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

Office Use Only
Application Number:

Application for resource consent or fast-track resource consent

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

1. Pre-Lodgement Meeting

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

◯ **Yes** ✔ **No**

2. Type of consent being applied for

(more than one circle can be ticked):

◯ **Land Use**

◯ **Fast Track Land Use***

◯ **Change of Consent Notice (s.221(3))**

◯ **Certificate of Compliance (s.139)**

◯ **Extension of time (s.125)**

◯ **Discharge:** Total voume = _____ m³
Note; volumes >3m³ requires NRC Consent.

✔ **Subdivision**

◯ **Existing Use Certicicate (s.139A)**

◯ **Consent under National Environmental Standard**
(e.g. Assessing and Managing Contaminants in Soil)

◯ **Other (please specify)** _____

**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:
The Resource Consents Planning Technicians, **planning_technicians@fndc.govt.nz**

5. Applicant details

Name/s: Phillippa and Frank Van Der Poel

Email: [redacted]

Phone number:

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

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

If yes, please provide details.

6. Address for correspondence

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

Name/s: Steven Sanson - Bay of Islands Planning

Email: [redacted]

Phone number:

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

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

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

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

Name/s:

Property address/
location:

8. Application site details

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

Name/s: Phillippa and Frank Van Der Poel

Site address/ location: 21 and 27 Lichen Grove, Russell

Postcode

Legal description: Lot 39 DP 188462 **Val Number:**

Certificate of title: NA118C/181

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.

Proposed subdivision of 21 and 27 Lichen Grove

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.

The proposal has been prepared in accordance with the following version of the FNDC Engineering Standards:

◯ **2009** ◯ **2023**

10. Would you like to request public notification?

◯ **Yes** ✔ **No**

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

(more than one circle can be ticked):

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

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

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

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

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

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

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

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

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

13. Natural hazards (National Policy Statement for Natural Hazards 2025)

Is the site subject to known or potential natural hazards (for example, flooding, coastal inundation, erosion, or unstable land), as contemplated by the National Policy Statement for Natural Hazards 2025? ☑ **Yes** ☐ **No**

If yes, please identify the relevant natural hazard(s) by ticking the applicable box(es) below:

- ☑ **Flooding**
- ☐ **Active Faults**
- ☐ **Landslips**
- ☐ **Liquefaction**
- ☐ **Coastal Erosion**
- ☐ **Tsunami**
- ☐ **Coastal Inundation**

Please ensure all relevant technical reports are submitted with the application.

14. 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**

15. Draft conditions:

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

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

16. 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) Frank and Phillippa Van Der Poel

Email: [redacted]

Phone number: [redacted]

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

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) Frank & Phillippa Van Der Poel

Signature:
(signature of bill payer) [redacted] Date 29-Jun-2026

17. Important Information:

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

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

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

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

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

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

18. Declaration

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

Name (please write in full) [redacted]

Signature [redacted]

See overleaf for a checklist of your information...

Checklist of your information

Please tick if information is provided

- ☑ 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.

BAY OF ISLANDS PLANNING (2022) LIMITED

Kerikeri House
Suite 3, 88 Kerikeri Road
Kerikeri

Email – office@bayplan.co.nz Website - www.bayplan.co.nz

29 June 2026

Re: Proposed 4 lot Subdivision, Lichen Grove, Russell

Our clients, Frank and Phillippa Van Der Poel seek approval to subdivide their properties at 21 and 27 Lichen Grove Russell into 4 lots. An existing dwelling is provided for on Lot 4.

The proposed subdivision is a Controlled Activity under the Operative Far North District Plan (**ODP**). The site is zoned in the Coastal Residential Zone under the ODP.

In terms of the Proposed Far North District Plan (**PDP**) the property is zoned Settlement. A Discretionary Activity consent is required.

As part of the subdivision proposal, it is proposed to cancel existing consent notices, but re-establish these to refer to the updated engineering reports provided as part of this application. Overall, the application is a Discretionary Activity.

