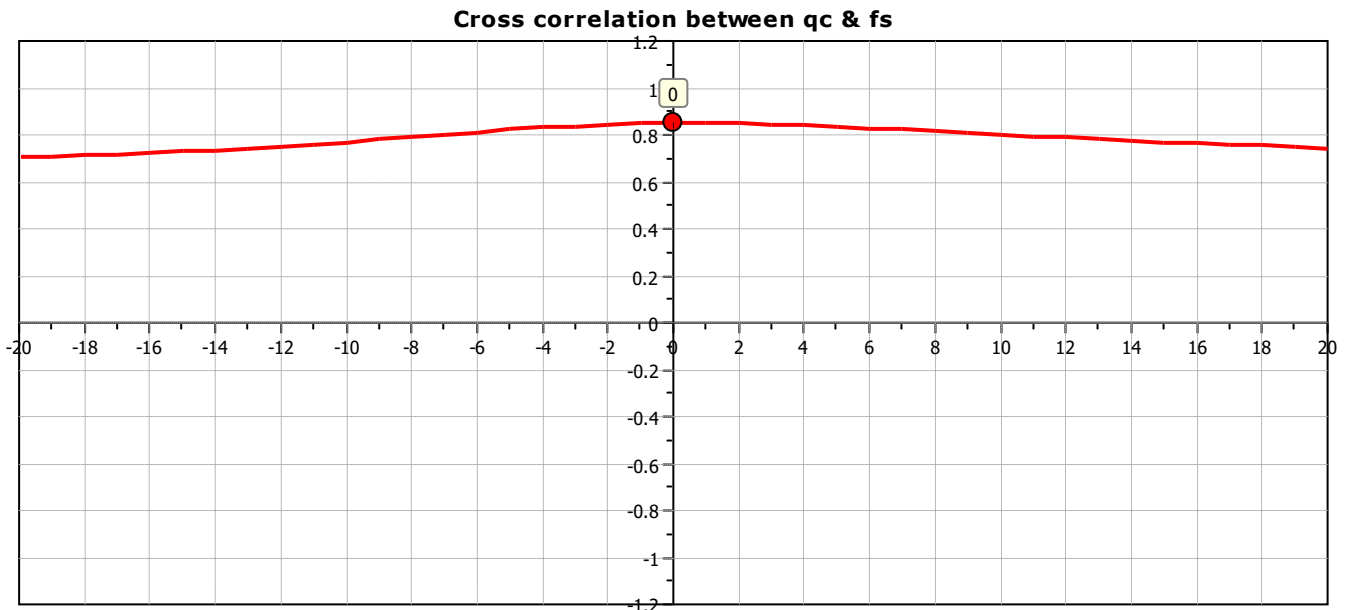
Test No	Depth (m)	Duration (secs)	Comments

## Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u
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The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT15	Job Identifier	HW Willowridge
Test Date	31/07/2024	Operator	Craig Greenfield
Cone Serial Number	5801	Battery Voltage Start	6
Cone Area Ratio	0.843	Start Recording	12:16:00 PM
Probe Radius	0.0178	Finish Recording	12:55:00 PM
Date of First Push Current Calibration	9/01/2024	Measured Ground Water Depth	collapsed at 3m
Metres To Next Calibration	844	Total Penetration Depth (m)	23.605
Depth of Predrill	0	Test ended due to:	<input type="checkbox"/> High Tilt
Depth at Start of Test	0		<input type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input checked="" type="checkbox"/> Anchor Failure

### Zero Value Change % FSO

	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.02%	0.00%	0.84%
End of test with tip loosened	0.01%	0.12%	0.06%

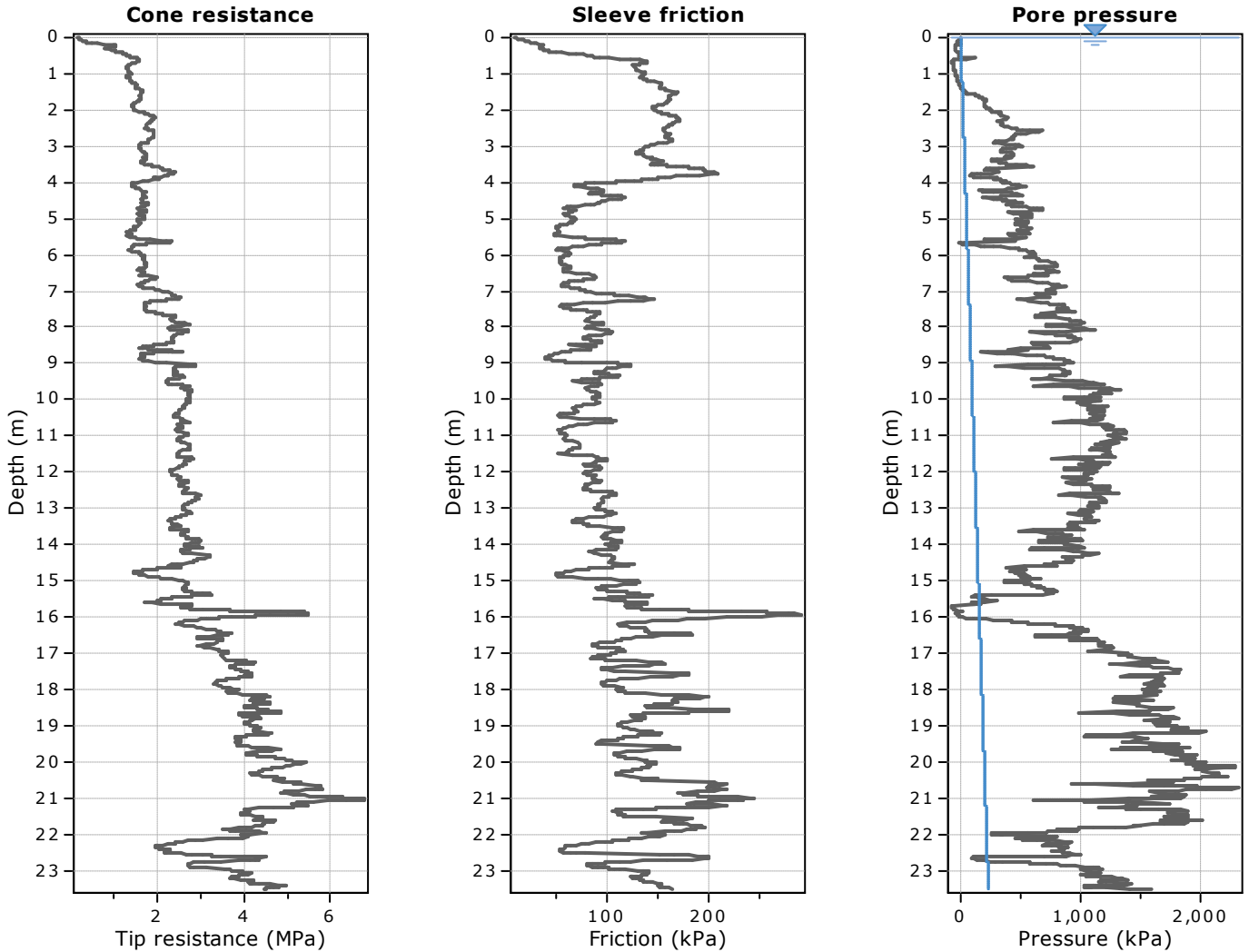
### Dissipation Testing

Test No	Depth (m)	Duration (secs)	Comments

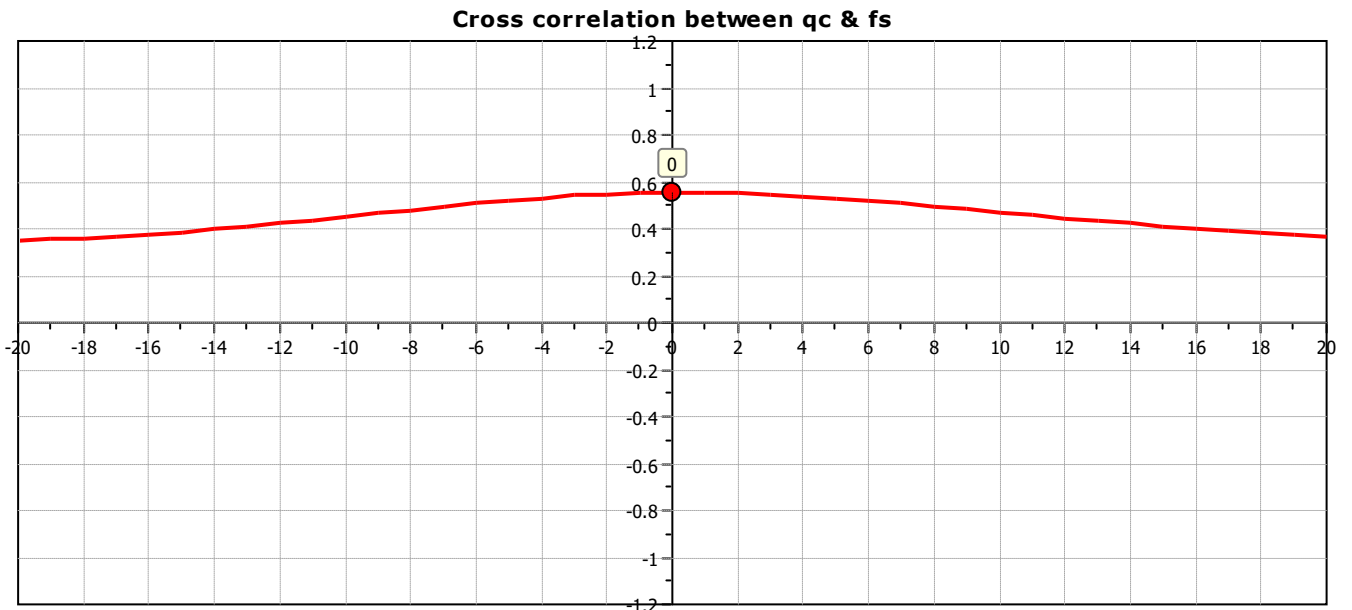
### Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u
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The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT16	Job Identifier	HW Willowridge
Test Date	1/08/2024	Operator	Craig Greenfield
Cone Serial Number	5681	Battery Voltage Start	5.98
Cone Area Ratio	0.865	Start Recording	2:07:00 PM
Probe Radius	0.0177	Finish Recording	2:42:00 PM
Date of First Push Current Calibration	14/09/2023	Measured Ground Water Depth	10.6
Metres To Next Calibration	161	Total Penetration Depth (m)	20.475
Depth of Predrill	0	Test ended due to:	<input type="checkbox"/> High Tilt
Depth at Start of Test	0		<input type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input checked="" type="checkbox"/> Anchor Failure

### Zero Value Change % FSO

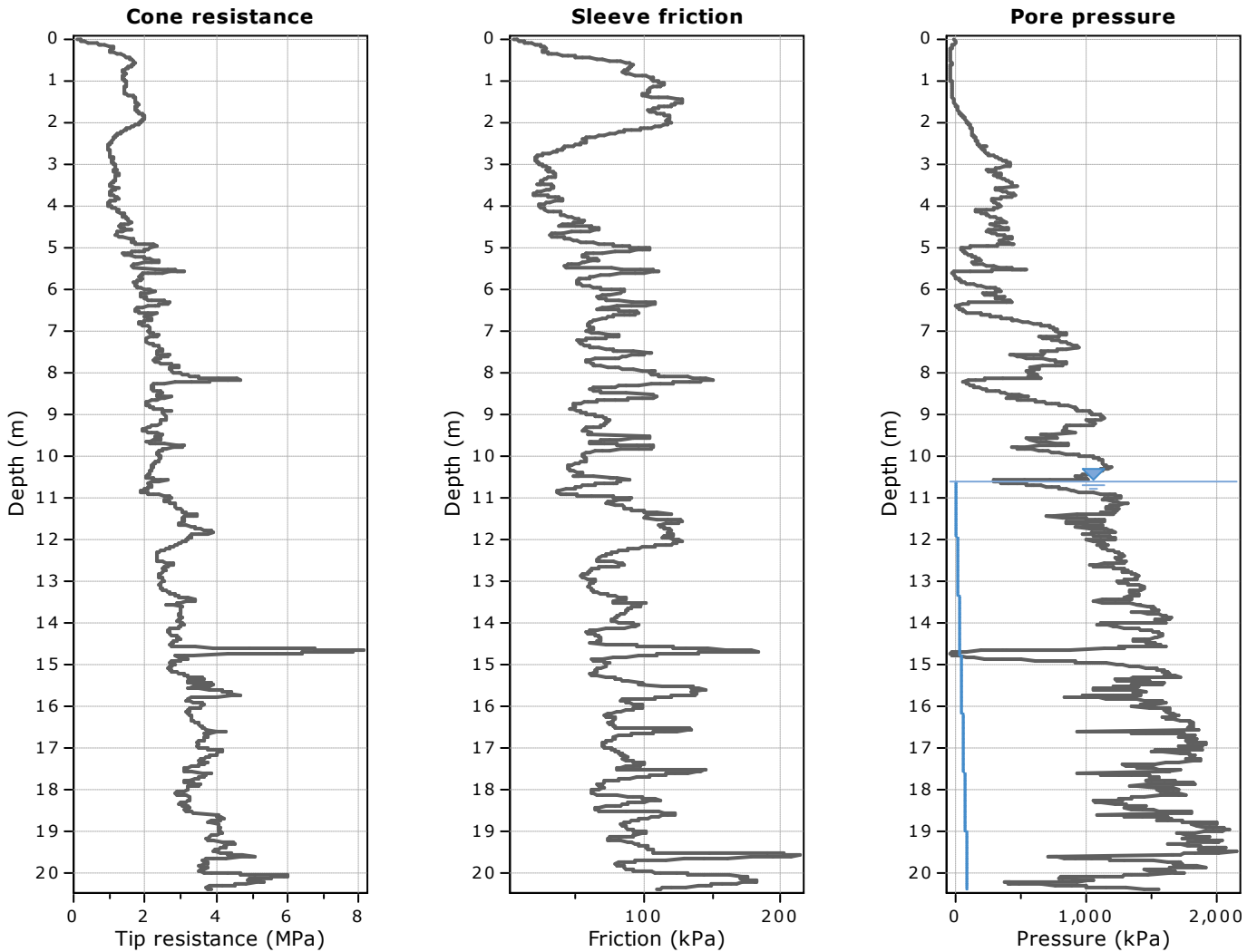
	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.06%	0.07%	0.74%
End of test with tip loosened	0.09%	0.03%	1.08%

### Dissipation Testing

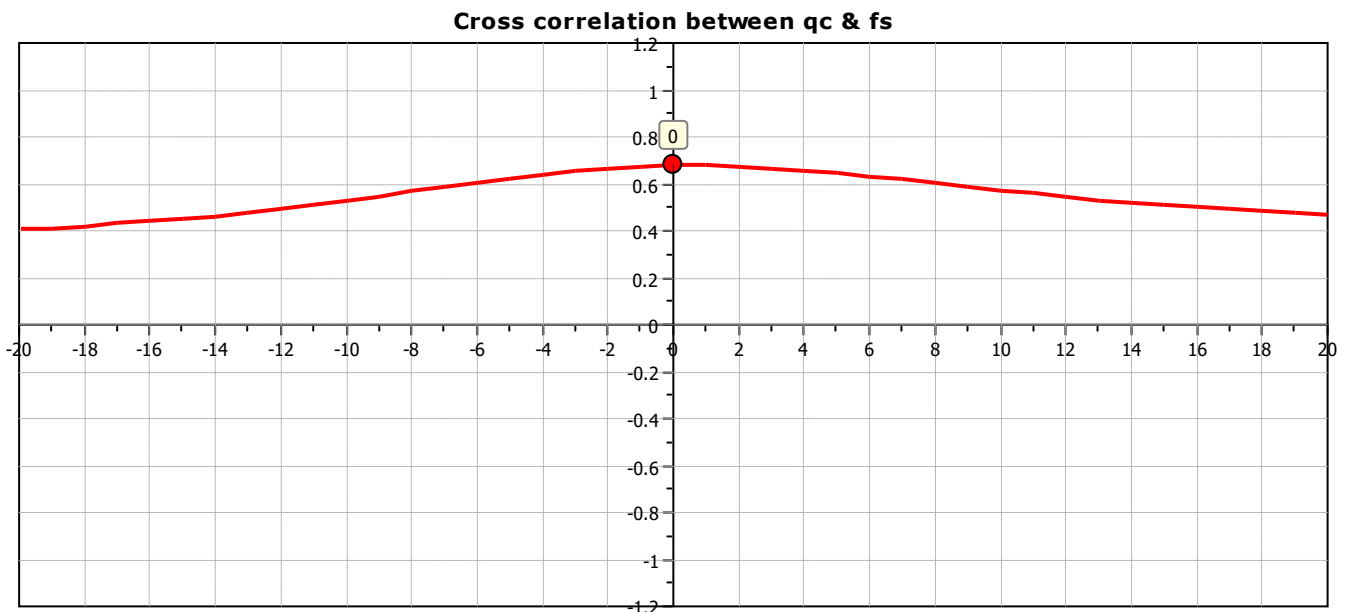
Test No	Depth (m)	Duration (secs)	Comments

### Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc 8.87-8.92	fs	u 8.89
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The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT17	Job Identifier	HW Willowridge
Test Date	1/08/2024	Operator	Craig Greenfield
Cone Serial Number	5708	Battery Voltage Start	5.9
Cone Area Ratio	0.862	Start Recording	3:02:00 PM
Probe Radius	0.0178	Finish Recording	3:48:00 PM
Date of First Push Current Calibration	9/11/2023	Measured Ground Water Depth	collapsed at 19.3m
Metres To Next Calibration	541	Total Penetration Depth (m)	28.62
Depth of Predrill	0	Test ended due to:	<input type="checkbox"/> High Tilt
Depth at Start of Test	0		<input type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input checked="" type="checkbox"/> Anchor Failure

## Zero Value Change % FSO

	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.04%	0.11%	0.08%
End of test with tip loosened	0.06%	0.06%	0.66%

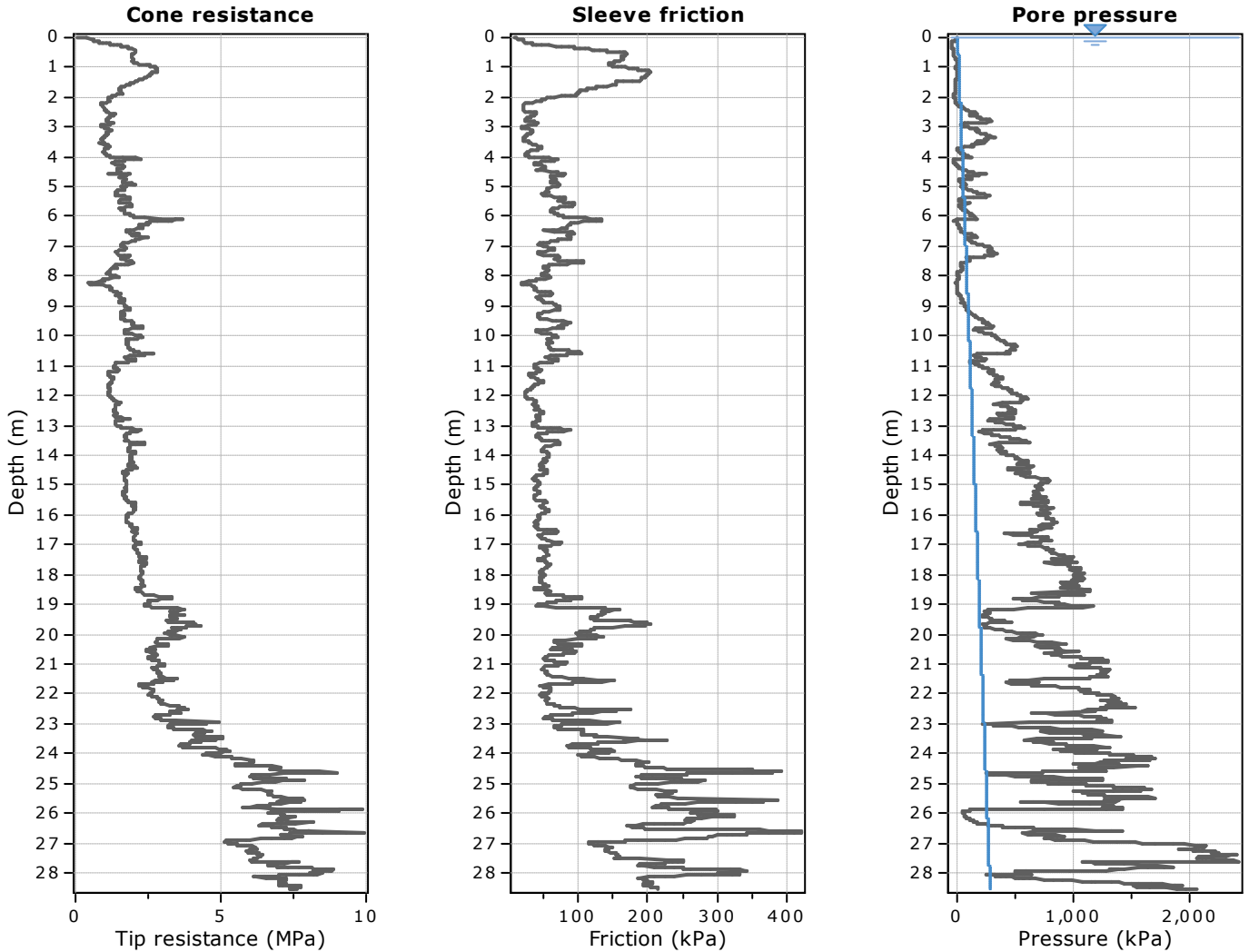
## Dissipation Testing

Test No	Depth (m)	Duration (secs)	Comments

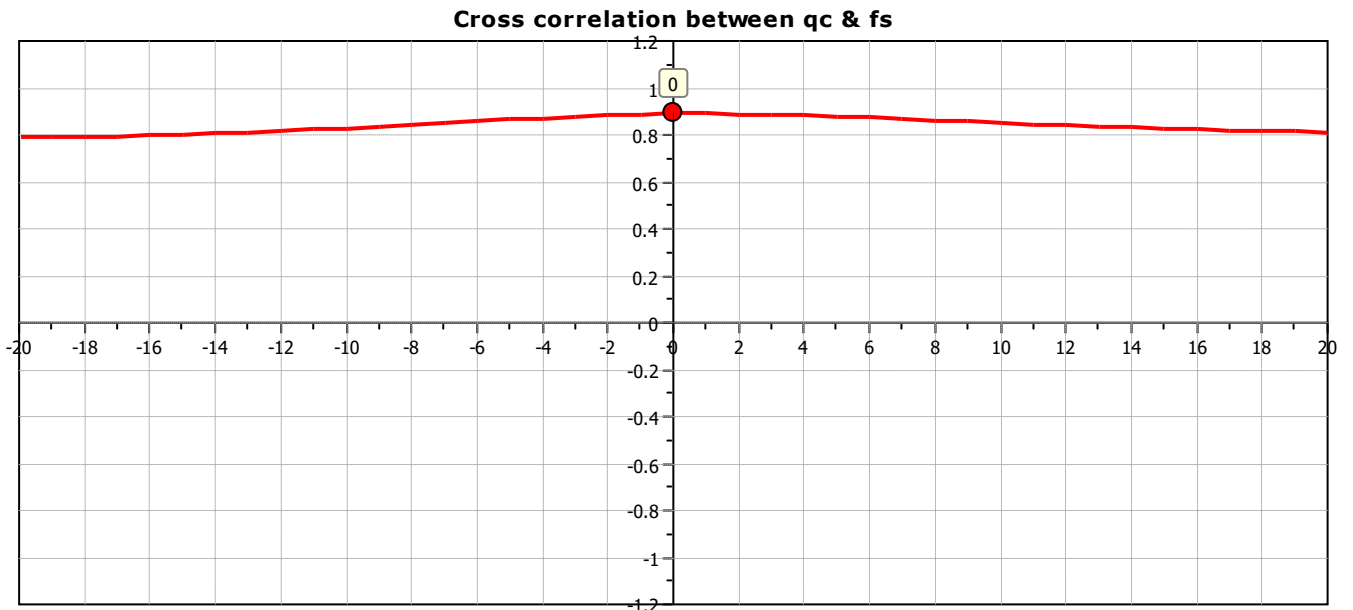
## Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u
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The plot below presents the cross correlation coefficient between the raw  $q_c$  and  $f_s$  values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT18	Job Identifier	HW Willowridge
Test Date	1/08/2024	Operator	Craig Greenfield
Cone Serial Number	5681	Battery Voltage Start	5.98
Cone Area Ratio	0.865	Start Recording	8:48:00 AM
Probe Radius	0.0177	Finish Recording	9:35:00 AM
Date of First Push Current Calibration	14/09/2023	Measured Ground Water Depth	EOB 29.6m dry
Metres To Next Calibration	140	Total Penetration Depth (m)	29.762
Depth of Predrill	0	Test ended due to:	<input type="checkbox"/> High Tilt
Depth at Start of Test	0		<input type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input checked="" type="checkbox"/> Anchor Failure

### Zero Value Change % FSO

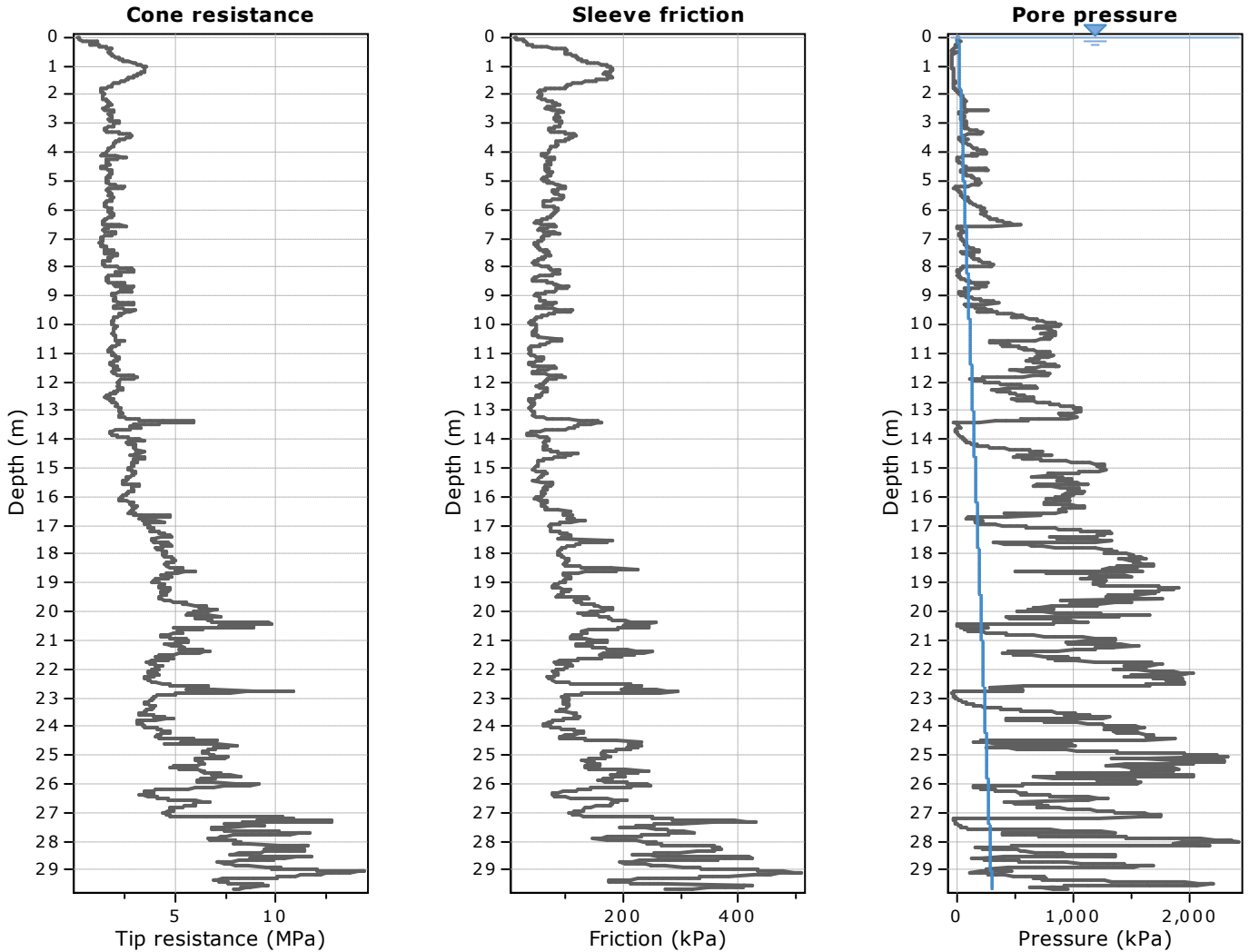
	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.02%	0.08%	0.12%
End of test with tip loosened	0.08%	0.18%	0.00%

### Dissipation Testing

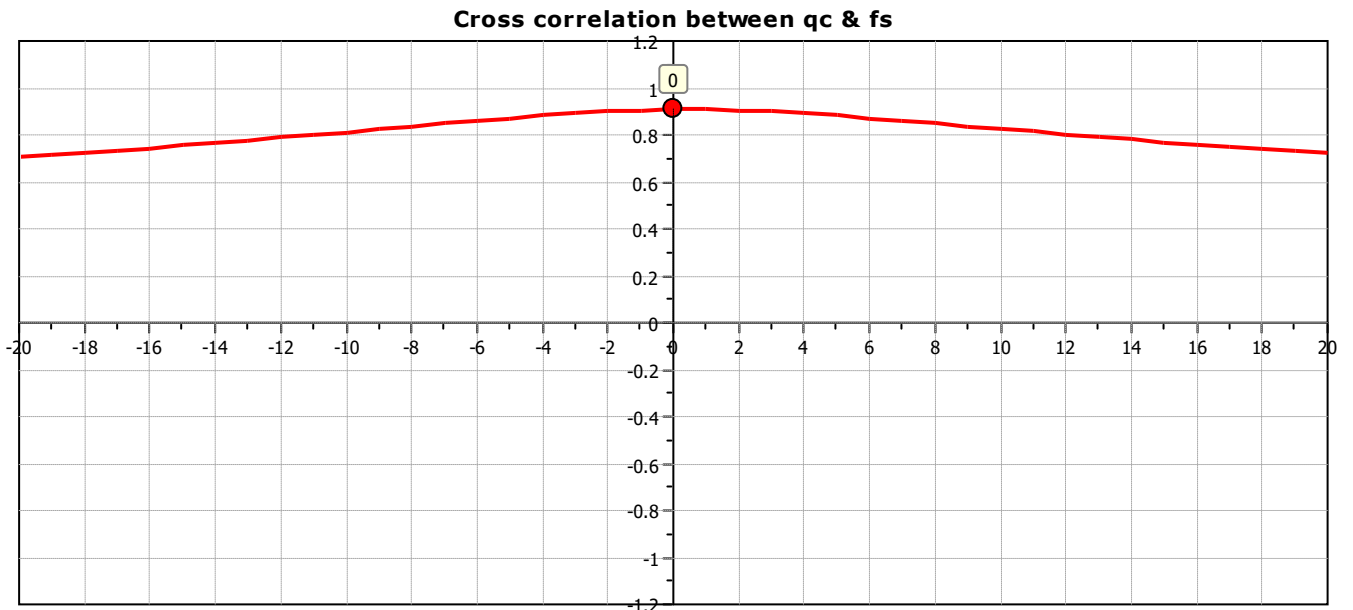
Test No	Depth (m)	Duration (secs)	Comments

### Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u
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The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT19	Job Identifier	HW Willowridge
Test Date	1/08/2024	Operator	Craig Greenfield
Cone Serial Number	5708	Battery Voltage Start	5.86
Cone Area Ratio	0.862	Start Recording	10:02:00 AM
Probe Radius	0.0178	Finish Recording	10:26:00 AM
Date of First Push Current Calibration	9/11/2023	Measured Ground Water Depth	10.2
Metres To Next Calibration	513	Total Penetration Depth (m)	15.025
Depth of Predrill	0	Test ended due to:	<input type="checkbox"/> High Tilt
Depth at Start of Test	0		<input type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input checked="" type="checkbox"/> Target Depth
			<input type="checkbox"/> Anchor Failure

### Zero Value Change % FSO

	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.00%	0.01%	0.56%
End of test with tip loosened	0.02%	0.02%	0.14%

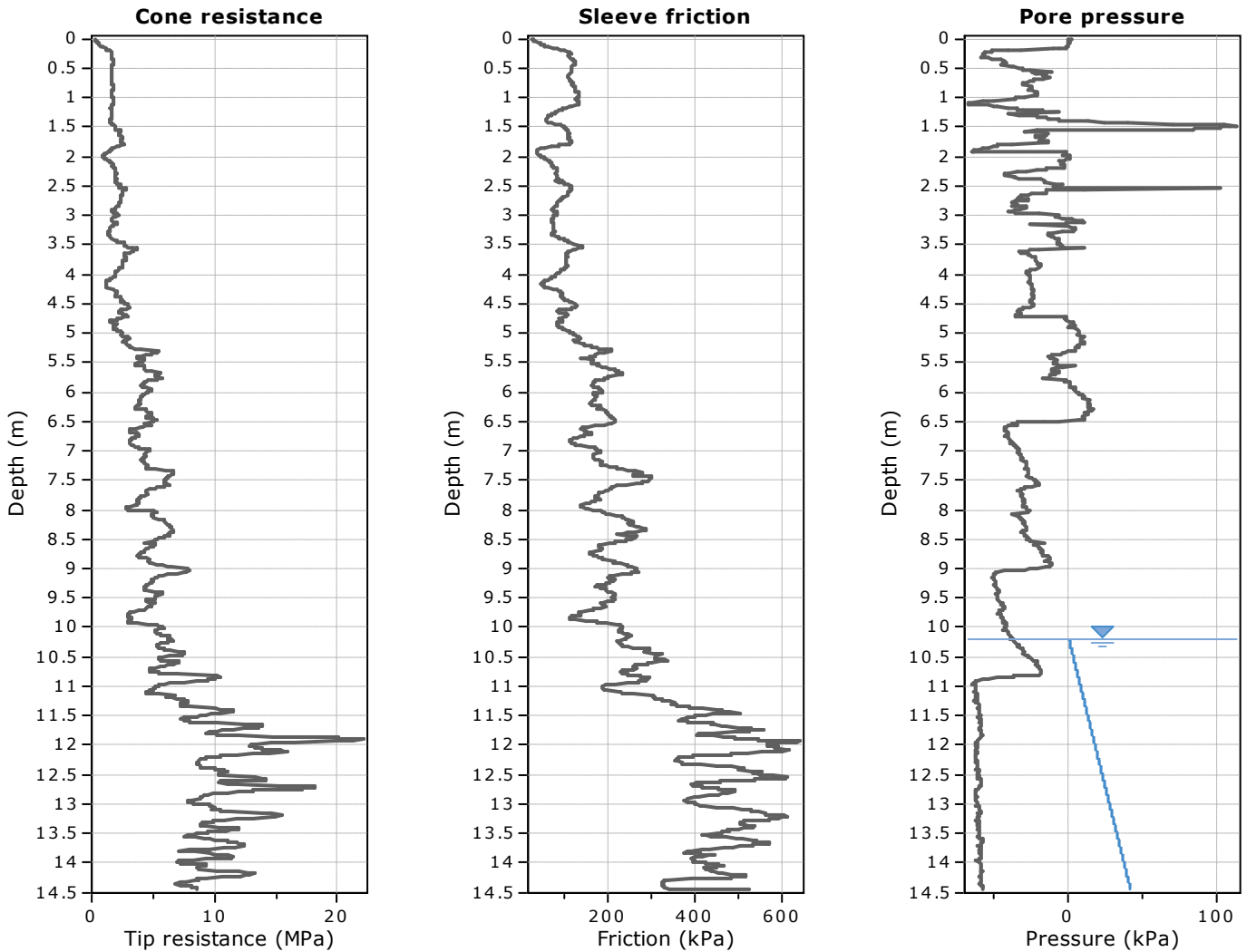
### Dissipation Testing

Test No	Depth (m)	Duration (secs)	Comments

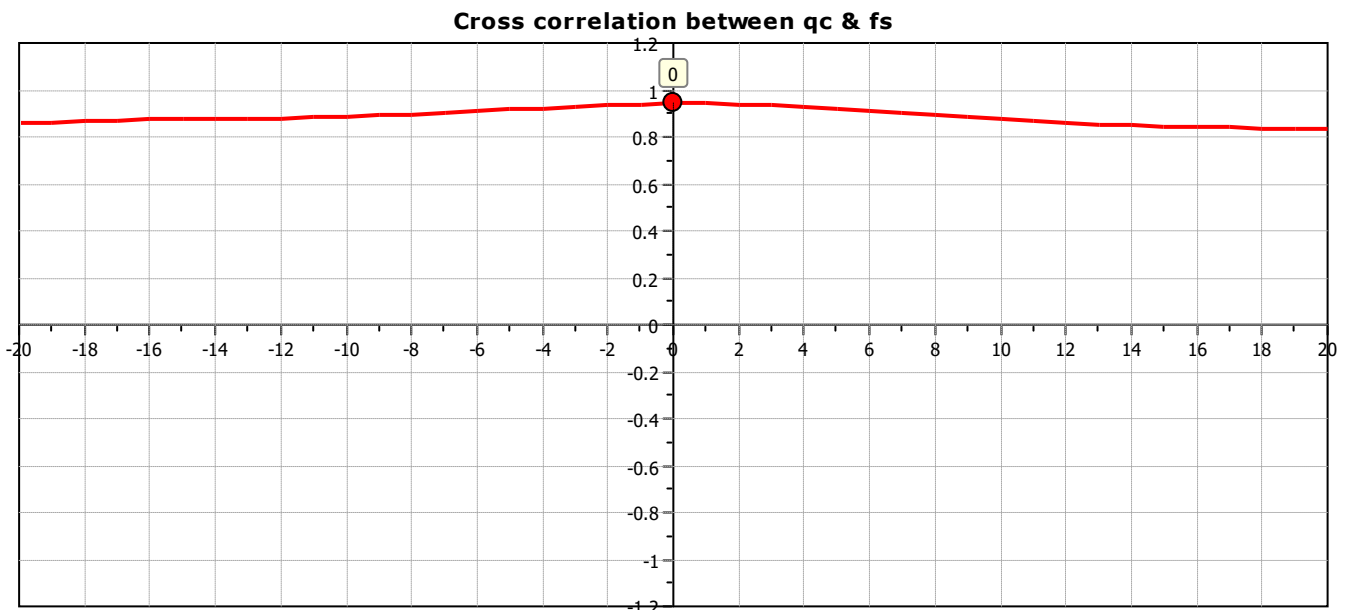
### Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u
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The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT20	Job Identifier	HW Willowridge
Test Date	1/08/2024	Operator	Craig Greenfield
Cone Serial Number	5801	Battery Voltage Start	5.84
Cone Area Ratio	0.843	Start Recording	10:44:00 AM
Probe Radius	0.0178	Finish Recording	11:07:00 AM
Date of First Push Current Calibration	9/01/2024	Measured Ground Water Depth	5.1
Metres To Next Calibration	820	Total Penetration Depth (m)	15.022
Depth of Predrill	0	Test ended due to:	<input type="checkbox"/> High Tilt
Depth at Start of Test	0		<input type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input checked="" type="checkbox"/> Target Depth
			<input type="checkbox"/> Anchor Failure

## Zero Value Change % FSO

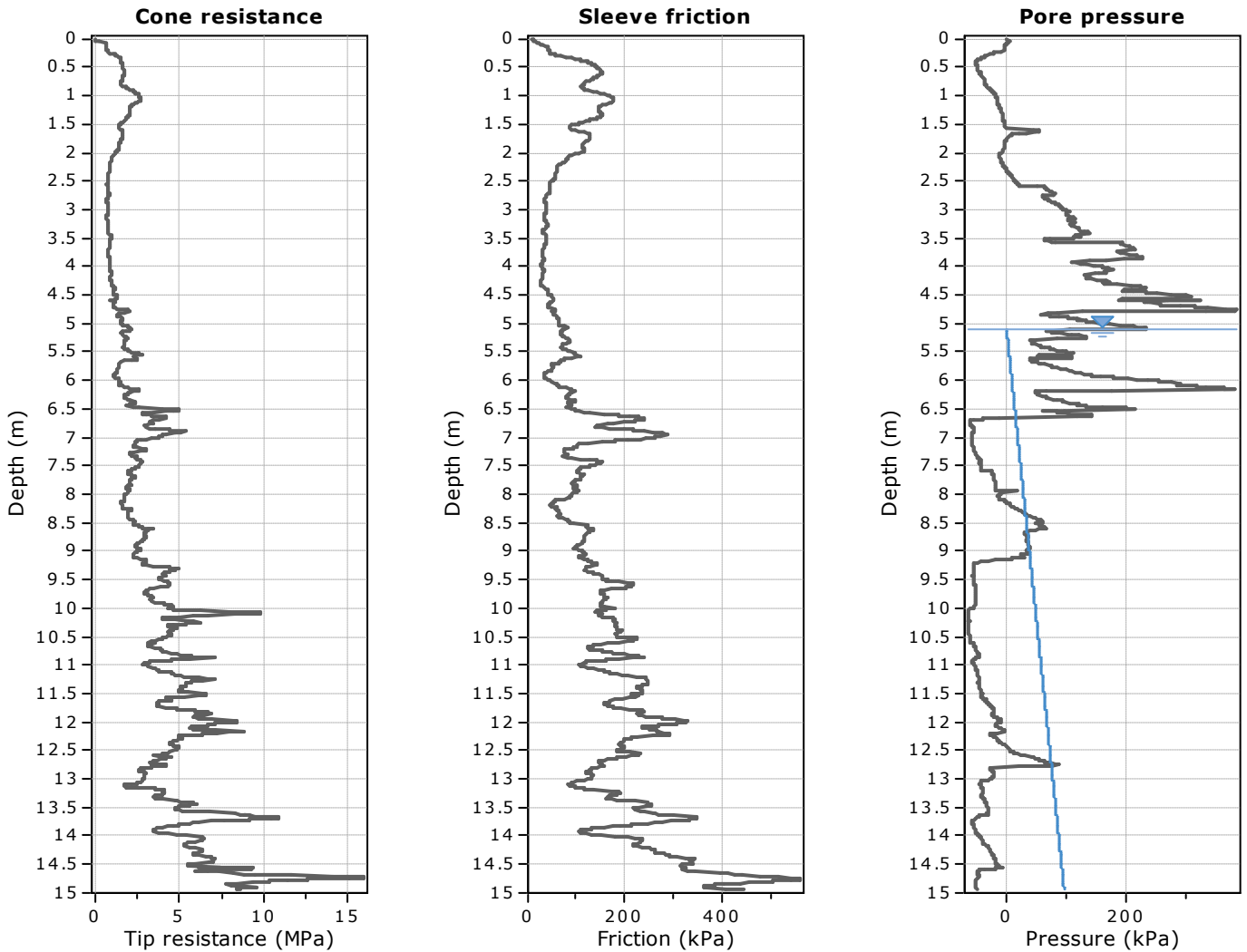
	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.01%	0.00%	0.80%
End of test with tip loosened	0.05%	0.02%	0.28%

## Dissipation Testing

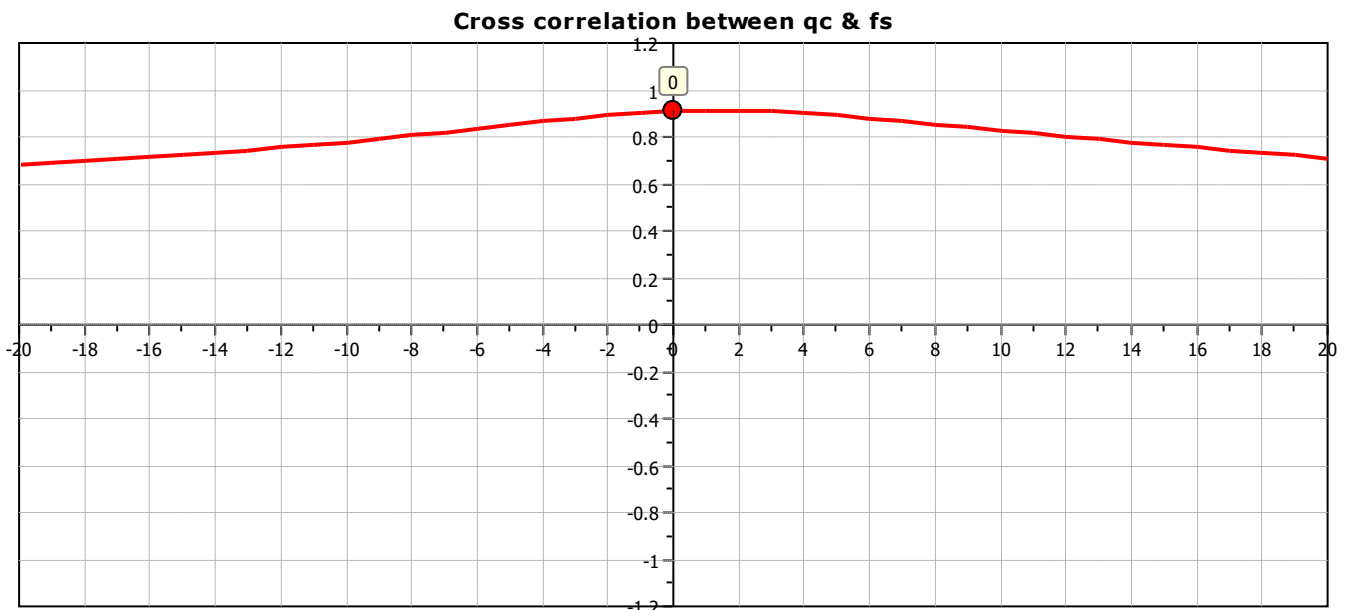
Test No	Depth (m)	Duration (secs)	Comments

## Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u
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The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT21	Job Identifier	HW Willowridge
Test Date	1/08/2024	Operator	Craig Greenfield
Cone Serial Number	5845	Battery Voltage Start	5.85
Cone Area Ratio	0.85	Start Recording	11:43:00 AM
Probe Radius	0.0179	Finish Recording	12:04:00 PM
Date of First Push Current Calibration	13/03/2024	Measured Ground Water Depth	0.4
Metres To Next Calibration	1123	Total Penetration Depth (m)	12.947
Depth of Predrill	0	Test ended due to:	<input type="checkbox"/> High Tilt
Depth at Start of Test	0		<input type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input checked="" type="checkbox"/> Anchor Failure

### Zero Value Change % FSO

	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.03%	0.08%	0.16%
End of test with tip loosened	0.07%	0.00%	0.88%