We attach the following information to support the application:

- **Planning Report and Assessment of Environmental Effects**
- **Appendix A – Record of Title**
- **Appendix B - Scheme Plan**
- **Appendix C – Engineering Reports**

Please do not hesitate to contact me should you require any further information.

Steven Sanson
Consultant Planner

1.0 INTRODUCTION

The applicant seeks subdivision consent for a 4-lot subdivision of the 21 & 27 Lichen Grove, Russell. The sites are legally described as Lot 39 DP 188462 being 9,064m^2 [21 Lichen Grove] in size and Lot 38 DP 188462 being 6,133m^2 [27 Lichen Grove] . A copy of the Records of Title for these properties is attached at **Appendix A**.

The application is a Controlled Activity subdivision under the ODP. A consequential approval is required under s221(3) for the purposes of cancelling and replacing consent notices, which is a Discretionary Activity under the RMA.

In terms of the PDP, a Discretionary Activity subdivision consent is required.

It is concluded that any potential adverse effects arising from the subdivision would be less than minor and that the proposal reflects an anticipated pattern of development that is enabled by the District Plan.

Figure 1 – Site Aerial 21 & 27 Lichen Grove (Source: Prover)

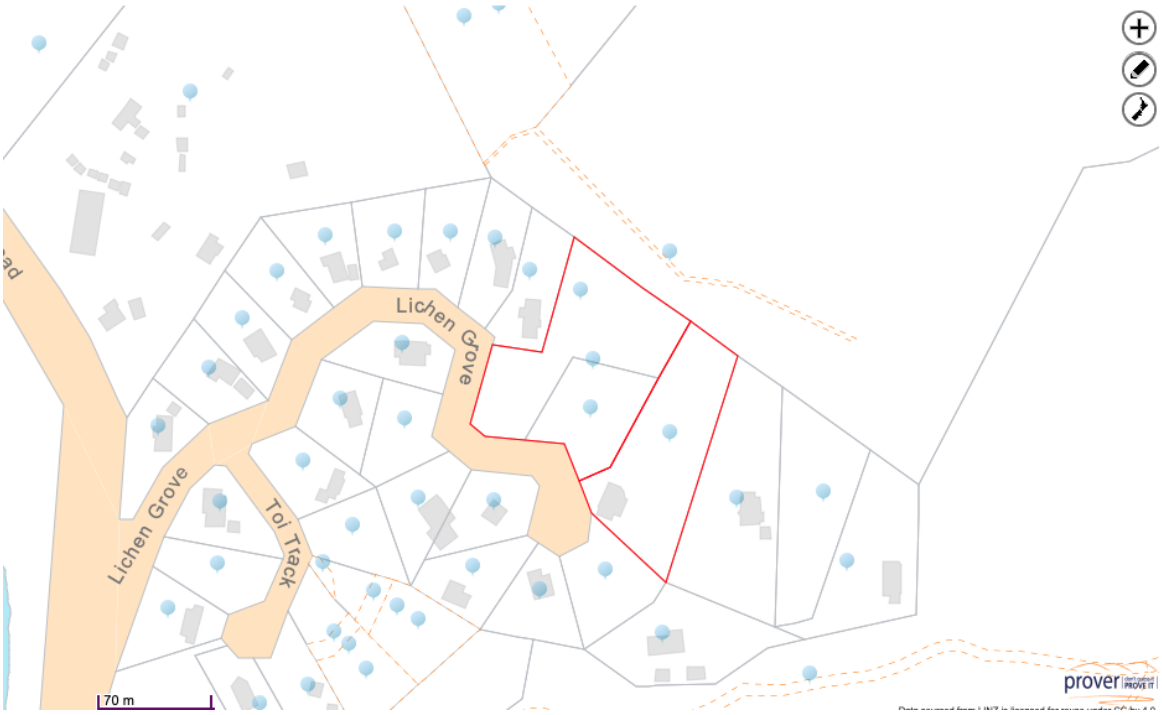


Figure 2 – Site 21 & 27 Lichen Grove (Source: Prover)

2.0 SITE AND LOCALITY DESCRIPTION

The application site is accessed from Lichen Grove, which is a no exit road from Russell Whakapara Road. The property is approximately 4.4km to the south-east of Russell, and 4.9km north east of the Okiato Ferry terminal in Okiato. Lichen Grove is a two-way, no exit road that terminates at a cul-de-sac head.

Lichen Grove has footpaths and streetlighting as well as localised stormwater infrastructure that leads from the top of Lichen Grove towards the Coastal Marine Area (**CMA**) at Russell – Whakapara Road.

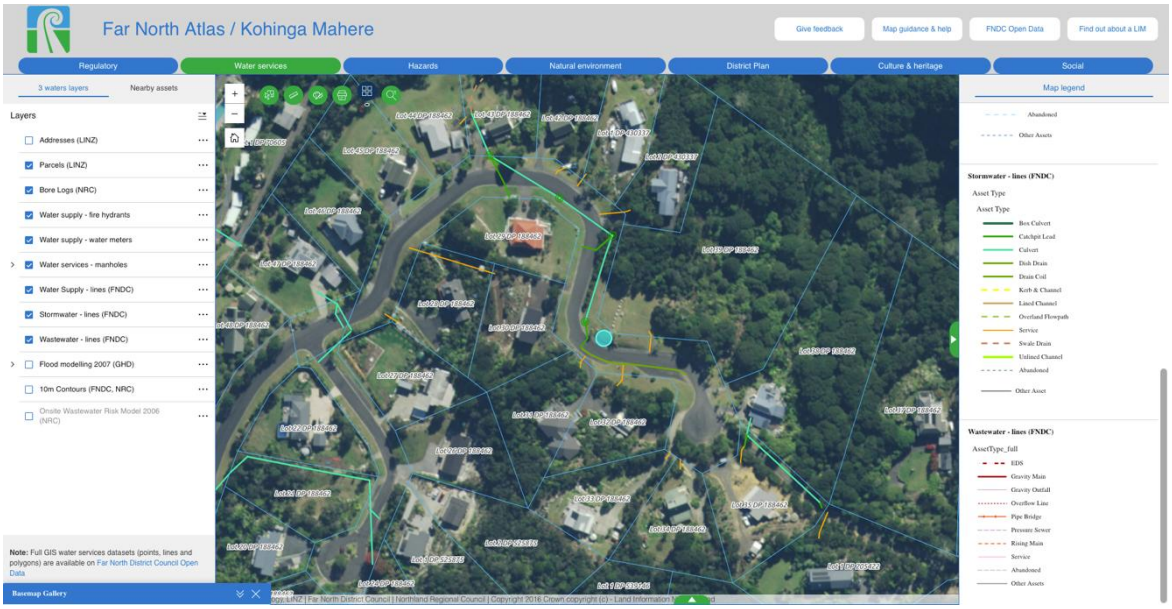


Figure 3 – Council Infrastructure - Lichen Grove (Source: Far North Atlas)

Figure 4 – Hazards (Source: Far North Atlas)

21 Lichen Grove is partially subjected to river flooding hazards 1:10, 1:50, and 1:100 extents as outlined in Figure 4. This hazard is well separated from the proposed building envelopes for the subdivision. Coastal hazards occur near the CMA however the proposal sites are unaffected as they are located well above sea level. The green shading in Figure 4 considers that the site is unlikely to be implicated by liquefaction.

Figure 5 – Natural Environment (Source: Far North Atlas)

With respect to Figure 5, the sites and surrounds form part of the Edwards Tikitikioure Coastal Habitat Protected Natural Area (**PNA**) and is overlain by a High Kiwi Density. Statutory mapping by the Northland Regional Council (**NRC**) considers that the majority of bush on each site is considered to have 'High Natural Character' (**HNC**). Their assessment considers that the area is a kanuka dominant shrubland and forest with mixed broadleaved species.

The subdivision plan in **Appendix B** shows protection of this area in its entirety via section 221 consent notice.

Lichen Grove is predominantly residential and is adjoined by both rural production and rural lifestyle allotments and uses. The surrounds are also located within a coastal environment and given the topography are typically laden with vegetation.

The sites are located on the upper portion of Lichen Grove with access from the existing property being from the cul-de-sac.