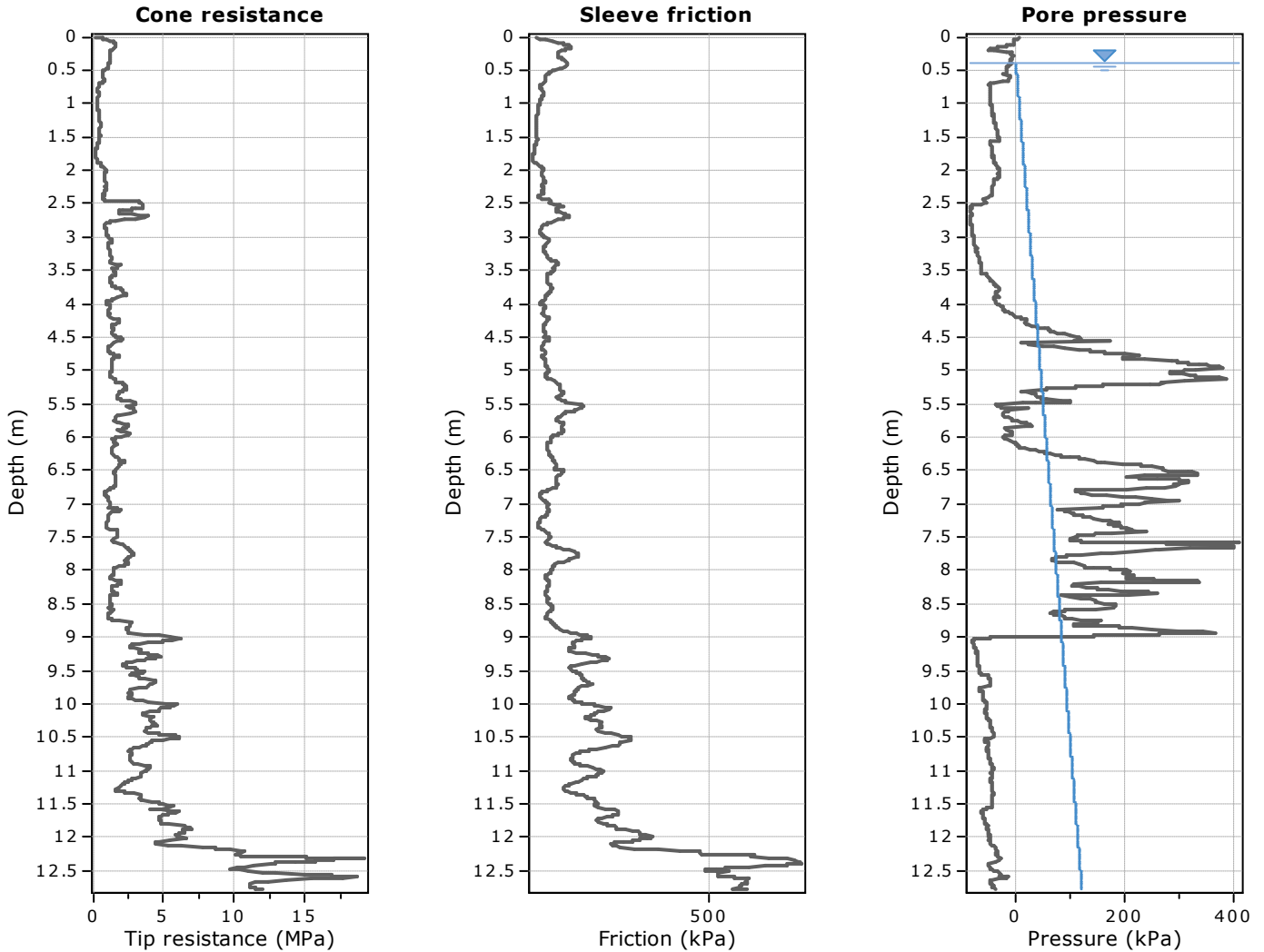
### Dissipation Testing

Test No	Depth (m)	Duration (secs)	Comments

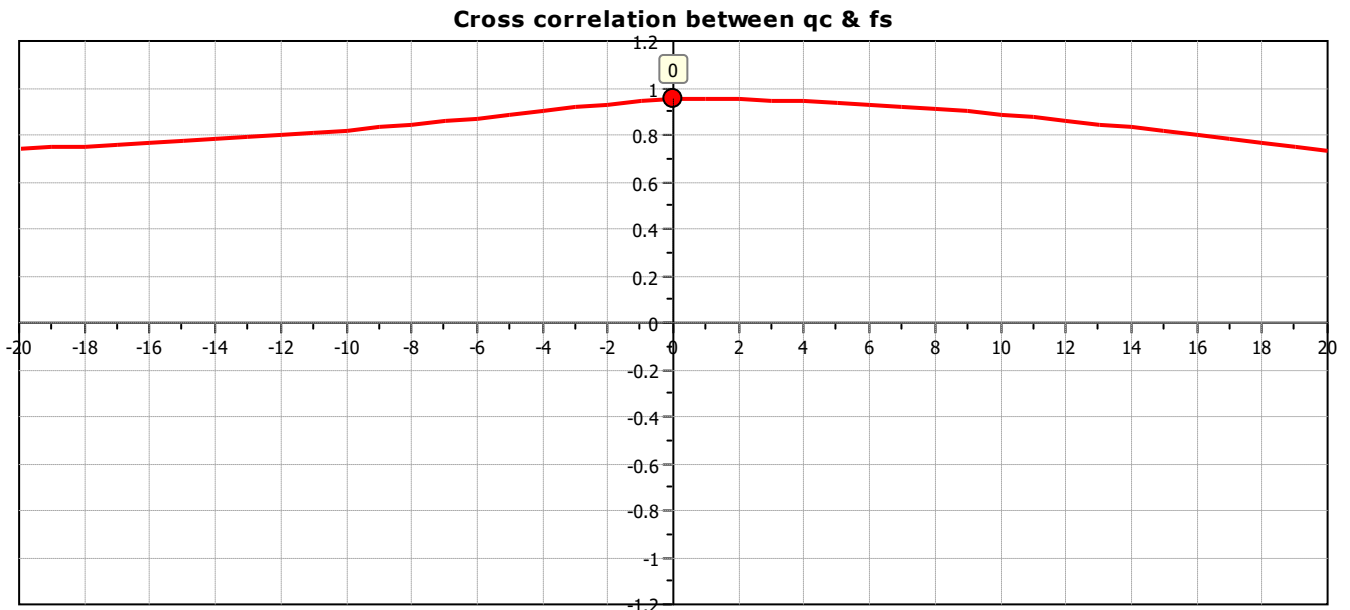
### Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u
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The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT22	Job Identifier	HW Willowridge
Test Date	1/08/2024	Operator	Craig Greenfield
Cone Serial Number	5959	Battery Voltage Start	5.8
Cone Area Ratio	0.869	Start Recording	12:15:00 PM
Probe Radius	0.0179	Finish Recording	1:20:00 PM
Date of First Push Current Calibration	26/06/2024	Measured Ground Water Depth	5
Metres To Next Calibration	1365	Total Penetration Depth (m)	12.612
Depth of Predrill	0	Test ended due to:	<input type="checkbox"/> High Tilt
Depth at Start of Test	0		<input type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input checked="" type="checkbox"/> Anchor Failure

## Zero Value Change % FSO

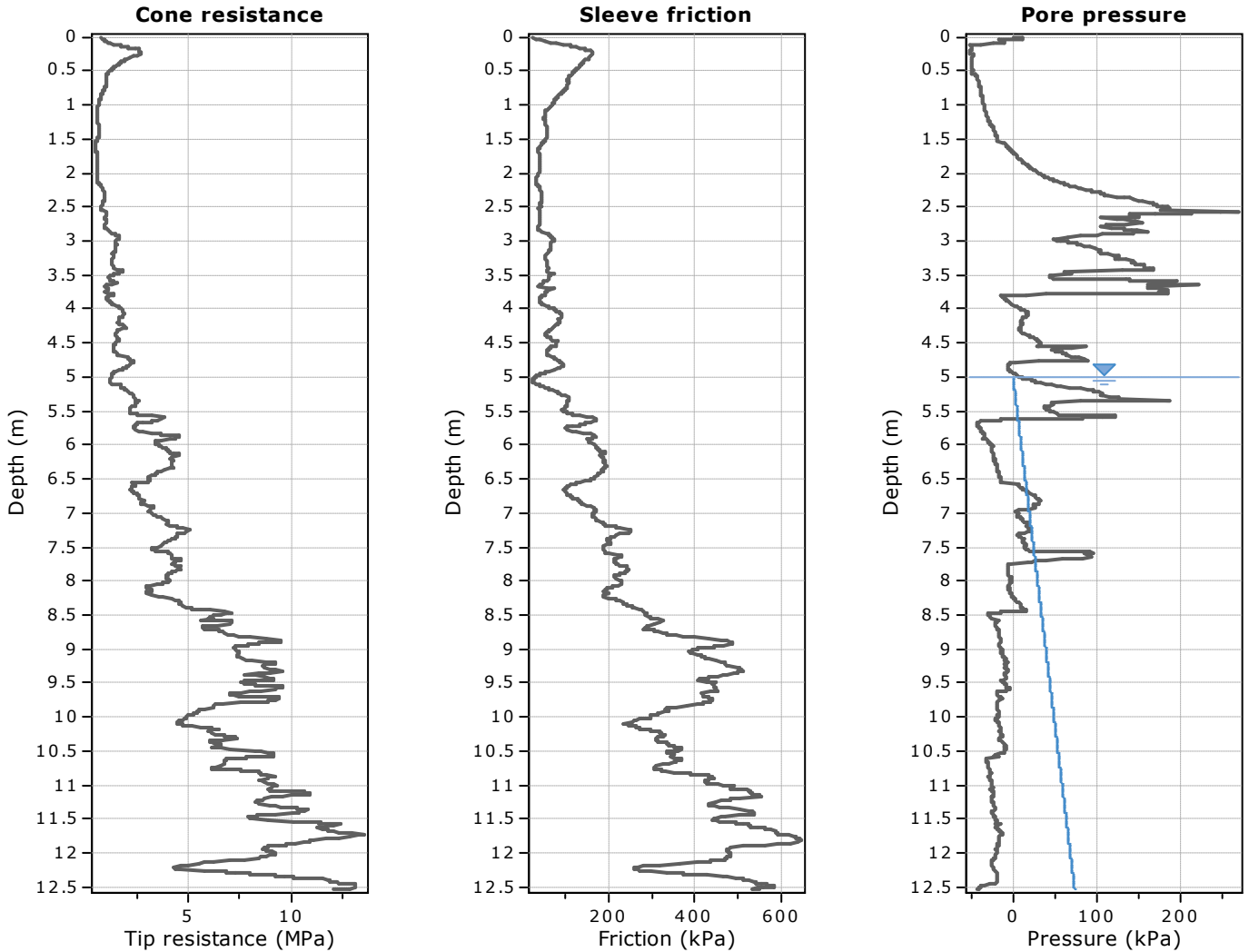
	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.00%	0.00%	0.52%
End of test with tip loosened	0.07%	0.01%	0.92%

## Dissipation Testing

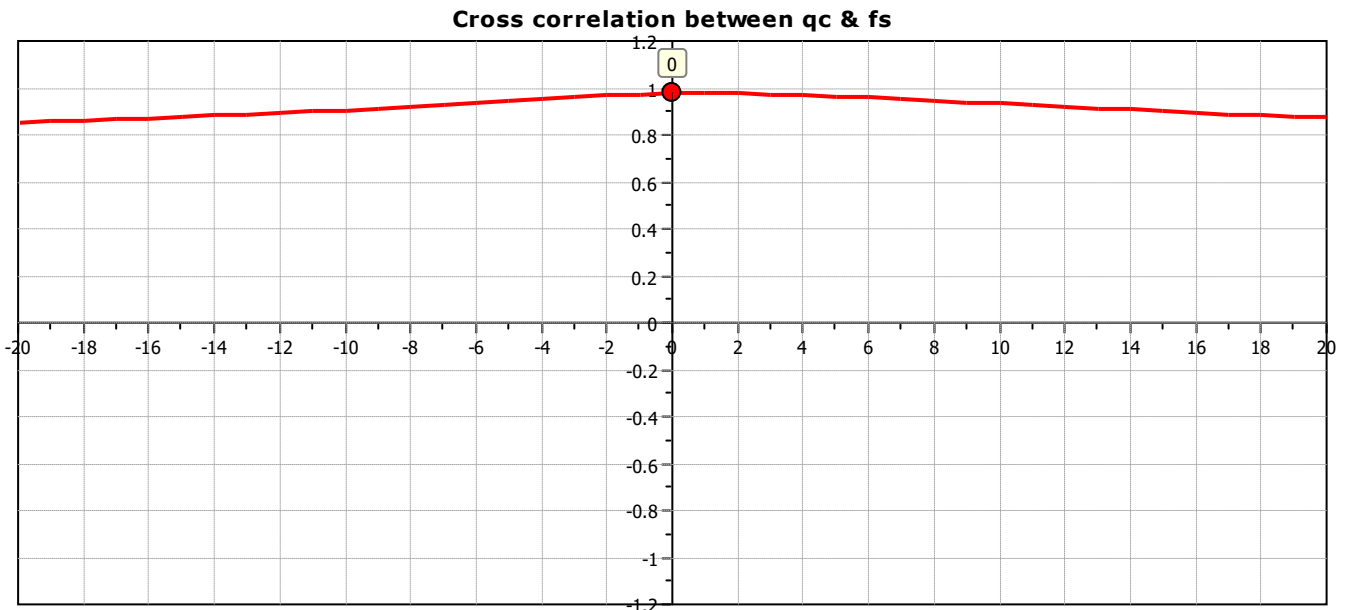
Test No	Depth (m)	Duration (secs)	Comments
CPT22-D1	3.772	2461	0.04

## Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u
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The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT23	Job Identifier	HW Willowridge
Test Date	1/08/2024	Operator	Craig Greenfield
Cone Serial Number	5654	Battery Voltage Start	5.77
Cone Area Ratio		Start Recording	1:58:00 PM
Probe Radius	0.018	Finish Recording	2:19:00 PM
Date of First Push Current Calibration	1/08/2024	Measured Ground Water Depth	collapsed at 5.5
Metres To Next Calibration	1500	Total Penetration Depth (m)	12.307
Depth of Predrill	0	Test ended due to:	<input checked="" type="checkbox"/> High Tilt
Depth at Start of Test	0		<input checked="" type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input type="checkbox"/> Anchor Failure

## Zero Value Change % FSO

	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.00%	0.00%	0.00%
End of test with tip loosened	0.03%	0.02%	0.04%

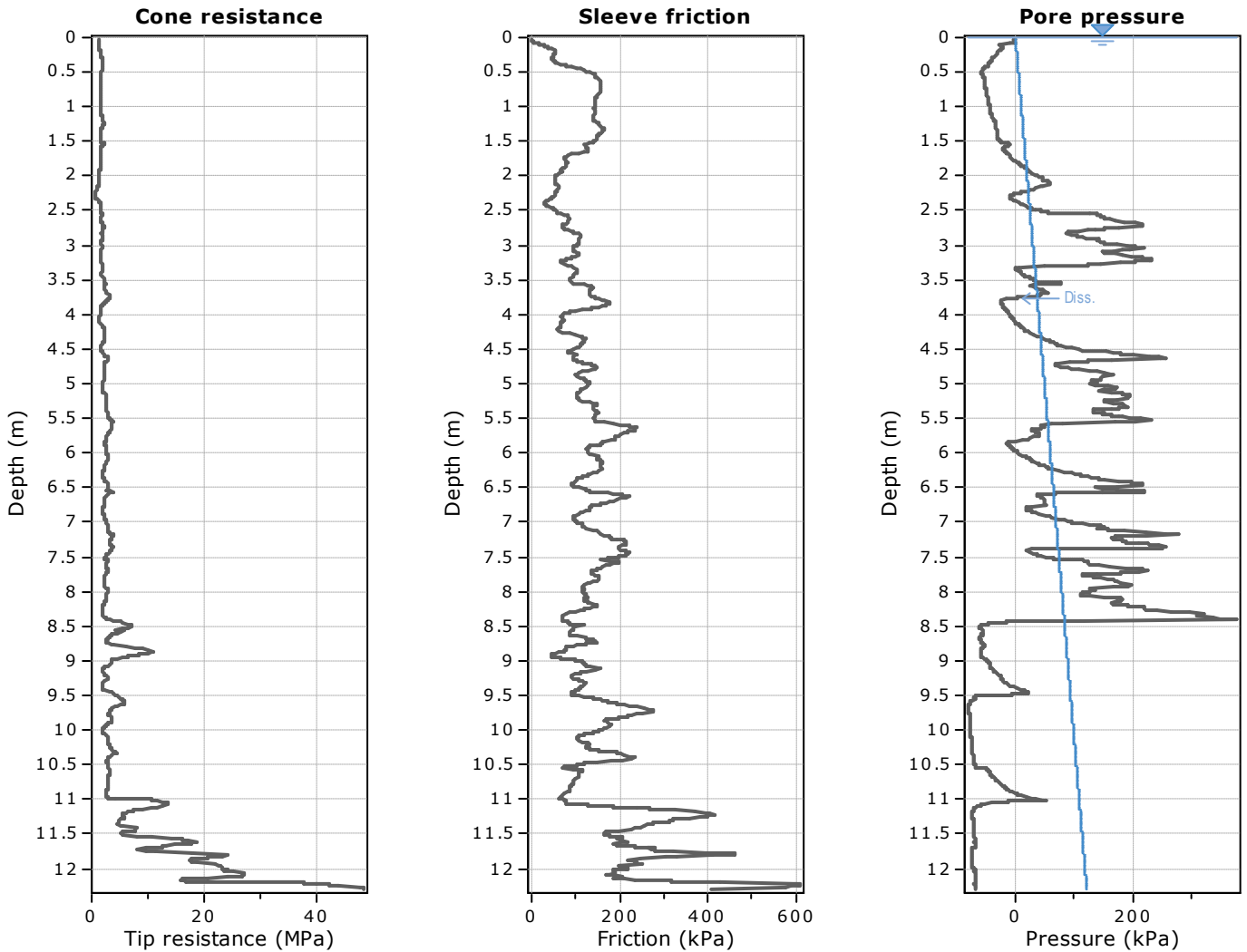
## Dissipation Testing

Test No	Depth (m)	Duration (secs)	Comments

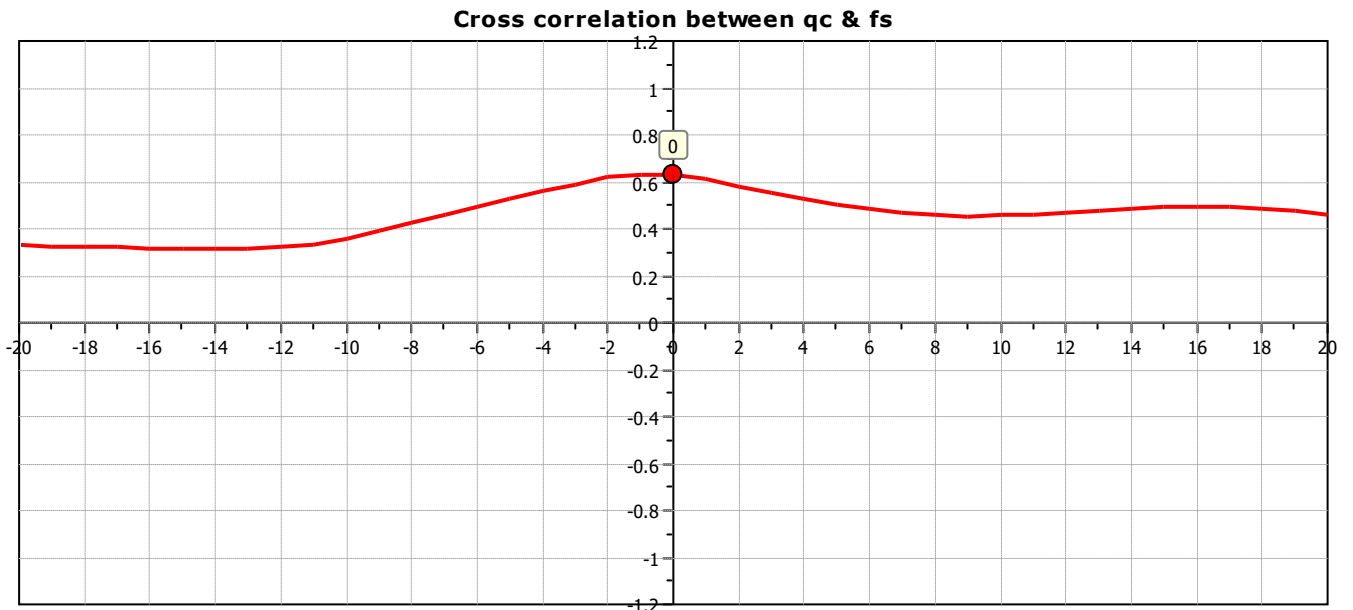
## Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u
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The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT24	Job Identifier	HW Willowridge
Test Date	1/08/2024	Operator	Craig Greenfield
Cone Serial Number	5681	Battery Voltage Start	5.78
Cone Area Ratio	0.865	Start Recording	3:15:00 PM
Probe Radius	0.0177	Finish Recording	3:57:00 PM
Date of First Push Current Calibration	14/09/2023	Measured Ground Water Depth	22.9
Metres To Next Calibration	111	Total Penetration Depth (m)	23.995
Depth of Predrill	0	Test ended due to:	<input type="checkbox"/> High Tilt
Depth at Start of Test	0		<input type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input checked="" type="checkbox"/> Anchor Failure

### Zero Value Change % FSO

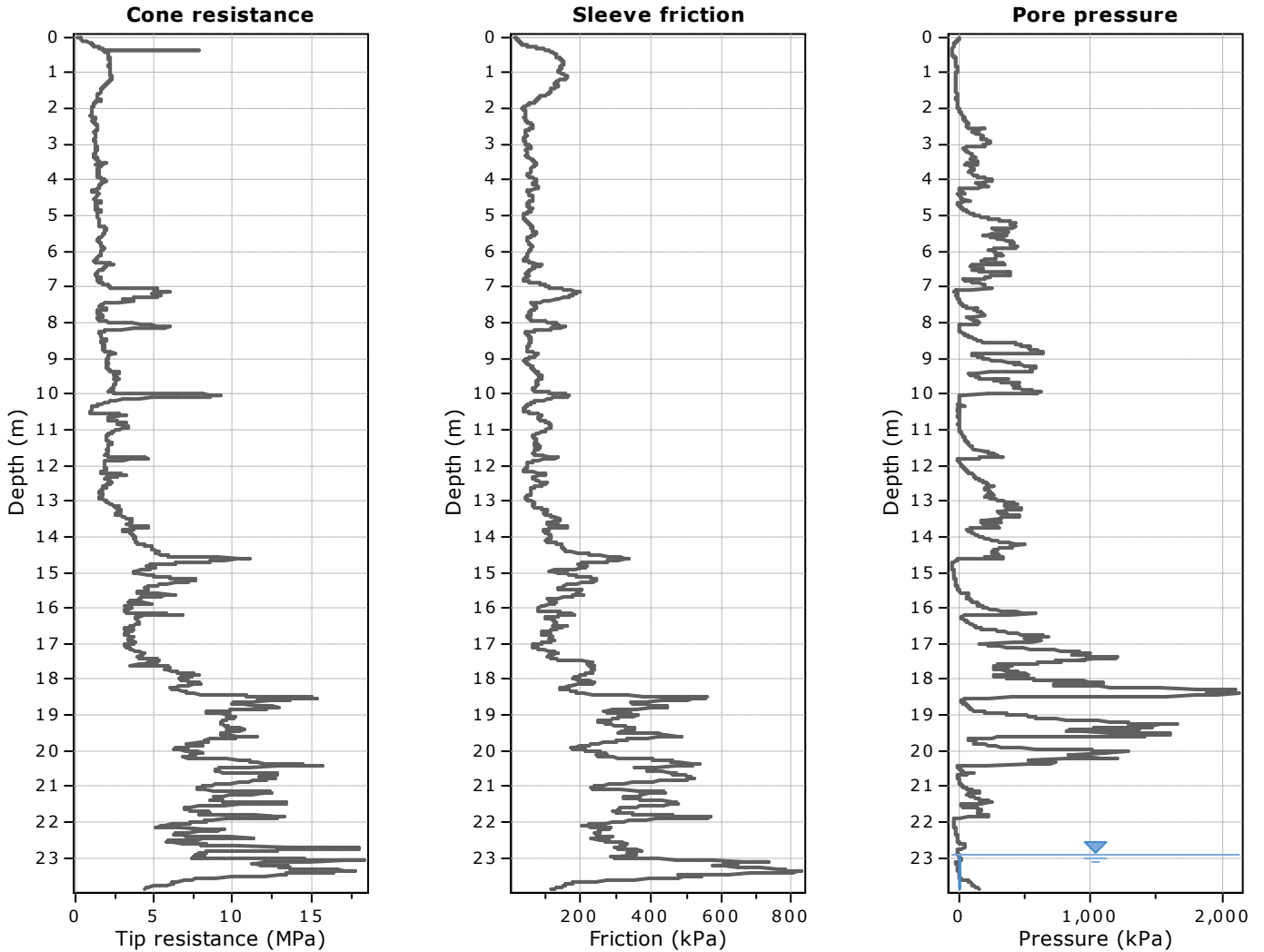
	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.04%	0.08%	0.16%
End of test with tip loosened	0.04%	0.02%	0.18%

### Dissipation Testing

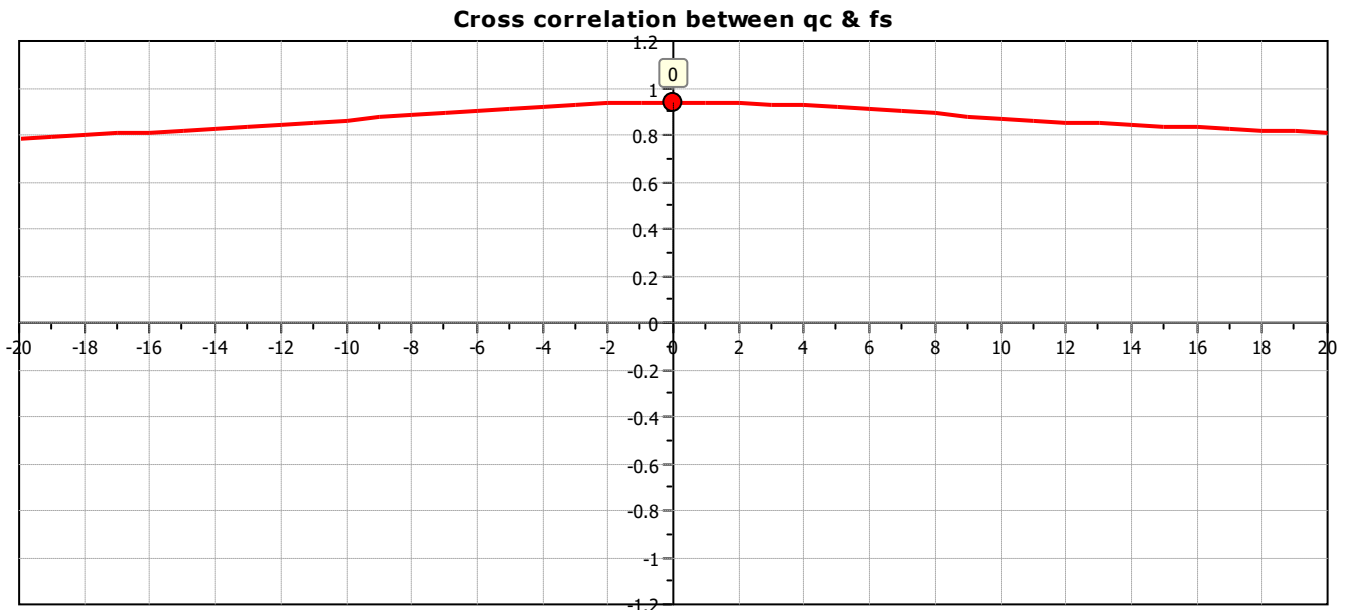
Test No	Depth (m)	Duration (secs)	Comments

### Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u
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The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT25	Job Identifier	HW Willowridge
Test Date	5/08/2024	Operator	Craig Greenfield
Cone Serial Number	5681	Battery Voltage Start	6.43
Cone Area Ratio	0.865	Start Recording	9:21:00 AM
Probe Radius	0.0177	Finish Recording	9:56:00 AM
Date of First Push Current Calibration	14/09/2023	Measured Ground Water Depth	3.6
Metres To Next Calibration	87	Total Penetration Depth (m)	18.387
Depth of Predrill	0	Test ended due to:	<input type="checkbox"/> High Tilt
Depth at Start of Test	0		<input type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input checked="" type="checkbox"/> Anchor Failure

### Zero Value Change % FSO

	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.06%	0.12%	0.24%
End of test with tip loosened	0.08%	0.05%	0.86%

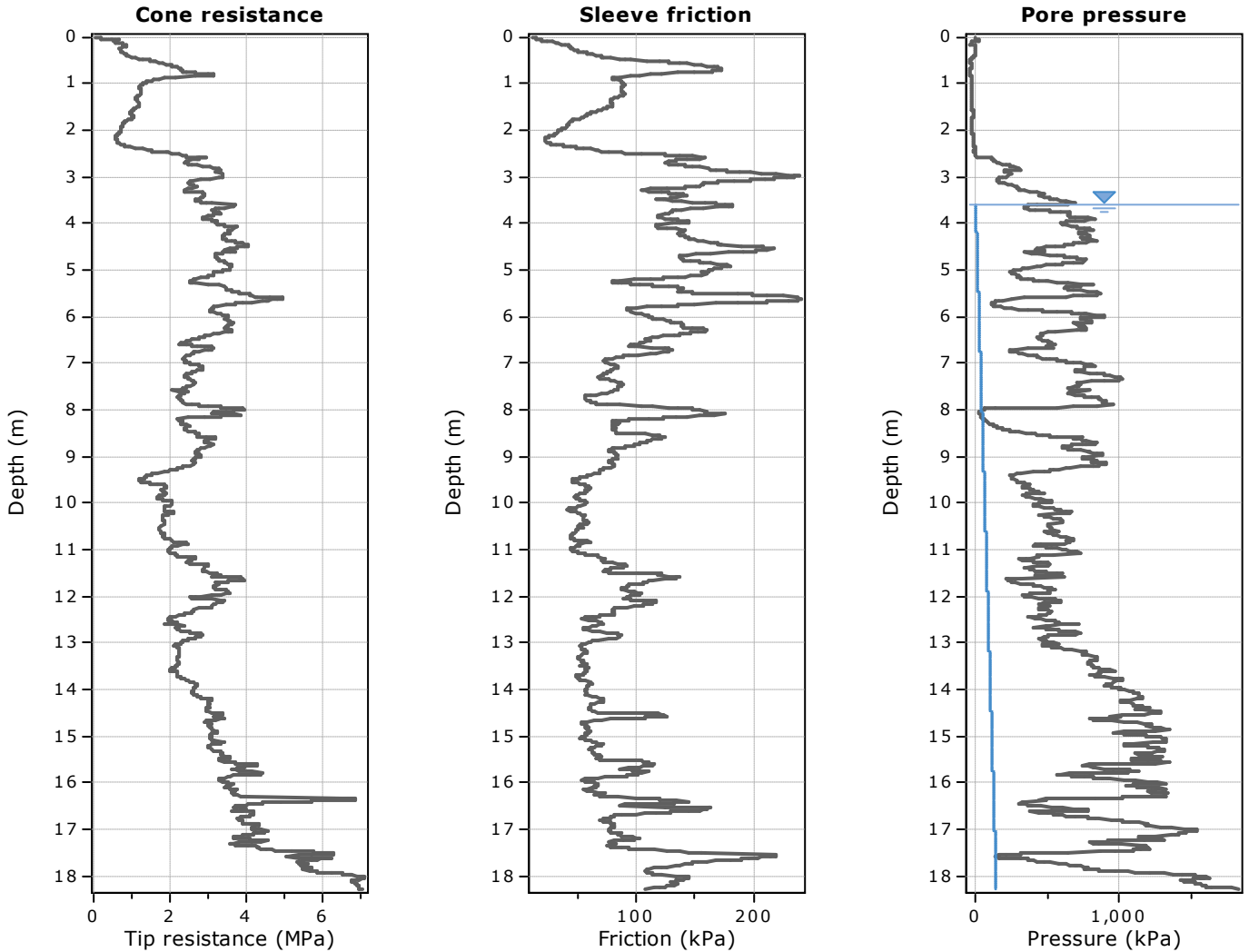
### Dissipation Testing

Test No	Depth (m)	Duration (secs)	Comments

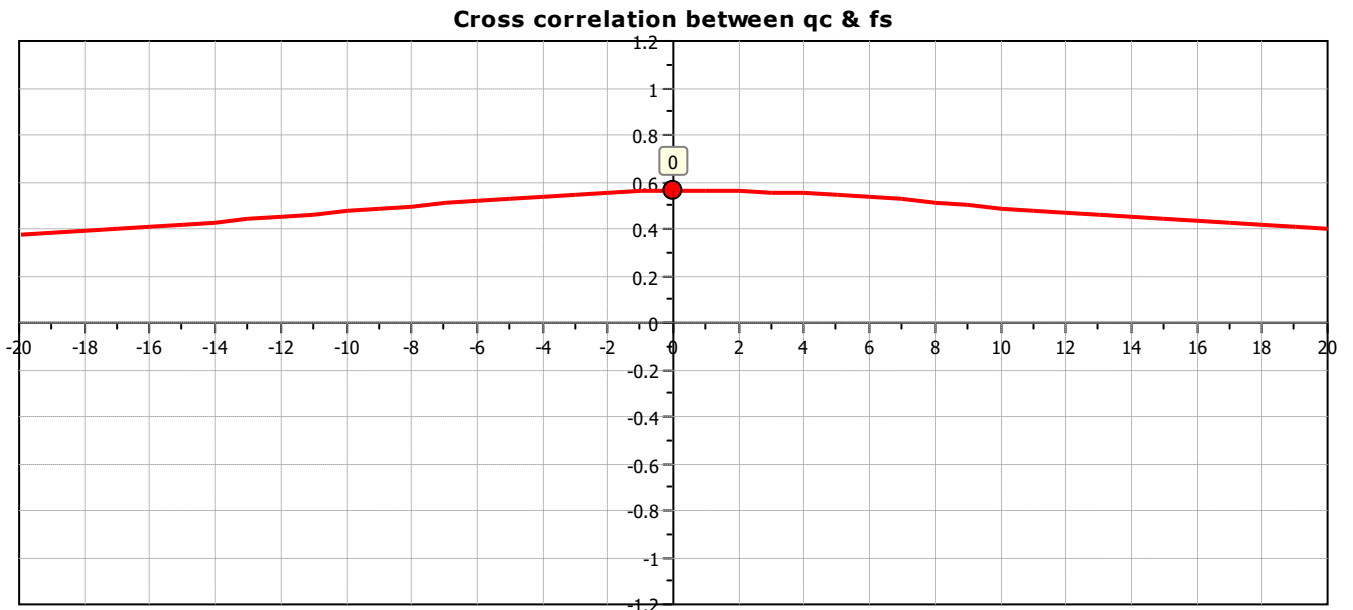
### Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u
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The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT26	Job Identifier	HW Willowridge
Test Date	5/08/2024	Operator	Craig Greenfield
Cone Serial Number	5708	Battery Voltage Start	6.24
Cone Area Ratio	0.862	Start Recording	10:22:00 AM
Probe Radius	0.0178	Finish Recording	10:41:00 AM
Date of First Push Current Calibration	9/11/2023	Measured Ground Water Depth	4.2
Metres To Next Calibration	498	Total Penetration Depth (m)	11.295
Depth of Predrill	0	Test ended due to:	<input type="checkbox"/> High Tilt
Depth at Start of Test	0		<input type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input checked="" type="checkbox"/> Anchor Failure

### Zero Value Change % FSO

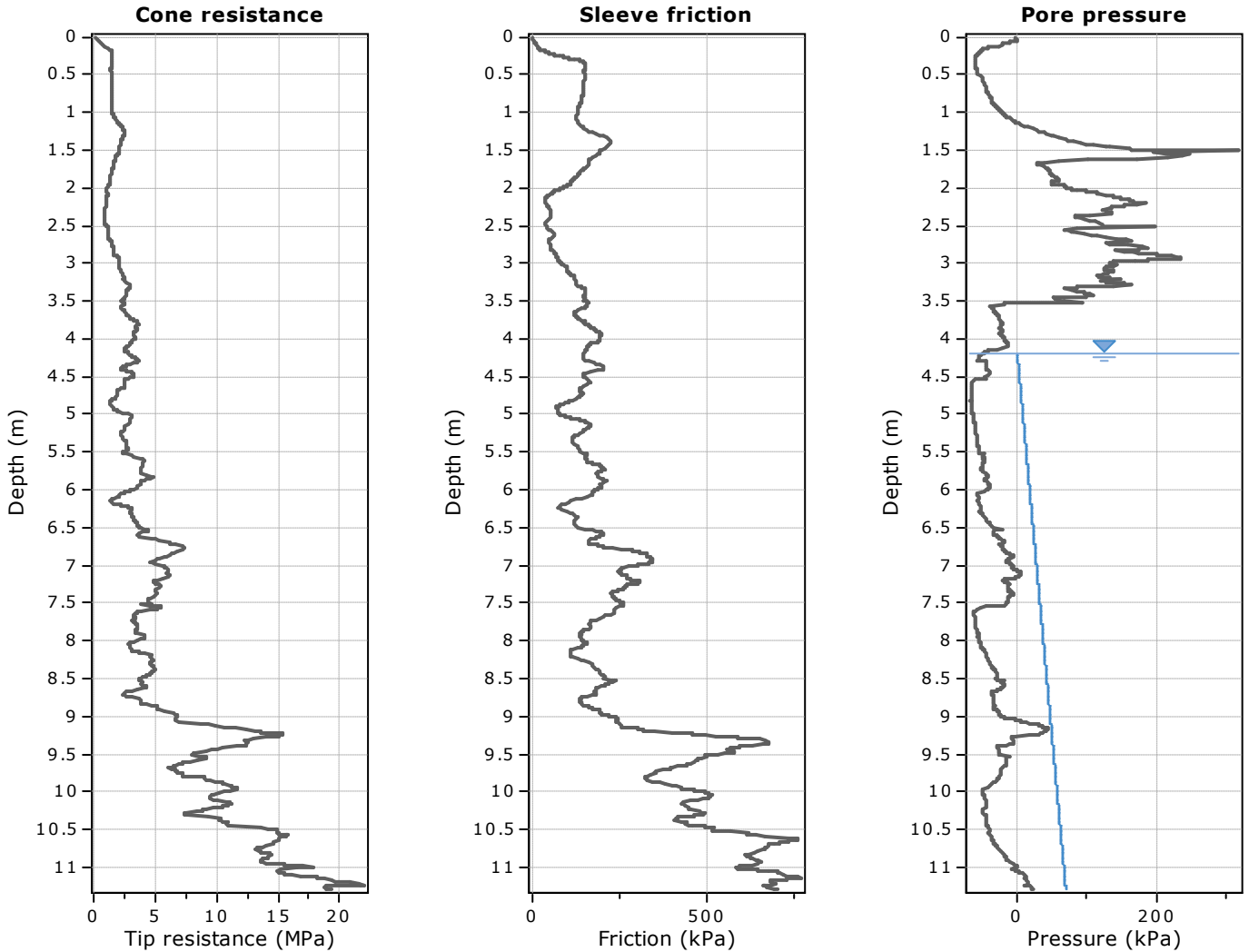
	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.07%	0.03%	0.14%
End of test with tip loosened	0.05%	0.01%	0.90%

### Dissipation Testing

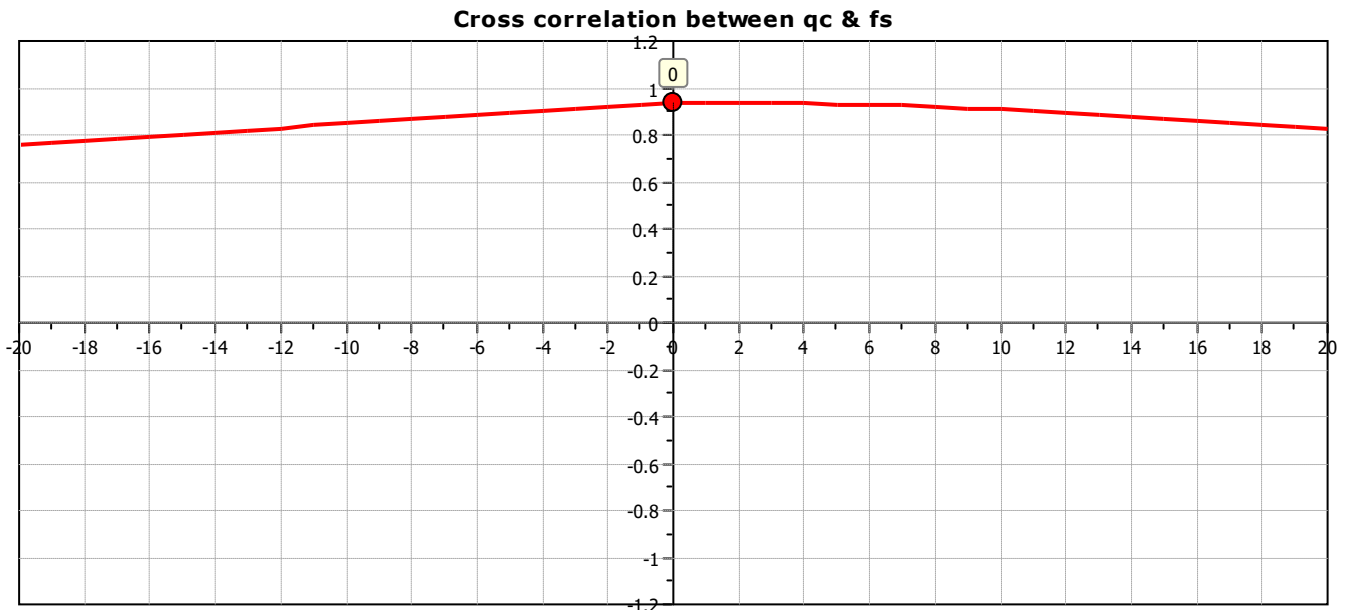
Test No	Depth (m)	Duration (secs)	Comments

### Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u
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The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT27	Job Identifier	HW Willowridge
Test Date	5/08/2024	Operator	Craig Greenfield
Cone Serial Number	5801	Battery Voltage Start	6.2
Cone Area Ratio	0.843	Start Recording	11:56:00 AM
Probe Radius	0.0178	Finish Recording	12:23:00 PM
Date of First Push Current Calibration	9/01/2024	Measured Ground Water Depth	EOB 17.5 dry
Metres To Next Calibration	805	Total Penetration Depth (m)	17.592
Depth of Predrill	0	Test ended due to:	<input type="checkbox"/> High Tilt
Depth at Start of Test	0		<input type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input checked="" type="checkbox"/> Anchor Failure

### Zero Value Change % FSO

	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.02%	0.01%	1.10%
End of test with tip loosened	0.05%	0.09%	0.70%

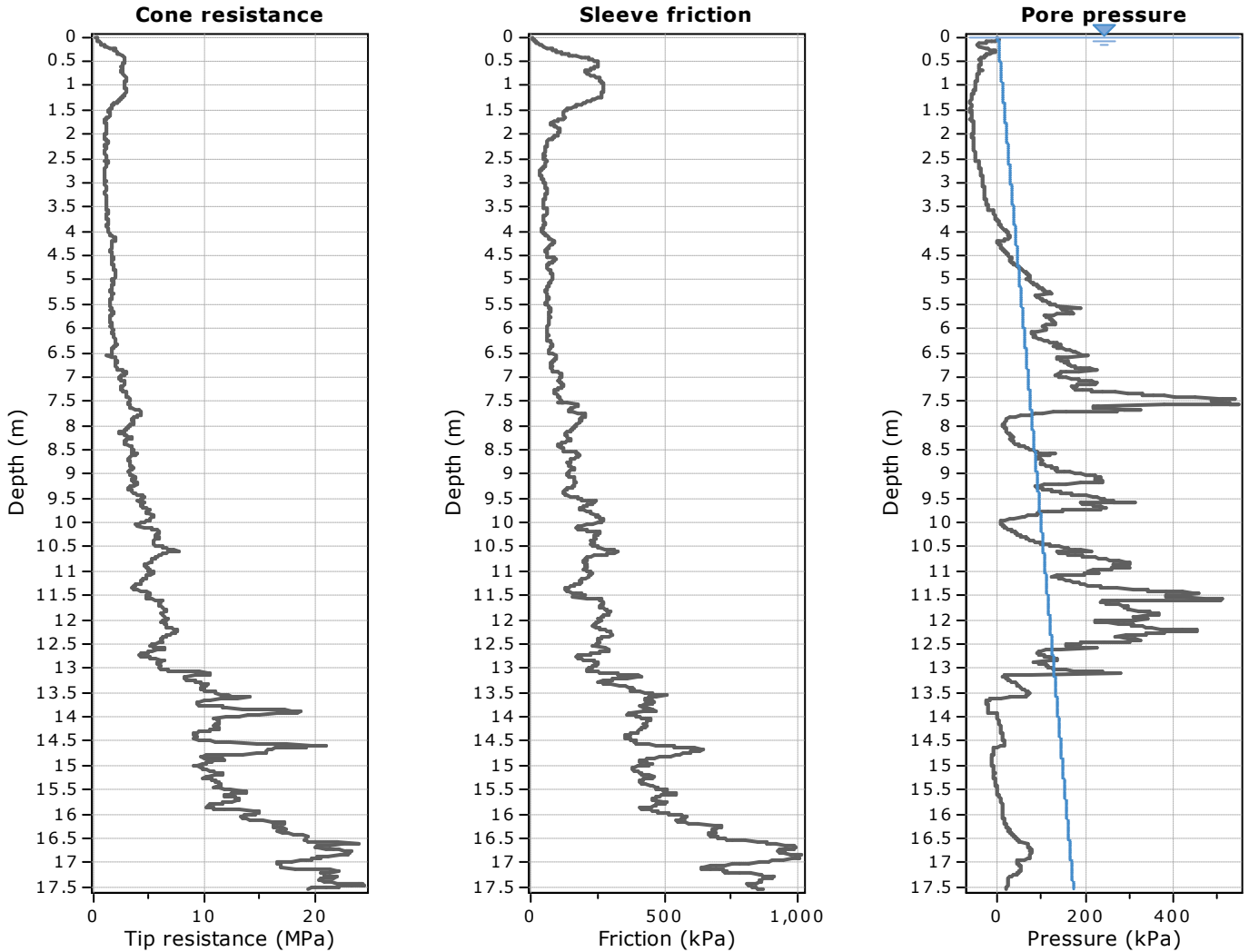
### Dissipation Testing

Test No	Depth (m)	Duration (secs)	Comments

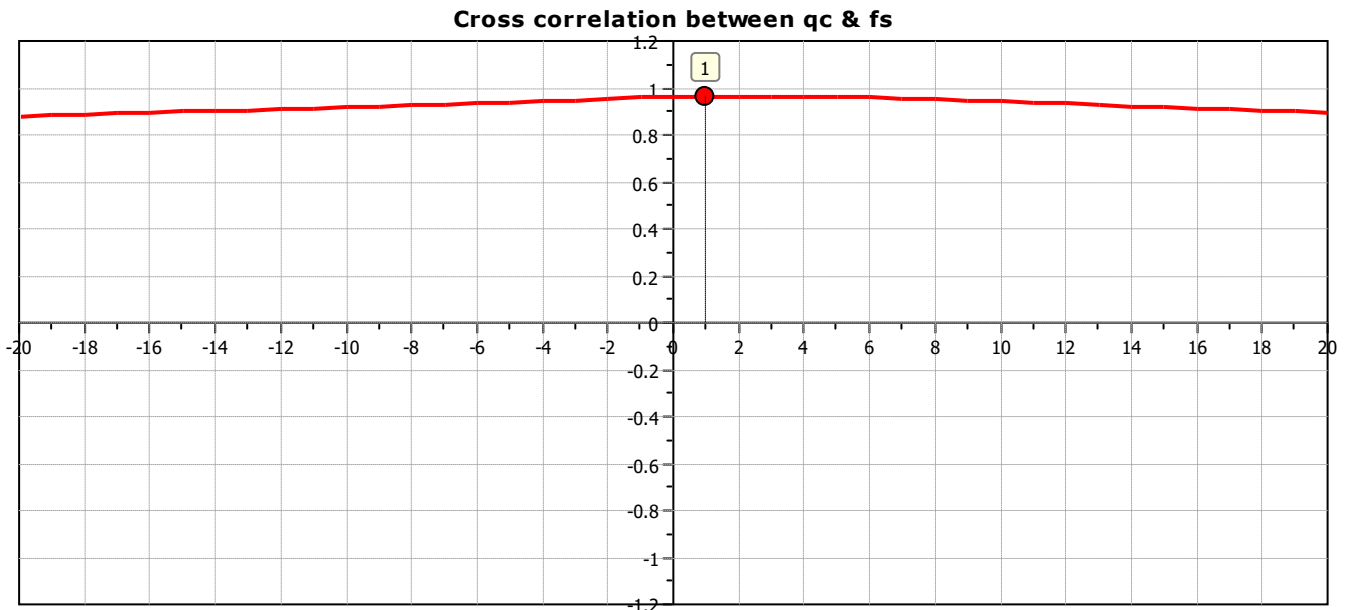
### Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u
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The plot below presents the cross correlation coefficient between the raw  $q_c$  and  $f_s$  values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT28	Job Identifier	HW Willowridge
Test Date	5/08/2024	Operator	Craig Greenfield
Cone Serial Number	5845	Battery Voltage Start	6.12
Cone Area Ratio	0.85	Start Recording	1:34:00 PM
Probe Radius	0.0179	Finish Recording	2:05:00 PM
Date of First Push Current Calibration	13/03/2024	Measured Ground Water Depth	collapsed at 19.4m dry
Metres To Next Calibration	1110	Total Penetration Depth (m)	19.48
Depth of Predrill	0	Test ended due to:	<input type="checkbox"/> High Tilt
Depth at Start of Test	0		<input type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input checked="" type="checkbox"/> Anchor Failure

## Zero Value Change % FSO

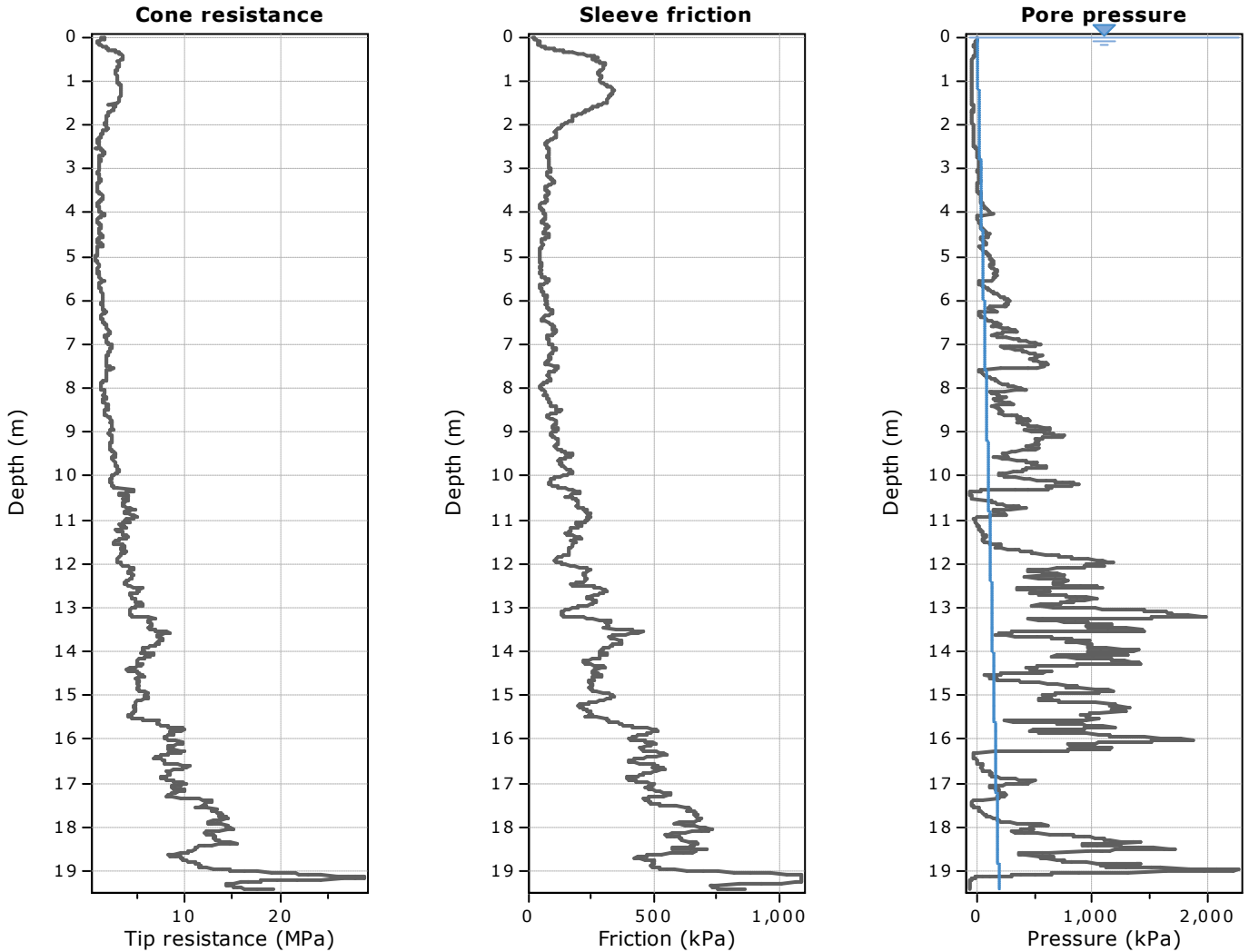
	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.03%	0.07%	0.26%
End of test with tip loosened	0.03%	0.02%	0.94%

## Dissipation Testing

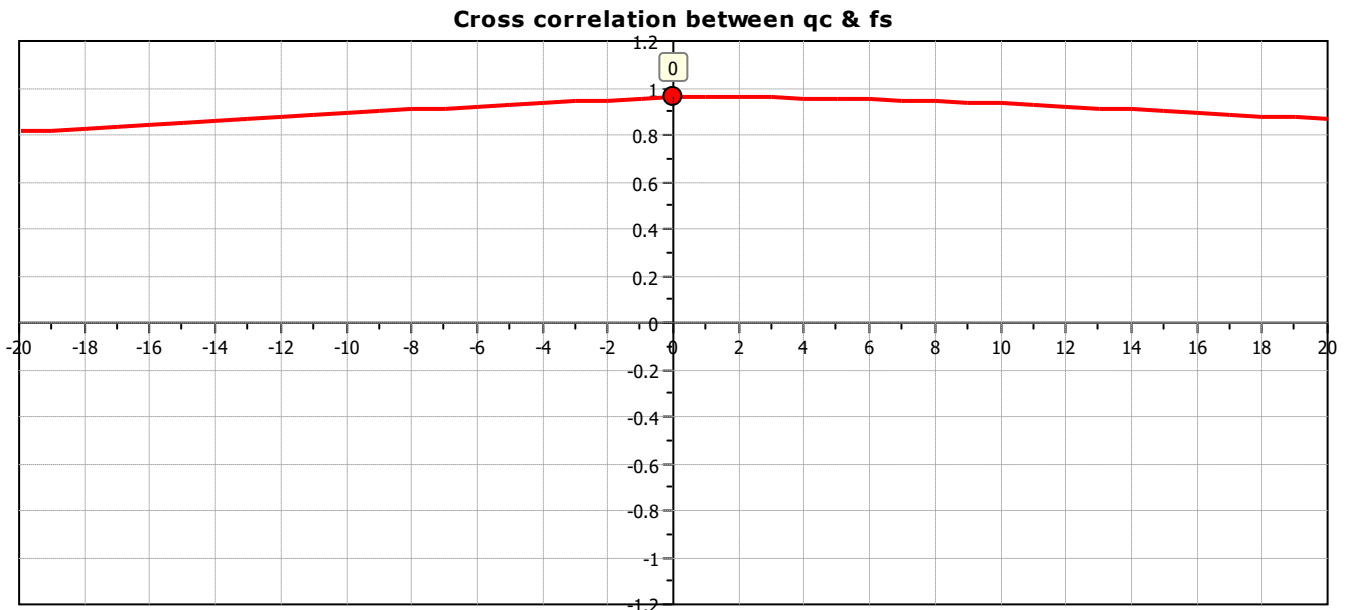
Test No	Depth (m)	Duration (secs)	Comments

## Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u
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The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT29	Job Identifier	HW Willowridge
Test Date	5/08/2024	Operator	Craig Greenfield
Cone Serial Number	5959	Battery Voltage Start	6.03
Cone Area Ratio	0.869	Start Recording	2:23:00 PM
Probe Radius	0.0179	Finish Recording	2:58:00 PM
Date of First Push Current Calibration	26/06/2024	Measured Ground Water Depth	6.5
Metres To Next Calibration	1352	Total Penetration Depth (m)	23.605
Depth of Predrill	0	Test ended due to:	<input type="checkbox"/> High Tilt
Depth at Start of Test	0		<input type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input checked="" type="checkbox"/> Anchor Failure

## Zero Value Change % FSO

	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.01%	0.01%	0.30%
End of test with tip loosened	0.07%	0.02%	1.12%

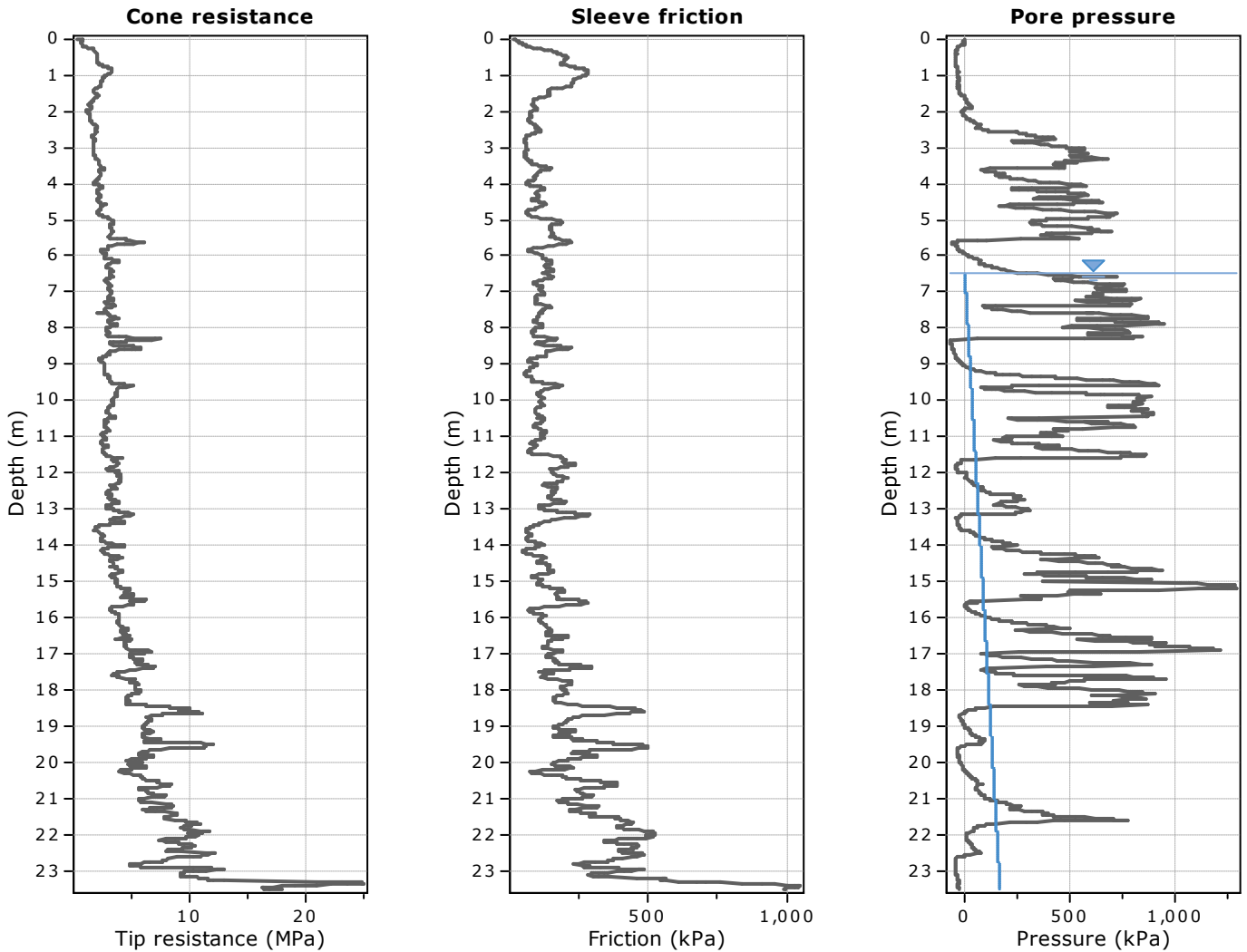
## Dissipation Testing

Test No	Depth (m)	Duration (secs)	Comments

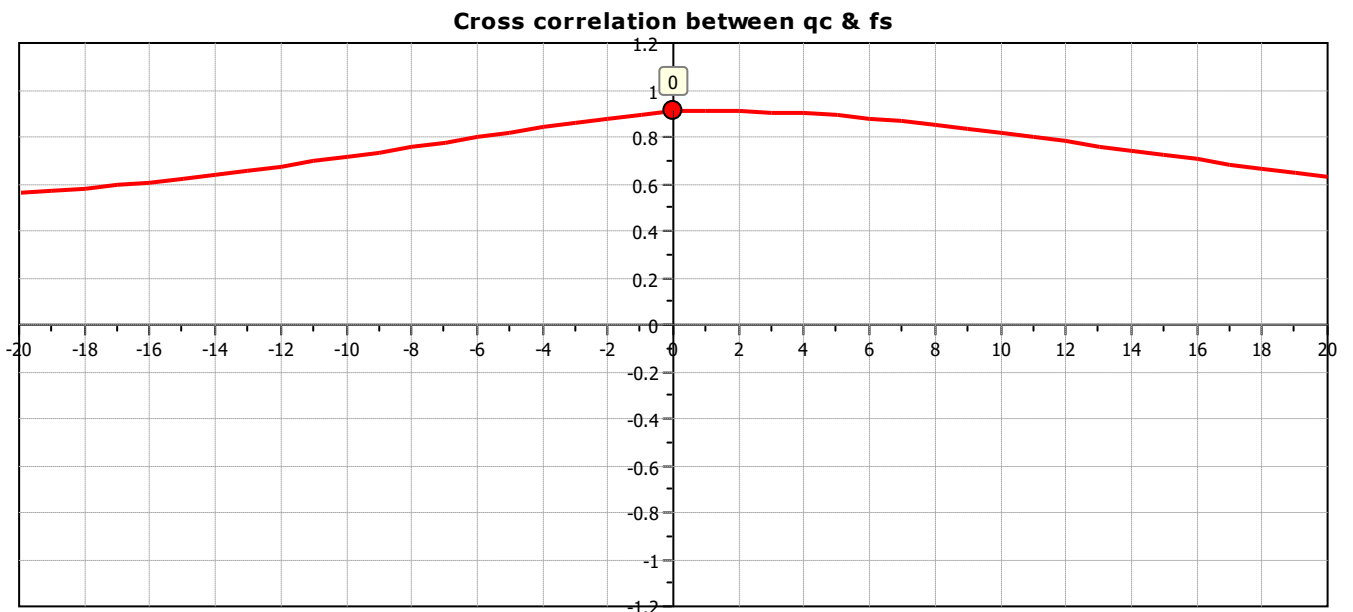
## Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u
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The plot below presents the cross correlation coefficient between the raw  $q_c$  and  $f_s$  values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).





# CPT Test Information

Test Hole Number	CPT30	Job Identifier	HW Willowridge
Test Date	5/08/2024	Operator	Craig Greenfield
Cone Serial Number	5654	Battery Voltage Start	5.98
Cone Area Ratio	0.84	Start Recording	3:50:00 PM
Probe Radius	0.018	Finish Recording	4:42:00 PM
Date of First Push Current Calibration	1/08/2024	Measured Ground Water Depth	collapsed at 3.6m dry
Metres To Next Calibration	1487	Total Penetration Depth (m)	11.375
Depth of Predrill	0	Test ended due to:	<input type="checkbox"/> High Tilt
Depth at Start of Test	0		<input checked="" type="checkbox"/> High Tip Pressure
Anchor Depth (Left)	1.5		<input type="checkbox"/> High Friction
Anchor Depth (Right)	1.5		<input type="checkbox"/> High Pore Pressure
			<input type="checkbox"/> High Total load
			<input type="checkbox"/> Danger of Rods Buckling
			<input type="checkbox"/> Target Depth
			<input type="checkbox"/> Anchor Failure

## Zero Value Change % FSO

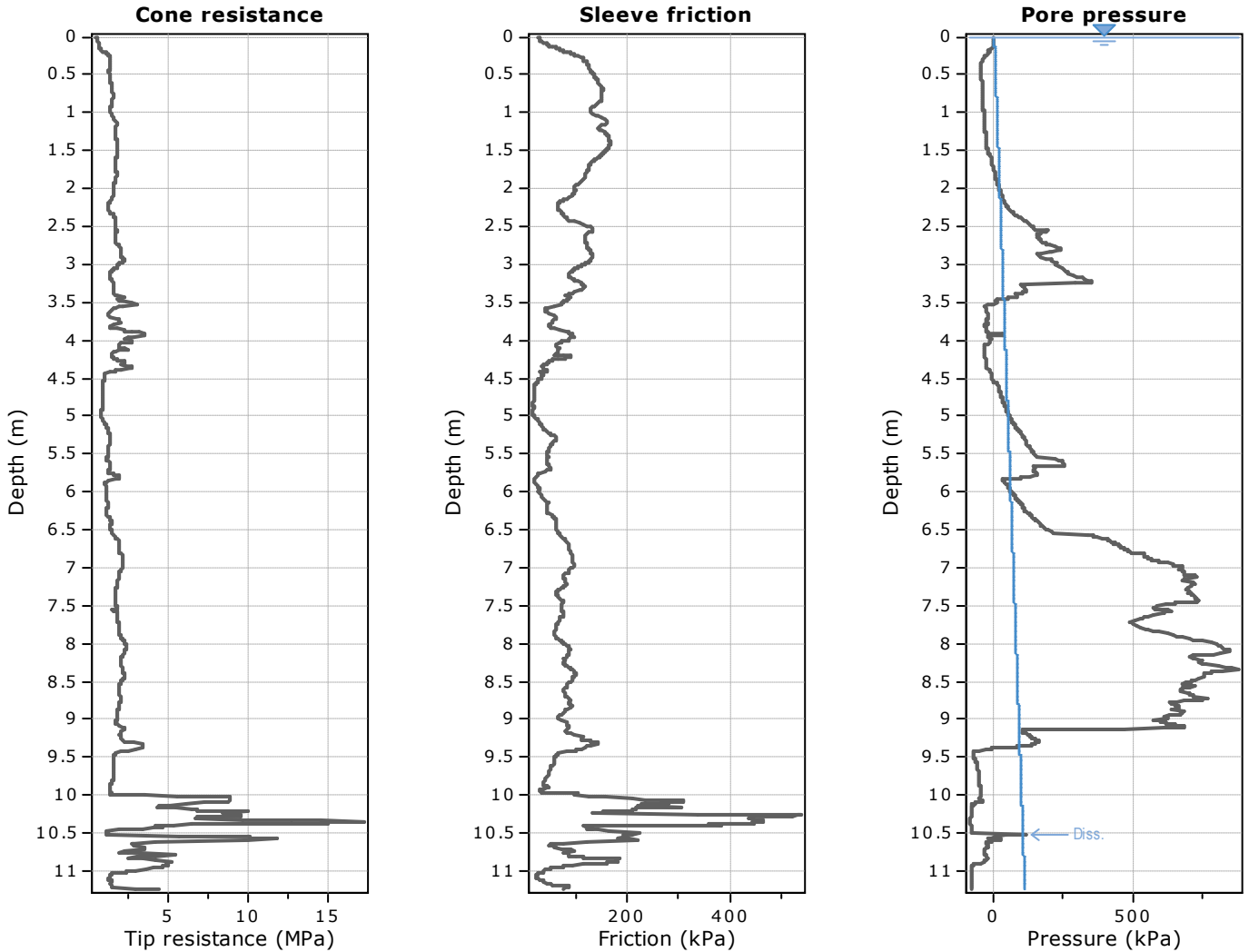
	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.02%	0.06%	0.02%
End of test with tip loosened	0.05%	0.03%	0.04%

## Dissipation Testing

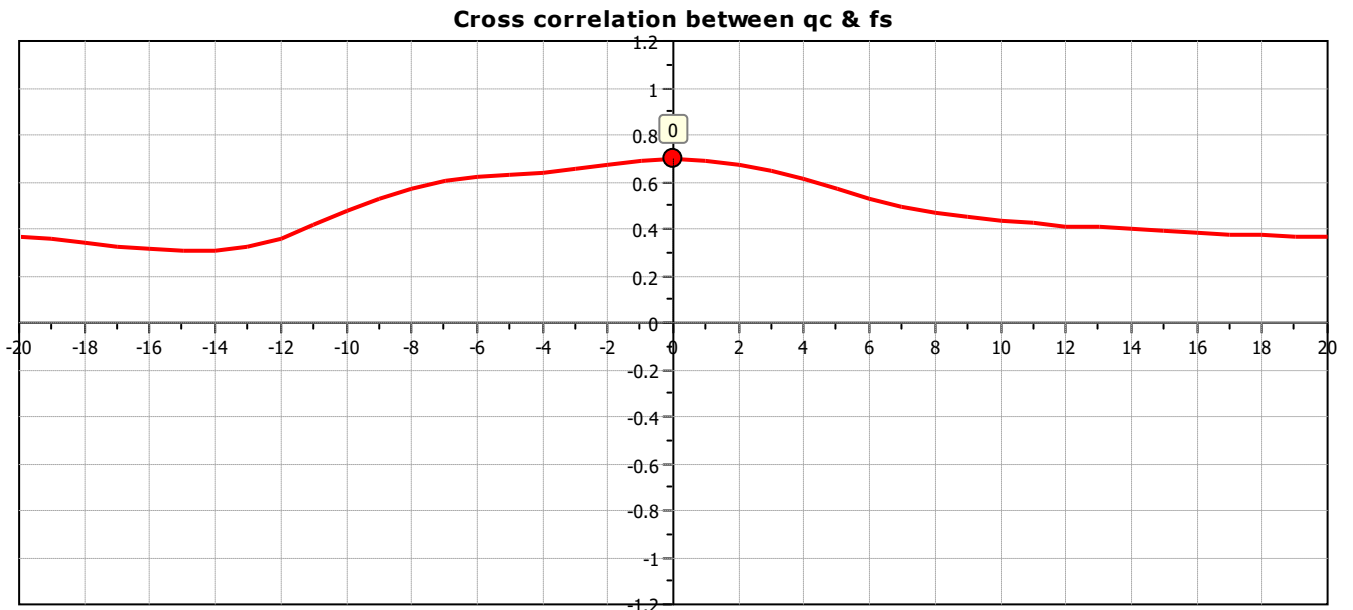
Test No	Depth (m)	Duration (secs)	Comments
CPT30-D1	10.507	1852	0.12

## Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u
--	----	----	---



The plot below presents the cross correlation coefficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).



## ***Appendix D – Laboratory Test Results***



Please reply to: W.E. Campton

Page 1 of 3

Haigh Workman Ltd.  
PO Box 89  
Kerikeri 0245

Job Number: 63632#L  
BGL Registration Number: 2828  
Checked by: JF

Attention: **JOSH CURREEN**

16<sup>th</sup> August 2024

## ATTERBERG LIMITS & LINEAR SHRINKAGE TESTING

Dear Sir,

**Re: 39 AUCKS ROAD, RUSSELL**  
**Your Reference: 23 020**  
**Report Number: 63632#L/AL 39 Aucks Road**

The following report presents the results of Atterberg Limits & Linear Shrinkage testing at BGL of soil samples delivered to this laboratory on the 7<sup>th</sup> of August 2024. Test results are summarised below, with page 3 showing where the samples plot on the Unified Soil Classification System (Casagrande) Chart. Test standards used were:

**Water Content:** NZS4402:1986:Test 2.1  
**Liquid Limit:** NZS4402:1986:Test 2.2  
**Plastic Limit:** NZS4402:1986:Test 2.3  
**Plasticity Index:** NZS4402:1986:Test 2.4  
**Linear Shrinkage:** NZS4402:1986:Test 2.6

Borehole Number	Sample Number	Depth (m)	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	Linear Shrinkage (%)*
BH01	Sample 1	0.50 – 1.00	30.7	71 ◆	29 ◆	42 ◆	16 ◆
BH03	Sample 2	0.50 – 1.00	34.2	85	31	54	19
BH21	Sample 3	0.50 – 1.00	30.0	69 ◆	28 ◆	41 ◆	16 ◆
BH29	Sample 4	0.80 – 1.30	28.5	59 ◆	28 ◆	31 ◆	13 ◆
BH40	Sample 5	1.20 – 1.90	31.2	67	33	34	15

\*The amount of shrinkage of the sample as a percentage of the original sample length.

◆ = The soil fraction passing a 425µm sieve was used for the liquid limit, plastic limit & linear shrinkage tests.

The whole soils were used for the water content tests (the soils were in a natural state), and for the liquid limit, plastic limit & linear shrinkage tests without a diamond beside them. The soil fractions passing a 0.425mm sieve were used for the liquid limit, plastic limit & linear shrinkage tests with a diamond (◆) beside them. The soils were wet up and dried where required for the liquid limit, plastic limit & linear shrinkage tests.

As per the reporting requirements of NZS4402: 1986: Test 2.1: water content is reported to two significant figures for values below 10%, and to three significant figures for values of 10% or greater. Test 2.2: liquid limit, test 2.3: plastic limit and test 2.6: linear shrinkage are reported to the nearest whole number.

Please note that the test results relate only to the samples as-received, and relate only to the samples under test.

Thank you for the opportunity to carry out this testing. If you have any queries regarding the content of this report please contact the person authorising this report below at your convenience.

Yours faithfully,

Justin Franklin  
**Key Technical Person**  
**Assistant Laboratory Manager**  
**Babbage Geotechnical Laboratory**



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation. This report may not be reproduced except in full & with written approval from BGL.

**DETERMINATION OF THE LIQUID LIMIT, PLASTIC LIMIT & THE PLASTICITY INDEX**

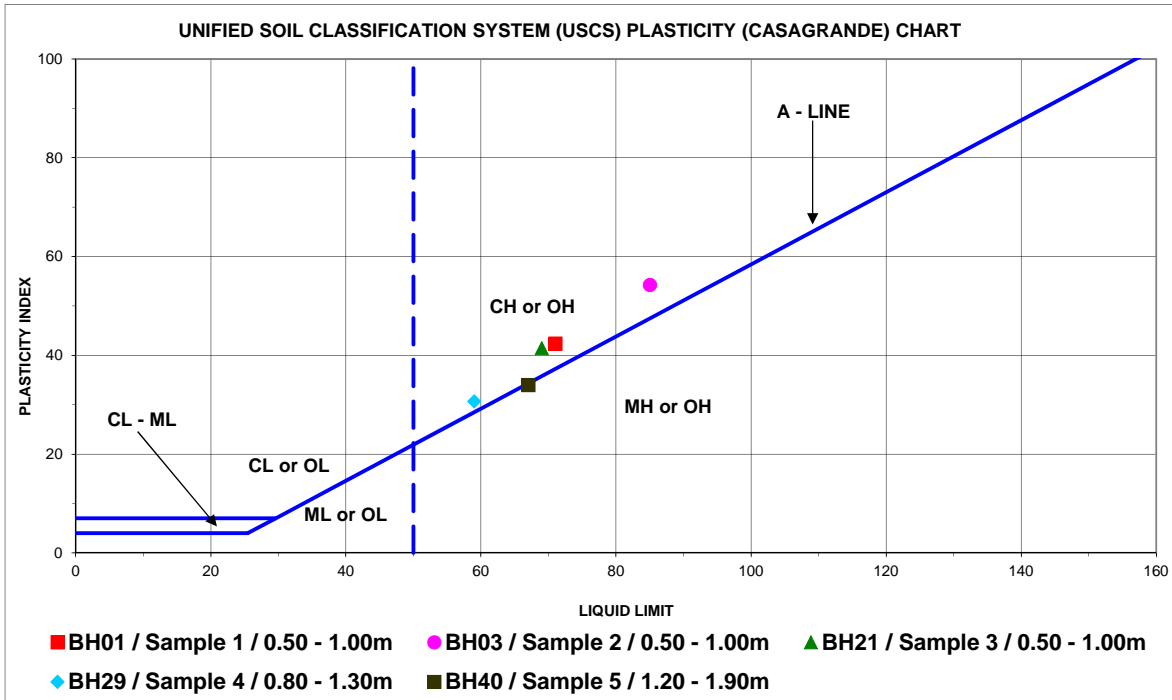
Tested By:	SG / JL	August 2024
Compiled By:	JF	16/08/2024
Checked By:	JF	16/08/2024

Test Methods: NZS4402: 1986: Test 2.2, Test 2.3 and Test 2.4

**SUMMARY OF TESTING**

Borehole Number	Sample Number	Depth (m)	Liquid Limit	Plastic Limit	Plasticity Index	Soil Classification Based on USCS Chart Below
BH01	Sample 1	0.50 - 1.00	71	29	42	CH
BH03	Sample 2	0.50 - 1.00	85	31	54	CH
BH21	Sample 3	0.50 - 1.00	69	28	41	CH
BH29	Sample 4	0.80 - 1.30	59	28	31	CH
BH40	Sample 5	1.20 - 1.90	67	33	34	CH / MH

The chart below & soil classification terminology is taken from ASTM D2487-17<sup>01</sup> "Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)", April 2020, & is based on the classification scheme developed by A. Casagrande in the 1940's (Casagrande, A., 1948: Classification and identification of soil. Transactions of the American Society of Civil Engineers, v. 113, p. 901-930). The chart below & the soil classification given in the table above are included for your information only, and are not included in the IANZ endorsement for this report.



**CHART LEGEND**

CL = CLAY, low plasticity ('lean' clay)	CH = CLAY, high plasticity ('fat' clay)
OL = ORGANIC CLAY or ORGANIC SILT, low liquid limit	OH = ORGANIC CLAY or ORGANIC SILT, high liquid limit
ML = SILT, low liquid limit	MH = SILT, high liquid limit ('elastic silt')
CL - ML = SILTY CLAY	

Please reply to: W.E. Campton

Page 1 of 2

Haigh Workman Ltd.  
PO Box 89  
Kerikeri 0245

Job Number: 63632#L  
BGL Registration Number: 2828  
Checked by: JF

Attention: **JOSH CURREEN**

15<sup>th</sup> August 2024

## SOLID DENSITY TESTING

Dear Sir,

**Re: 39 AUCKS ROAD, RUSSELL**  
**Your Reference: 23 020**  
**Report Number: 63632#L/SD 39 Aucks Road**

The following report presents the results of solid density testing at BGL of soil samples delivered to this laboratory on the 7<sup>th</sup> of August 2024.

The test standard used was:

**Solid Density (medium & fine soils):**

NZS4402:1986:Test 2.7.2

Borehole Number	Sample Number	Depth (m)	Solid Density (t/m <sup>3</sup> )
BH21	Sample 3	0.50 – 1.00	2.73
BH29	Sample 4	0.80 – 1.30	2.71
BH40	Sample 5	1.20 – 1.90	2.70

The whole soil was used for these tests. When tested the samples were in the as-received state.

As per the reporting requirements of NZS4402: 1986: Test 2.7.2, solid density is the average value of two determinations (each within 0.02t/m<sup>3</sup> of each other) reported to the nearest 0.01t/m<sup>3</sup>.



**Sample Descriptions** (not part of BGL IANZ Accreditation)

**BH21 / Sample 3 / 0.50 – 1.00m:**

CLAY, moderately to highly plastic, orange, slightly moist.

**BH29 / Sample 4 / 0.80 – 1.30m:**

CLAY, fine to medium sandy, moderately plastic, orange with red mottles, moist.

**BH40 / Sample 5 / 1.20 – 1.90m:**

CLAY, silty, trace fine sand, moderately plastic, yellow, moist.

Please note that the test results relate only to the samples as-received, and relate only to the samples under test.

Thank you for the opportunity to carry out this testing. If you have any queries regarding the content of this report please contact the person authorising this report below at your convenience.

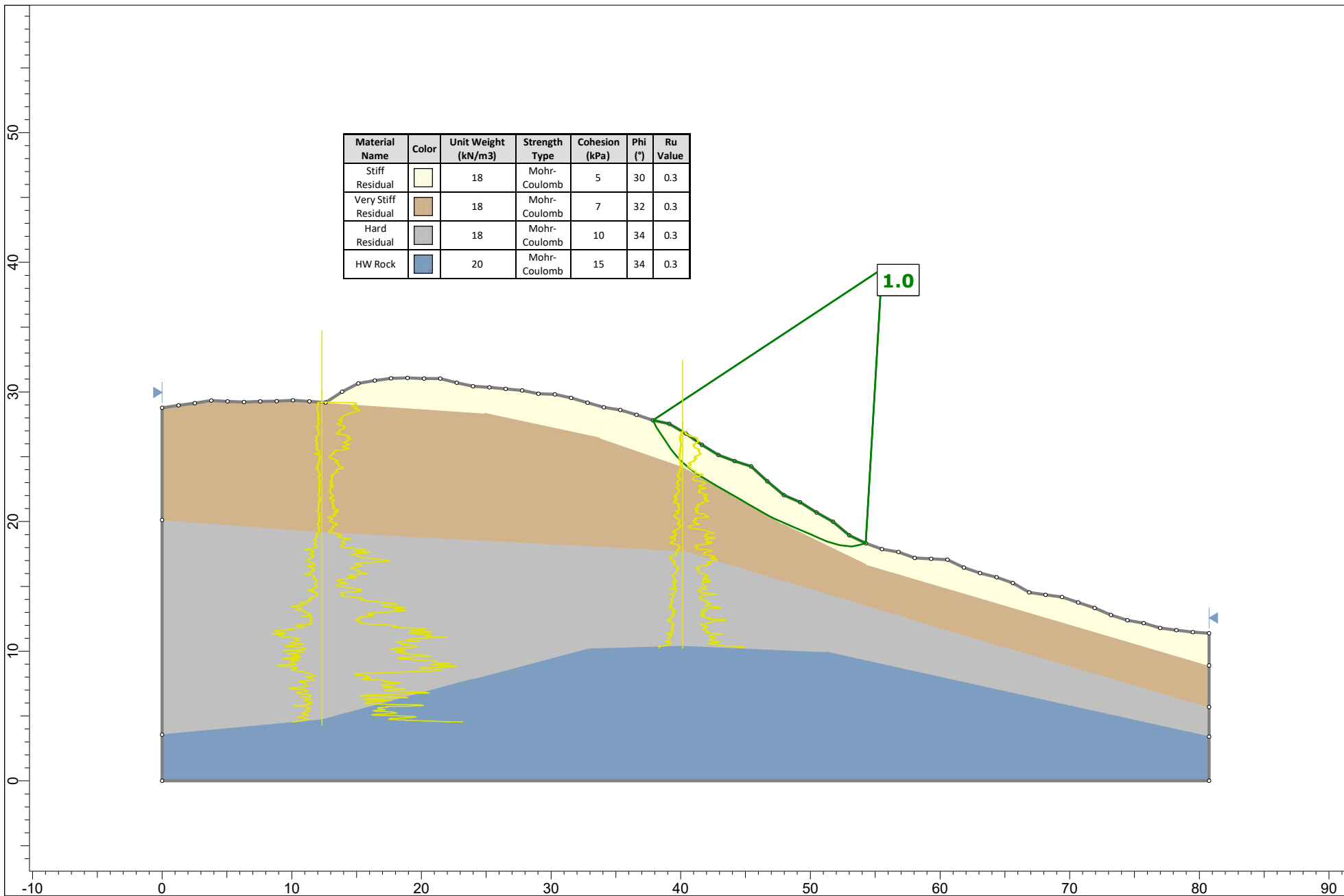
Yours faithfully,


Justin Franklin  
**Key Technical Person**  
**Assistant Laboratory Manager**  
**Babbage Geotechnical Laboratory**

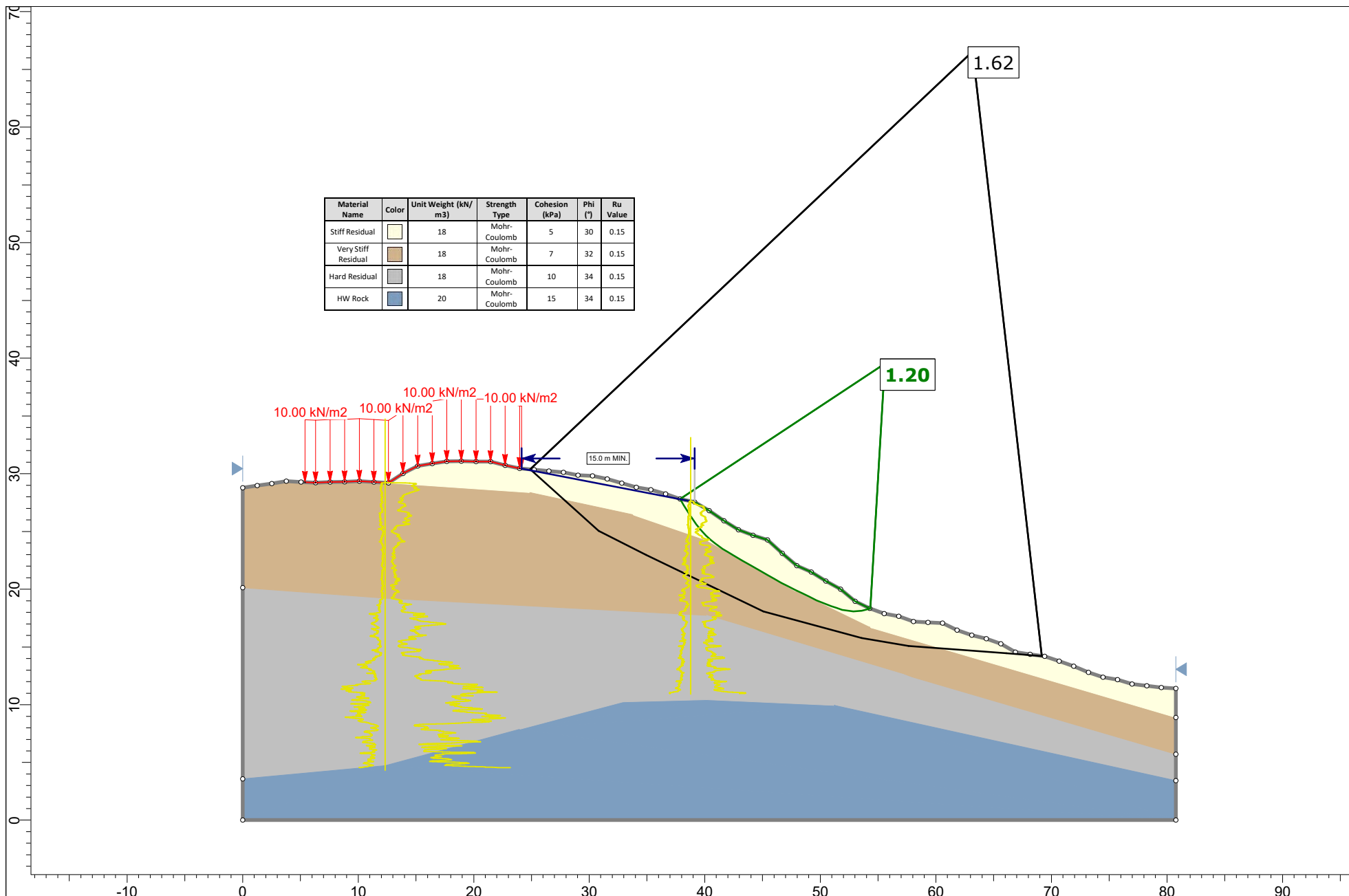


All tests reported herein have been performed in accordance with the laboratory's scope of accreditation. This report may not be reproduced except in full & with written approval from BGL.