The sites do not feature versatile soils and are considered as Class 6e9.

The sites are not identified as a contaminated site in the NRC land use register therefore a HAIL report is not considered necessary.

Both sites are subject to the same consent notice – D314934.3 which is also provided in **Appendix A**.

3.0 DESCRIPTION OF THE PROPOSAL

The applicant seeks subdivision consent to subdivide the property into 4 fee simple allotments.

- Proposed Lot 1: 3,000m2
- Proposed Lot 2: 4,075m2
- Proposed Lot 3: 4,000m2
- Proposed Lot 4: 5,120m2

The following covenants are proposed:

- Bush covenants on Lots 1-4, mirroring the High Natural Character Overlay.

In terms of physical works required to give effect to the subdivision, this is limited to the works required to provide a vehicle crossing for Lot 1.

Future building and works have been premised off of a conceptual dwelling with a roof area of 196m^2 with 100m^2 provided for access. The 196m^2 area relates to a typical 14m x 14m building envelope, whilst the 100m^2 figure has been generated based off of the allotments proposed.

No clearance or works are proposed in the bush protection area however it is noted that stormwater and wastewater assets may be required in parts of those areas considered to be of a High Natural Character.

4.0 REASONS FOR CONSENT

Resource Management Act (RMA) 1991 – s221(3)

Both sites share a common consent notice which are engineering related. The first condition in the schedule requires the construction of dwellings on the allotment to be designed and generally located in the positions shown on the Haigh Development Consultant report dated 25 October 1996. The second condition requires a wastewater system in accordance with TP58.

The applicant proposes to cancel and replace these specific conditions with ones that refer to the appended engineering reports and their recommendations therein. 30 years have passed since the referred report was created and it is considered appropriate to refer to the updated reports provided.

Operative Far North District Plan (ODP)

Under the ODP, the site is zoned Coastal Residential. There are no resource features identified on the site.

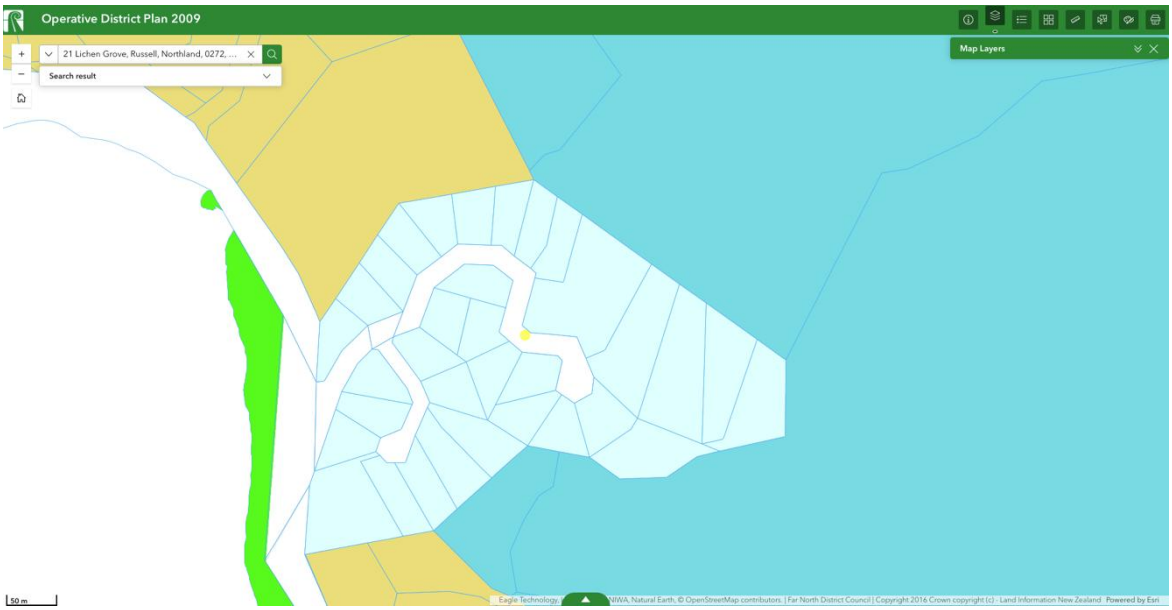


Figure 5 - FNDC Operative District Plan Map – Coastal Residential (Source Far North Maps)

Proposed Far North District Plan (PDP)

Under the PDP, the site is zoned Settlement. The site is located within the Coastal Environment. Parts of the site are also subjected to a High Natural Character overlay – Ref 08/24 Orongo Bay. As noted earlier, a small part of the 21 Lichen Grove is subject to river flooding.

Figure 6 - FNDC Proposed District Plan Map – Settlement Zone (Source Far North Maps)

Subdivision

The subdivision proposal is subject to other performance standards as set out in Table 1 below:

Table 1: Subdivision Performance Standards ODP

Performance Standard	Comment
Rule 13.7.2.1 – Minimum Lot Size	Each lot is 'unsewered' and are proposed to be at or greater than 3,000m^2 in size. ***Controlled Activity***
Rule 13.7.2.2 – Allotment dimensions	All proposed lots can achieve the required 14m x 14m square building envelopes. ***Complies***
Rule 13.7.2.3 -Amalgamation of land in a rural zone with land in an urban or coastal zone	Not applicable
Rule 13.7.2.4 – Lots divided by zone boundaries	Not applicable
Rule 13.7.2.5 - Sites divided by an outstanding landscape, outstanding landscape feature or outstanding natural feature	Not applicable
Rule 13.7.2.6 – Activities, Utilities, Roads and Reserves	Not applicable
Rule 13.7.2.7 – Savings as to previous approvals	Not applicable
Rule 13.7.2.8 – Proximity to Top Energy transmission lines	Not applicable
Rule 13.7.2.9 – Proximity to National Grid	Not applicable

Any subdivision proposal must consider the matters set out in Table 2 below.

Table 2: Subdivision Rule 13.7.3 Matters

Performance Standard	Comment

Rule 13.7.3.1 – Property Access	Except for Lot 1, all lots are considered to have appropriate access with no upgrades required. Lot 1 will be required to provide a vehicle crossing in accordance with engineering standards.
Rule 13.7.3.2 - Natural and other Hazards	Natural hazards are comprehensively addressed in **Appendix C**. In summary, flooding hazards are completely avoided due to their location far removed from feasible building locations and the overall bush covenant proposed. Land instability issues can mitigated through engineering mitigation and final location of buildings.
Rule 13.7.3.3 - Water Supply	There is no reticulated water supply so this will need to be provided by way of rainwater tanks for potable and fire-fighting supply. A consent notice can be applied to manage this aspect for future development.
Rule 13.7.3.4 - Stormwater Disposal	The proposed subdivision will manage stormwater through a coordinated strategy of on-site attenuation, dual-purpose water storage, and controlled discharges to protect both downstream environments and site stability. While Lot 4 will continue using its existing private network due to its unchanged impervious footprint, the new developments on Lots 1, 2, and 3 are designed to remain well within the permitted limits of both the Coastal Residential and Settlement Zones, with each conceptually proposing 296 m^2 of hard coverage. To mitigate this increase, runoff from the new roofs and driveways will be captured in two 25,000 L dual-purpose water tanks per lot, which will provide the potable water supply while utilizing a low-flow orifice to attenuate post-development peak flows to 80% of pre-development levels for the 20% and 50% AEP storm events. Basic water quality will be maintained prior to discharge through leaf guards, first-flush diverters, and a 150 mm sediment-settling dead storage zone at the base of the tanks.