## ***Appendix E – Slope Stability Outputs***

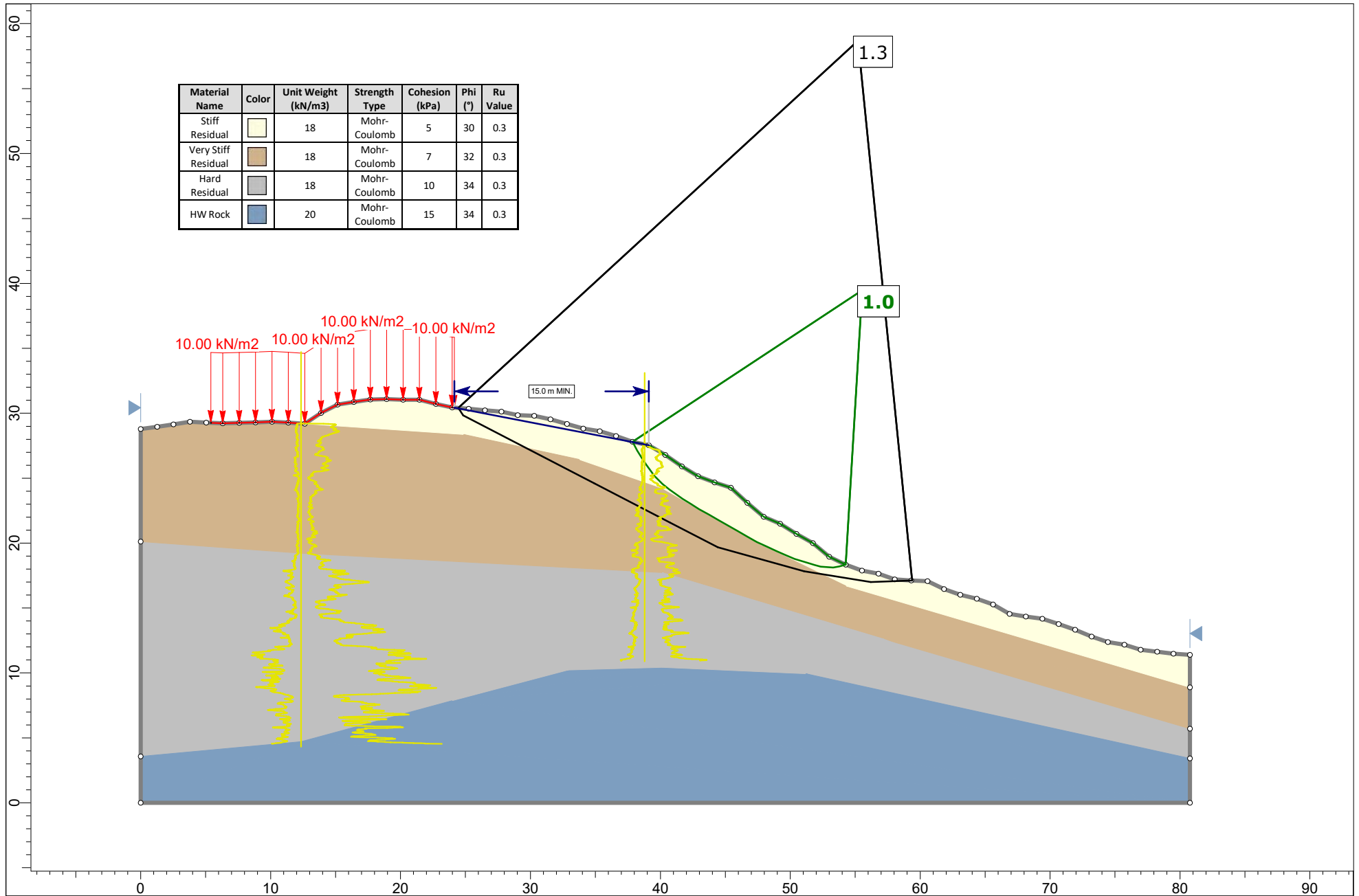


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	Drawn By	JMC	Company
	Date	16/08/2024, 9:07:26 am	File Name



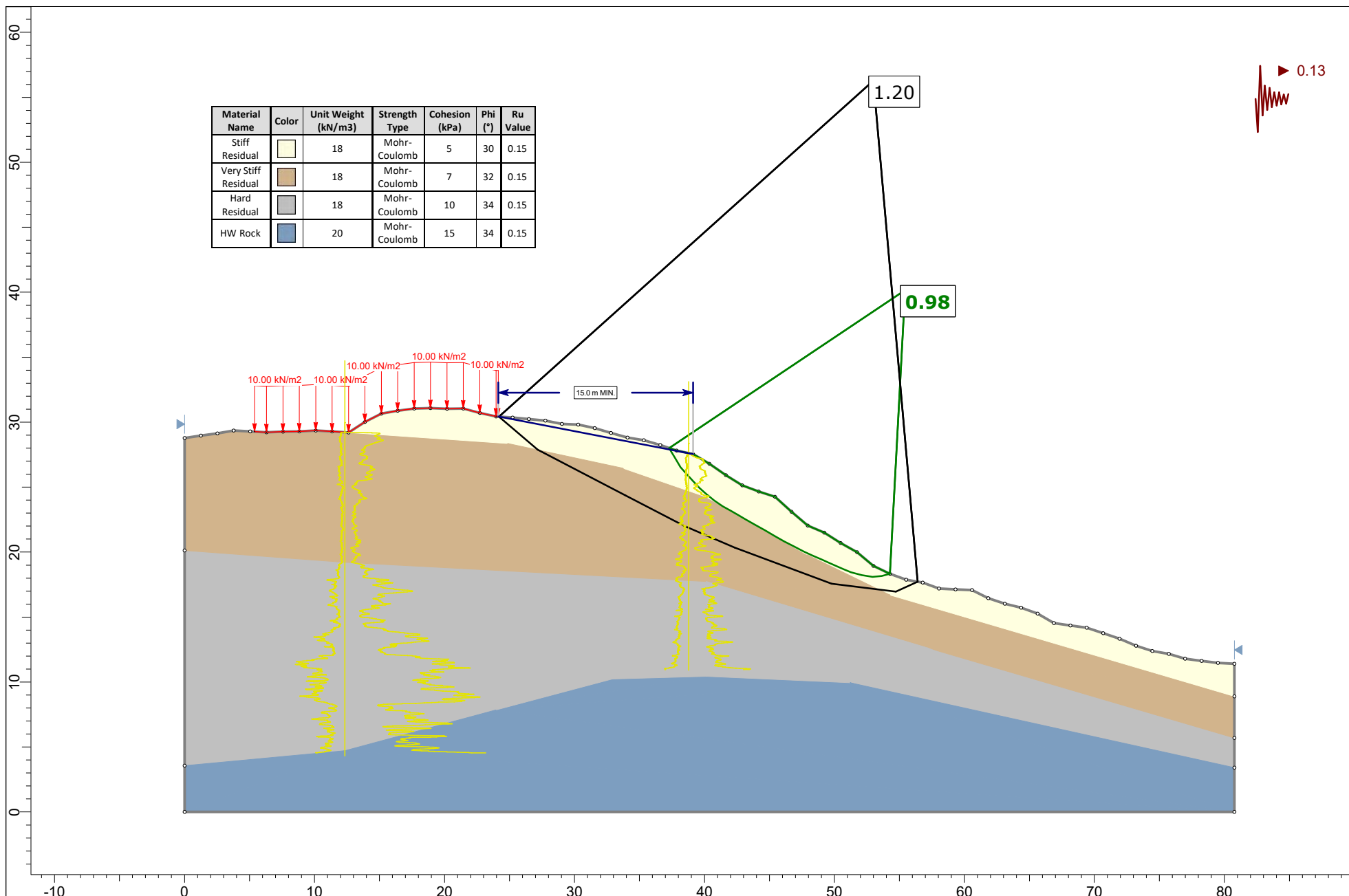
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	Date	16/08/2024, 9:07:26 am	File Name	CC_static.slmd



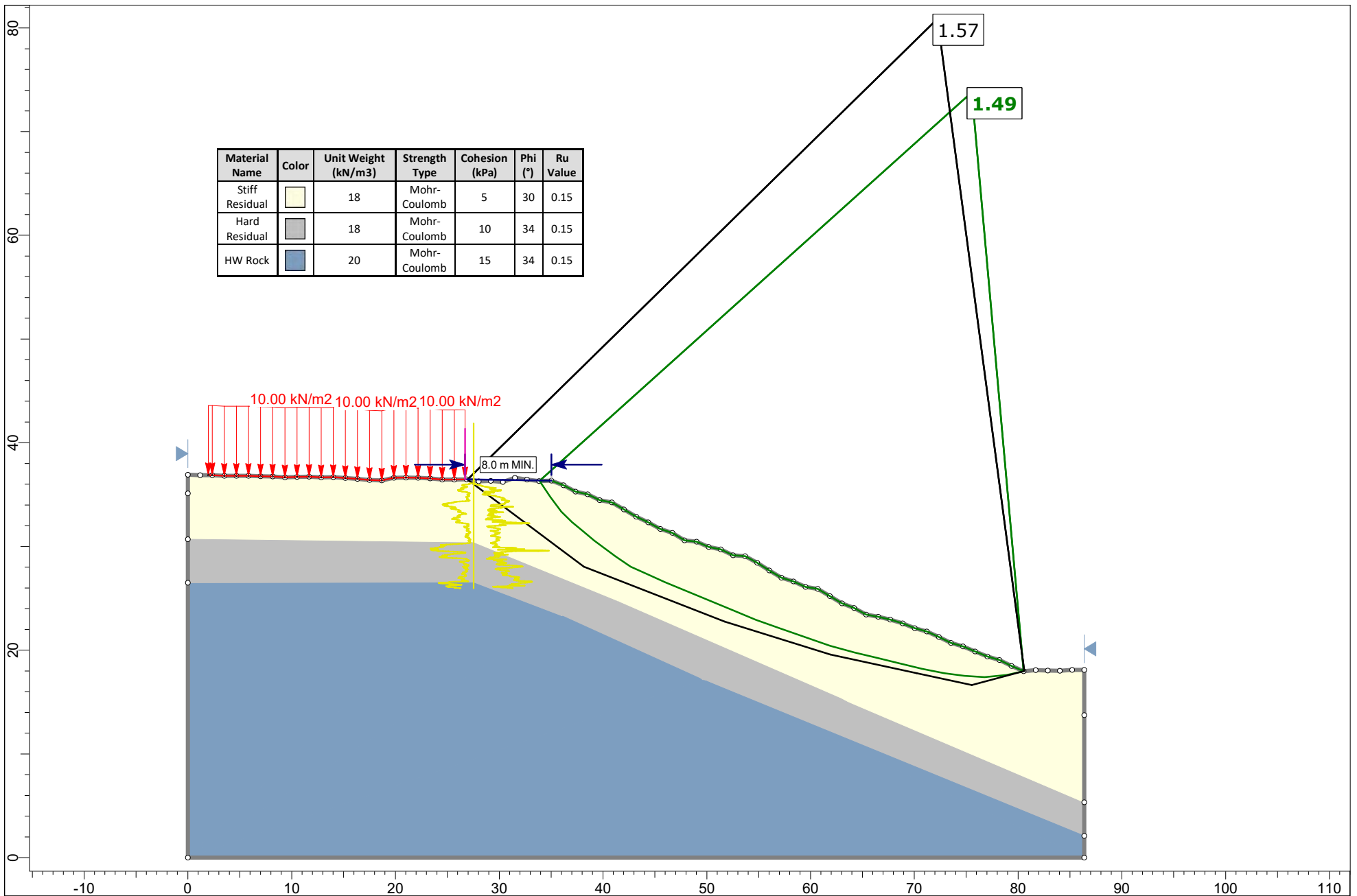


Material Name	Color	Unit Weight (kN/m <sup>3</sup> )	Strength Type	Cohesion (kPa)	Phi (°)	Ru Value
Stiff Residual	Yellow	18	Mohr-Coulomb	5	30	0.3
Very Stiff Residual	Brown	18	Mohr-Coulomb	7	32	0.3
Hard Residual	Grey	18	Mohr-Coulomb	10	34	0.3
HW Rock	Blue	20	Mohr-Coulomb	15	34	0.3

	Project	23 020 - Aucks Rd, Russell - Willowridge Developments		
	Group	Cross Section C-C'	Scenario	Elevated groundwater conditions
	Drawn By	JMC	Company	
	Date	16/08/2024, 9:07:26 am	File Name	CC_elevatedGW.slm

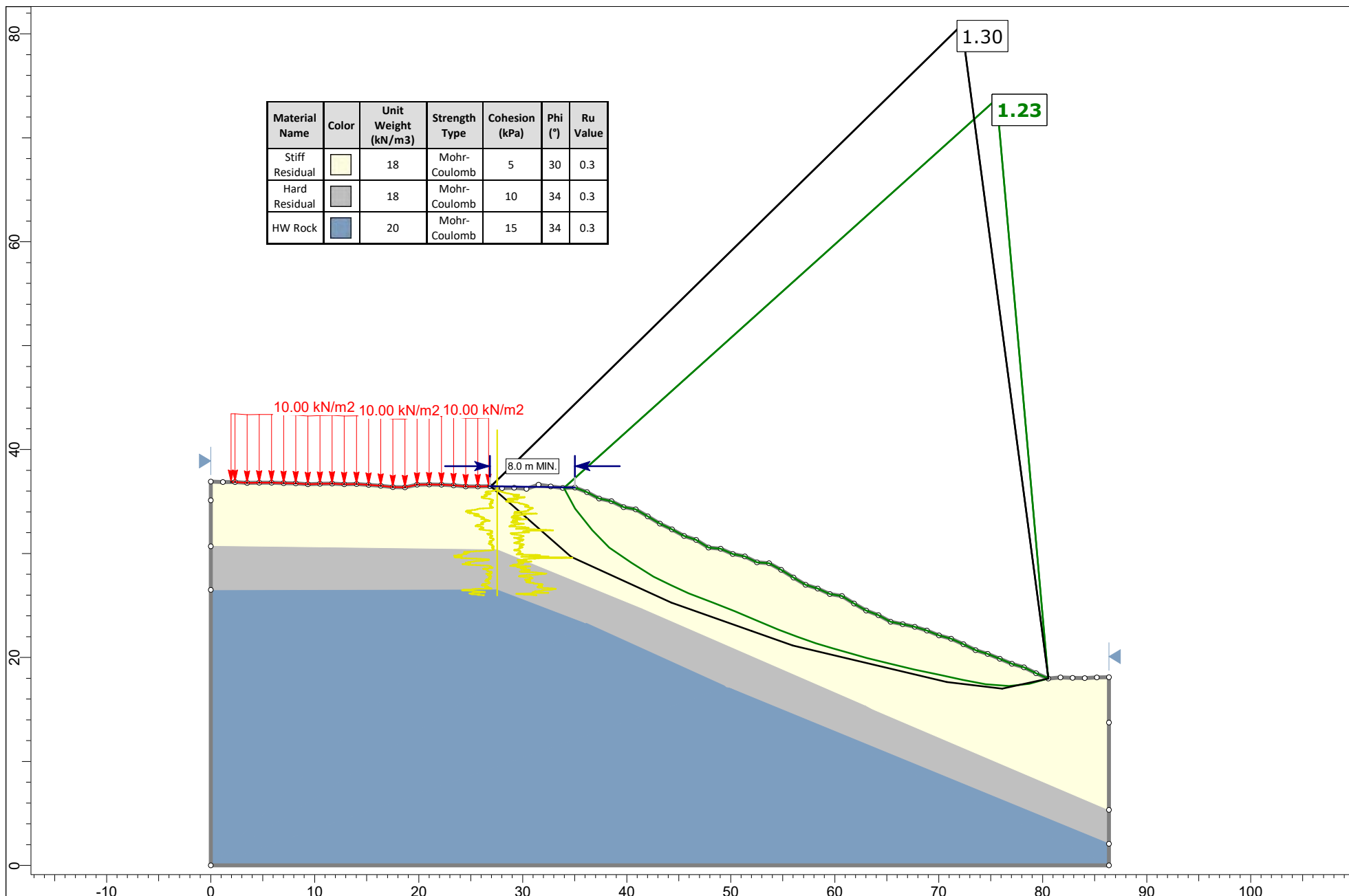


	Project	23 020 - Aucks Rd, Russell - Willowridge Developments		
	Group	Cross Section C-C'	Scenario	Seismic conditions
	Drawn By	JMC	Company	
	Date	16/08/2024, 9:07:26 am	File Name	CC_seismic.slmd



Material Name	Color	Unit Weight (kN/m <sup>3</sup> )	Strength Type	Cohesion (kPa)	Phi (°)	Ru Value
Stiff Residual	Yellow	18	Mohr-Coulomb	5	30	0.15
Hard Residual	Grey	18	Mohr-Coulomb	10	34	0.15
HW Rock	Blue	20	Mohr-Coulomb	15	34	0.15

	Project	23 020 - Aucks Rd, Russell - Willowridge Developments		
	Group	Cross Section D-D'	Scenario	Static conditions
	Drawn By	JMC	Company	
	Date	16/08/2024, 9:07:26 am	File Name	DD_static.slm

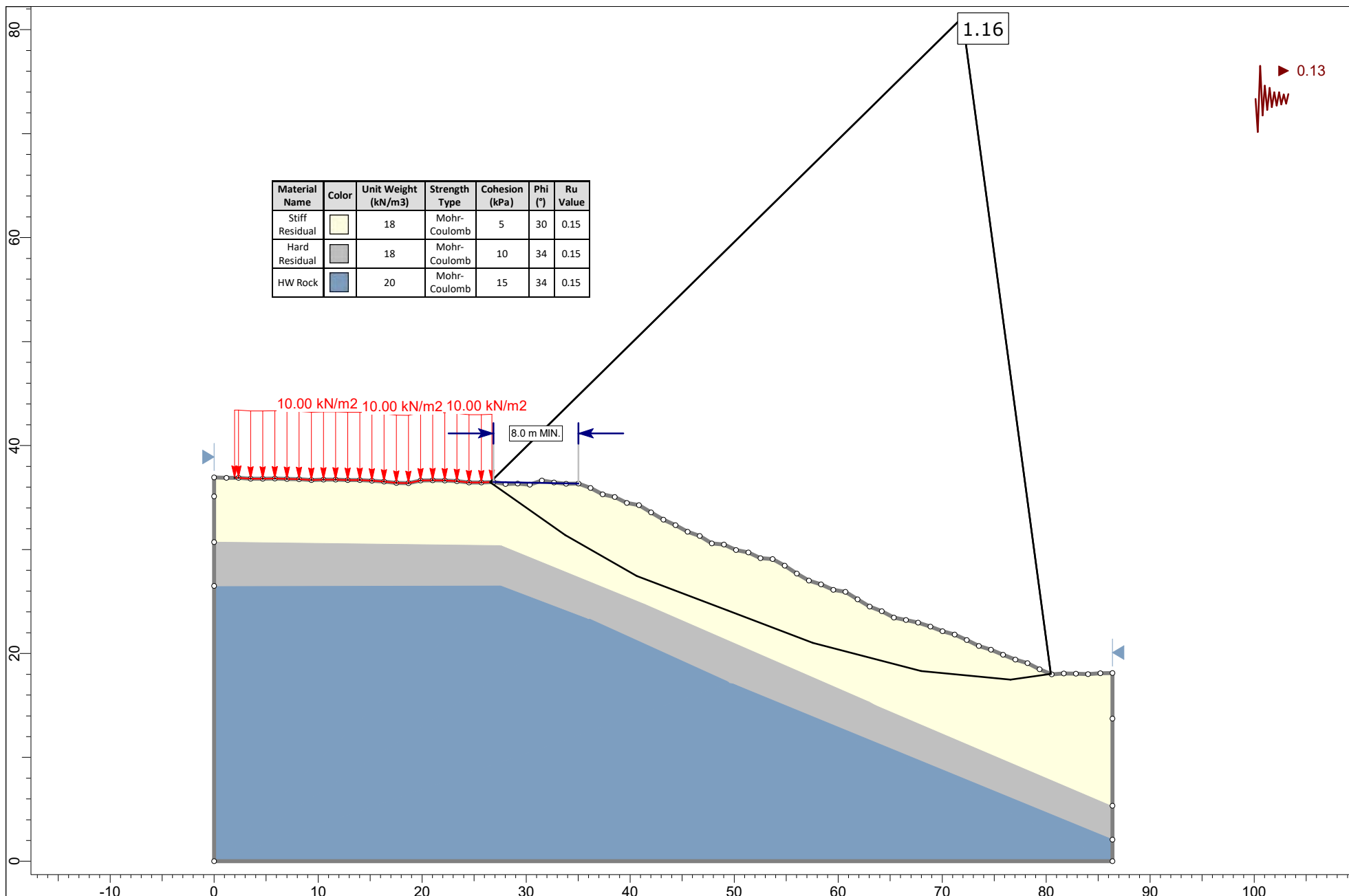


Material Name	Color	Unit Weight (kN/m <sup>3</sup> )	Strength Type	Cohesion (kPa)	Phi (°)	Ru Value
Stiff Residual	Yellow	18	Mohr-Coulomb	5	30	0.3
Hard Residual	Grey	18	Mohr-Coulomb	10	34	0.3
HW Rock	Blue	20	Mohr-Coulomb	15	34	0.3

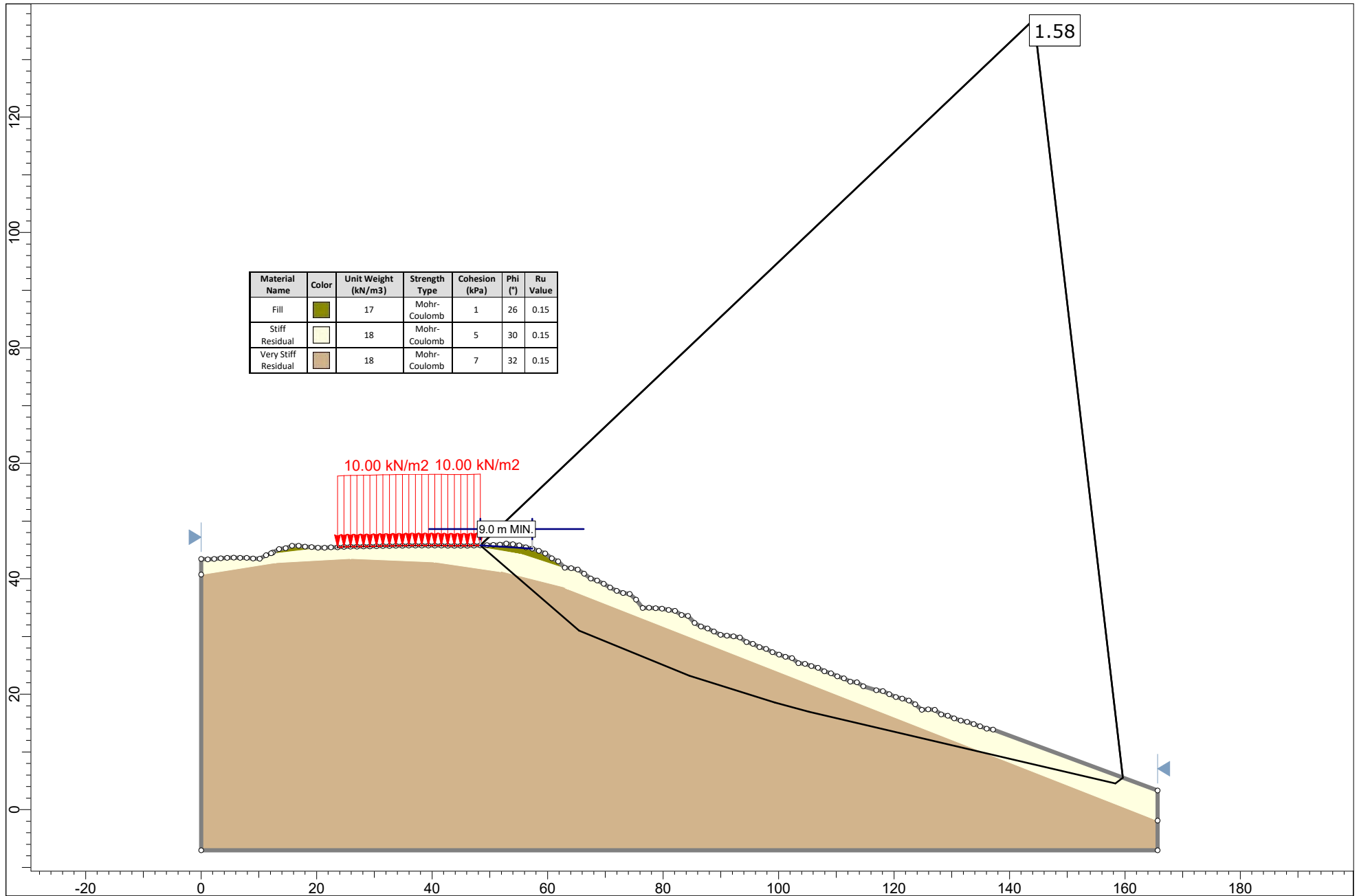


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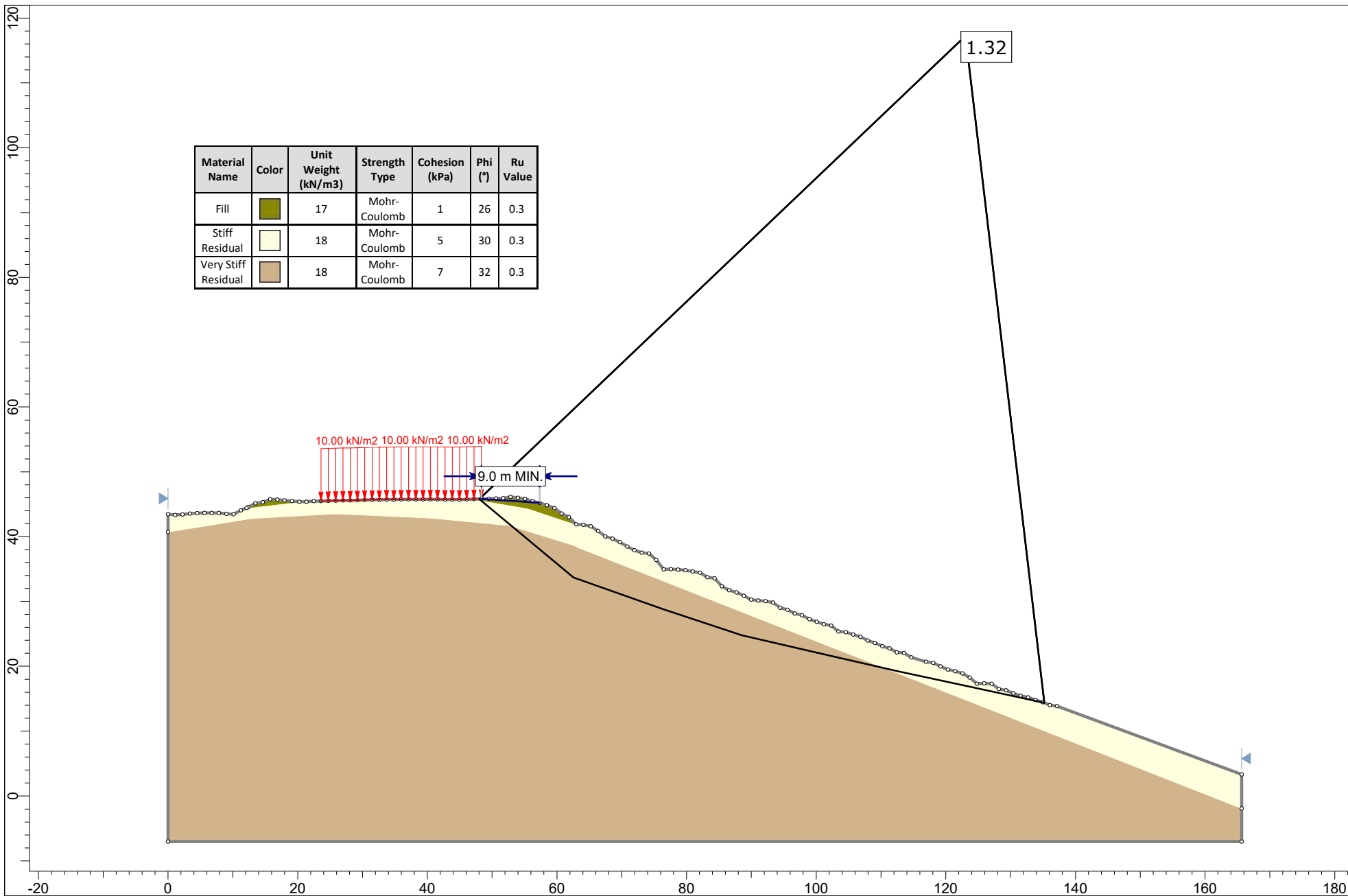




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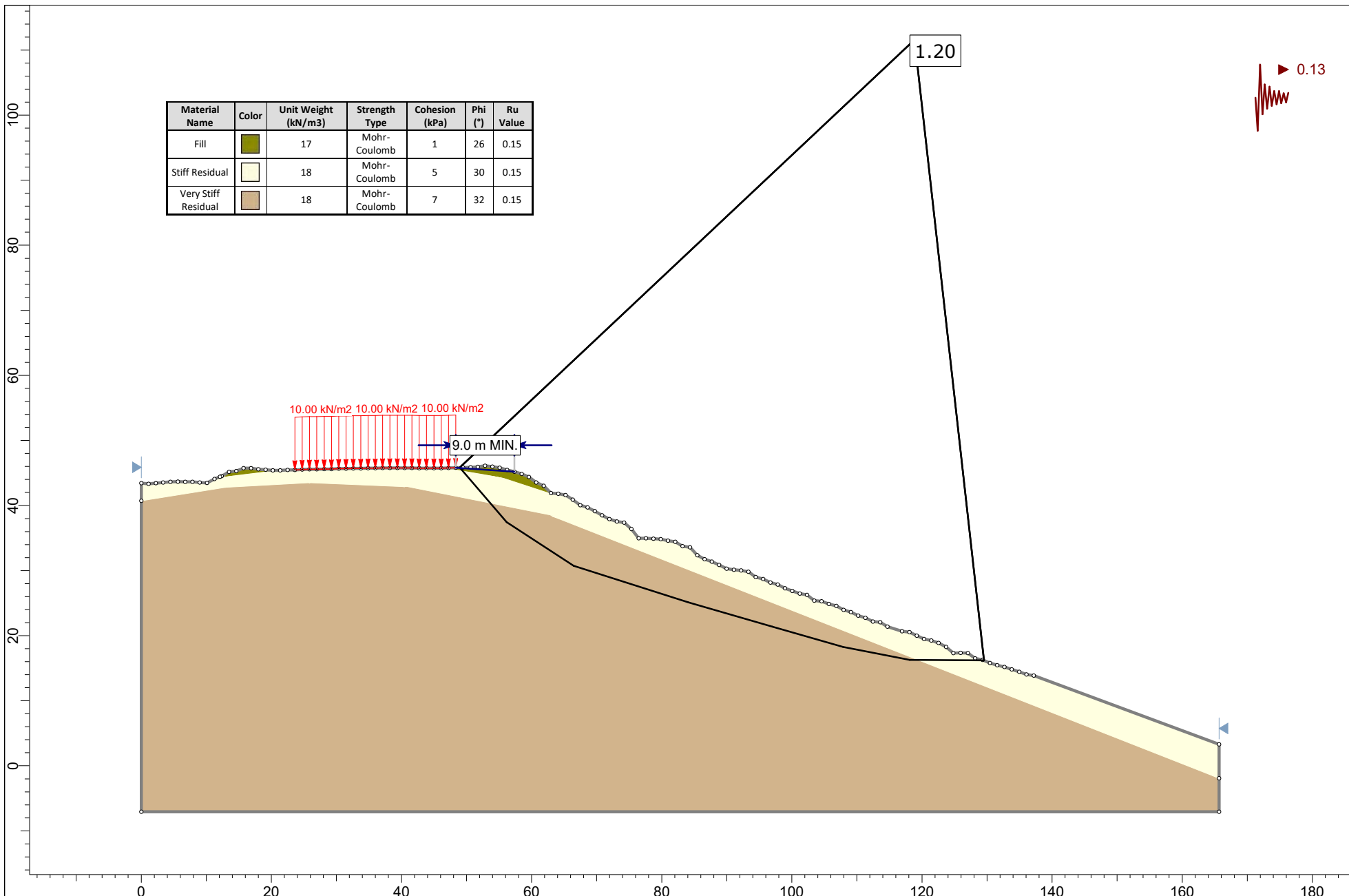


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Group	Cross Section F-F'	Scenario Static conditions
Drawn By	JMC	Company
Date	16/08/2024, 9:07:26 am	File Name FF_static.slmd



Material Name	Color	Unit Weight (kN/m <sup>3</sup> )	Strength Type	Cohesion (kPa)	Phi (°)	Ru Value
Fill	Green	17	Mohr-Coulomb	1	26	0.3
Stiff Residual	Yellow	18	Mohr-Coulomb	5	30	0.3
Very Stiff Residual	Brown	18	Mohr-Coulomb	7	32	0.3

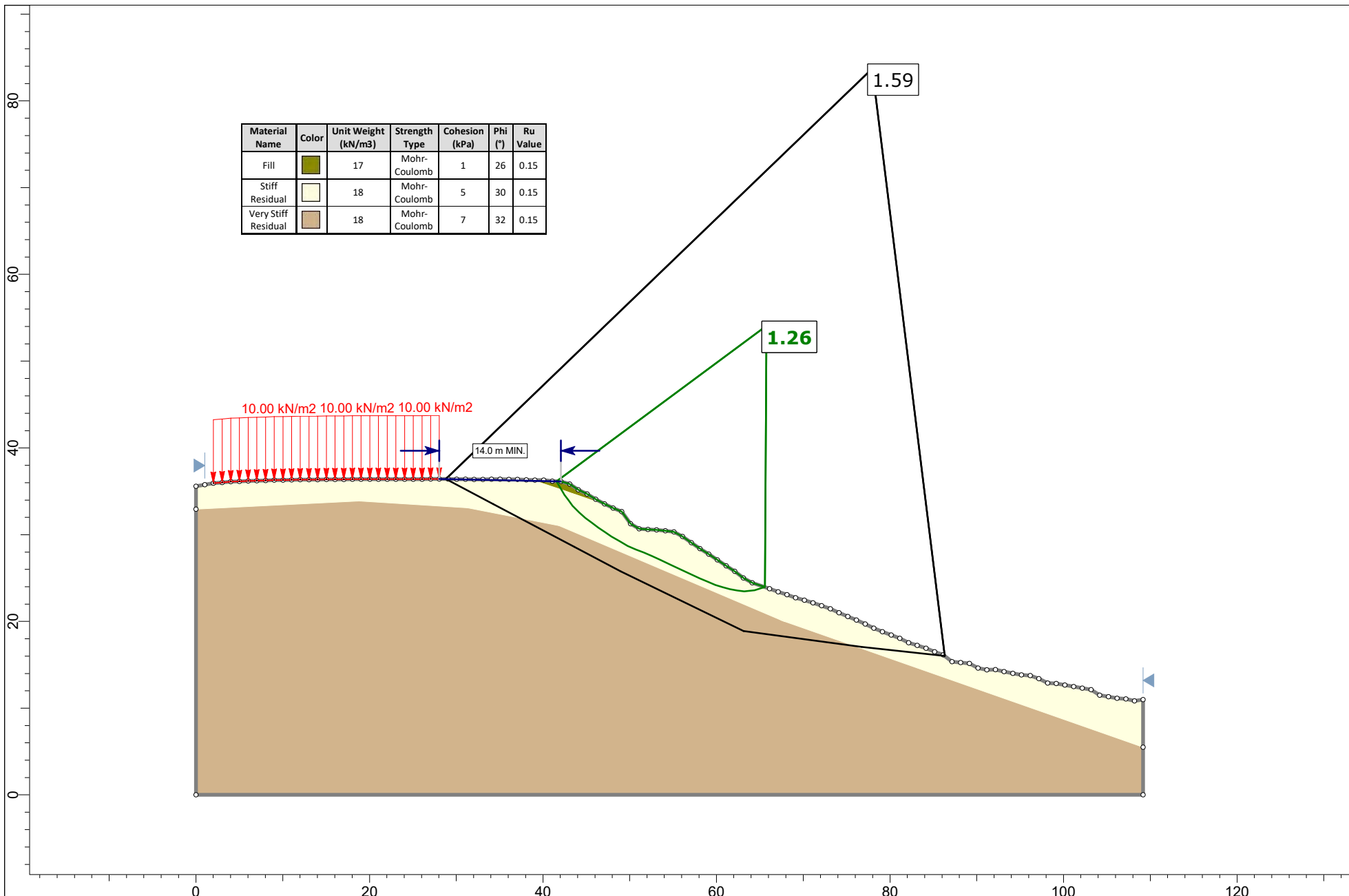
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Material Name	Color	Unit Weight (kN/m <sup>3</sup> )	Strength Type	Cohesion (kPa)	Phi (°)	Ru Value
Fill	Green	17	Mohr-Coulomb	1	26	0.15
Stiff Residual	Yellow	18	Mohr-Coulomb	5	30	0.15
Very Stiff Residual	Brown	18	Mohr-Coulomb	7	32	0.15

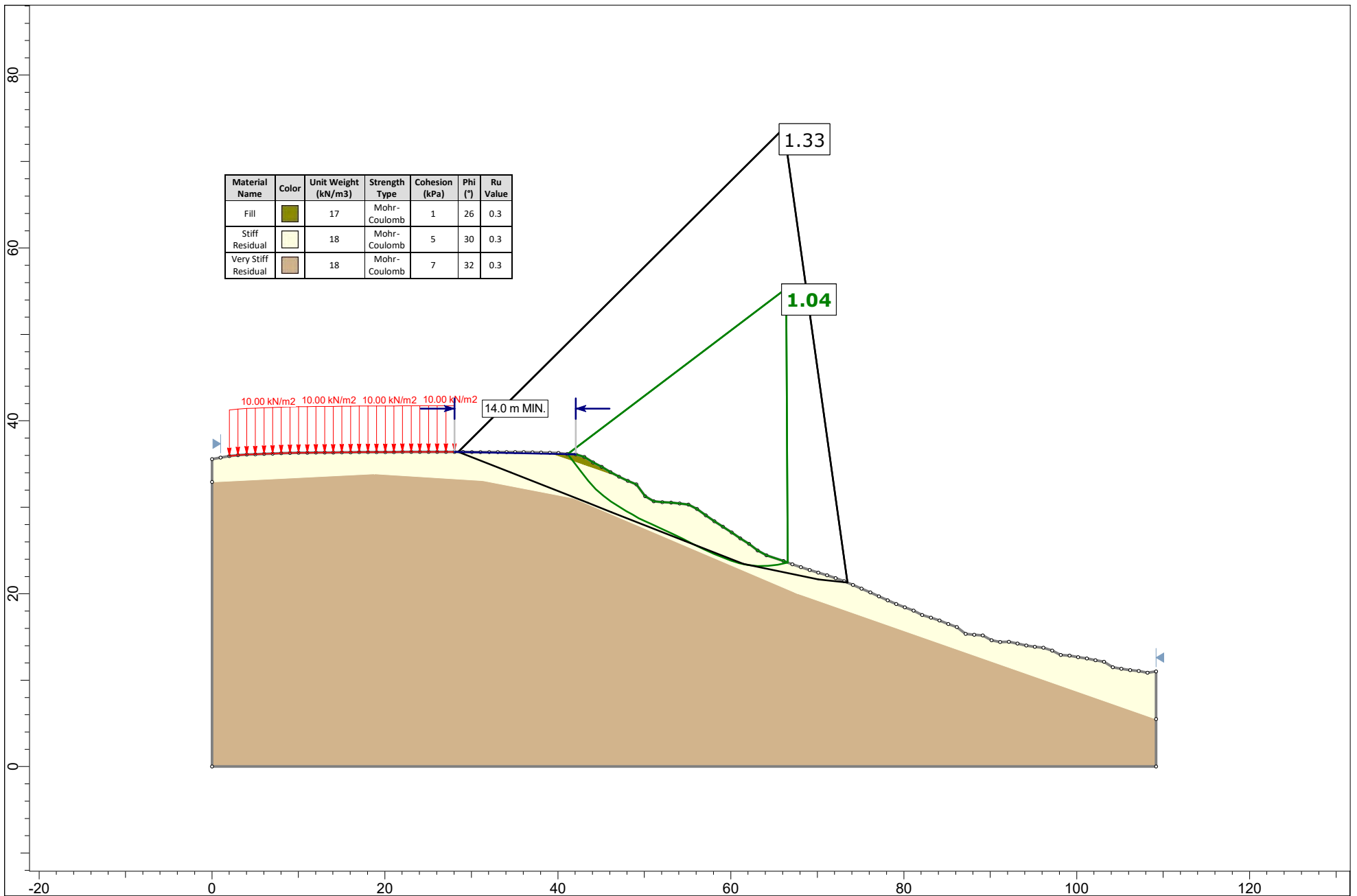
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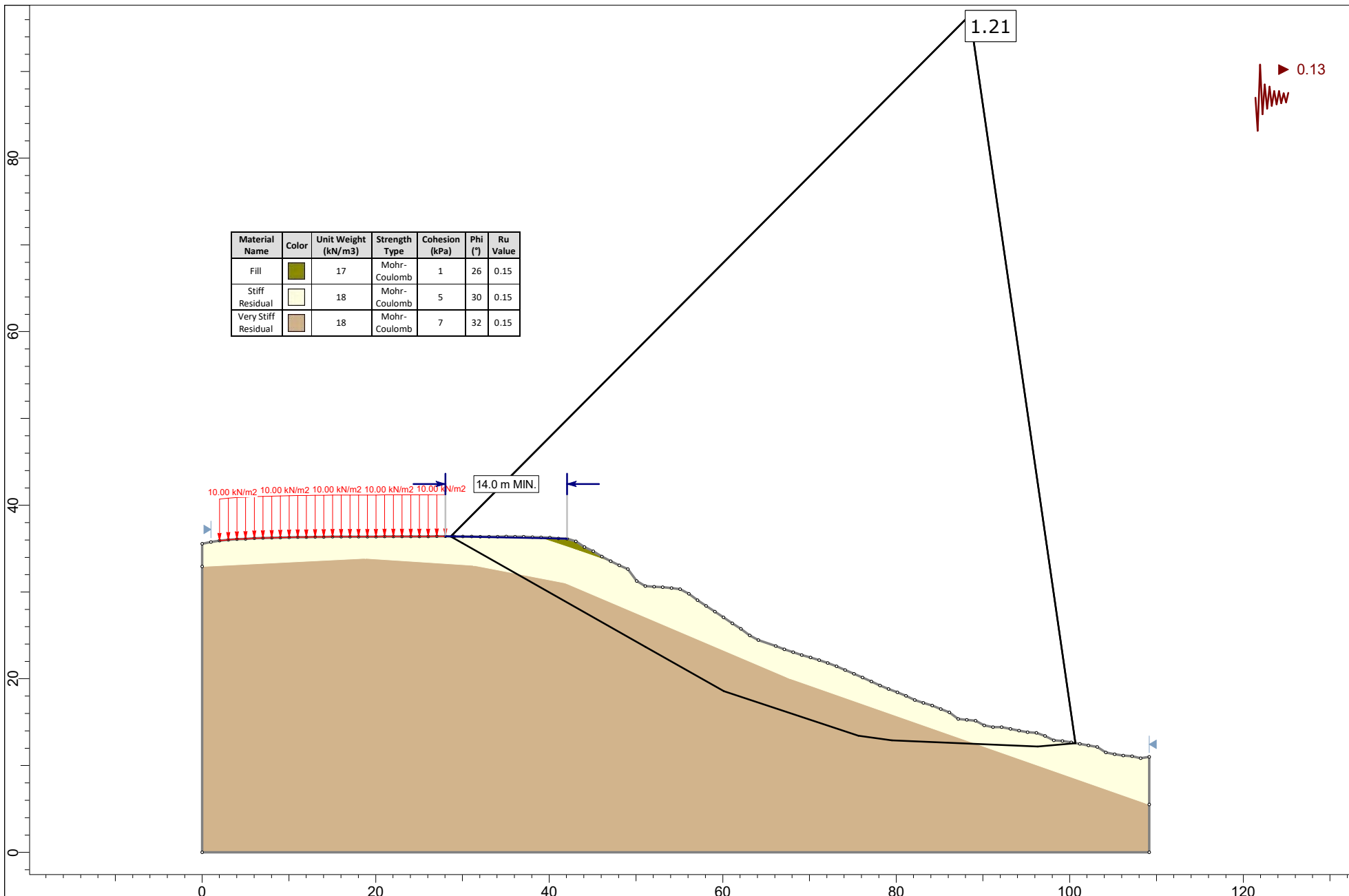


Material Name	Color	Unit Weight (kN/m <sup>3</sup> )	Strength Type	Cohesion (kPa)	Phi (°)	Ru Value
Fill	Green	17	Mohr-Coulomb	1	26	0.15
Stiff Residual	Yellow	18	Mohr-Coulomb	5	30	0.15
Very Stiff Residual	Brown	18	Mohr-Coulomb	7	32	0.15

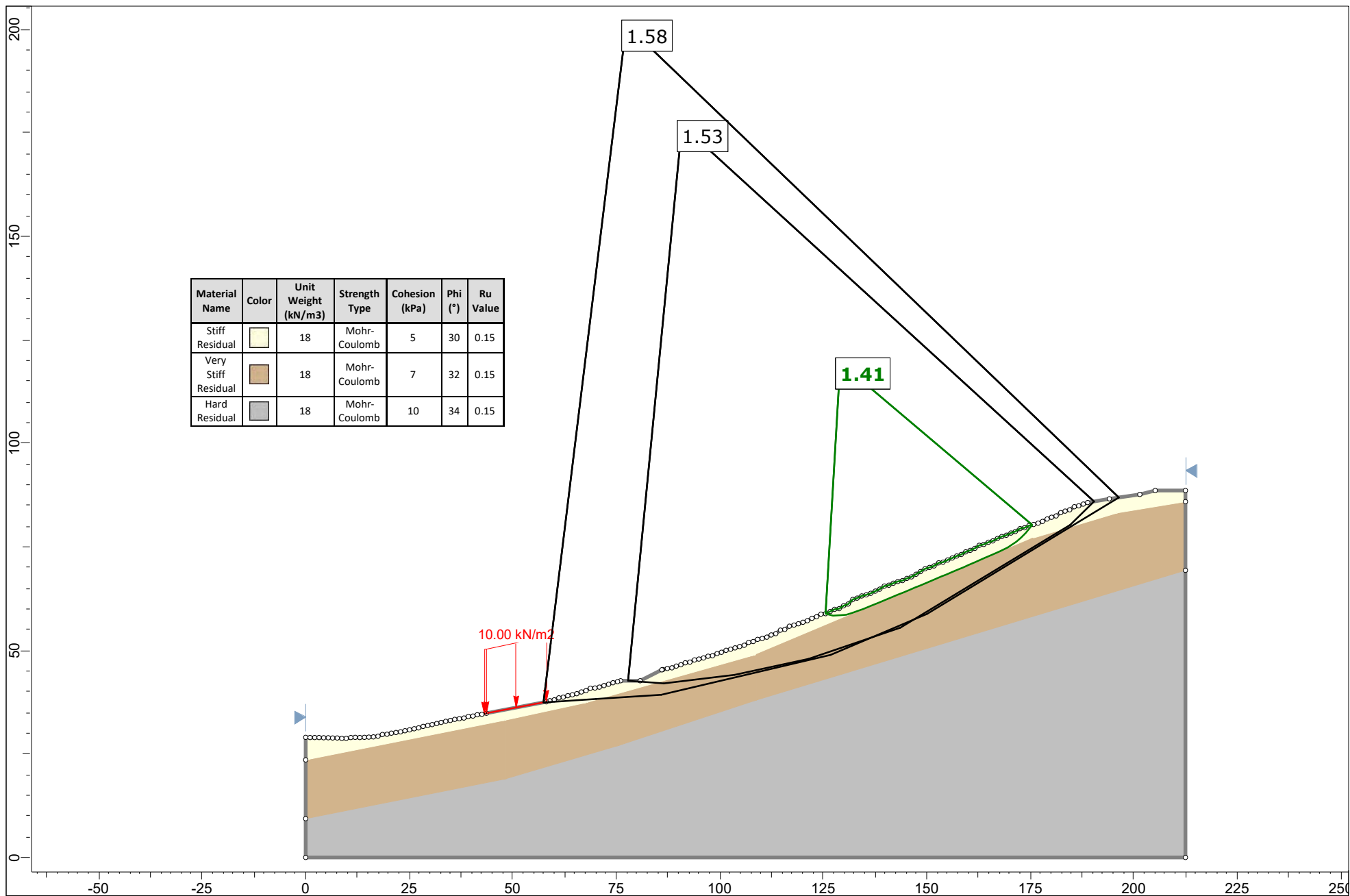
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	Date	16/08/2024, 9:07:26 am	File Name	GG_static.slmd



	Project		23 020 - Aucks Rd, Russell - Willowridge Developments	
	Group	Cross Section G-G'	Scenario	Elevated groundwater conditions
	Drawn By	JMC	Company	
	Date	16/08/2024, 9:07:26 am	File Name	GG_elevatedGW.sldm



	Project	23 020 - Aucks Rd, Russell - Willowridge Developments		
	Group	Cross Section G-G'	Scenario	Seismic conditions
	Drawn By	JMC	Company	
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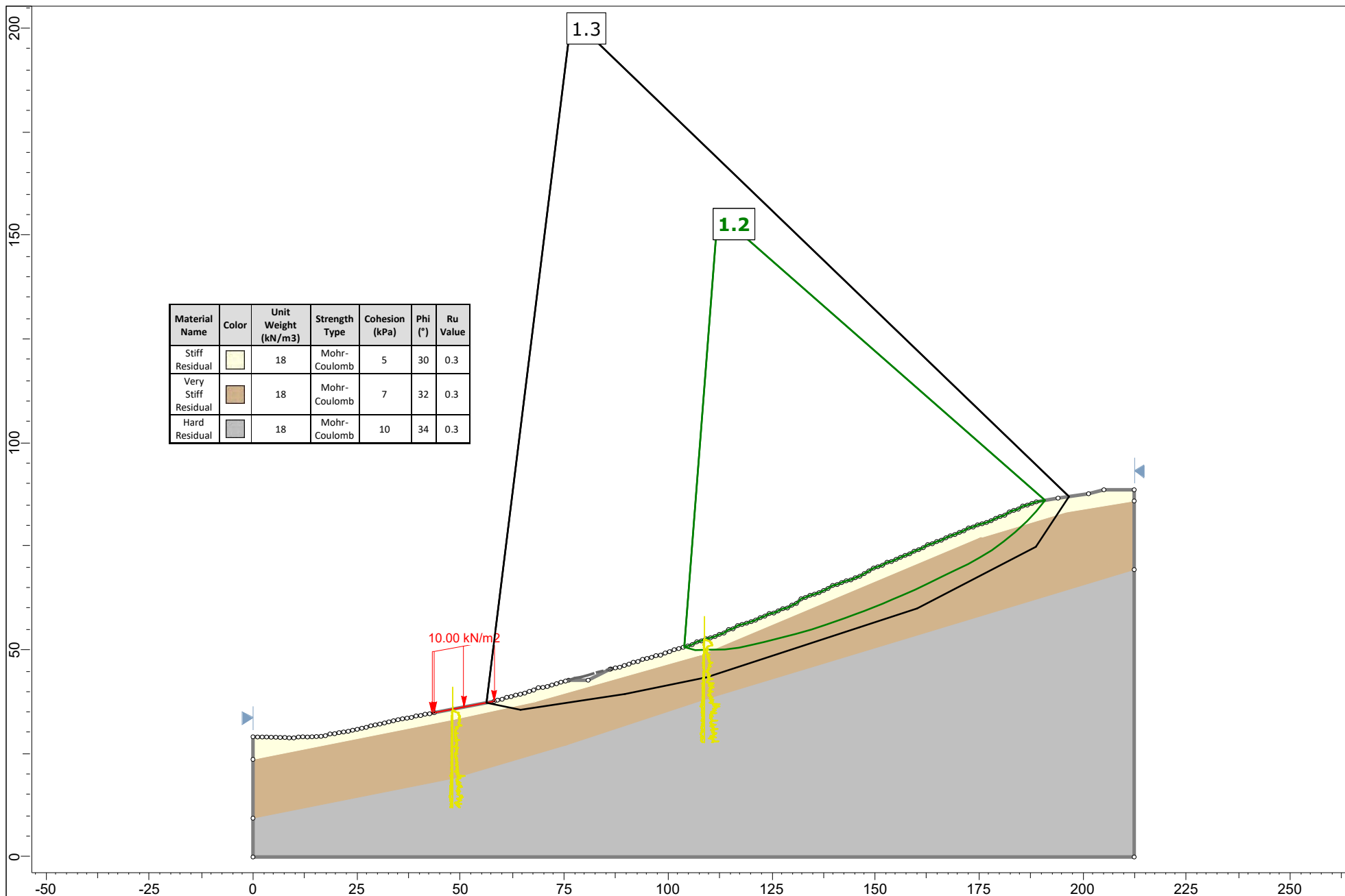
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Stiff Residual	Yellow	18	Mohr-Coulomb	5	30	0.15
Very Stiff Residual	Brown	18	Mohr-Coulomb	7	32	0.15
Hard Residual	Grey	18	Mohr-Coulomb	10	34	0.15