	Finally, the attenuated overflow will be safely discharged via a public manhole connection for Lot 1, and existing kerb discharges or safely positioned on-lot dispersion devices for Lots 2 and 3, which crucially redirects surface water away from the site's steeper flanks to prevent geotechnical scouring and erosion.
Rule 13.7.3.5 - Sanitary Sewage Disposal	There is no reticulated wastewater system in this area so each allotment will need to provide on site wastewater disposal. A consent notice can be applied to manage this aspect for future development.
Rule 13.7.3.6 - Energy Supply	As noted in the Site Suitability Report, there is existing infrastructure in this regard.
Rule 13.7.3.7 - Telecommunications	As noted in the Site Suitability Report, there is existing potential for this infrastructure in this regard.
Rule 13.7.3.8 - Easements for any purpose	Please refer to the Subdivision Plan in **Appendix B**.
Rule 13.7.3.9 - Preservation of heritage resources, vegetation, Fauna and Landscape and Land set aside for conservation purposes	Areas subject to bush protection covenants by way of a consent notice are shown on the Subdivision Plan in **Appendix B**. In addition to the above, the applicant is happy to volunteer a no cats / no dogs covenant with respect to supporting established kiwi in the area. Community pest controls is already present in the area, so this is not considered to be a formal requirement.
Rule 13.7.3.10 - Access to reserves and waterways	Not relevant.
Rule 13.7.3.11 - Land use compatibility	The proposal promotes residential allotments that are suitable and commensurate with the density of the immediate area and are of a size that can be serviced on site.
Rule 13.7.3.12 - Proximity to Airports	Not relevant.

For completeness, the proposal has been assessed against the relevant zone rules. This is assessed in Table 3.

Table 3: Coastal Residential Zone Performance Standards

Chapter 10 – Coastal Environment – Coastal Residential Zone	
Performance Standard	**Comment**
10.8.5.1.1 Relocated Buildings	The proposal does not require or propose relocated buildings. **Permitted Activity**
10.8.5.1.2 Residential Intensity	The existing dwelling complies and the proposal can service building envelopes to ensure compliance for future dwellings. **Permitted Activity**
10.8.5.1.3 Scale of Activities	Only residential activities are known and proposed resulting from the subdivision. **Permitted Activity**
10.8.5.1.4 Building Height	The existing dwelling complies and future dwellings will need to comply. **Permitted Activity**
10.8.5.1.5 Sunlight	The existing dwelling complies and future dwellings will need to comply. **Permitted Activity**
10.8.5.1.6 Stormwater Management	The existing and proposed conceptual coverages comply with the permitted standards. **Permitted Activity**
10.8.5.1.7 Setback from Boundaries	The existing dwelling complies and future dwellings will need to comply. **Permitted Activity**
10.8.5.1.8 Screening for Neighbours Non Residential Activities	There are no non-residential activities proposed. **Permitted Activity**
10.8.5.1.9 Outdoor Activities	There are no non-residential activities proposed.

	Permitted Activity
10.8.5.1.10 Transportation	Please see the Chapter 15 assessment below. **Permitted Activity**
10.8.5.1.11 Site Intensity Non Residential Activities	There are no non-residential activities proposed. **Permitted Activity**
10.8.5.1.12 Hours of Operation Non Residential Activities	There are no non-residential activities proposed. **Permitted Activity**
10.8.5.1.13 Keeping of Animals	This activity is not proposed. **Permitted Activity**
10.8.5.1.14 Noise	Residential activities are expected with noise expected to be at permitted levels. **Permitted Activity**
10.8.5.1.15 Helicopter Landing Area	This activity is not proposed. **Permitted Activity**
10.8.5.1.16 Building Coverage	The existing dwelling complies and future dwellings will need to comply. **Permitted Activity**

District wide rules are assessed below to ensure that subdivision does not result in additional land use consents. These are addressed in the tables below.

Table 4: Natural and Physical Resources Performance Standards

Chapter 12 – Natural and Physical Resources	
12.1 Landscapes and Natural Features	The proposed subdivision is not affected by landscapes and natural features. **Permitted Activity**

12.2 Indigenous Flora and Fauna	The proposed subdivision will create 4 allotments from two titles and being located in the Coastal Residential Zone, each will have a permitted allowance of 500m^2 of clearance. Each site is proposed to have a building area of 14m x 14m = 196m^2. A driveway of 100m^2 has also been conceptually promoted. This leaves an addition 204m^2 available, if needed. The permitted level of clearance per site will not be breached as a result of the subdivision and future land use activities will also fit within the permitted standard. **Permitted Activity**
12.3 Soils and Minerals	At time of development, there will be a need for earthworks to establish a building platform and access. For the subdivision, a crossing for Lot 1 is required and this will be well within the confines of the permitted activity requirements. Anything further would require a land use consent at time of development. **Permitted Activity**
12.4 Natural Hazards	There is an identified river flood hazard that is present on the site but there are no specific rules in Chapter 12.4 relating to this matter . The subdivision does create building envelopes within 20m of vegetation. At this stage no buildings are proposed so there is considered to be no land use breach resulting from the subdivision. **Permitted Activity**
12.5 Heritage	There is no heritage, archaeological, or sites of cultural significance to Māori located on the property. **Permitted Activity**

12.6 Air	Not applicable **Permitted Activity**
12.7 Lakes, Rivers, Wetlands and the Coastline	Vacant lots can be developed an appropriate distance from these features. **Permitted Activity**
12.8 Hazardous Substances	Not applicable **Permitted Activity**
12.9 Renewable Energy and Energy Efficiency	Not applicable **Permitted Activity**

Table 5: Transportation Performance Standards

Chapter 15 - Transportation	
15.1.6A.2 Traffic Intensity	In the Coastal Residential zone, the traffic intensity threshold for a permitted activity is 20 one-way vehicle movements per day. There are two sites involved in the subdivision and each site is therefore allocated 40 movements. Only 3 additional houses are proposed and 1 is existing. This equates to 40 movements. **Permitted Activity**
15.1.6B.1 Parking	On site carparking can be provided for the range of permitted land use activities enabled by the subdivision, although I note this aspect no longer requires consent. **Permitted Activity**
15.1.6C Access **15.1.6C.1.6 Vehicle crossing standards in urban zones** **15.1.6C.1.8 Frontage to Existing Roads**	Lichen Grove is considered to be of a sufficient standard to service the additional lots proposed. Vehicle crossings are existing and previously approved [existing use rights], and for Lot 1, this can be developed in accordance with the relevant requirements. **Permitted Activity**

FNDC Proposed District Plan (PDP)

These matters below comprise relevant rules that have immediate effect under the Proposed District Plan.

Table 6: PDP Rules with Legal Effect

Proposed District Plan		
Matter	**Rule/Std Ref**	**Evidence**
Hazardous Substances Majority of rules relates to development within a site that has heritage or cultural items scheduled and mapped however Rule HS-R6 applies to any development within an SNA – which is not mapped	Rule HS-R2 has immediate legal effect but only for a new significant hazardous facility located within a scheduled site and area of significance to Māori, significant natural area or a scheduled heritage resource. HS-R5, HS-R6, HS-R9	Not indicated on Far North Proposed District Plan. **Permitted Activity**
Heritage Area Overlays (Property specific) This chapter applies only to properties within identified heritage area overlays (e.g. in the operative plan they are called precincts for example)	All rules have immediate legal effect (HA-R1 to HA-R14) All standards have immediate legal effect (HA-S1 to HA-S3)	Not indicated on Far North Proposed District Plan. **Permitted Activity**
Historic Heritage (Property specific and applies to adjoining sites (if the boundary is within 20m of an identified heritage item)). Rule HH-R5 Earthworks within 20m of a scheduled heritage resource. Heritage resources are shown as a historic item on the maps) This chapter applies to scheduled heritage resources – which are called heritage items	All rules have immediate legal effect (HH-R1 to HH-R10) Schedule 2 has immediate legal effect	Not indicated on Far North Proposed District Plan. **Permitted Activity**