SLIDEINTERPRET 9.034

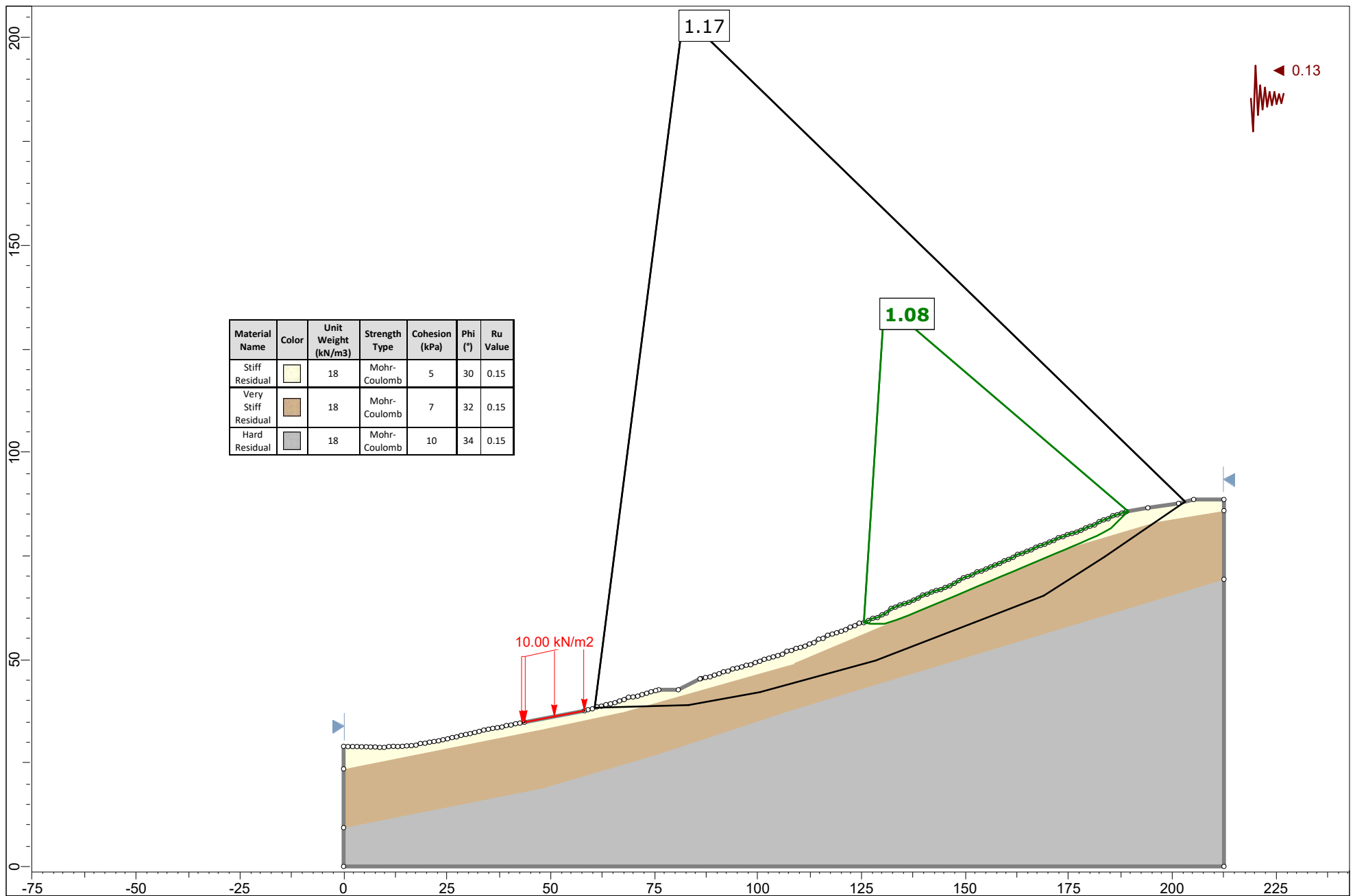
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Drawn By	JMC	Company
Date	16/08/2024, 9:07:26 am	File Name HH_static.slm





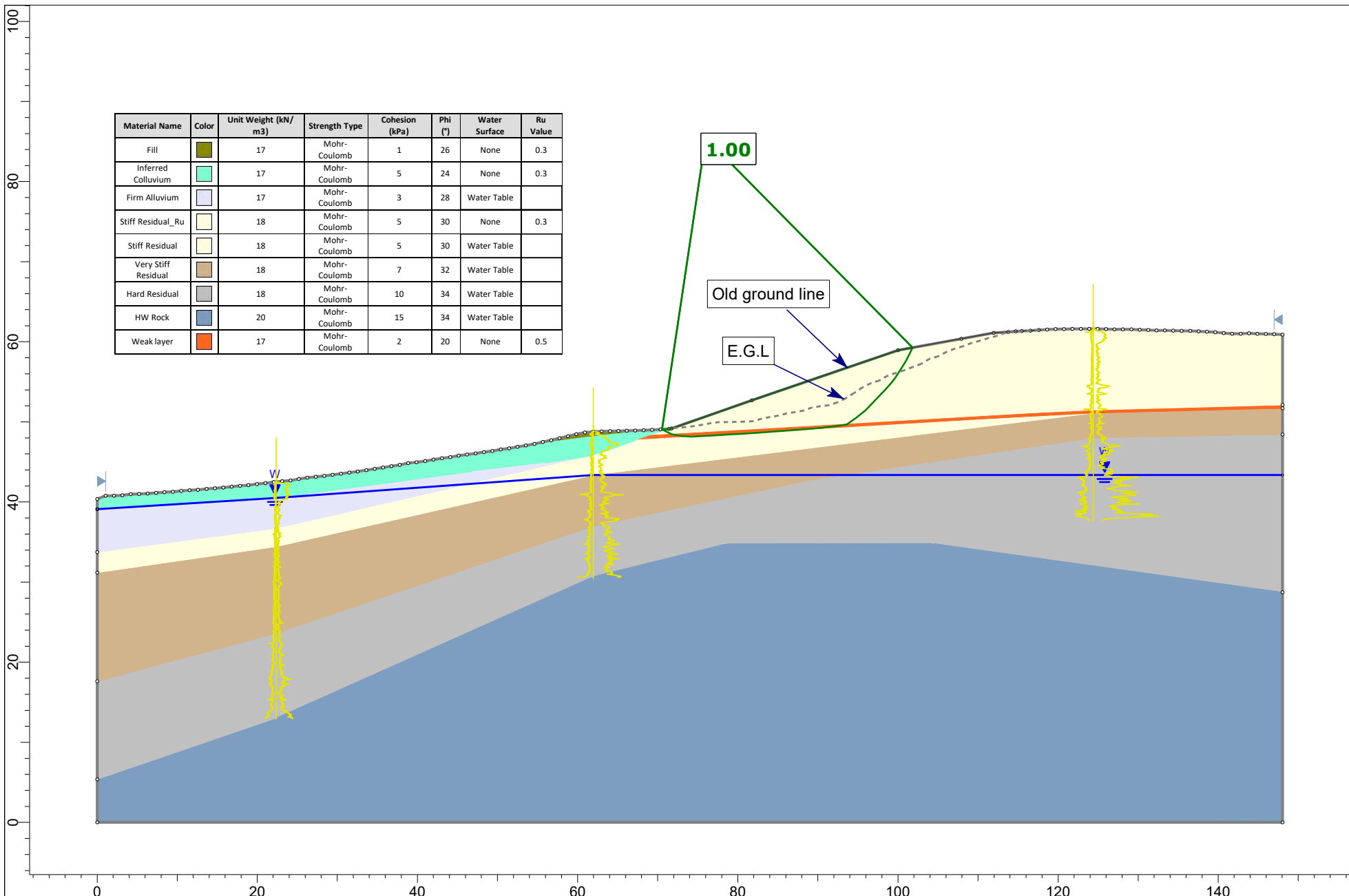
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Project	23 020 - Aucks Rd, Russell - Willowridge Developments		
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Drawn By	JMC	Company	
Date	16/08/2024, 9:07:26 am	File Name	HH_elevatedGW.sldm

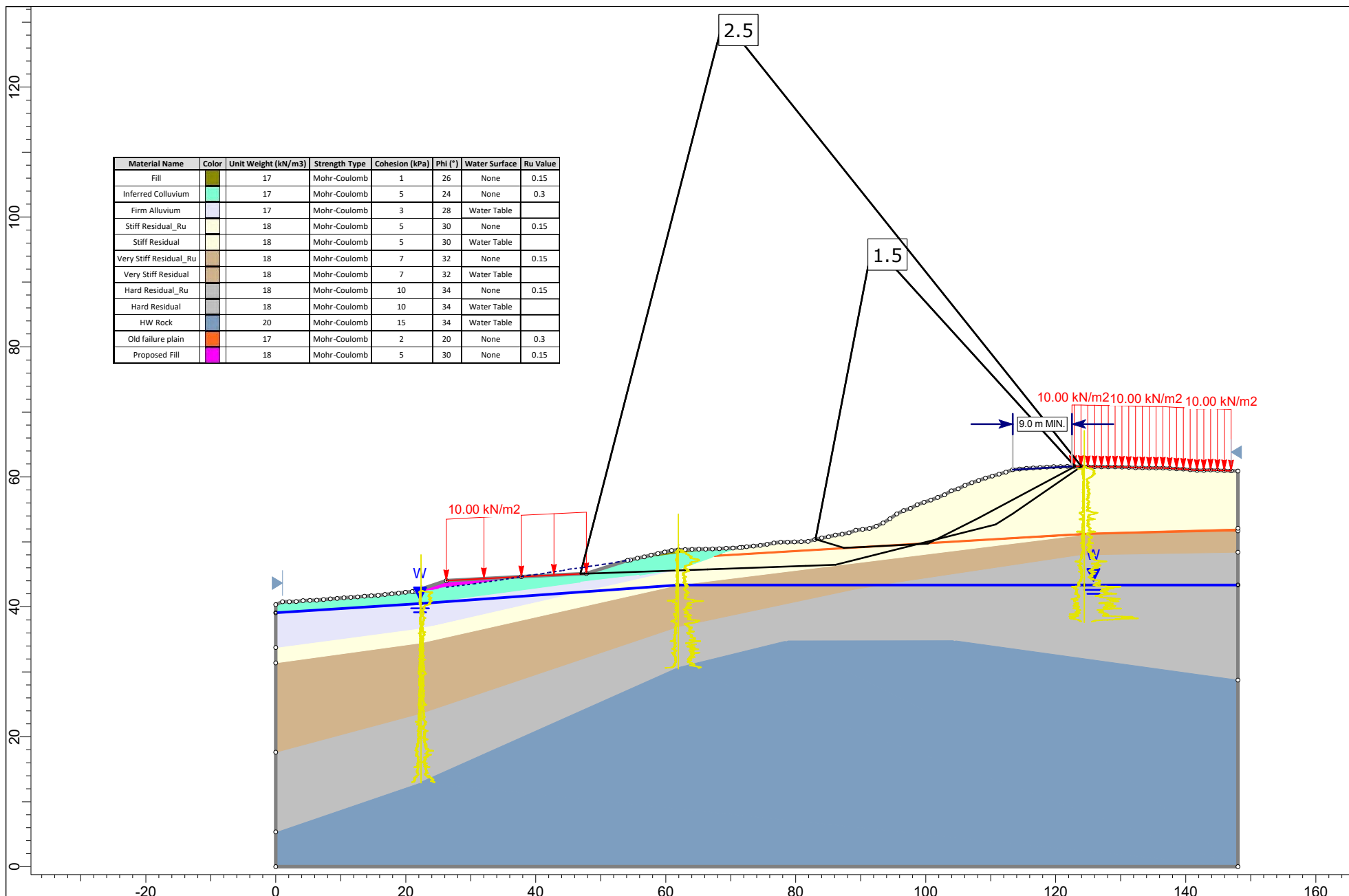


Material Name	Color	Unit Weight (kN/m <sup>3</sup> )	Strength Type	Cohesion (kPa)	Phi (°)	Ru Value
Stiff Residual	Yellow	18	Mohr-Coulomb	5	30	0.15
Very Stiff Residual	Brown	18	Mohr-Coulomb	7	32	0.15
Hard Residual	Grey	18	Mohr-Coulomb	10	34	0.15

	Project		23 020 - Aucks Rd, Russell - Willowridge Developments	
	Group	Cross Section H-H'	Scenario	Seismic conditions
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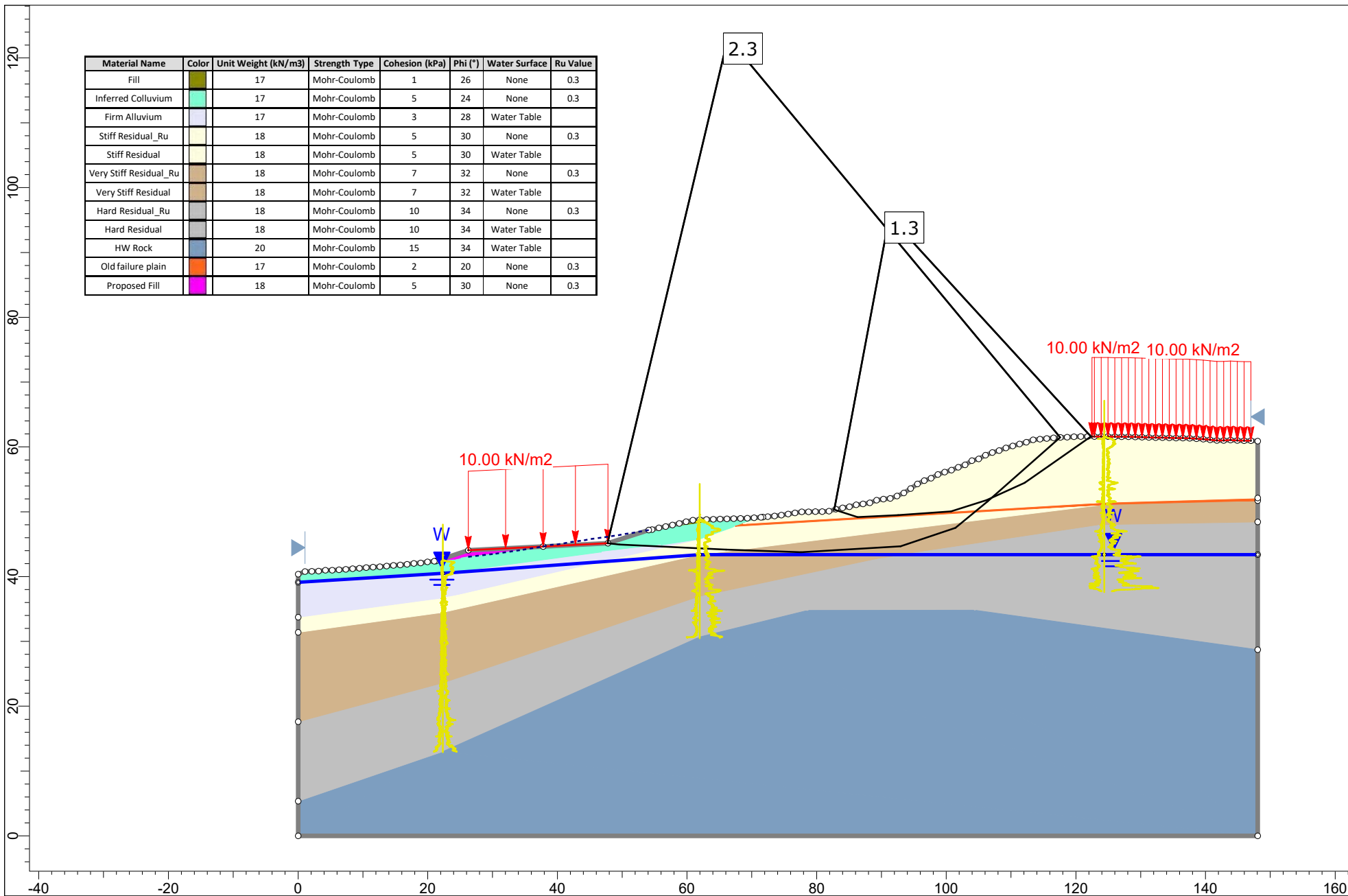


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	Group	Cross Section I-I'	Scenario	Back analyses
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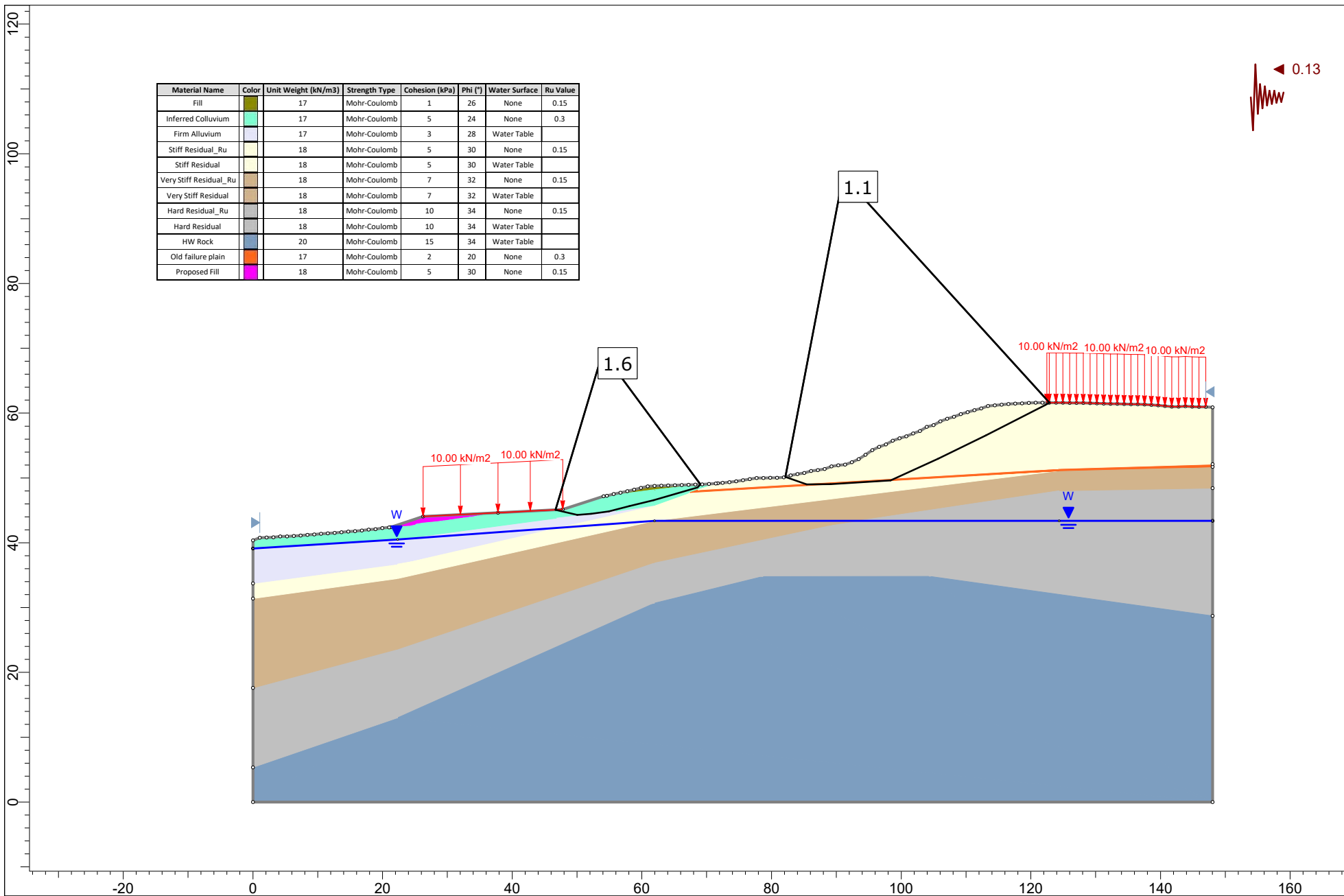


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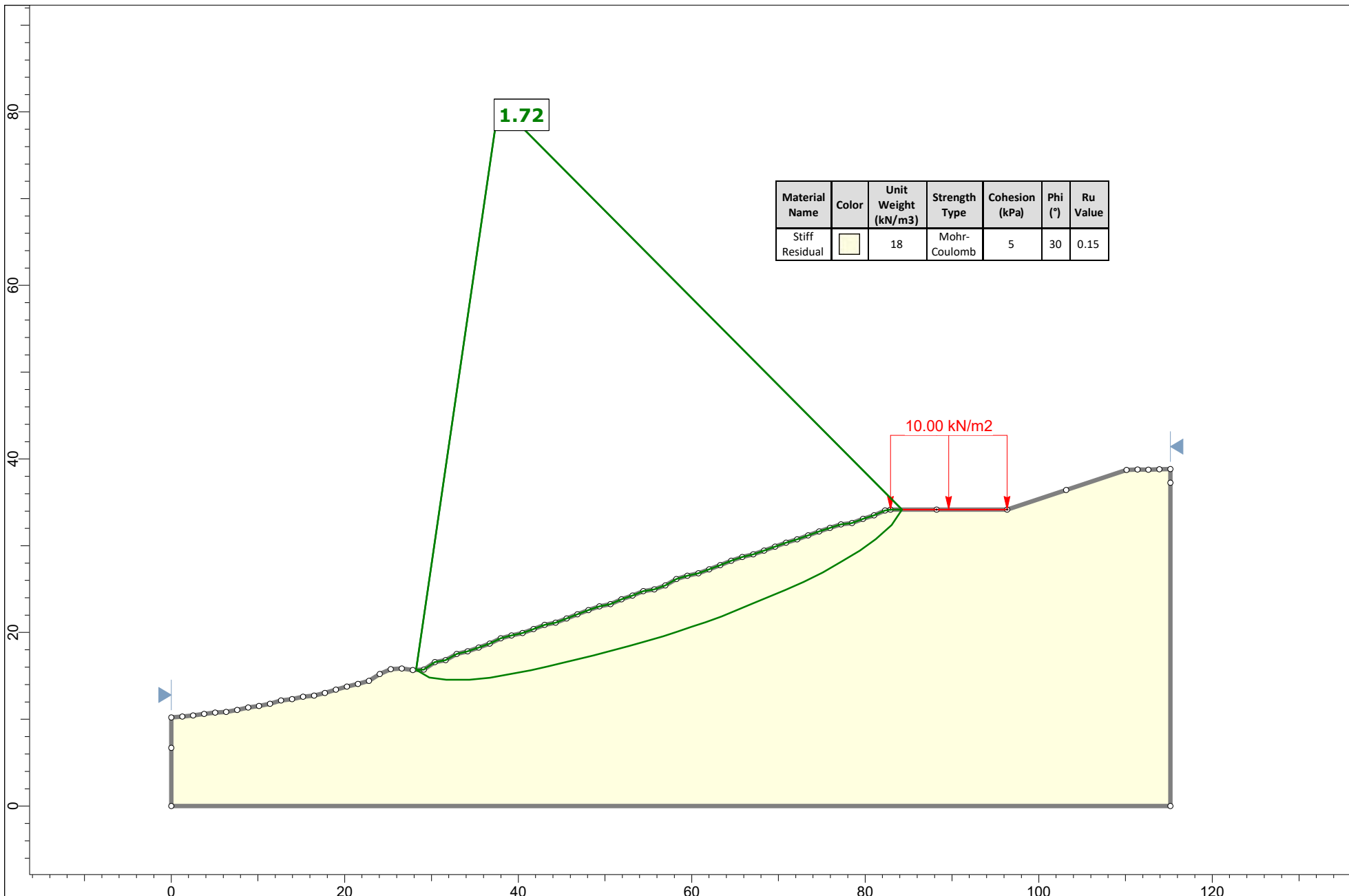



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	Group	Cross Section I-I'	Scenario	Elevated groundwater conditions
	Drawn By	JMC	Company	
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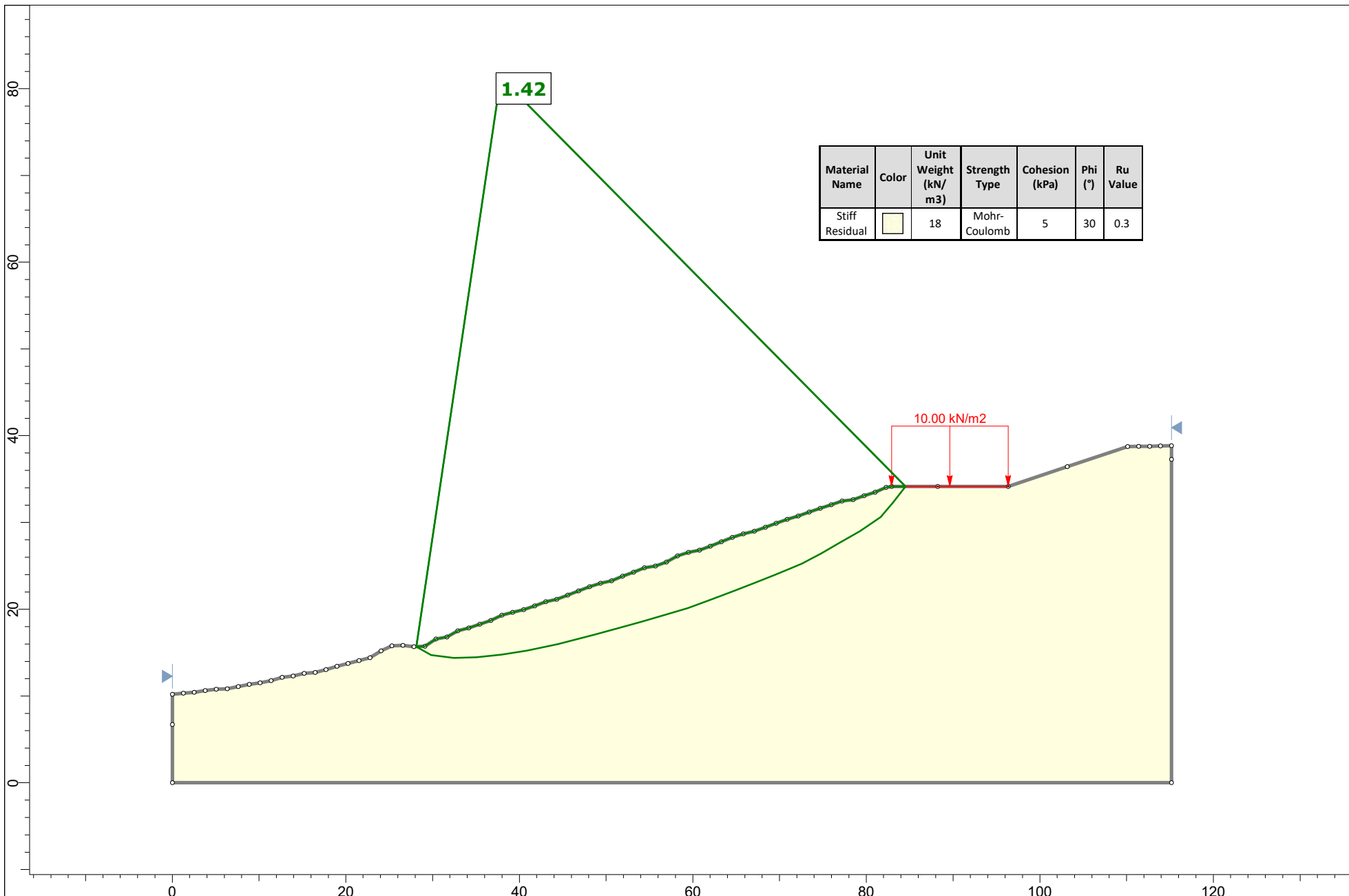


Material Name	Color	Unit Weight (kN/m <sup>3</sup> )	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
Fill		17	Mohr-Coulomb	1	26	None	0.15
Inferred Colluvium		17	Mohr-Coulomb	5	24	None	0.3
Firm Alluvium		17	Mohr-Coulomb	3	28	Water Table	
Stiff Residual_Ru		18	Mohr-Coulomb	5	30	None	0.15
Stiff Residual		18	Mohr-Coulomb	5	30	Water Table	
Very Stiff Residual_Ru		18	Mohr-Coulomb	7	32	None	0.15
Very Stiff Residual		18	Mohr-Coulomb	7	32	Water Table	
Hard Residual_Ru		18	Mohr-Coulomb	10	34	None	0.15
Hard Residual		18	Mohr-Coulomb	10	34	Water Table	
HW Rock		20	Mohr-Coulomb	15	34	Water Table	
Old failure plain		17	Mohr-Coulomb	2	20	None	0.3
Proposed Fill		18	Mohr-Coulomb	5	30	None	0.15


	Project	23 020 - Aucks Rd, Russell - Willowridge Developments		
	Group	Cross Section I-I'	Scenario	Seismic conditions
	Drawn By	JMC	Company	
	Date	16/08/2024, 9:07:26 am	File Name	II_seismic.slmd



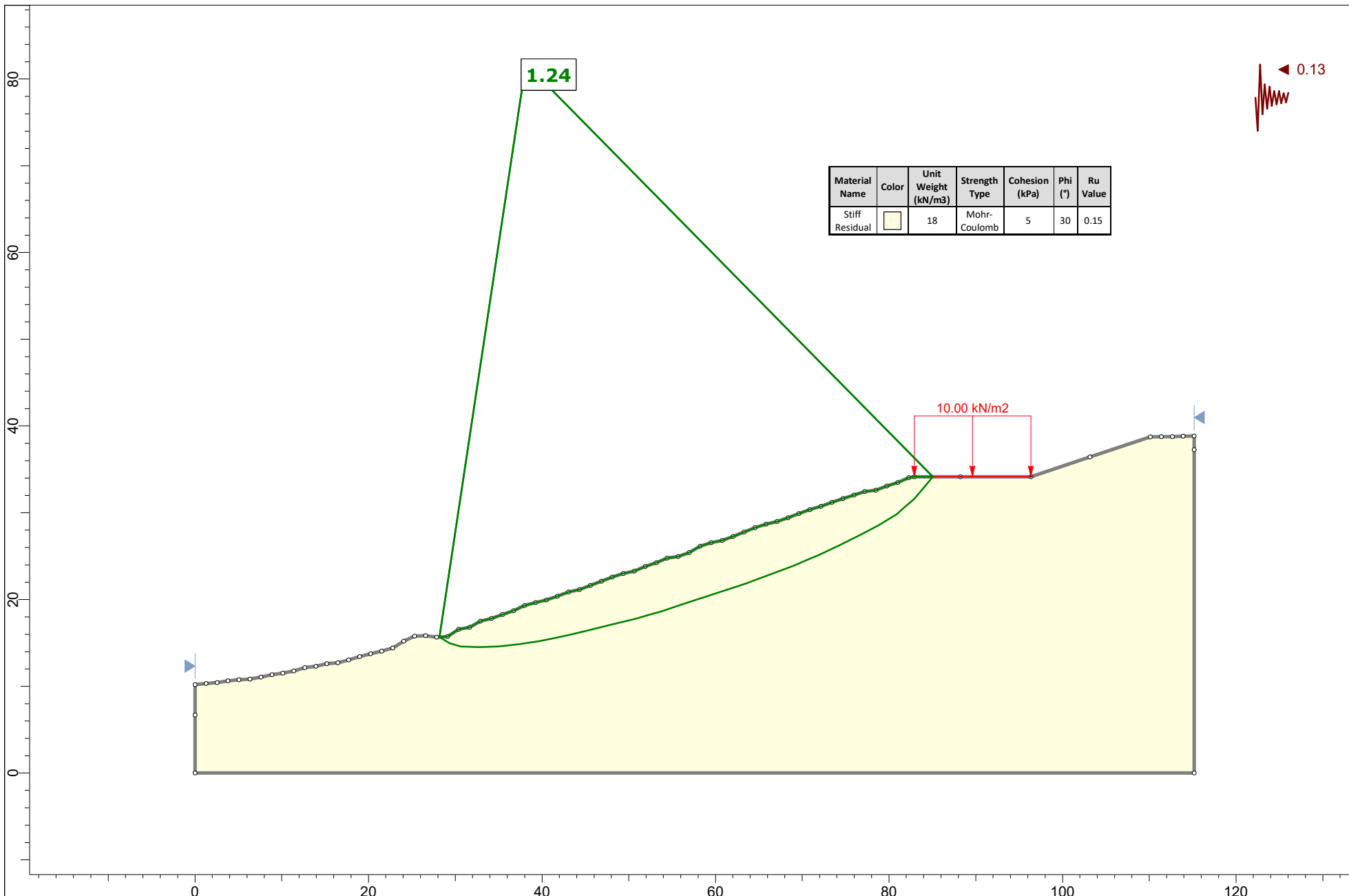
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	Group	Cross Section J-J'	Scenario	Static conditions
	Drawn By	JMC	Company	
	Date	16/08/2024, 9:07:26 am	File Name	JJ_static.slmd




Material Name	Color	Unit Weight (kN/m <sup>3</sup> )	Strength Type	Cohesion (kPa)	Phi (°)	Ru Value
Stiff Residual	Yellow	18	Mohr-Coulomb	5	30	0.3

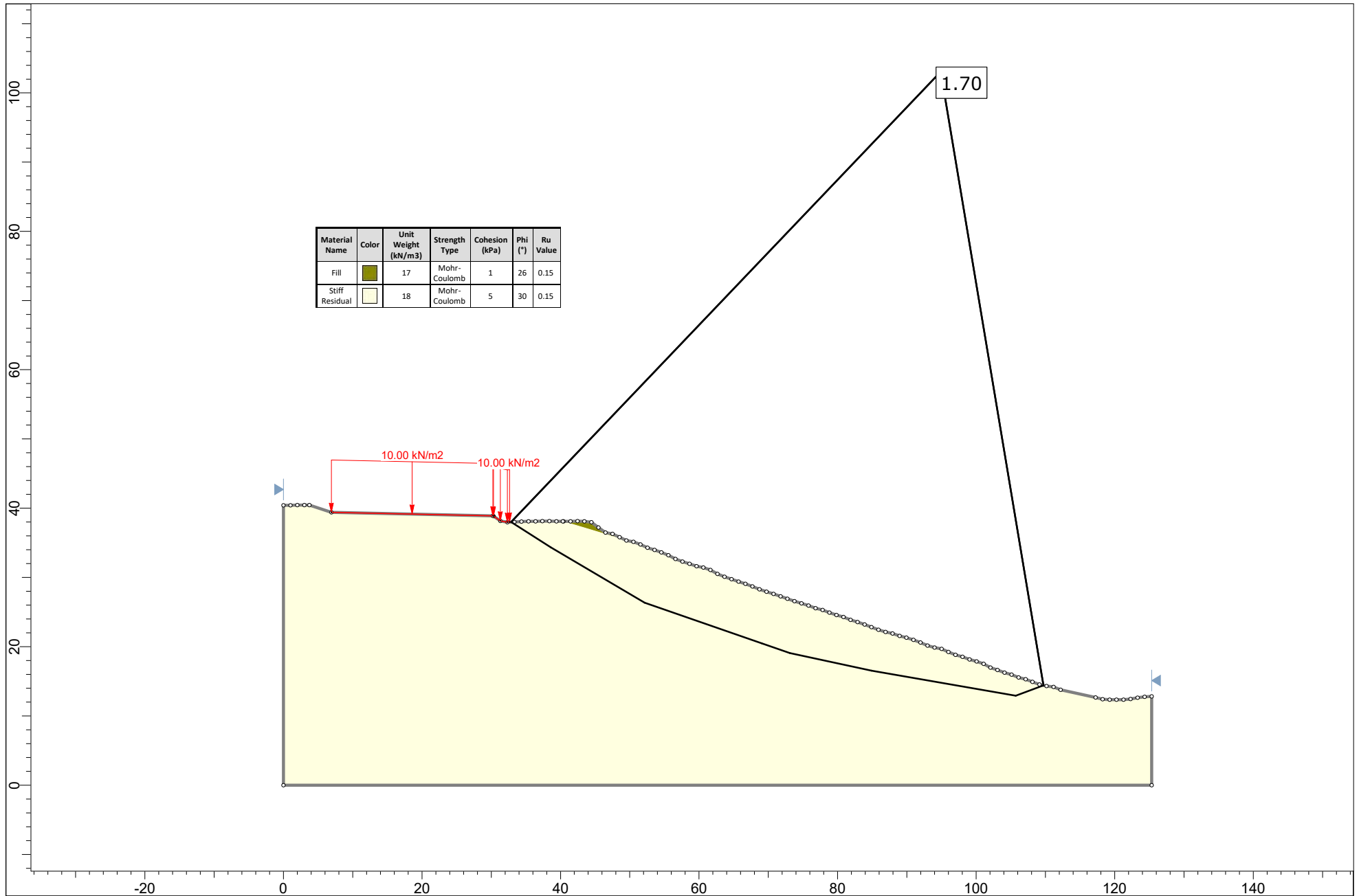
	Project		23 020 - Aucks Rd, Russell - Willowridge Developments		
	Group		Cross Section J-J'	Scenario	Elevated groundwater conditions
	Drawn By		JMC	Company	
	Date		16/08/2024, 9:07:26 am	File Name	



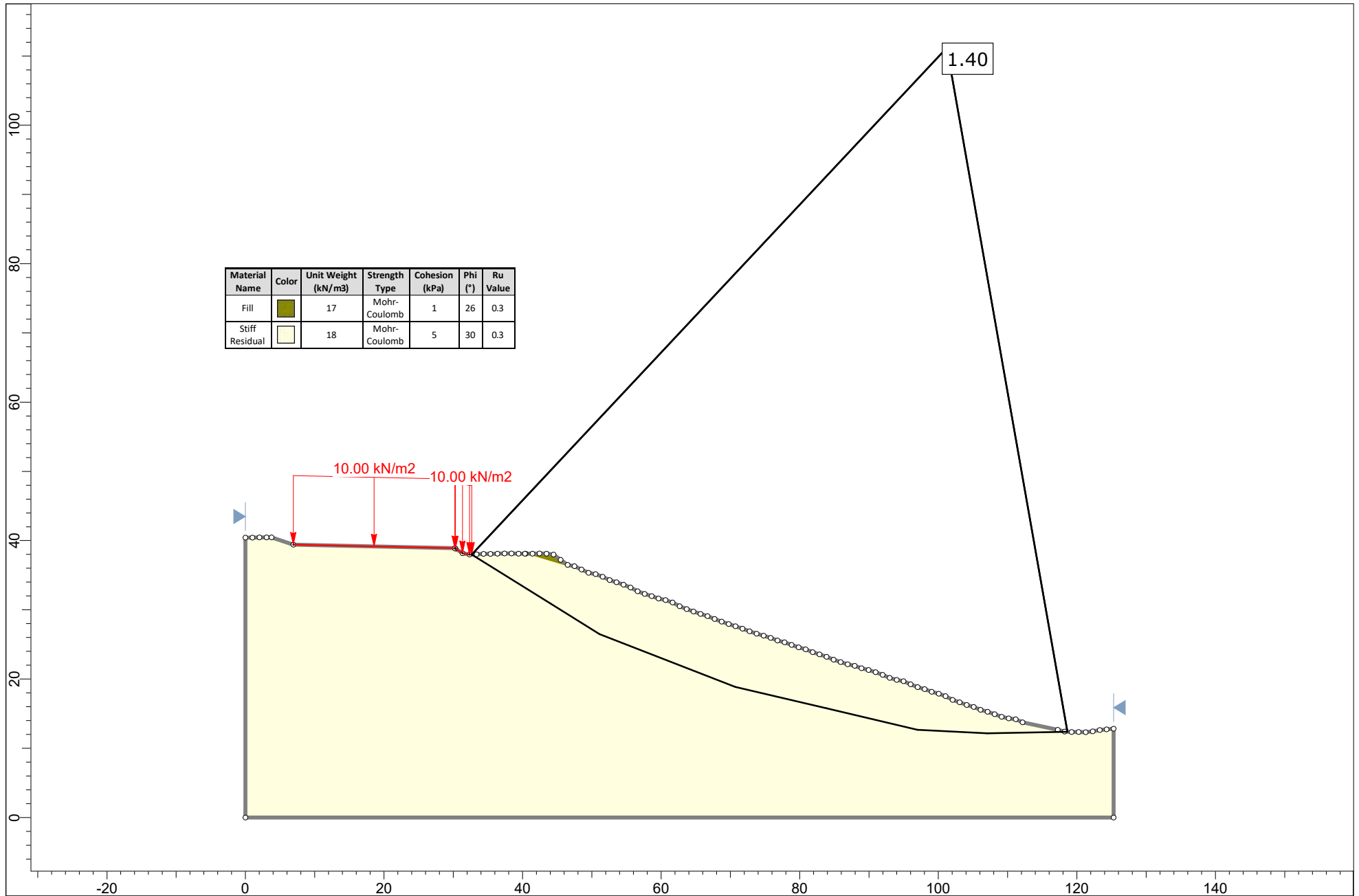


Material Name	Color	Unit Weight (kN/m <sup>3</sup> )	Strength Type	Cohesion (kPa)	Phi (°)	Ru Value
Stiff Residual	□	18	Mohr-Coulomb	5	30	0.15

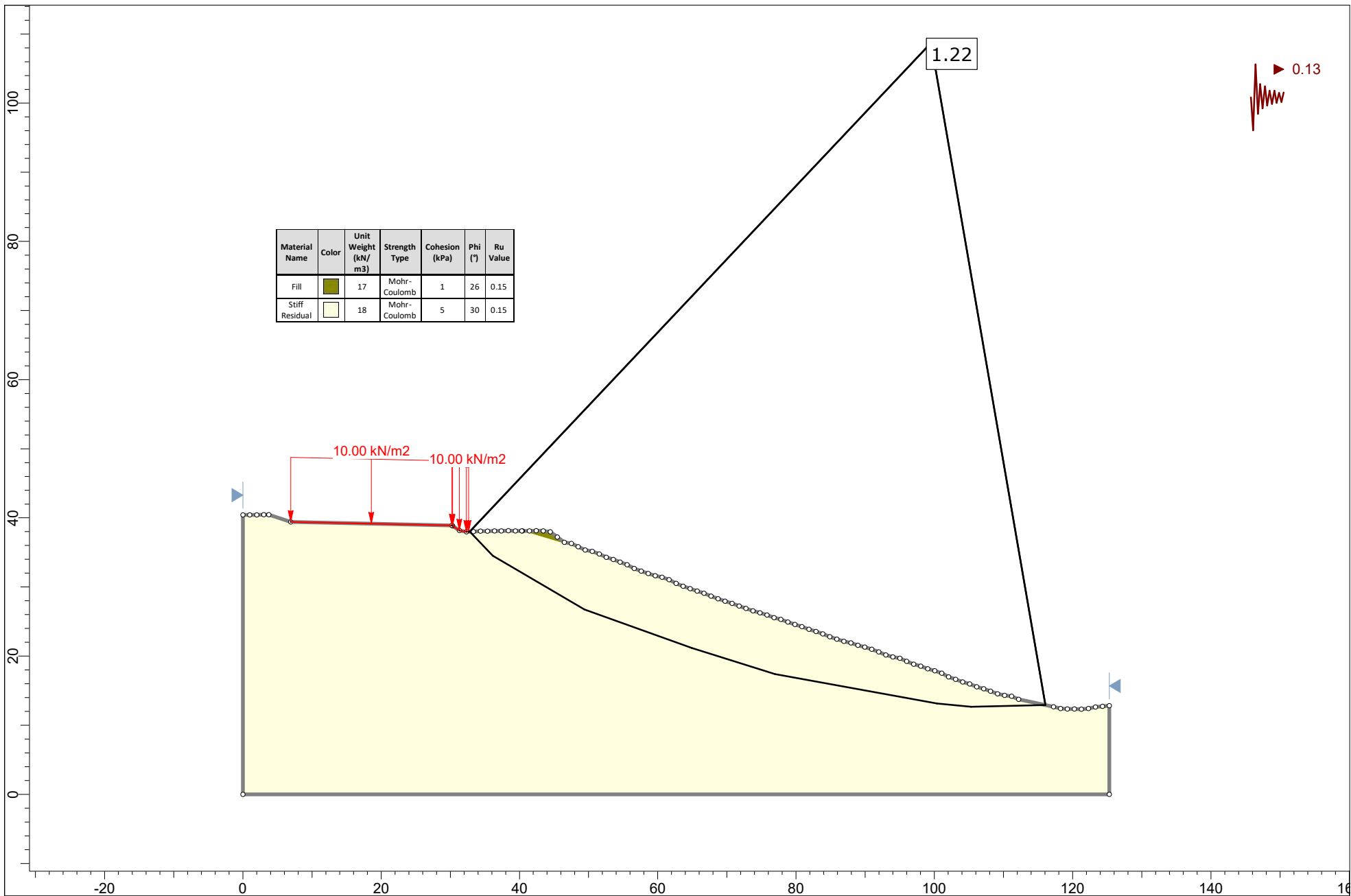
	Project		23 020 - Aucks Rd, Russell - Willowridge Developments	
	Group	Cross Section J-J'	Scenario	Seismic conditions
	Drawn By	JMC	Company	
	Date	16/08/2024, 9:07:26 am	File Name	JJ_seismic.slmd



Project	23 020 - Aucks Rd, Russell - Willowridge Developments		
Group	Cross Section K-K'	Scenario	Static conditions
Drawn By	JMC	Company	
Date	16/08/2024, 9:07:26 am	File Name	KK_static.slmd



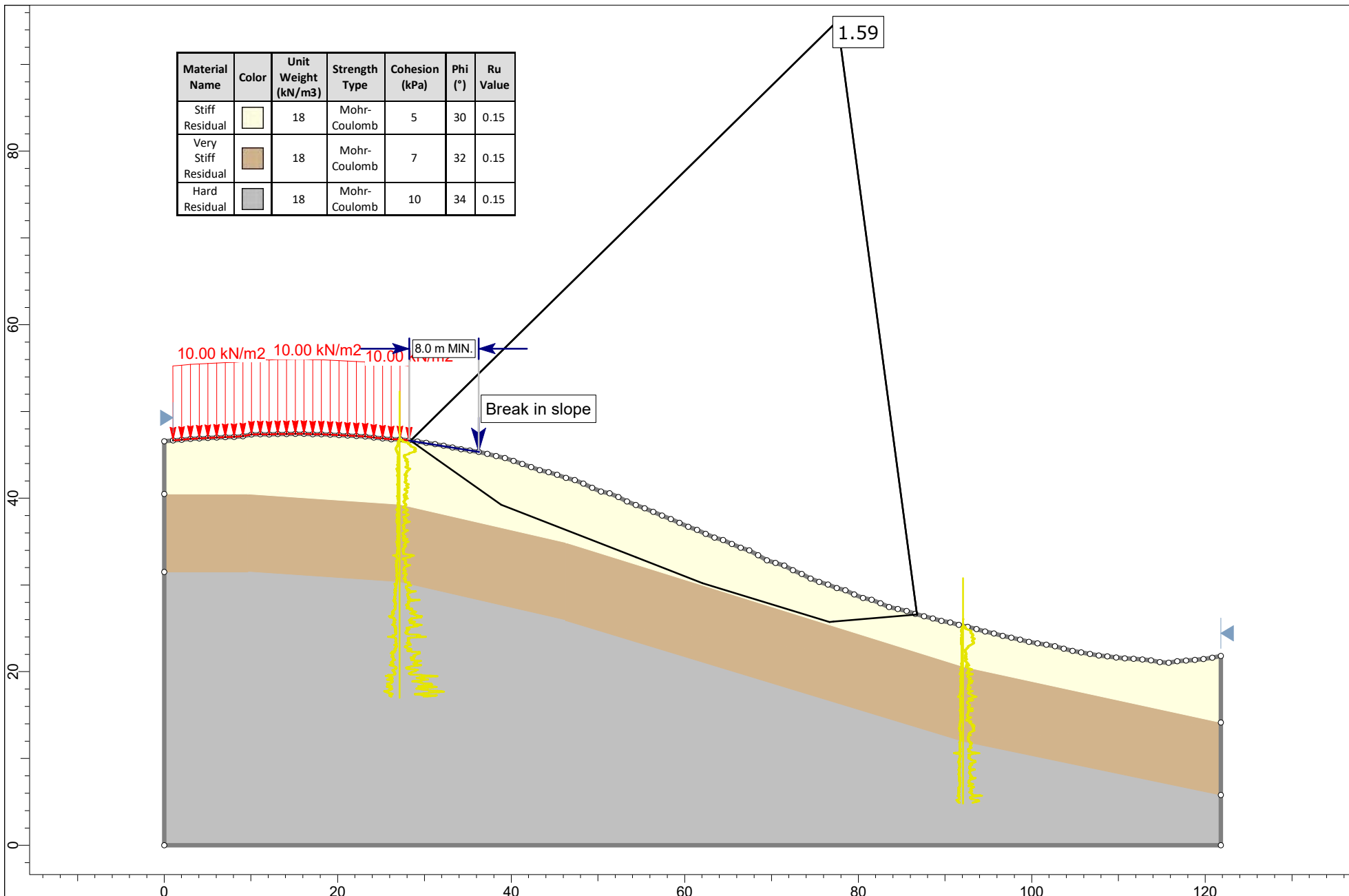
Project	23 020 - Aucks Rd, Russell - Willowridge Developments		
Group	Cross Section K-K'	Scenario	Elevated groundwater conditions
Drawn By	JMC	Company	
Date	16/08/2024, 9:07:26 am	File Name	KK_elevated.slm



Material Name	Color	Unit Weight (kN/m <sup>3</sup> )	Strength Type	Cohesion (kPa)	Phi (°)	Ru Value
Fill	Green	17	Mohr-Coulomb	1	26	0.15
Stiff Residual	Yellow	18	Mohr-Coulomb	5	30	0.15

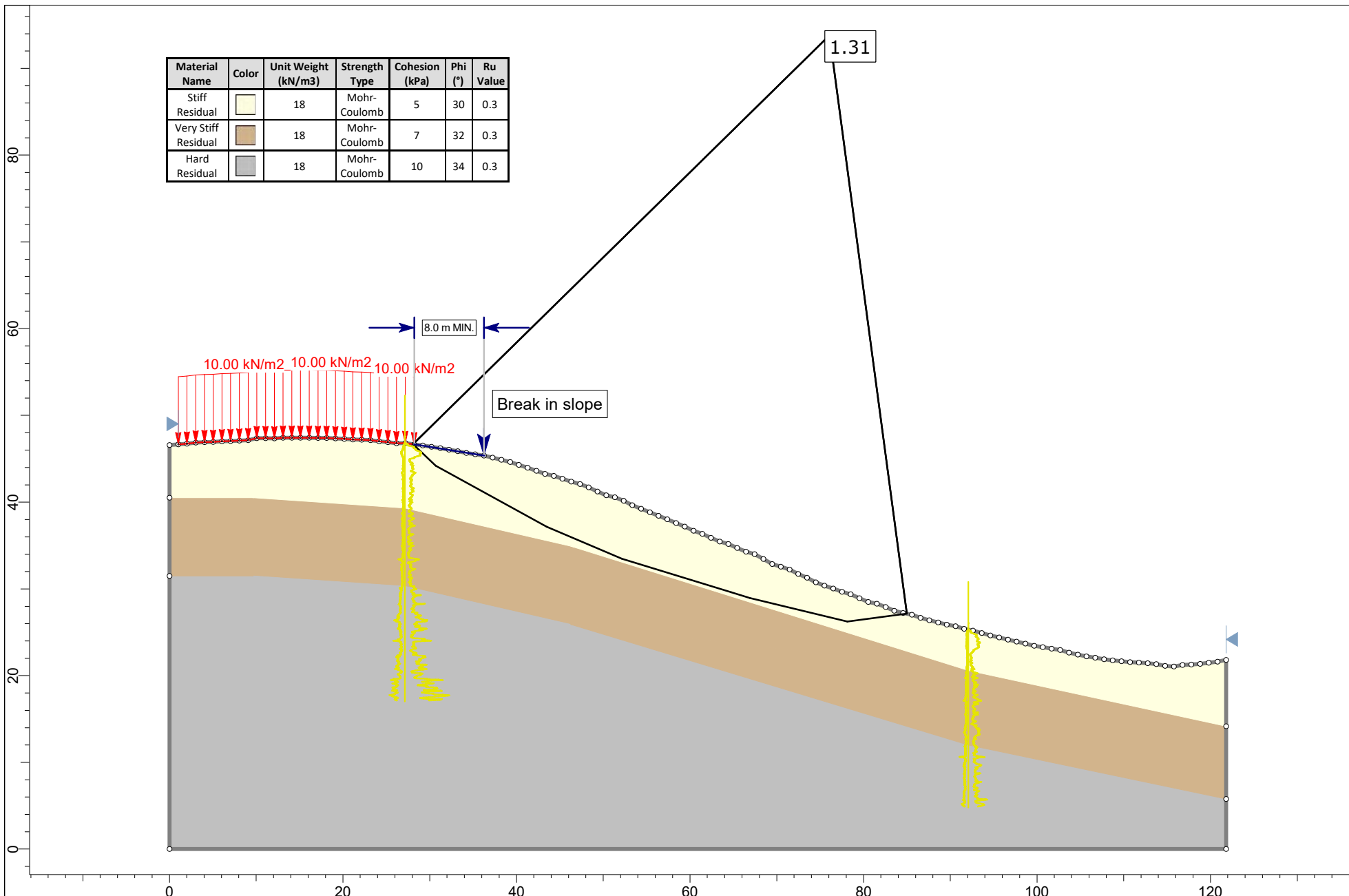
	Project		23 020 - Aucks Rd, Russell - Willowridge Developments	
	Group	Cross Section K-K'	Scenario	Seismic conditions
	Drawn By	JMC	Company	
	Date	16/08/2024, 9:07:26 am	File Name	KK_seismic.slmd



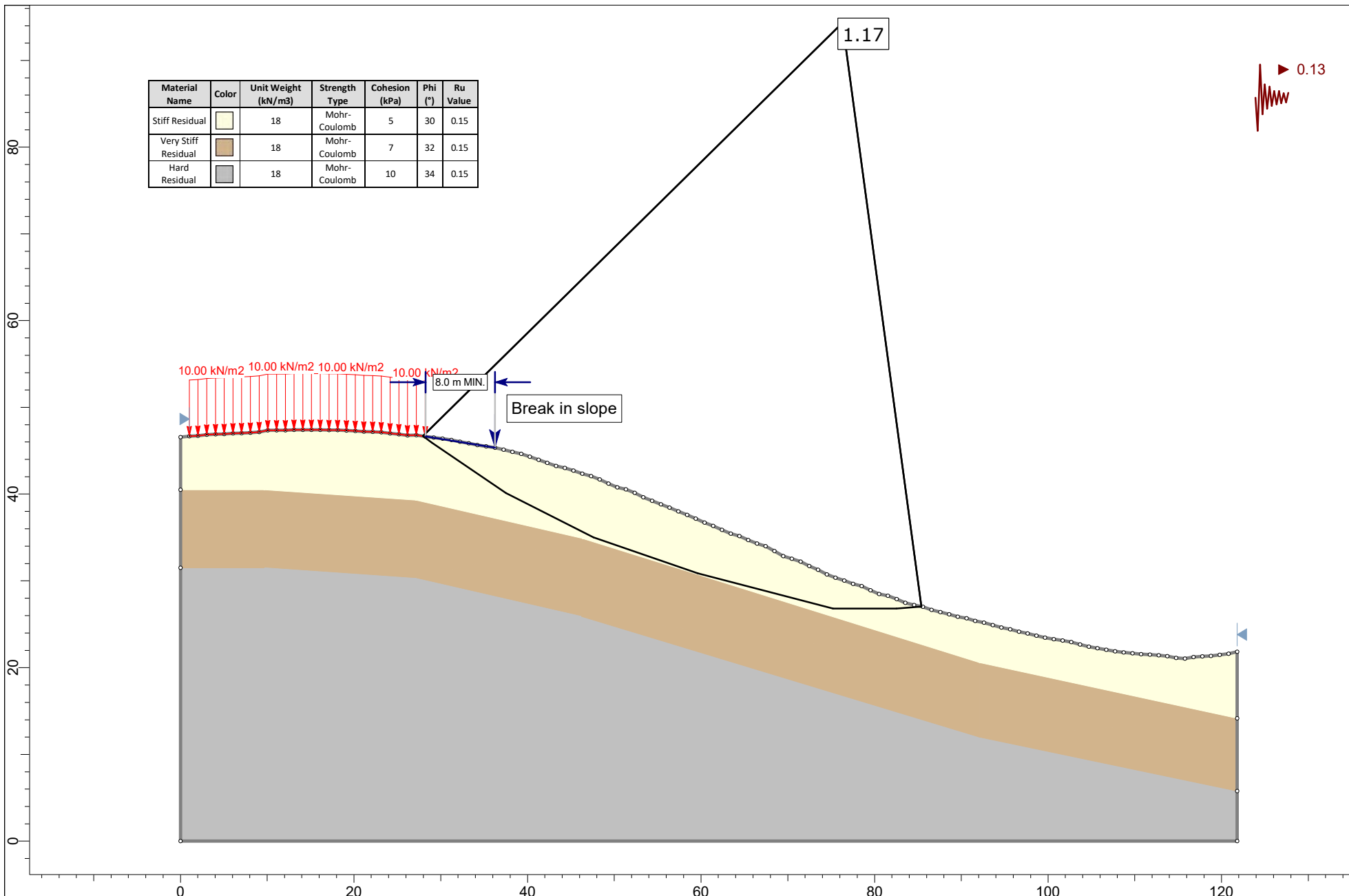


Material Name	Color	Unit Weight (kN/m <sup>3</sup> )	Strength Type	Cohesion (kPa)	Phi (°)	Ru Value
Stiff Residual	Yellow	18	Mohr-Coulomb	5	30	0.15
Very Stiff Residual	Brown	18	Mohr-Coulomb	7	32	0.15
Hard Residual	Grey	18	Mohr-Coulomb	10	34	0.15

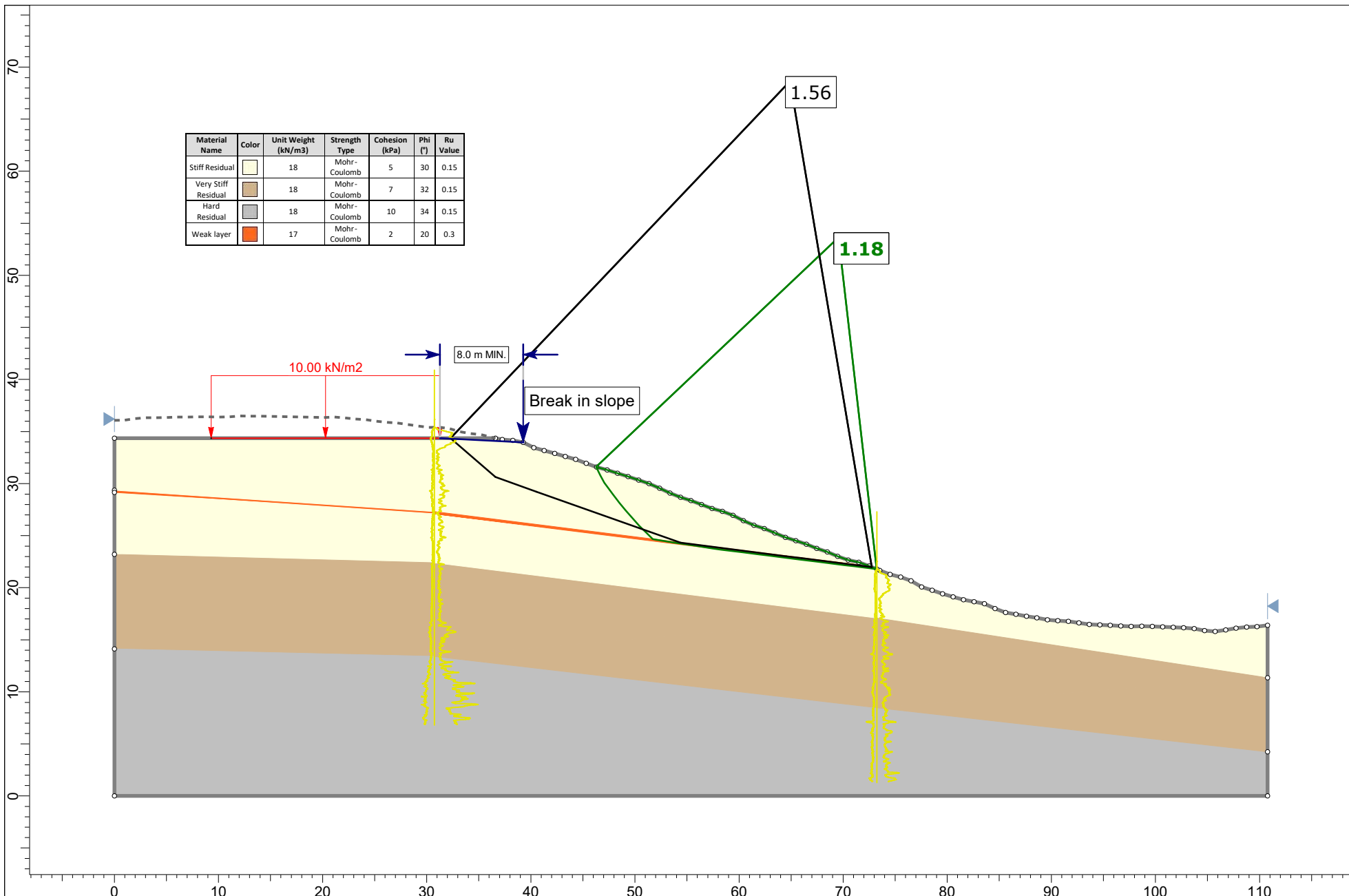
	Project	23 020 - Aucks Rd, Russell - Willowridge Developments		
	Group	Cross Section L-L'	Scenario	Static conditions
	Drawn By	JMC	Company	
	Date	16/08/2024, 9:07:26 am	File Name	LL_static.sldm



	Project			23 020 - Aucks Rd, Russell - Willowridge Developments			
	Group		Cross Section L-L'		Scenario		Elevated groundwater conditions
	Drawn By		JMC		Company		
	Date		16/08/2024, 9:07:26 am		File Name		LL_elevatedGW.sldm



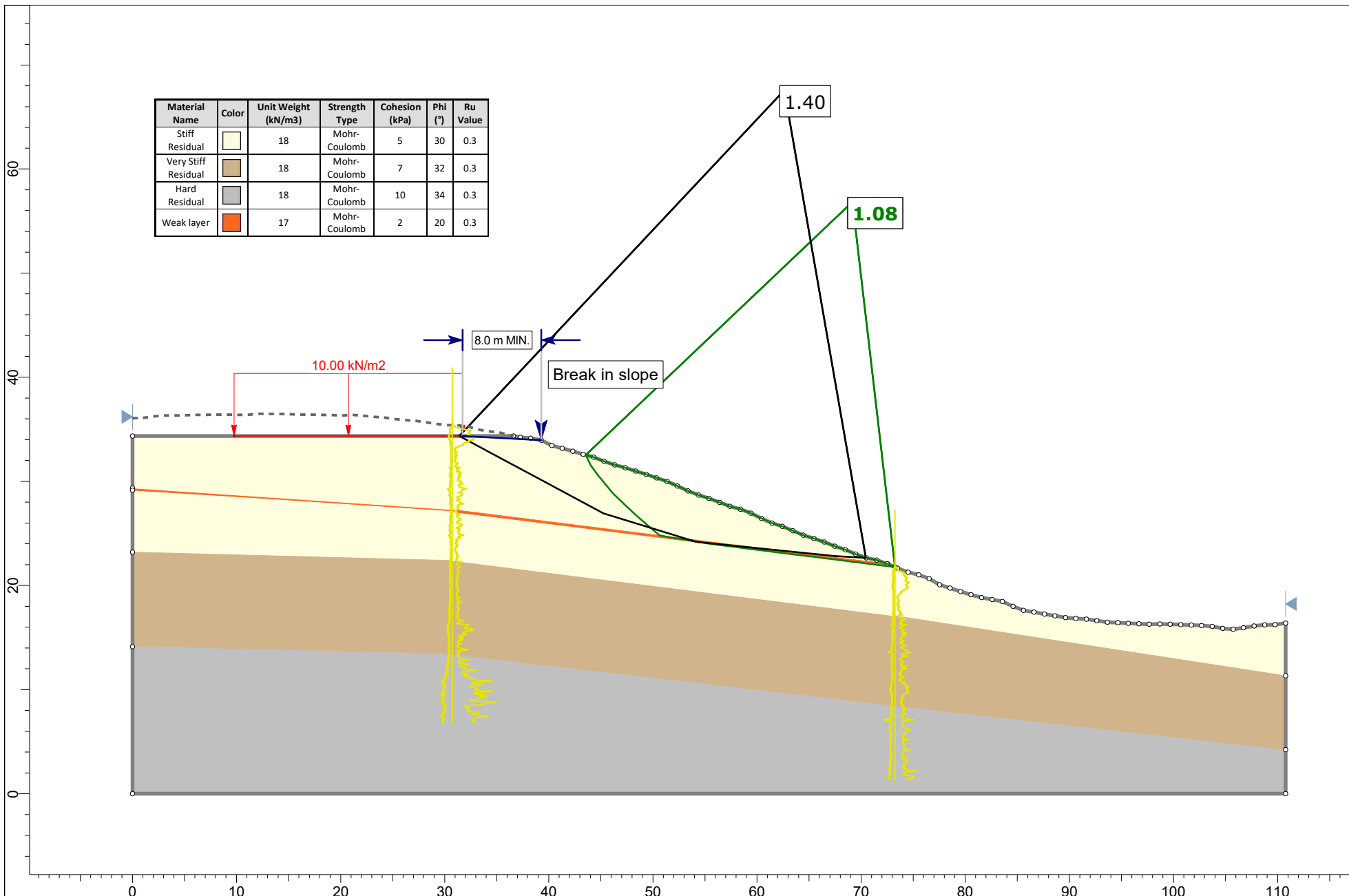
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	Group	Cross Section L-L'	Scenario	Seismic conditions
	Drawn By	JMC	Company	
	Date	16/08/2024, 9:07:26 am	File Name	LL_seismic.slmd



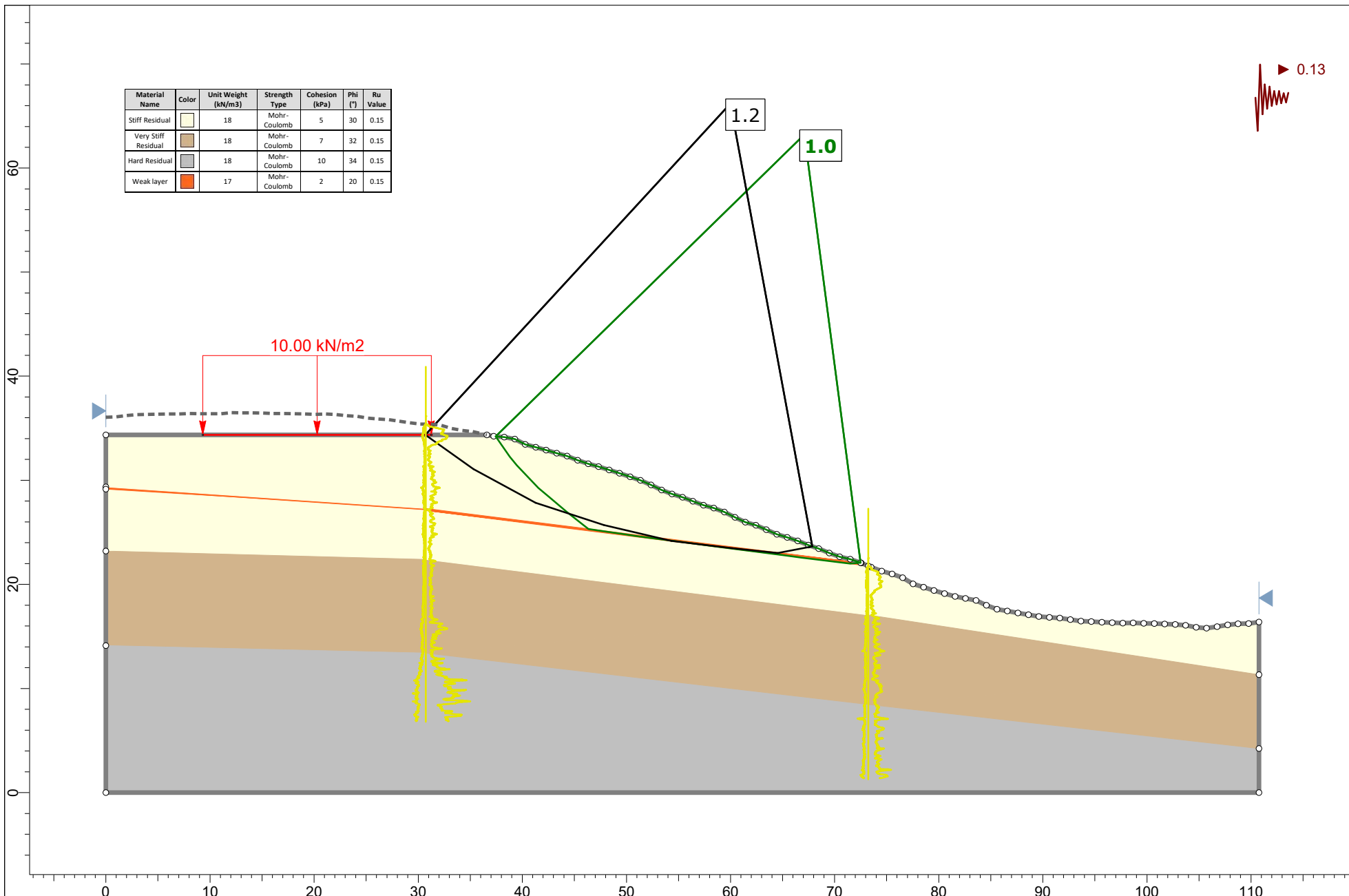
Material Name	Color	Unit Weight (kN/m <sup>3</sup> )	Strength Type	Cohesion (kPa)	Phi (°)	Ru Value
Stiff Residual	Yellow	18	Mohr-Coulomb	5	30	0.15
Very Stiff Residual	Brown	18	Mohr-Coulomb	7	32	0.15
Hard Residual	Grey	18	Mohr-Coulomb	10	34	0.15
Weak layer	Orange	17	Mohr-Coulomb	2	20	0.3

	Project	23 020 - Aucks Rd, Russell - Willowridge Developments		
	Group	Cross Section M-M'	Scenario	Static conditions
	Drawn By	JMC	Company	
	Date	16/08/2024, 9:07:26 am	File Name	MM_static.slmd

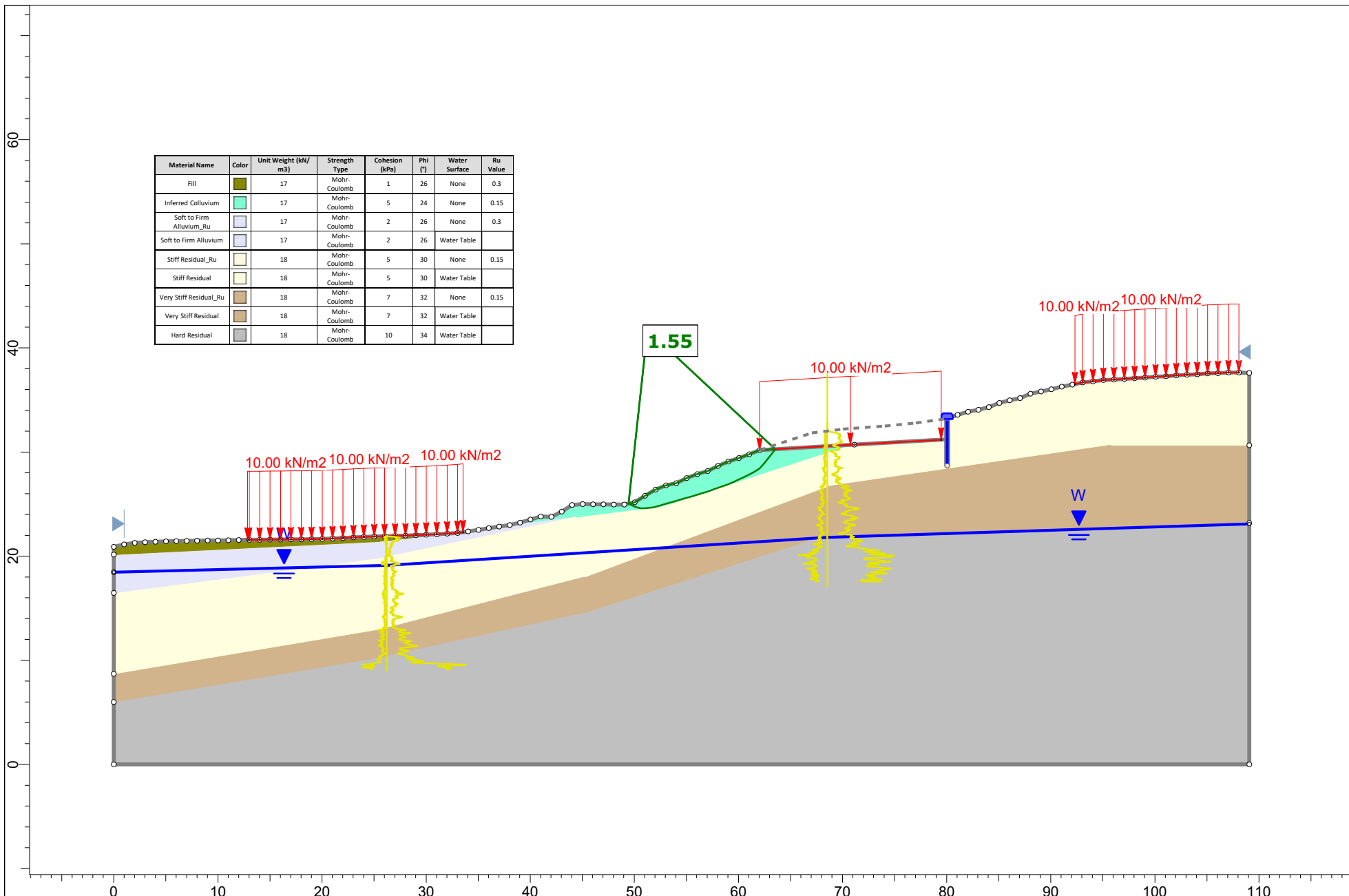




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	Group	Cross Section M-M'	Scenario	Elevated groundwater conditions
	Drawn By	JMC	Company	
	Date	16/08/2024, 9:07:26 am	File Name	MM_elevatedGW.slmd

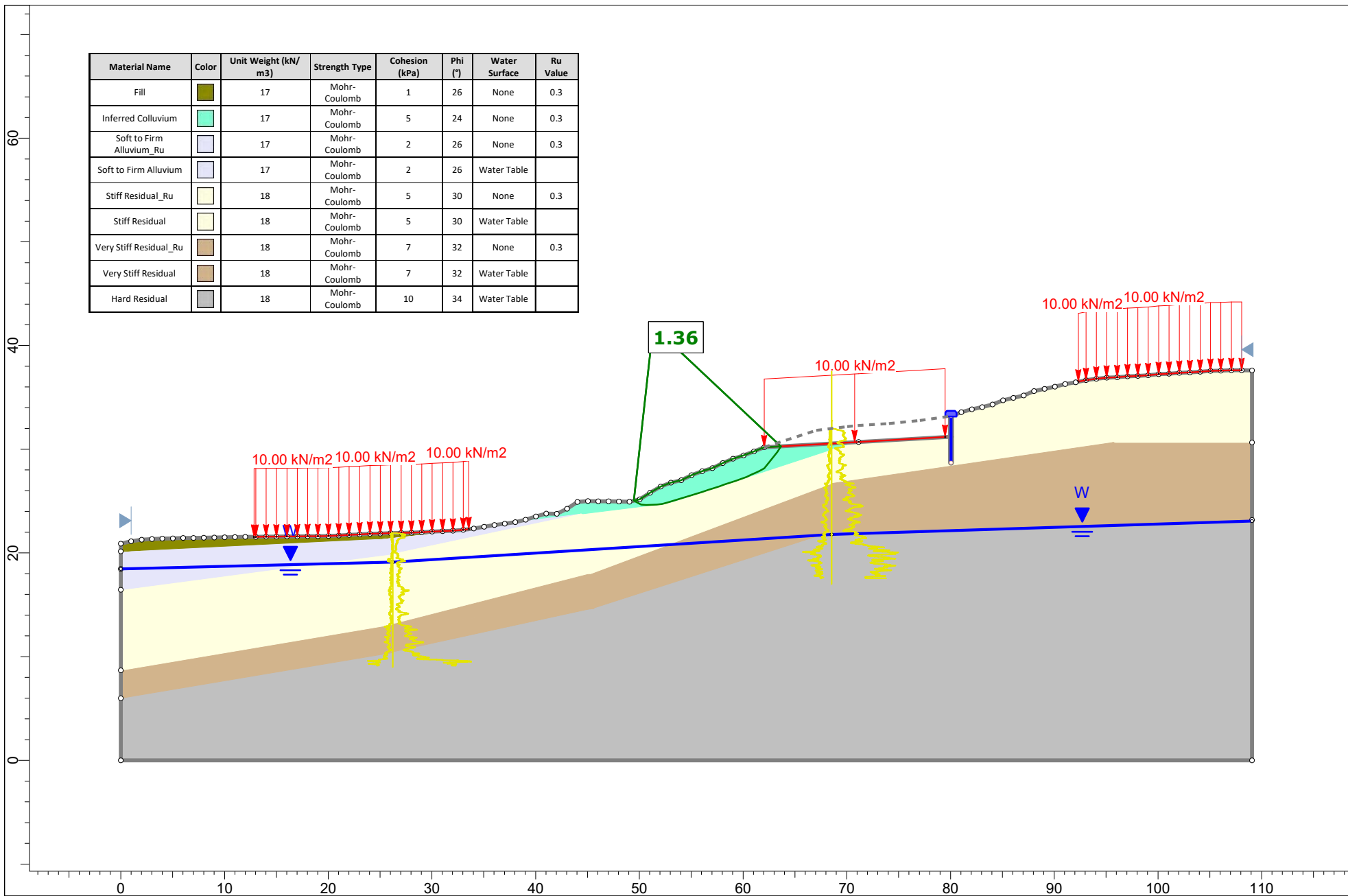


	Project		23 020 - Aucks Rd, Russell - Willowridge Developments	
	Group	Cross Section M-M'	Scenario	Seismic conditions
	Drawn By	JMC	Company	
	Date	16/08/2024, 9:07:26 am	File Name	MM_seismic.slm



Material Name	Color	Unit Weight (kN/m <sup>3</sup> )	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
Fill	Dark Green	17	Mohr-Coulomb	1	24	None	0.3
Inferred Colluvium	Light Green	17	Mohr-Coulomb	5	24	None	0.15
Soft to Firm Alluvium_Ru	Light Blue	17	Mohr-Coulomb	2	26	None	0.3
Soft to Firm Alluvium	Light Yellow	17	Mohr-Coulomb	2	26	Water Table	
Stiff Residual_Ru	Light Orange	18	Mohr-Coulomb	5	30	None	0.15
Stiff Residual	Light Brown	18	Mohr-Coulomb	5	30	Water Table	
Very Stiff Residual_Ru	Dark Orange	18	Mohr-Coulomb	7	32	None	0.15
Very Stiff Residual	Dark Brown	18	Mohr-Coulomb	7	32	Water Table	
Hard Residual	Grey	18	Mohr-Coulomb	10	34	Water Table	

	Project	23 020 - Aucks Rd, Russell - Willowridge Developments	
	Group	Cross Section N-N'	Scenario Static conditions
	Drawn By	JMC	Company
	Date	16/08/2024, 9:07:26 am	File Name NN_static.slm

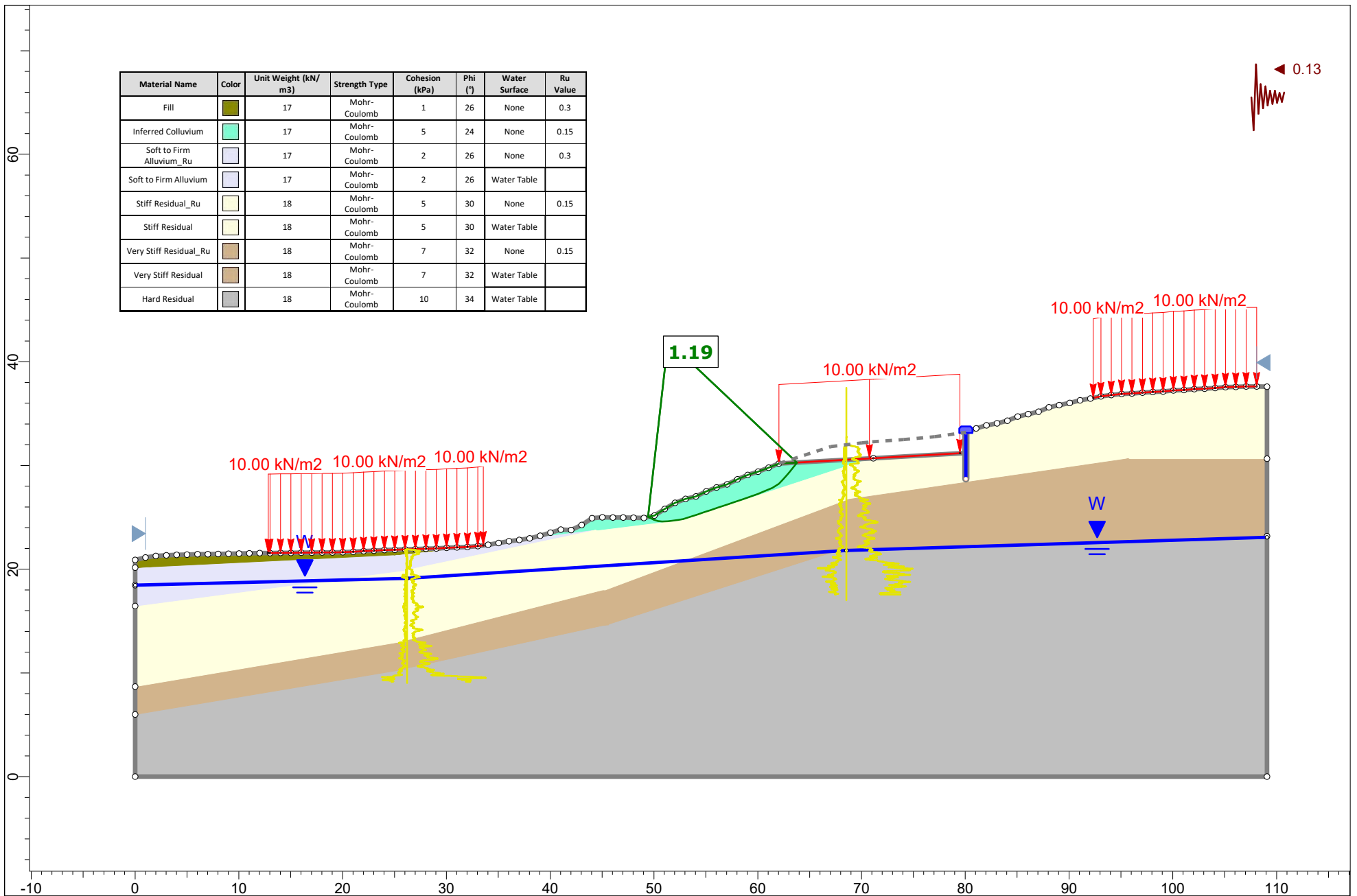


Material Name	Color	Unit Weight (kN/m <sup>3</sup> )	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
Fill	Dark Green	17	Mohr-Coulomb	1	26	None	0.3
Inferred Colluvium	Light Green	17	Mohr-Coulomb	5	24	None	0.3
Soft to Firm Alluvium_Ru	Light Blue	17	Mohr-Coulomb	2	26	None	0.3
Soft to Firm Alluvium	Light Blue	17	Mohr-Coulomb	2	26	Water Table	
Stiff Residual_Ru	Light Yellow	18	Mohr-Coulomb	5	30	None	0.3
Stiff Residual	Light Yellow	18	Mohr-Coulomb	5	30	Water Table	
Very Stiff Residual_Ru	Light Brown	18	Mohr-Coulomb	7	32	None	0.3
Very Stiff Residual	Light Brown	18	Mohr-Coulomb	7	32	Water Table	
Hard Residual	Grey	18	Mohr-Coulomb	10	34	Water Table	

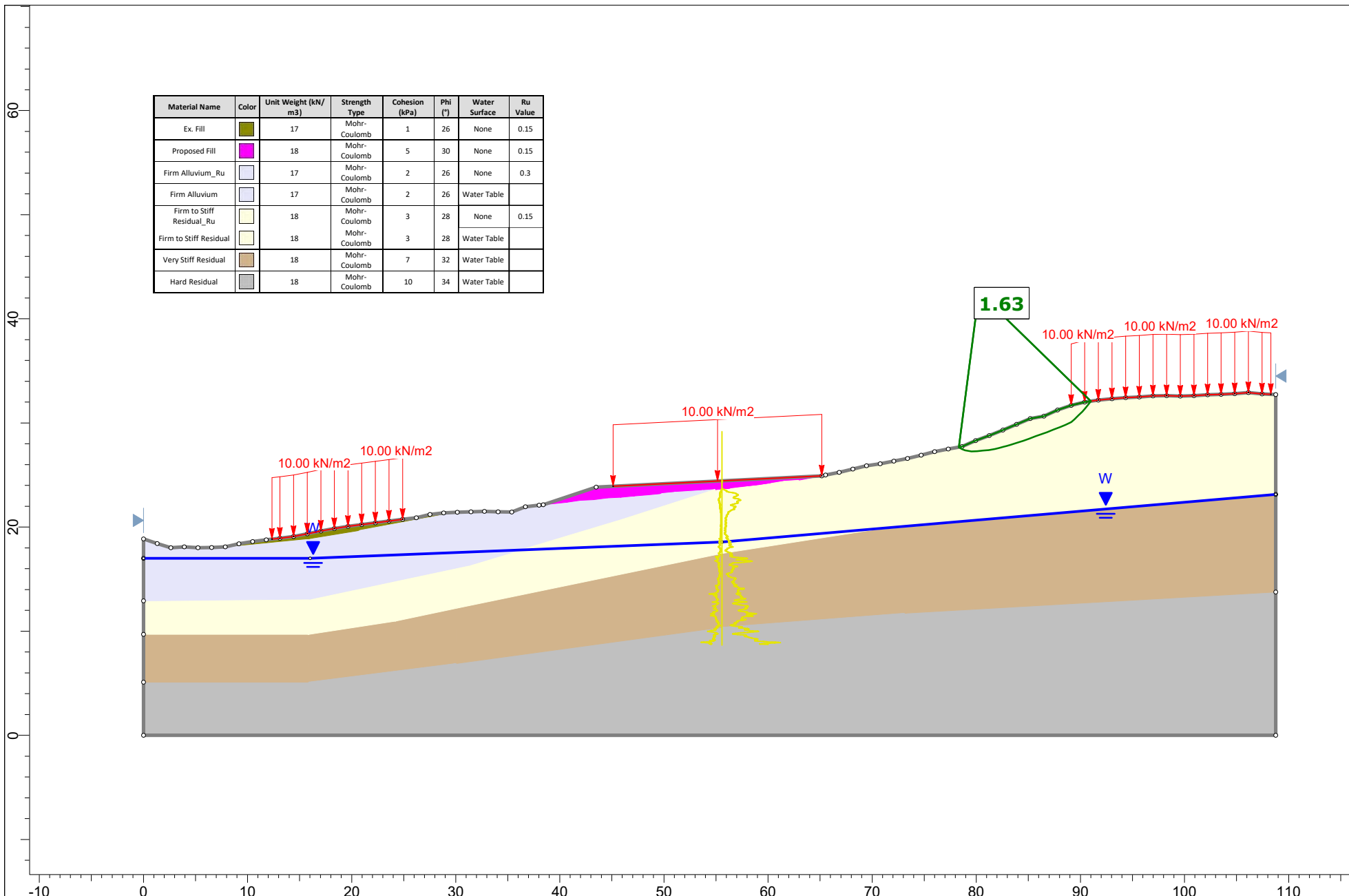
	Project	23 020 - Aucks Rd, Russell - Willowridge Developments		
	Group	Cross Section N-N'	Scenario	Elevated groundwater conditions
	Drawn By	JMC	Company	
	Date	16/08/2024, 9:07:26 am	File Name	NN_elevatedGW.scmd



Material Name	Color	Unit Weight (kN/m <sup>3</sup> )	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
Fill	Dark Green	17	Mohr-Coulomb	1	26	None	0.3
Inferred Colluvium	Light Green	17	Mohr-Coulomb	5	24	None	0.15
Soft to Firm Alluvium_Ru	Light Blue	17	Mohr-Coulomb	2	26	None	0.3
Soft to Firm Alluvium	Light Blue	17	Mohr-Coulomb	2	26	Water Table	
Stiff Residual_Ru	Light Yellow	18	Mohr-Coulomb	5	30	None	0.15
Stiff Residual	Light Yellow	18	Mohr-Coulomb	5	30	Water Table	
Very Stiff Residual_Ru	Light Brown	18	Mohr-Coulomb	7	32	None	0.15
Very Stiff Residual	Light Brown	18	Mohr-Coulomb	7	32	Water Table	
Hard Residual	Grey	18	Mohr-Coulomb	10	34	Water Table	

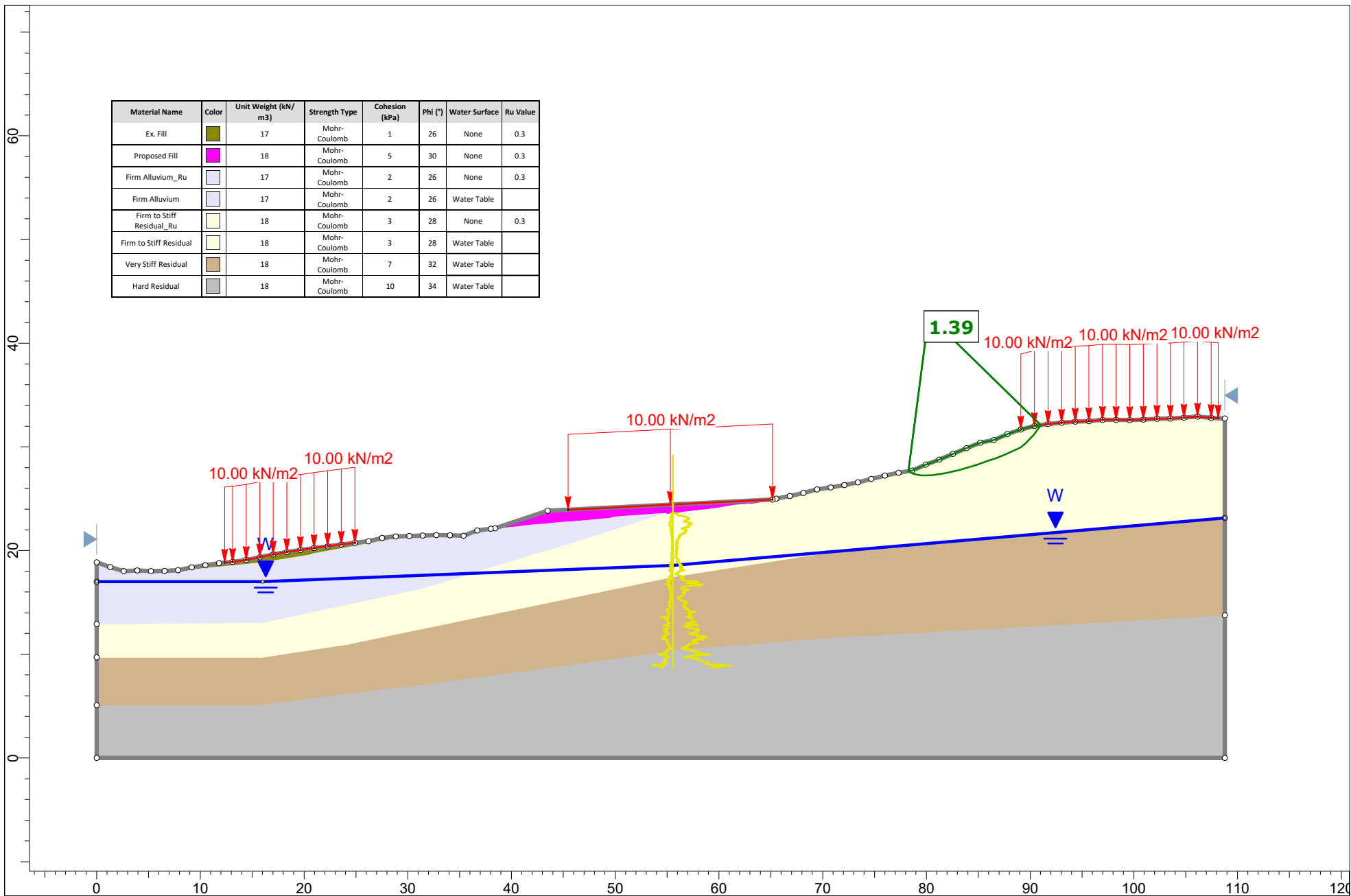


Project	23 020 - Aucks Rd, Russell - Willowridge Developments		
Group	Cross Section N-N'	Scenario	Seismic conditions
Drawn By	JMC	Company	
Date	16/08/2024, 9:07:26 am	File Name	NN_seismic.slmd



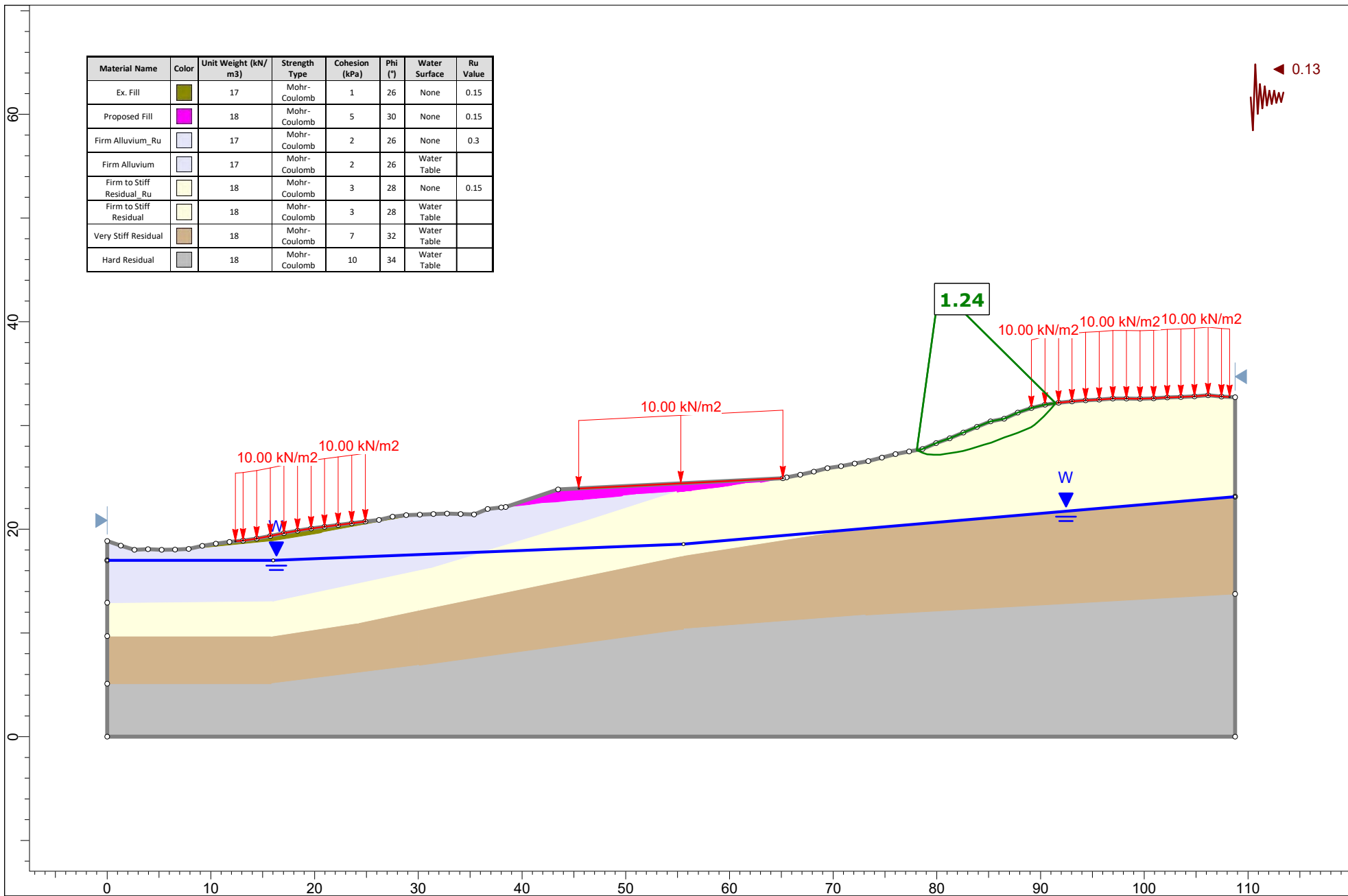
Material Name	Color	Unit Weight (kN/m <sup>3</sup> )	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
Ex. Fill	Green	17	Mohr-Coulomb	1	26	None	0.15
Proposed Fill	Magenta	18	Mohr-Coulomb	5	30	None	0.15
Firm Alluvium_Ru	Light Blue	17	Mohr-Coulomb	2	26	None	0.3
Firm Alluvium	Light Blue	17	Mohr-Coulomb	2	26	Water Table	
Firm to Stiff Residual_Ru	Yellow	18	Mohr-Coulomb	3	28	None	0.15
Firm to Stiff Residual	Yellow	18	Mohr-Coulomb	3	28	Water Table	
Very Stiff Residual	Brown	18	Mohr-Coulomb	7	32	Water Table	
Hard Residual	Grey	18	Mohr-Coulomb	10	34	Water Table	

	Project	23 020 - Aucks Rd, Russell - Willowridge Developments		
	Group	Cross Section O-O'	Scenario	Static conditions
	Drawn By	JMC	Company	
	Date	16/08/2024, 9:07:26 am	File Name	OO_static.slm
	SLIDEINTERPRET 9.034			



Material Name	Color	Unit Weight (kN/m <sup>3</sup> )	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
Ex. Fill	Green	17	Mohr-Coulomb	1	26	None	0.3
Proposed Fill	Pink	18	Mohr-Coulomb	5	30	None	0.3
Firm Alluvium_Ru	Light Blue	17	Mohr-Coulomb	2	26	None	0.3
Firm Alluvium	Light Blue	17	Mohr-Coulomb	2	26	Water Table	
Firm to Stiff Residual_Ru	Yellow	18	Mohr-Coulomb	3	28	None	0.3
Firm to Stiff Residual	Yellow	18	Mohr-Coulomb	3	28	Water Table	
Very Stiff Residual	Brown	18	Mohr-Coulomb	7	32	Water Table	
Hard Residual	Grey	18	Mohr-Coulomb	10	34	Water Table	

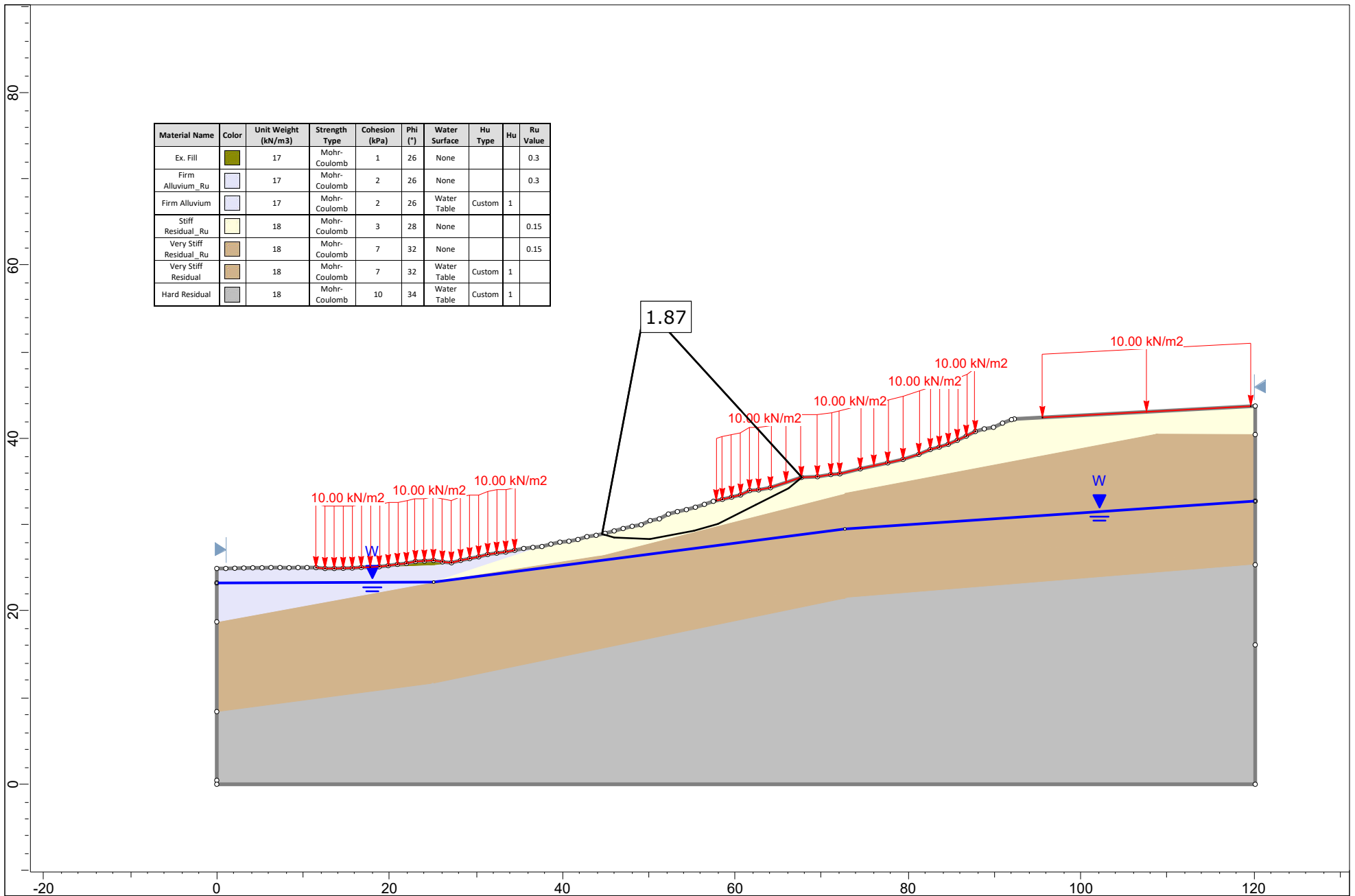
	Project			23 020 - Aucks Rd, Russell - Willowridge Developments				
	Group		Cross Section O-O'		Scenario		Elevated groundwater conditions	
	Drawn By		JMC		Company			
	Date		16/08/2024, 9:07:26 am		File Name		OO_elevatedGW.slm	
	SLIDEINTERPRET 9.034							



Material Name	Color	Unit Weight (kN/m <sup>3</sup> )	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
Ex. Fill	Green	17	Mohr-Coulomb	1	26	None	0.15
Proposed Fill	Magenta	18	Mohr-Coulomb	5	30	None	0.15
Firm Alluvium_Ru	Light Blue	17	Mohr-Coulomb	2	26	None	0.3
Firm Alluvium	Light Yellow	17	Mohr-Coulomb	2	26	Water Table	
Firm to Stiff Residual_Ru	Yellow	18	Mohr-Coulomb	3	28	None	0.15
Firm to Stiff Residual	Orange	18	Mohr-Coulomb	3	28	Water Table	
Very Stiff Residual	Brown	18	Mohr-Coulomb	7	32	Water Table	
Hard Residual	Grey	18	Mohr-Coulomb	10	34	Water Table	

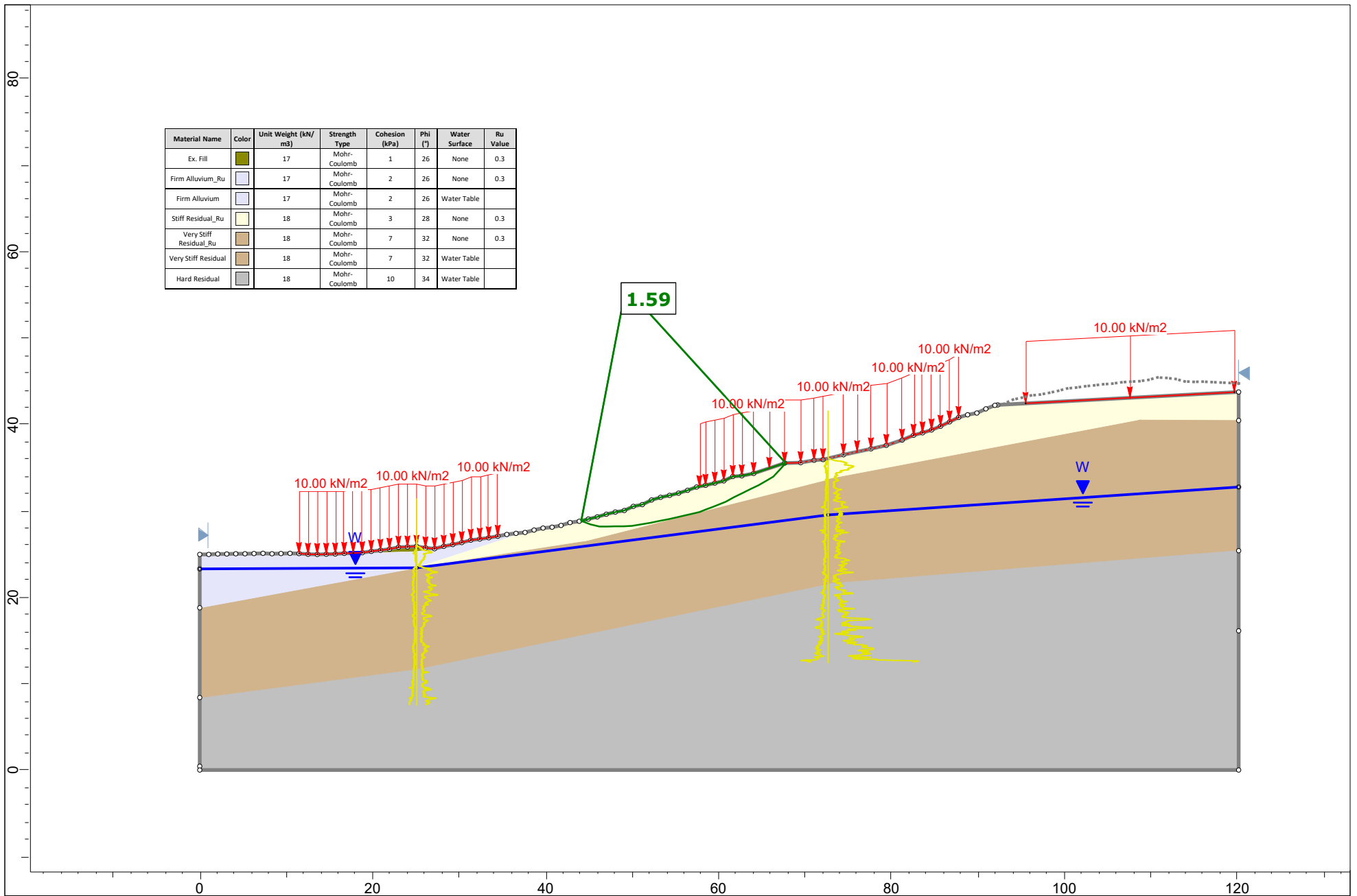
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	Group	Cross Section O-O'	Scenario	Seismic conditions
	Drawn By	JMC	Company	
	Date	16/08/2024, 9:07:26 am	File Name	OO_seismic.slmd



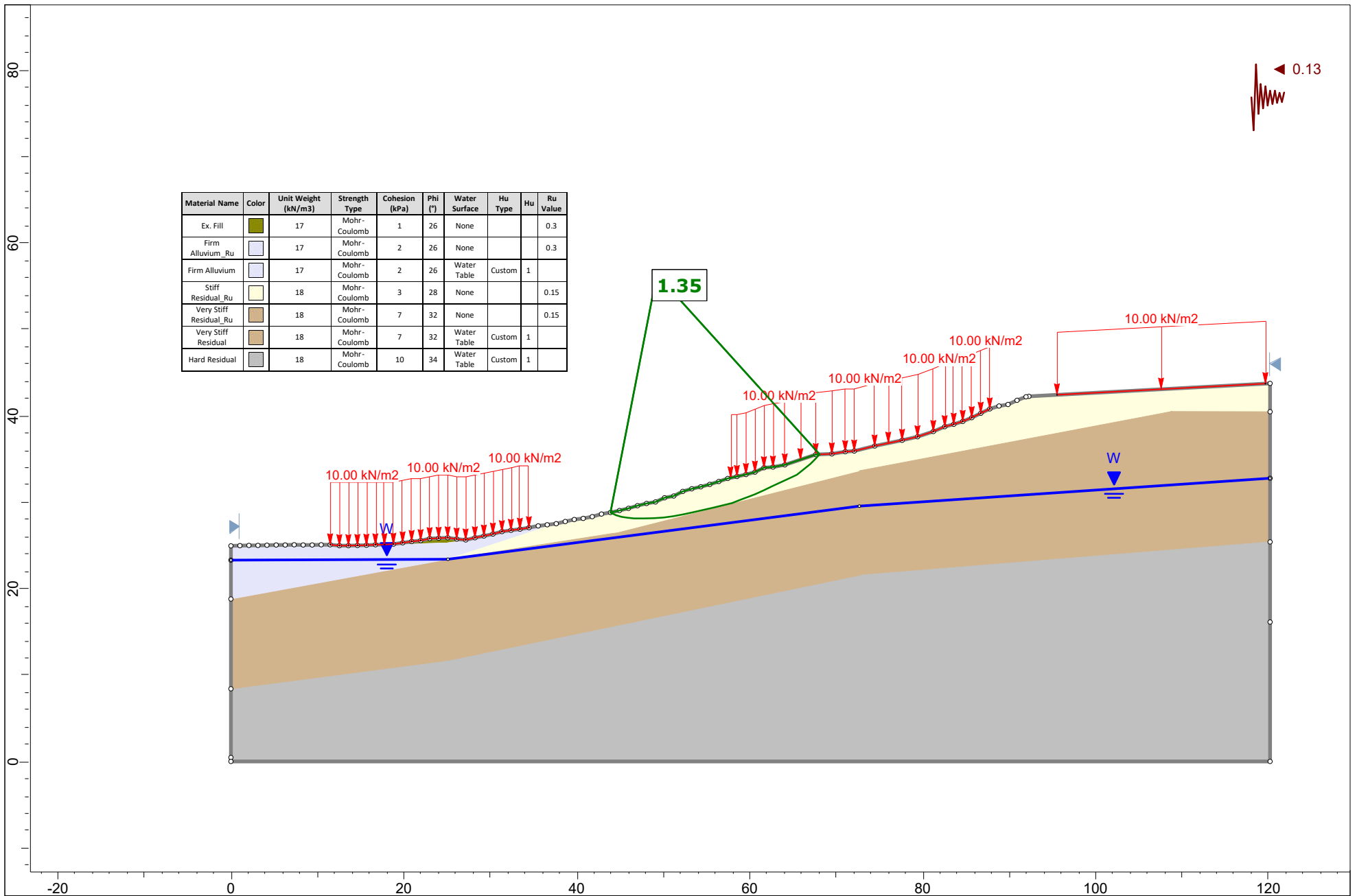


Material Name	Color	Unit Weight (kN/m <sup>3</sup> )	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Ex. Fill	Green	17	Mohr-Coulomb	1	26	None			0.3
Firm Alluvium_Ru	Light Blue	17	Mohr-Coulomb	2	26	None			0.3
Firm Alluvium	Light Blue	17	Mohr-Coulomb	2	26	Water Table	Custom	1	
Stiff Residual_Ru	Yellow	18	Mohr-Coulomb	3	28	None			0.15
Very Stiff Residual_Ru	Brown	18	Mohr-Coulomb	7	32	None			0.15
Very Stiff Residual	Brown	18	Mohr-Coulomb	7	32	Water Table	Custom	1	
Hard Residual	Grey	18	Mohr-Coulomb	10	34	Water Table	Custom	1	

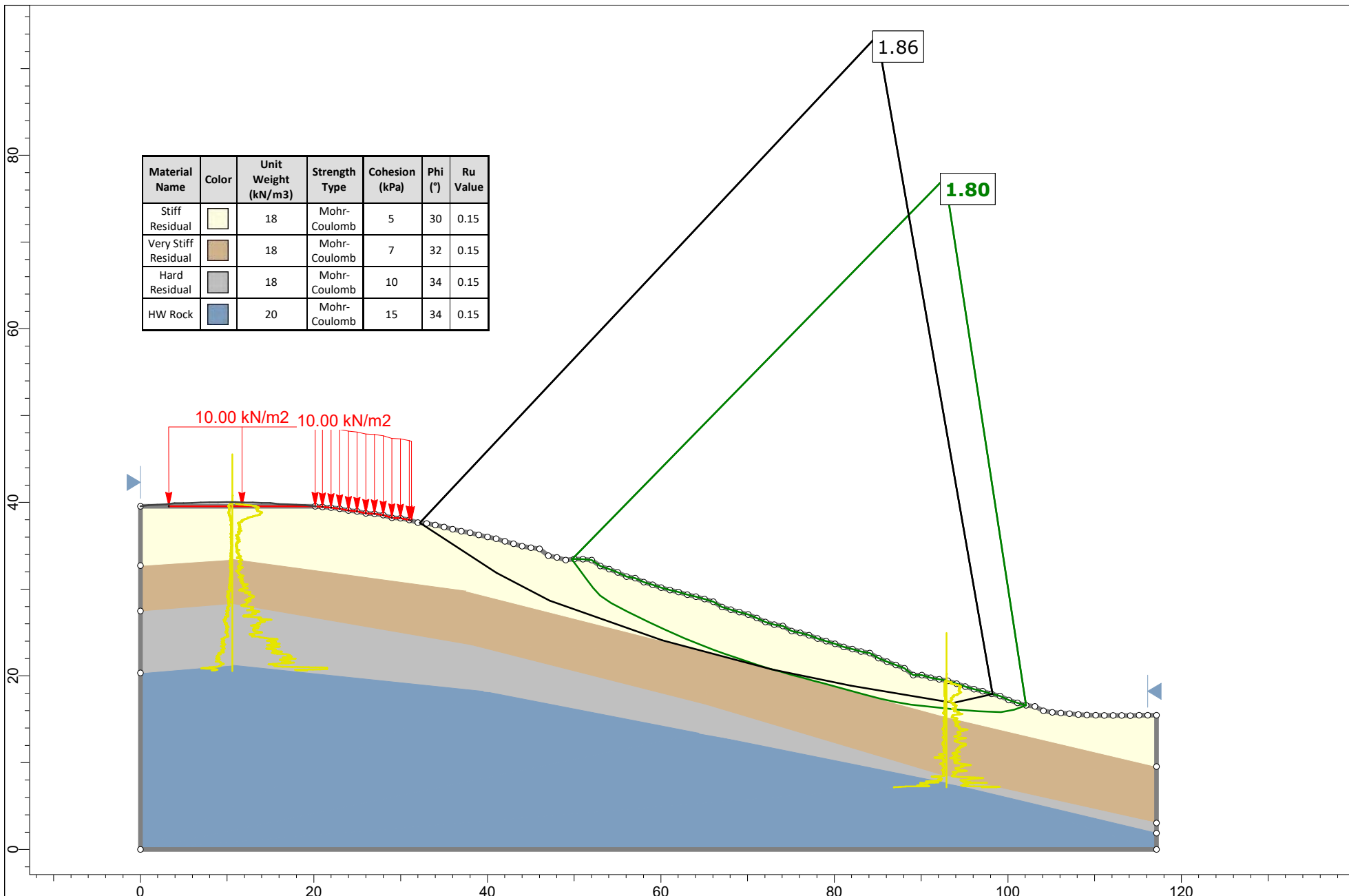
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	Group	Cross Section P-P'	Scenario	Static conditions
	Drawn By	JMC	Company	
	Date	16/08/2024, 9:07:26 am	File Name	PP_static.slmd
	SLIDEINTERPRET 9.034			



Project	23 020 - Aucks Rd, Russell - Willowridge Developments		
Group	Cross Section P-P'	Scenario	Elevated groundwater conditions
Drawn By	JMC	Company	
Date	16/08/2024, 9:07:26 am	File Name	PP_elevatedGW.slm

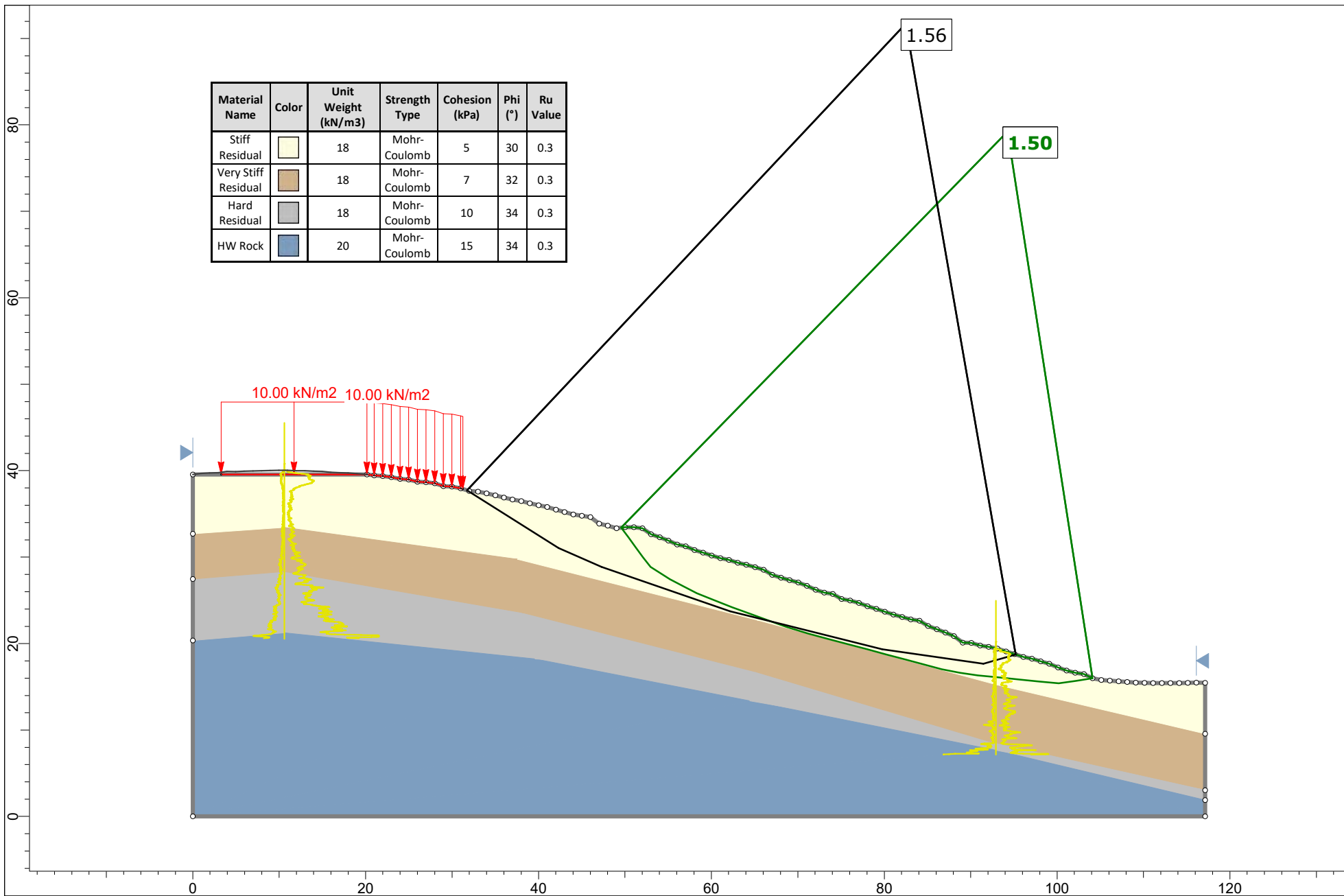


Material Name	Color	Unit Weight (kN/m <sup>3</sup> )	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Ex. Fill	Green	17	Mohr-Coulomb	1	26	None			0.3
Firm Alluvium_Ru	Light Blue	17	Mohr-Coulomb	2	26	None			0.3
Firm Alluvium	Light Blue	17	Mohr-Coulomb	2	26	Water Table	Custom	1	
Stiff Residual_Ru	Yellow	18	Mohr-Coulomb	3	28	None			0.15
Very Stiff Residual_Ru	Brown	18	Mohr-Coulomb	7	32	None			0.15
Very Stiff Residual	Brown	18	Mohr-Coulomb	7	32	Water Table	Custom	1	
Hard Residual	Grey	18	Mohr-Coulomb	10	34	Water Table	Custom	1	

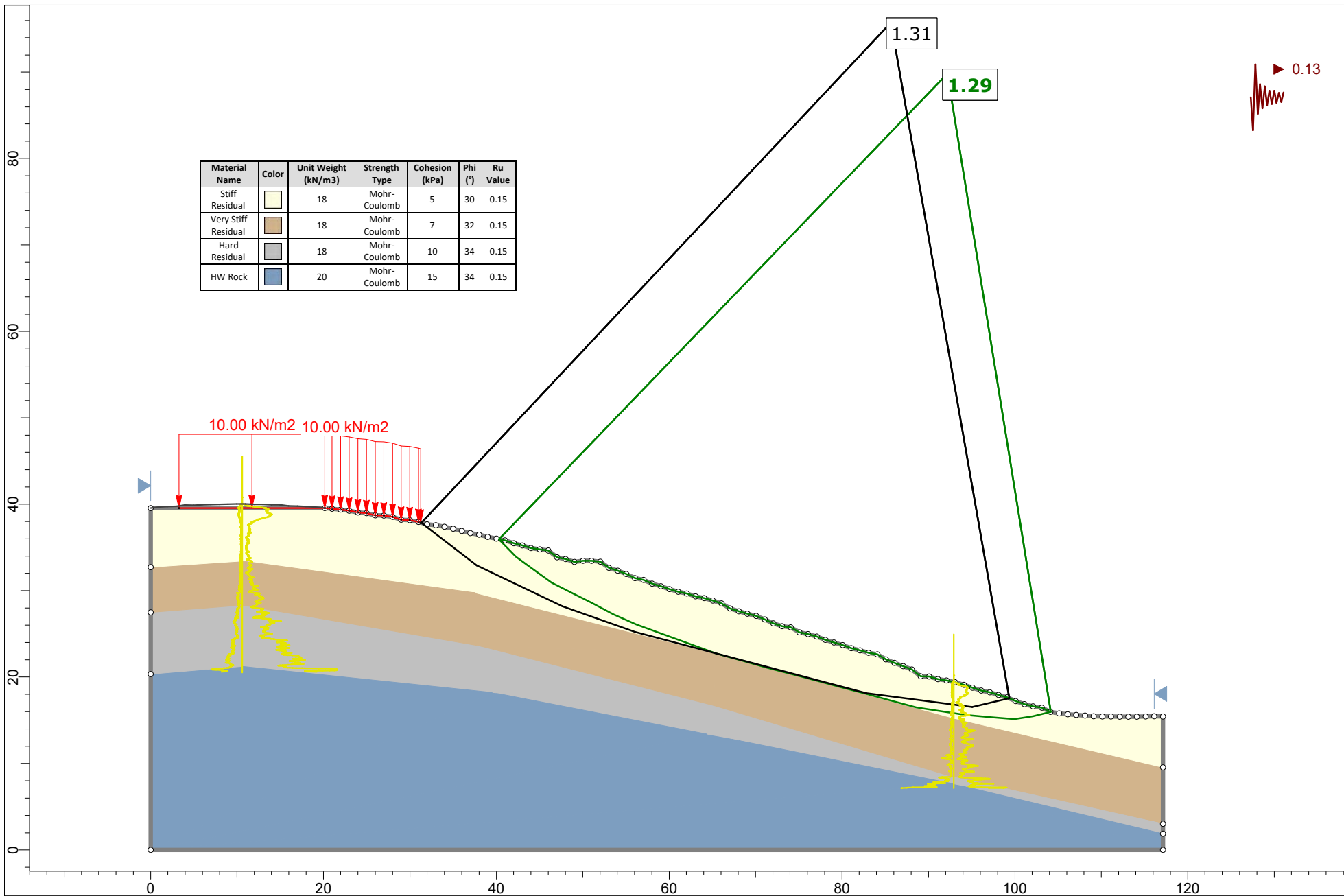


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	Group	Cross Section Q-Q' - [EAST]	Scenario	Static conditions
	Drawn By	JMC	Company	
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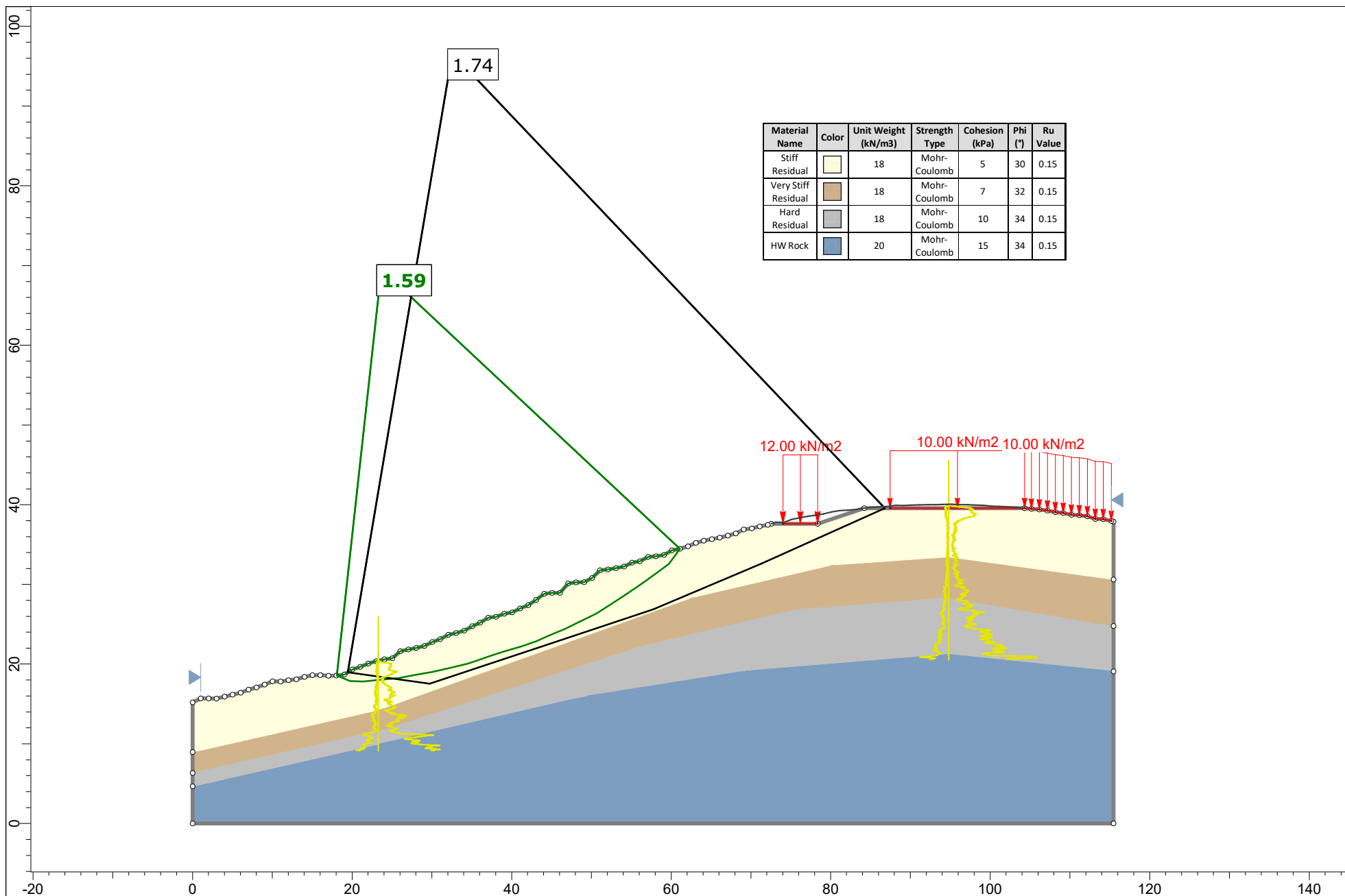




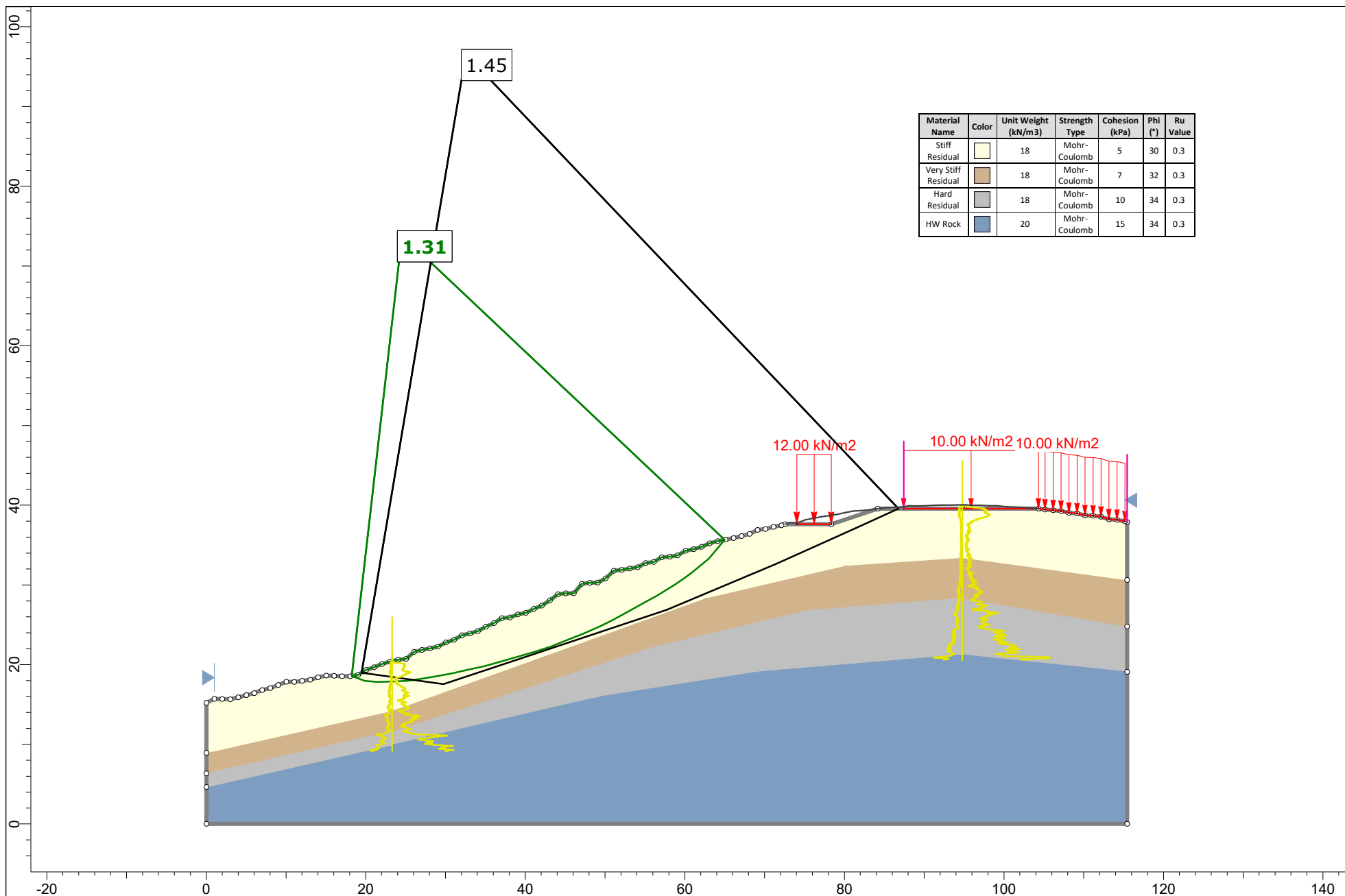
	Project		23 020 - Aucks Rd, Russell - Willowridge Developments	
	Group	Cross Section Q-Q' [EAST]	Scenario	Elevated groundwater conditions
	Drawn By	JMC	Company	
	Date	16/08/2024, 9:07:26 am	File Name	QQ-east_elevatedGW.slmtd



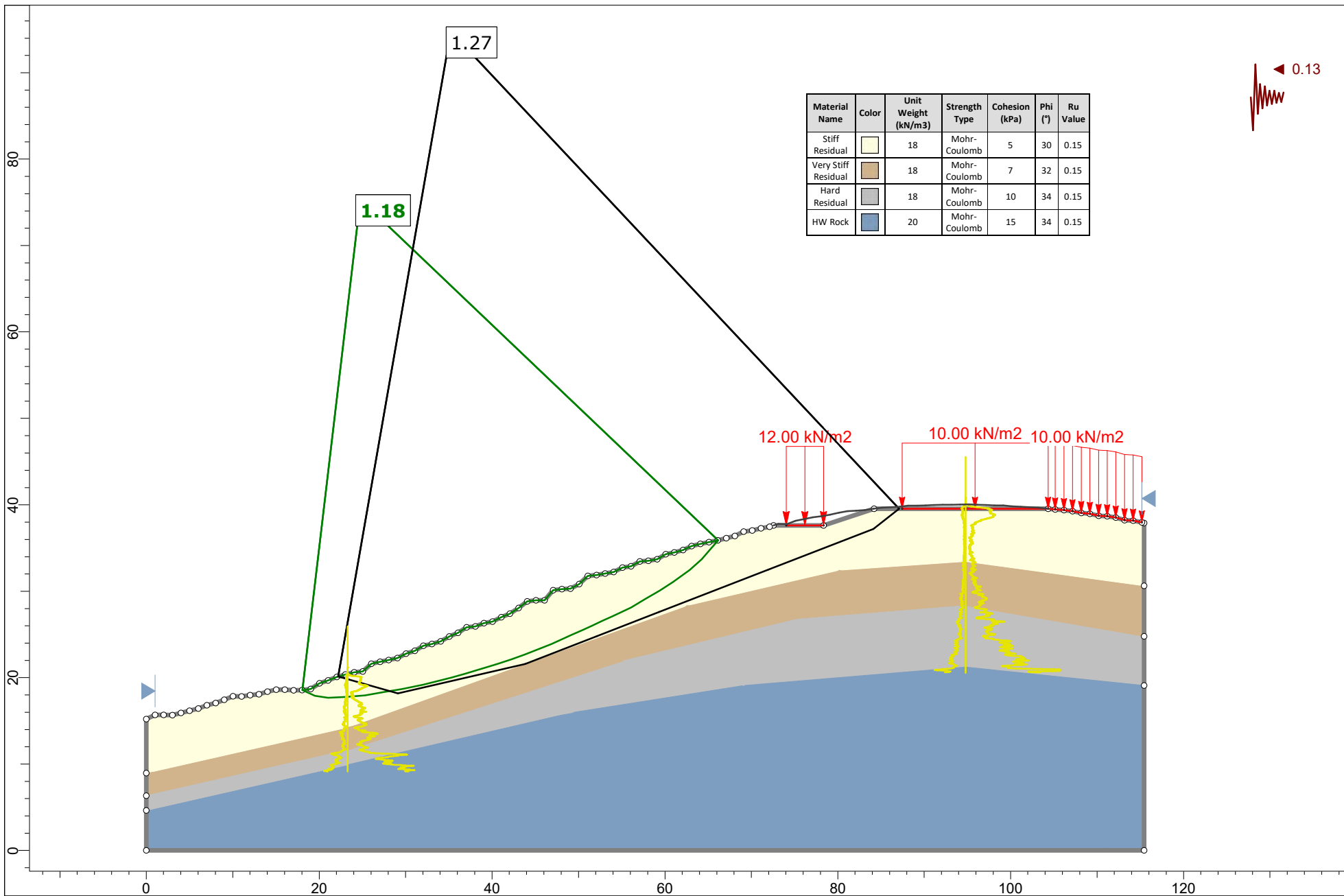
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	Group	Cross Section Q-Q' [EAST]	Scenario	Seismic conditions
	Drawn By	JMC	Company	
	Date	16/08/2024, 9:07:26 am	File Name	QQ-east_seismic.slmd



Project	23 020 - Aucks Rd, Russell - Willowridge Developments		
Group	Cross Section Q-Q' - [WEST]	Scenario	Static conditions
Drawn By	JMC	Company	
Date	16/08/2024, 9:07:26 am	File Name	QQ-west_static.slmd

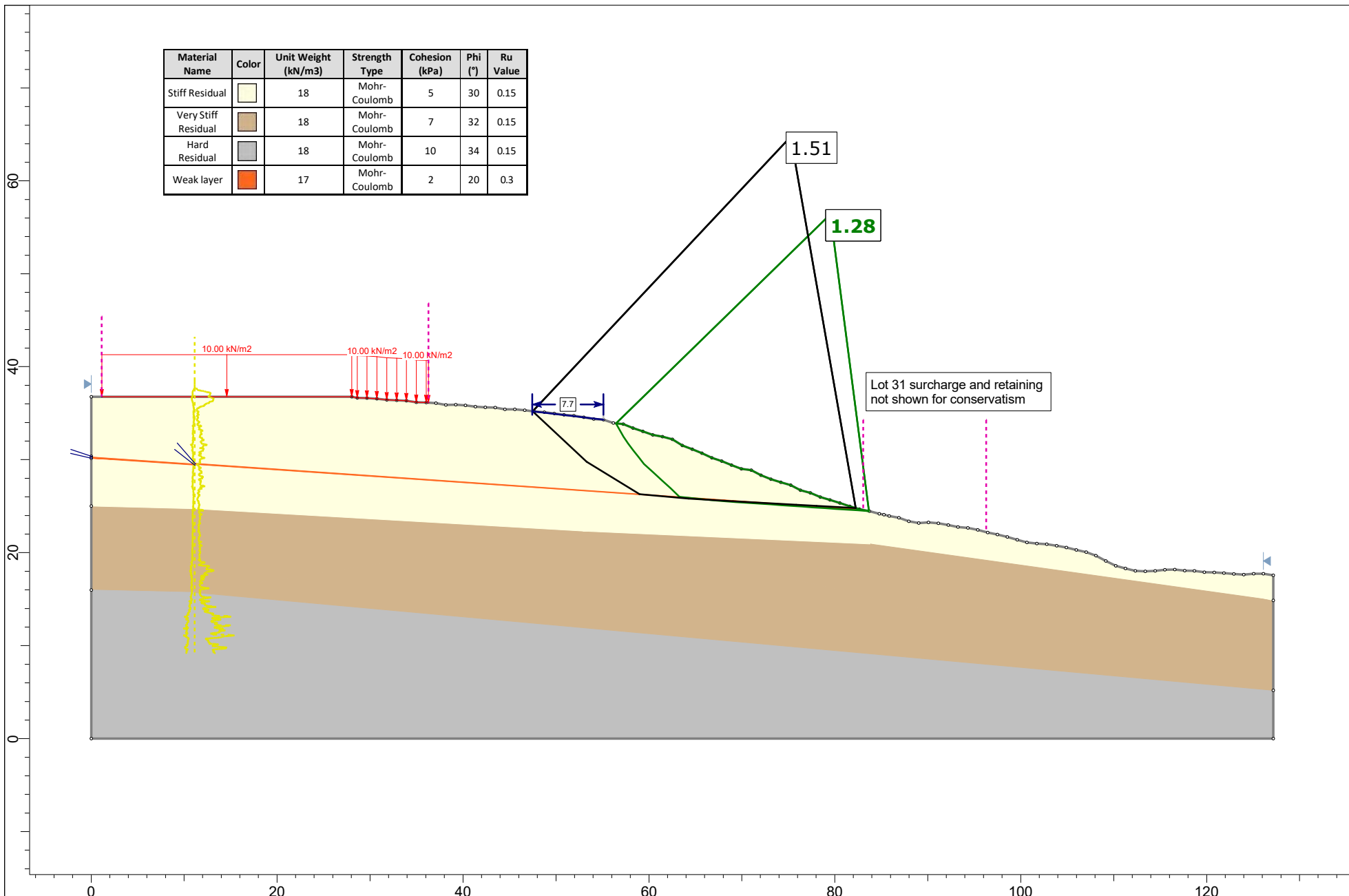


Project	23 020 - Aucks Rd, Russell - Willowridge Developments		
Group	Cross Section Q-Q' - [WEST]	Scenario	Elevated groundwater conditions
Drawn By	JMC	Company	
Date	16/08/2024, 9:07:26 am	File Name	QQ-west_elevatedGW.slm

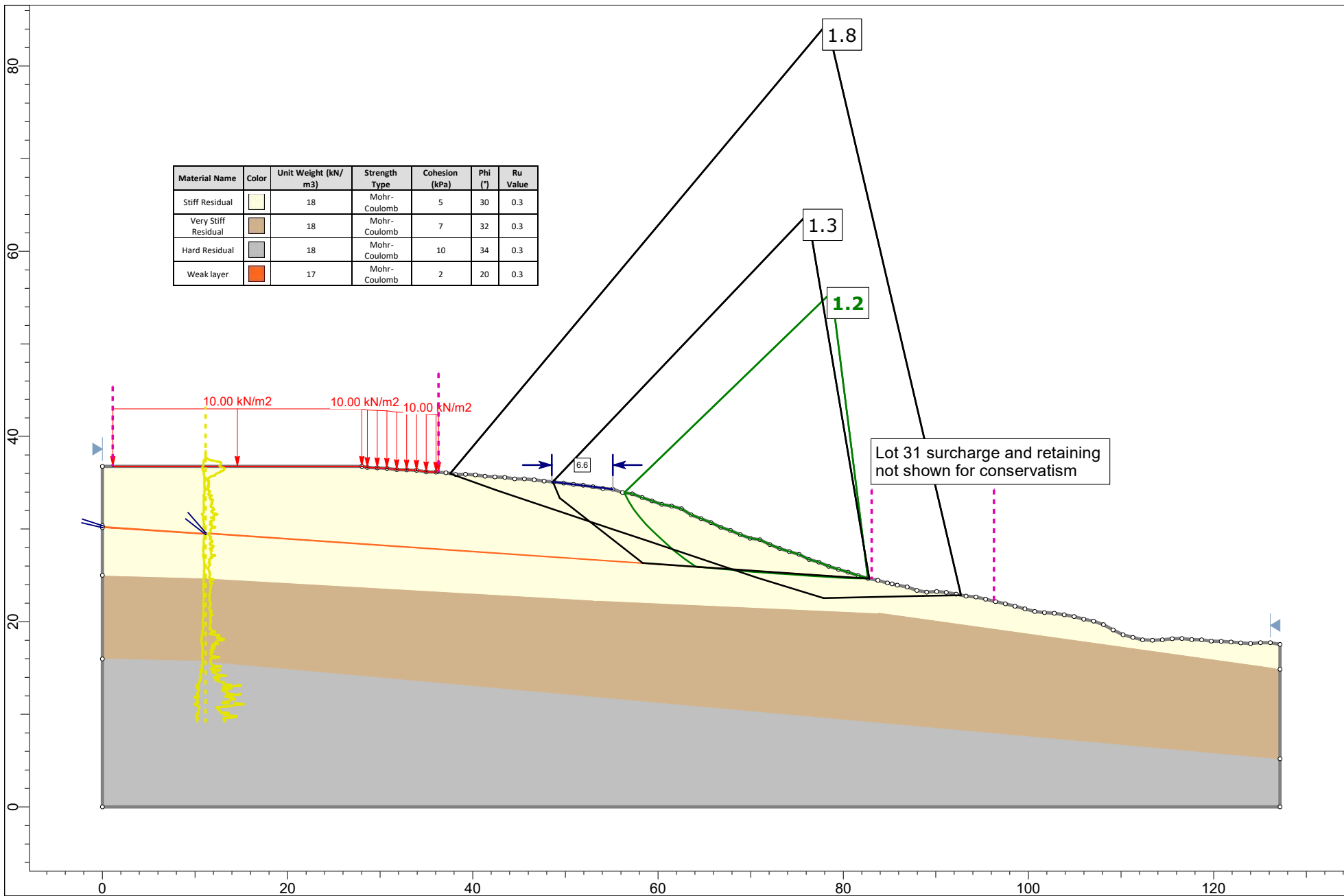


	Project	23 020 - Aucks Rd, Russell - Willowridge Developments		
	Group	Cross Section Q-Q' - [WEST]	Scenario	Seismic conditions
	Drawn By	JMC	Company	
	Date	16/08/2024, 9:07:26 am	File Name	QQ-west_seismic.slmd

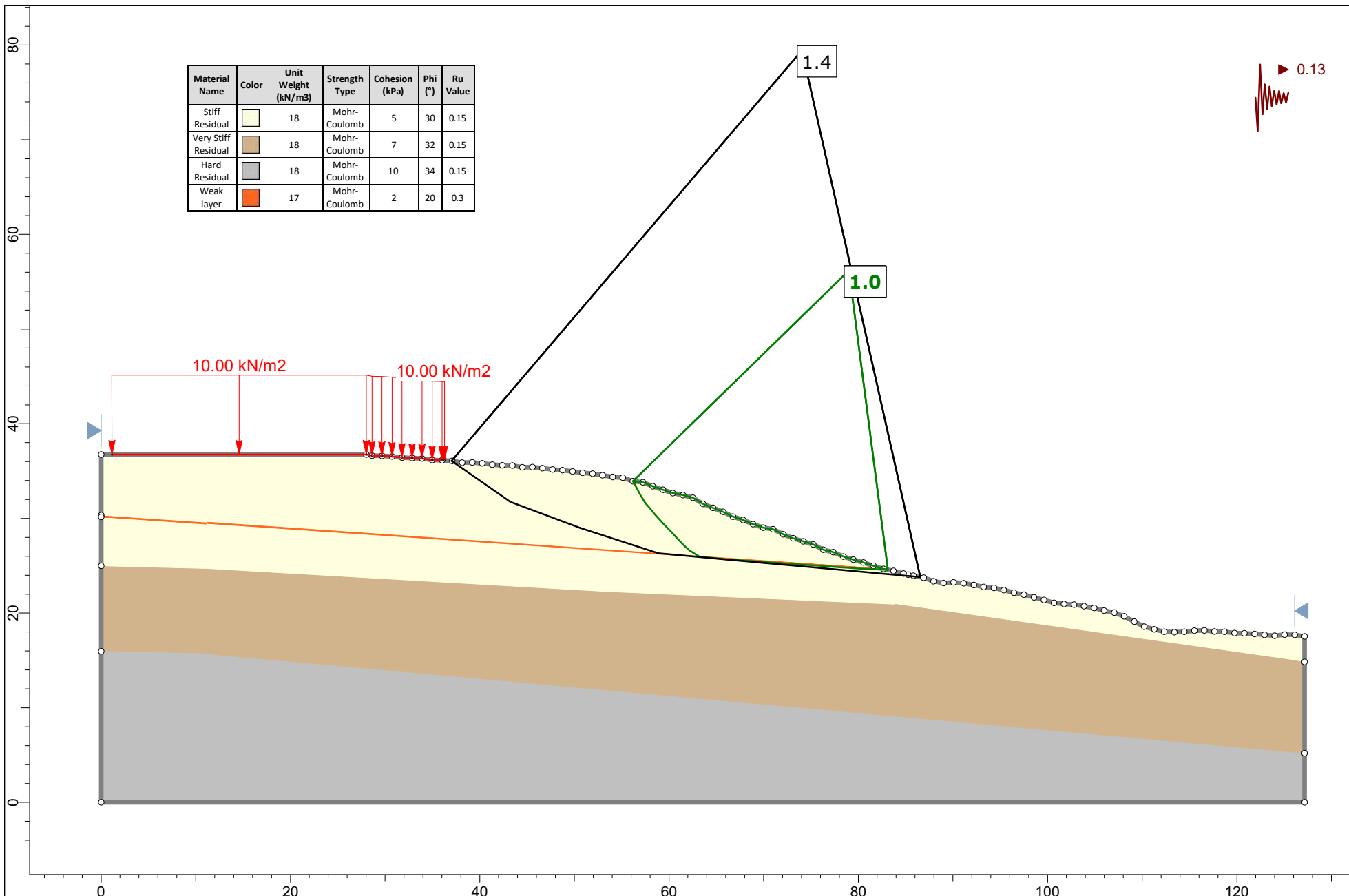




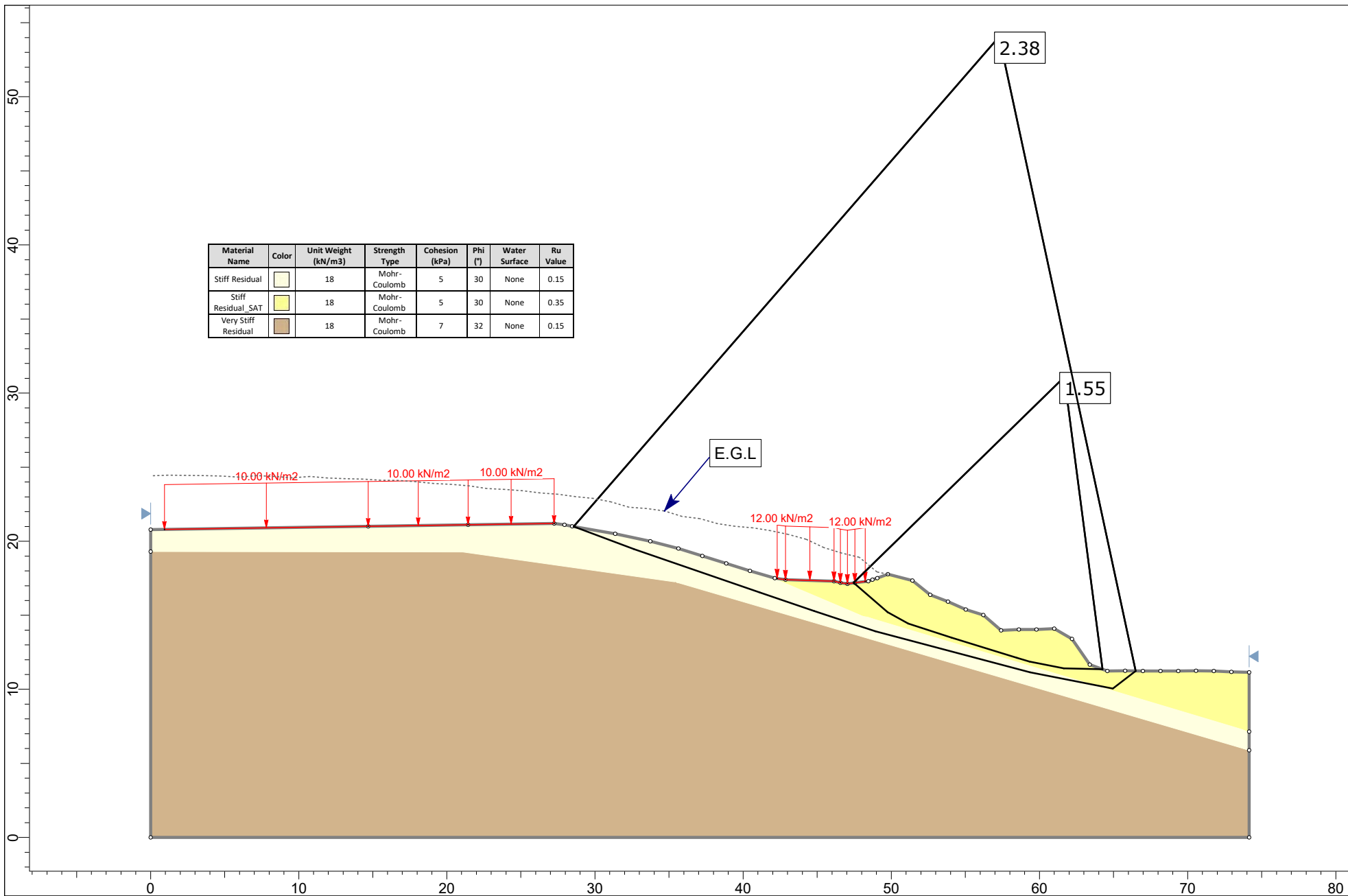
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	Group	Cross Section R-R'	Scenario	Static conditions
	Drawn By	JMC	Company	
	Date	16/08/2024, 9:07:26 am	File Name	RR_static.slmd



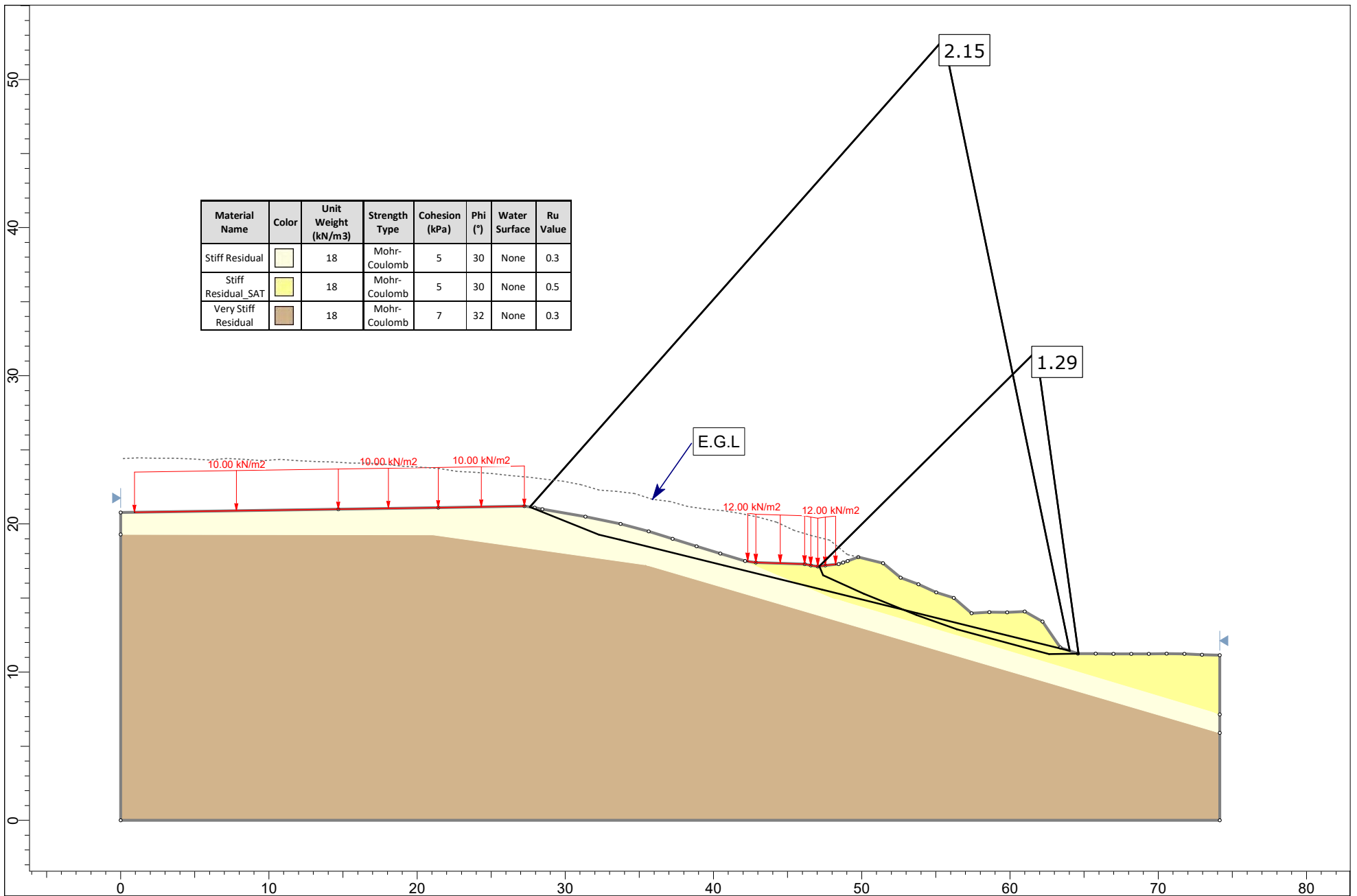
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	Group		Cross Section R-R'		Scenario		Elevated groundwater conditions
	Drawn By		JMC		Company		
	Date		16/08/2024, 9:07:26 am		File Name		RR_elevatedGW.slm



	Project		23 020 - Aucks Rd, Russell - Willowridge Developments	
	Group	Cross Section R-R'	Scenario	Seismic conditions
	Drawn By	JMC	Company	
	Date	16/08/2024, 9:07:26 am	File Name	RR_seismic.slmd

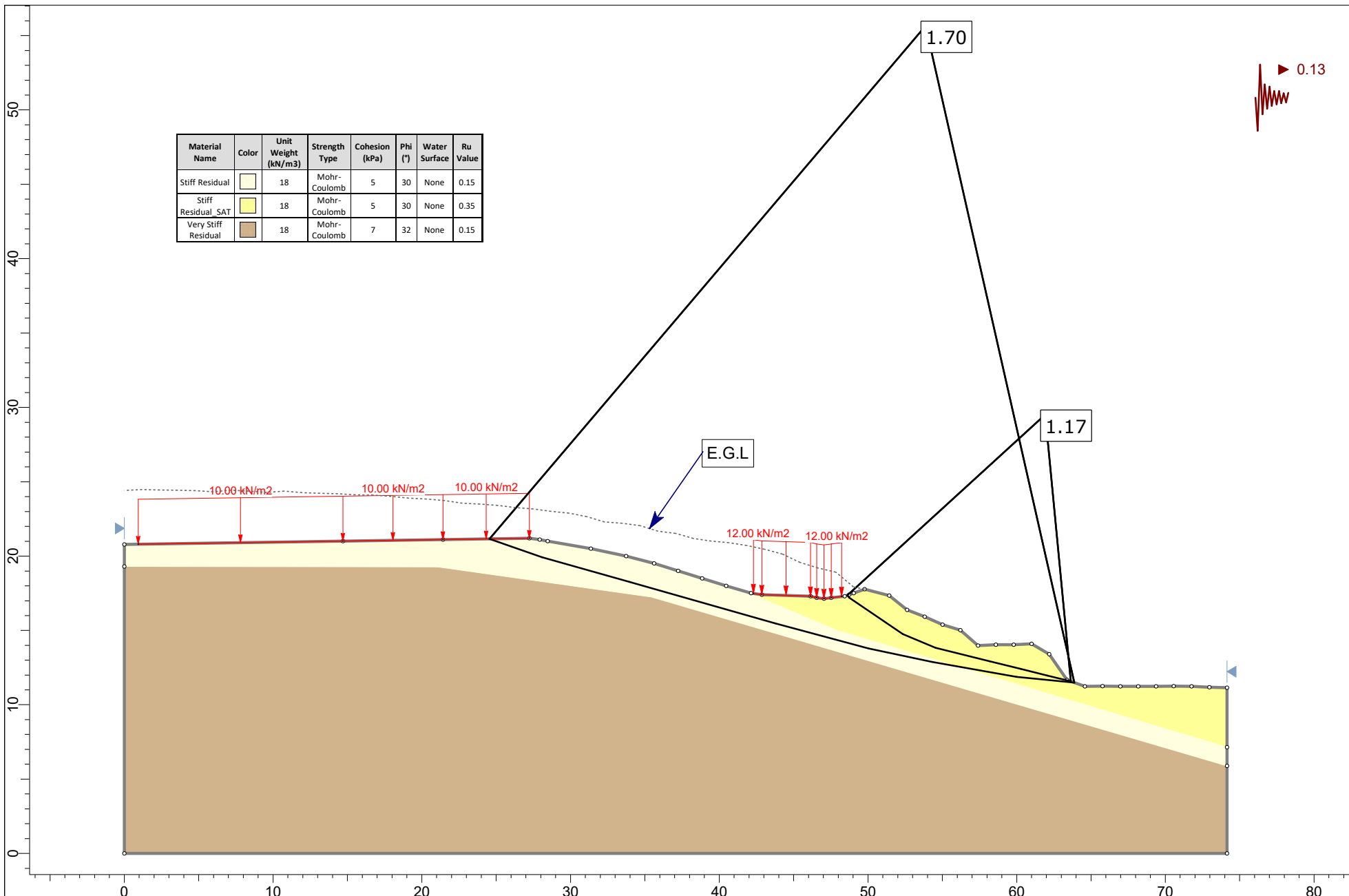


	Project		23 020 - Aucks Rd, Russell - Willowridge Developments	
	Group	Cross Section S-S'	Scenario	Static conditions
	Drawn By	JMC	Company	
	Date	16/08/2024, 9:07:26 am	File Name	SS_static.slmd



Project	23 020 - Aucks Rd, Russell - Willowridge Developments		
Group	Cross Section S-S'	Scenario	Elevated groundwater conditions
Drawn By	JMC	Company	
Date	16/08/2024, 9:07:26 am	File Name	SS_elevatedGW.sldm





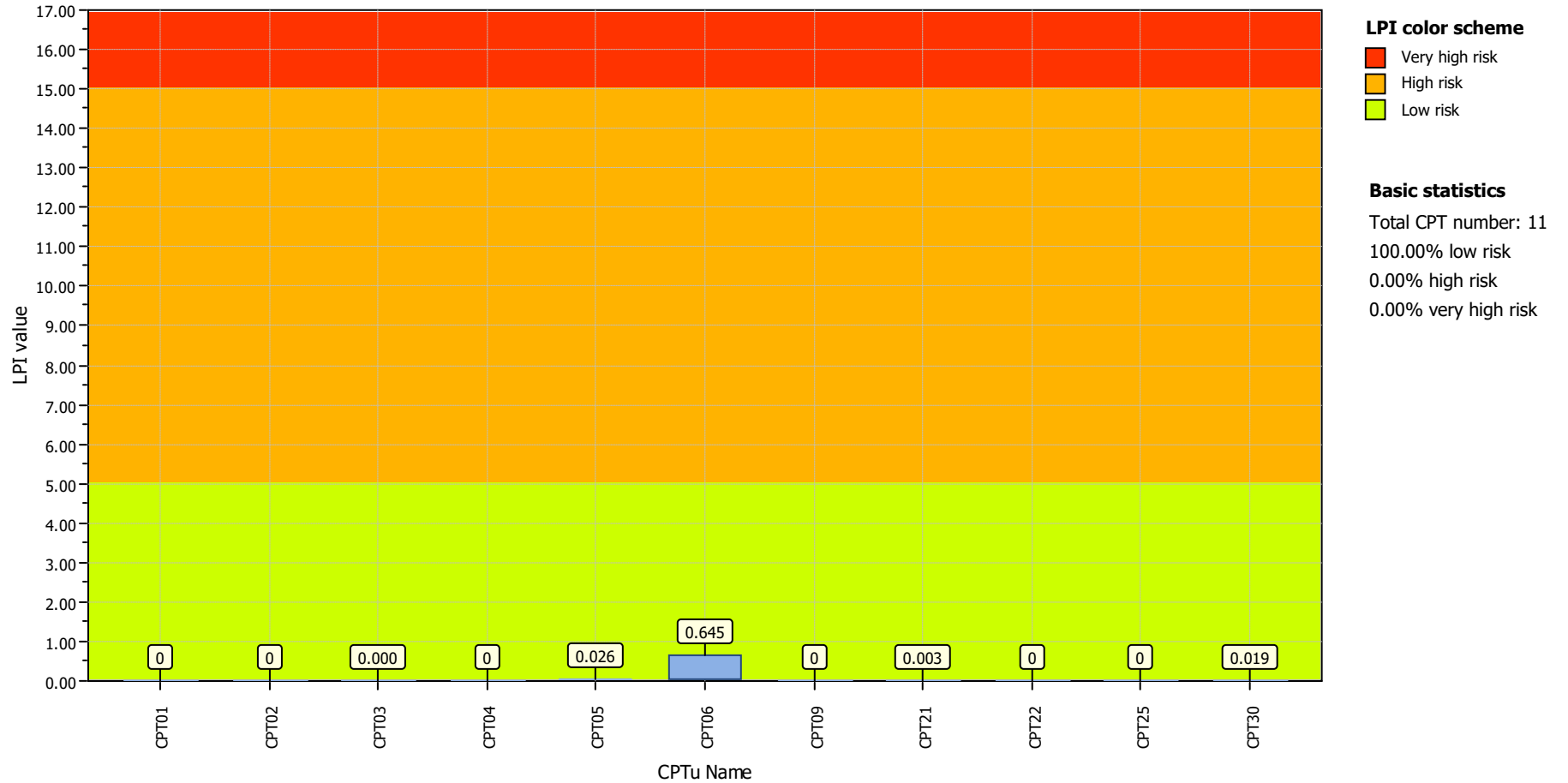
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	Group	Cross Section S-S'	Scenario	Seismic conditions
	Drawn By	JMC	Company	
	Date	16/08/2024, 9:07:26 am	File Name	SS_seismic.slmd

## ***Appendix F – Liquefaction Assessment***

**Project title : Willowridge Developments**

**Location : Aucks Road Russell**

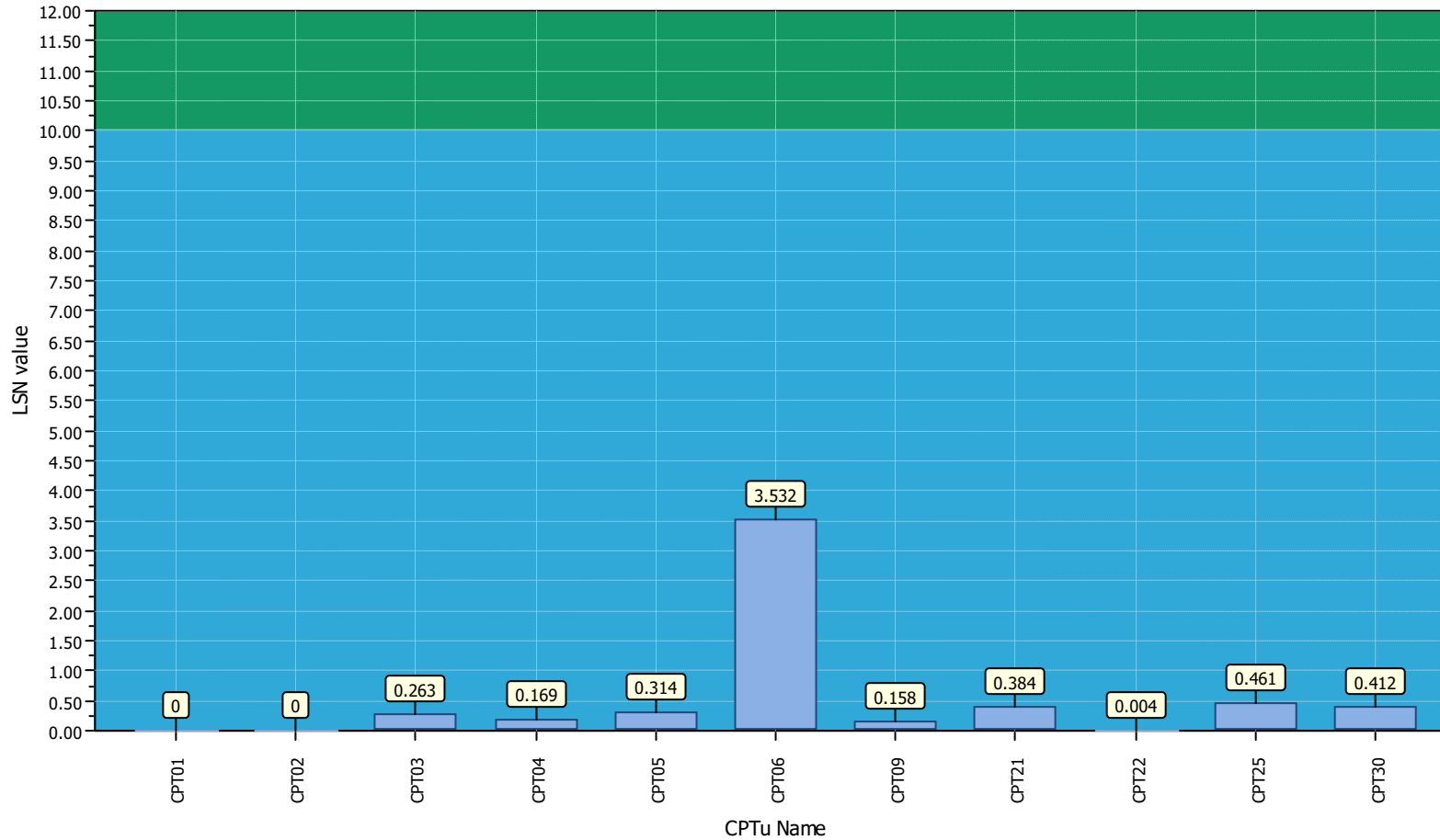
**Overall Liquefaction Potential Index report**



Project title : Willowridge Developments

Location : Aucks Road Russell

### Overall Liquefaction Severity Number report



**LSN color scheme**

- Severe damage
- Major expression of liquefaction
- Moderate to severe exp. of liquefaction
- Moderate expression of liquefaction
- Minor expression of liquefaction
- Little to no expression of liquefaction

**Basic statistics**

- Total CPT number: 11
- 100.00% little liquefaction
- 0.00% minor liquefaction
- 0.00% moderate liquefaction
- 0.00% moderate to major liquefaction
- 0.00% major liquefaction
- 0.00% severe liquefaction

**LIQUEFACTION ANALYSIS REPORT**

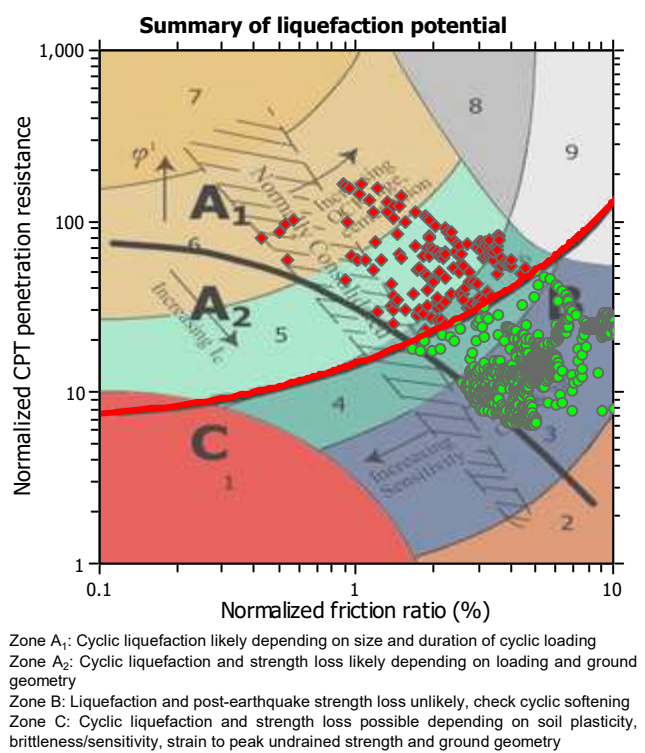
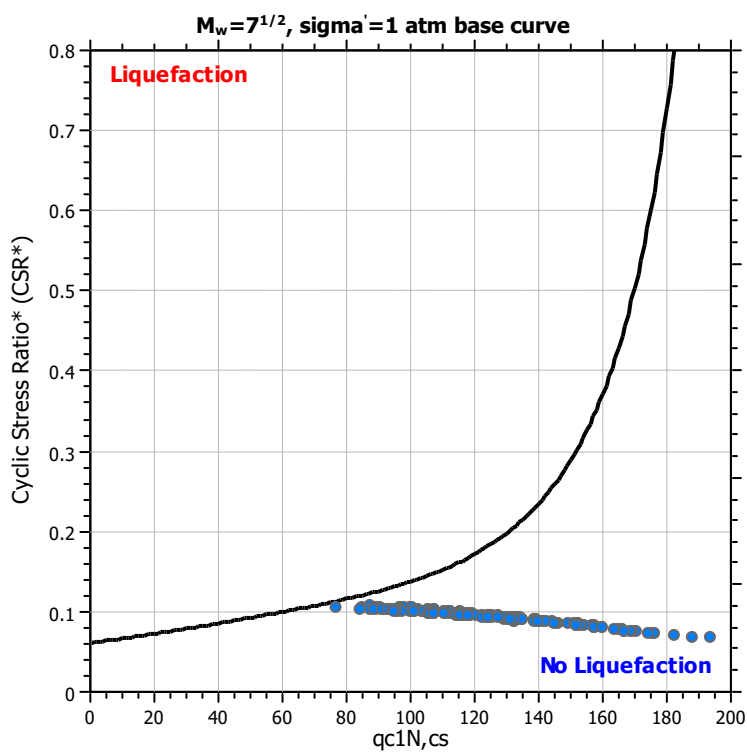
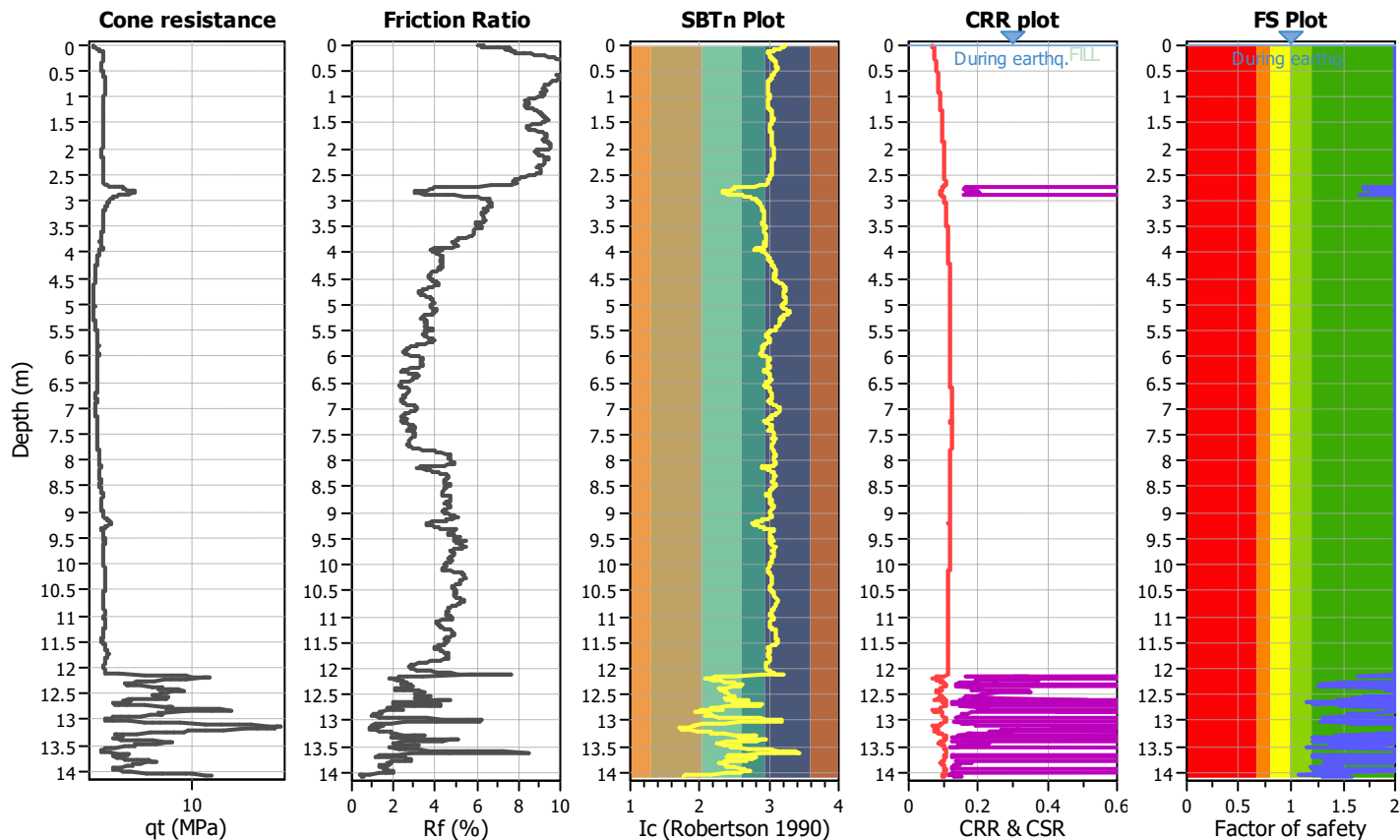
**Project title : Willowridge Developments**

**Location : Aucks Road Russell**

**CPT file : CPT01**

**Input parameters and analysis data**

Analysis method:	B&I (2014)	G.W.T. (in-situ):	1.40 m	Use fill:	Yes	Clay like behavior	
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	1.00 m	Fill height:	1.00 m	applied:	Sands only
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	18.00 kN/m <sup>3</sup>	Limit depth applied:	No
Earthquake magnitude $M_w$ :	5.80	Ic cut-off value:	2.60	Trans. detect. applied:	No	Limit depth:	N/A
Peak ground acceleration:	0.13	Unit weight calculation:	Based on SBT	$K_\sigma$ applied:	Yes	MSF method:	Method





**LIQUEFACTION ANALYSIS REPORT**

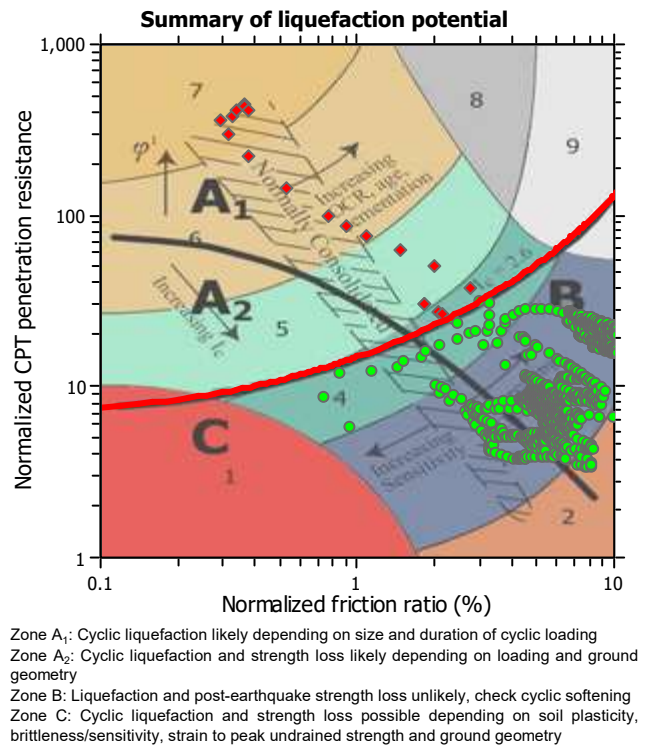
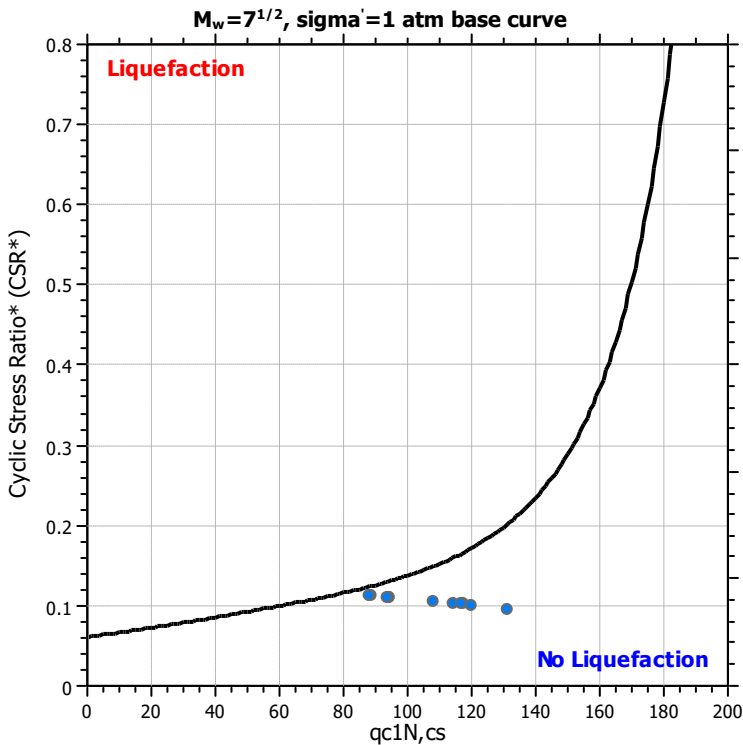
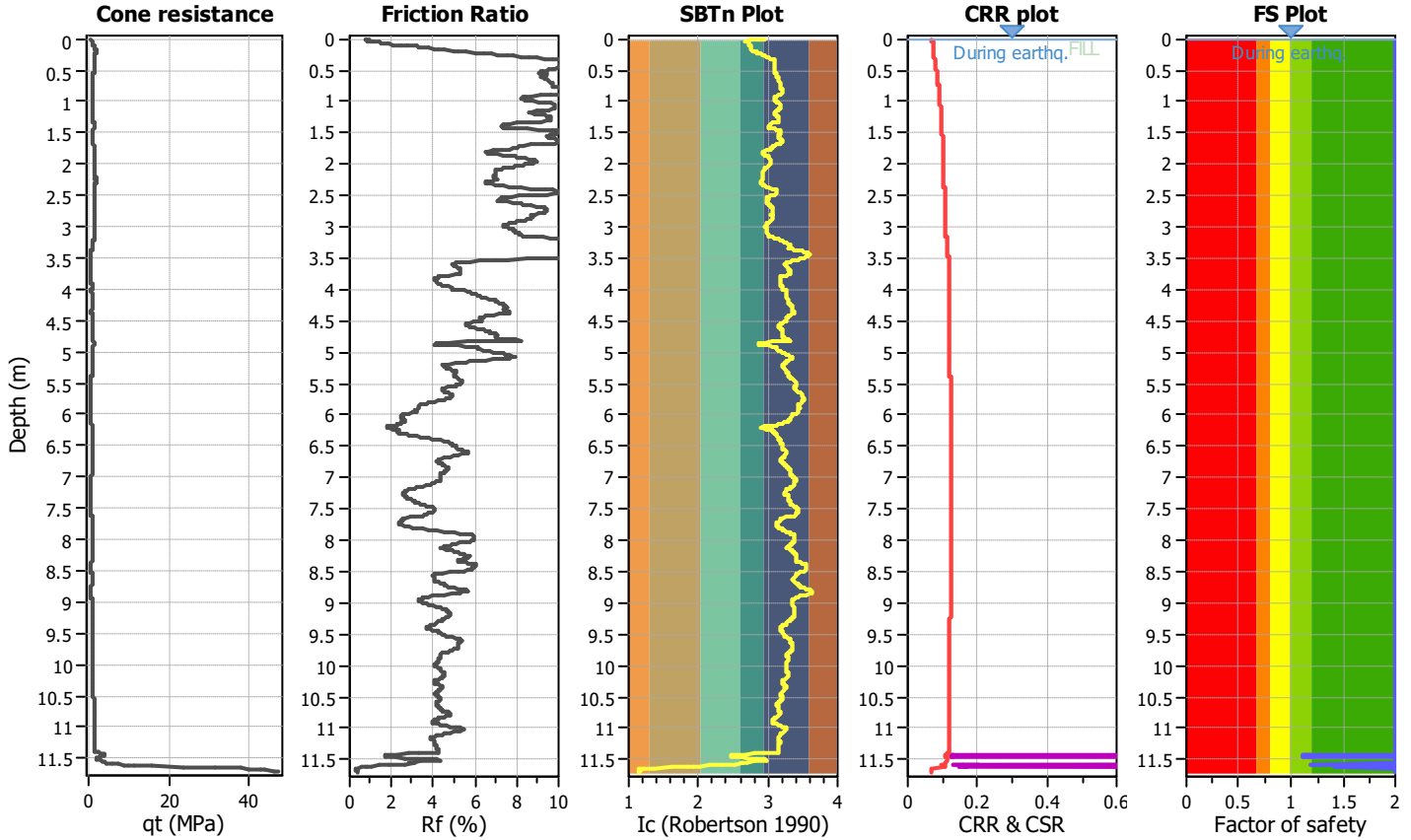
**Project title : Willowridge Developments**

**Location : Aucks Road Russell**

**CPT file : CPT02**

**Input parameters and analysis data**

Analysis method:	B&I (2014)	G.W.T. (in-situ):	2.90 m	Use fill:	Yes	Clay like behavior applied:	Sands only
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	1.00 m	Fill height:	1.00 m	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	18.00 kN/m <sup>3</sup>	Limit depth:	N/A
Earthquake magnitude $M_w$ :	5.80	Ic cut-off value:	2.60	Trans. detect. applied:	No	MSF method:	Method
Peak ground acceleration:	0.13	Unit weight calculation:	Based on SBT	$K_\sigma$ applied:	Yes		



**LIQUEFACTION ANALYSIS REPORT**

**Project title : Willowridge Developments**

**Location : Aucks Road Russell**

**CPT file : CPT03**

**Input parameters and analysis data**

Analysis method:	B&I (2014)	G.W.T. (in-situ):	3.80 m	Use fill:	Yes	Clay like behavior	
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	1.00 m	Fill height:	0.50 m	applied:	Sands only
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	18.00 kN/m <sup>3</sup>	Limit depth applied:	No
Earthquake magnitude $M_w$ :	5.80	Ic cut-off value:	2.60	Trans. detect. applied:	No	Limit depth:	N/A
Peak ground acceleration:	0.13	Unit weight calculation:	Based on SBT	$K_\sigma$ applied:	Yes	MSF method:	Method