in the map legend		
Notable Trees (Property specific) Applied when a property is showing a scheduled notable tree in the map	All rules have immediate legal effect (NT-R1 to NT-R9) All standards have legal effect (NT-S1 to NT-S2) Schedule 1 has immediate legal effect	Not indicated on Far North Proposed District Plan. **Permitted Activity**
Sites and Areas of Significance to Māori (Property specific) Applied when a property is showing a site / area of significance to Maori in the map or within the Te Oneroa-a Tohe Beach Management Area (in the operative plan they are called site of cultural significance to Maori)	All rules have immediate legal effect (SASM-R1 to SASM-R7) Schedule 3 has immediate legal effect	Not indicated on Far North Proposed District Plan. **Permitted Activity**
Ecosystems and Indigenous Biodiversity SNA are not mapped	All rules have immediate legal effect (IB-R1 to IB-R5)	The proposal is compliant with IB-R1 PER1-7 in that clearance on the site will only be to allot for the construction of a single residential unit on a title and essential associated on site infrastructure and access. Clearance as mentioned above will be below 1,000m^2 and less than 500m^2 as required under the ODP. **Permitted Activity**
Activities on the Surface of Water	All rules have immediate legal effect (ASW-R1 to ASW-R4)	Not indicated on Far North Proposed District Plan. **Permitted Activity**
Earthworks all earthworks (refer	The following rules have	Earthworks required to

to new definition) need to comply with this	immediate legal effect: EW-R12, EW-R13 The following standards have immediate legal effect: EW-S3, EW-S5	establish the proposed subdivision should it be approved will be in accordance with the relevant standards including GD-05 and will have an ADP applied. **Permitted Activity**
Signs (Property specific) as rules only relate to situations where a sign is on a scheduled heritage resource (heritage item), or within the Kororareka Russell or Kerikeri Heritage Areas	The following rules have immediate legal effect: SIGN-R9, SIGN-R10 All standards have immediate legal effect but only for signs on or attached to a scheduled heritage resource or heritage area	Not indicated on Far North Proposed District Plan. **Permitted Activity**
Orongo Bay Zone (Property specific as rule relates to a zone only)	Rule OBZ-R14 has partial immediate legal effect because RD-1(5) relates to water	Not indicated on Far North Proposed District Plan. **Permitted Activity**
Subdivision Rules refer to environmental benefit subdivision. Subdivision of sites within a heritage overlay, containing a scheduled heritage resource, Māori site/area of significance or SNA.	The following rules have immediate legal effect SUB-R6, SUB-R13, SUB-R14, SUB-R15, SUB-R17.	Not indicated on Far North Proposed District Plan. **Permitted Activity**
Comments:		
Resource consent is not required under the PDP in relation to this subdivision for PDP rules which have legal effect.		

Overall, the application is considered to be a Discretionary Activity under the ODP.

Table 7: PDP Rules – Subdivision Chapter

Subdivision Chapter	
SUB-R1 Boundary Adjustments	No boundary adjustment is proposed. **Complies**
SUB-R2 Subdivision of Land Solely to Create an Allotment for the Purpose of Public Works, Infrastructure Reserves or Access	Not proposed. **Complies**
SUB-R3 Subdivision of Land to Create a New Allotment	The proposal can meet CON-1 and CON-2 as the minimum lot sizes are at or above 3,000m^2. CON-3 is not relevant. ***Controlled Activity***
SUB-R4 Subdivision That Creates a Private Accessway	The subdivision promotes access for 1 x user for each site. **Complies**
SUB-R5 Subdivision Around an Approved Residential Development	Not relevant **Complies**
SUB-R6 Environmental Benefit Subdivision	Not relevant **Complies**
SUB-R7 Management Plan Subdivision	Not relevant **Complies**
SUB-R8 Subdivision of a Site Containing Land Susceptible to Land Instability	The proposal includes subdivision of land that is susceptible to land instability. Indicative building envelopes and services which have been conceptually assessed are not wholly outside of any area on the site that has been identified, including a 15m buffer within slopes that are 1V:3H. ***Discretionary Activity***
SUB-R9 Subdivision of a Site Within the National Grid Subdivision Corridor	Not relevant **Complies**
SUB-R10 Subdivision of a Site within 32m of the Centre Line of a Critical Electricity Line Overlay	Not relevant **Complies**

Subdivision Chapter	
SUB-R11 Subdivision of a Site Within Flood Hazard Zones	Proposed Lots 1-3 are subject to flood hazards. RDIS-1 is met as follows: 1. Building envelopes are not proposed within any 1:100 flood hazard zone. 2. No development is proposed within any 1:100 flood hazard zone. 3. No private roads, rights of ways or accesses are proposed within a 1:100 flood hazard zone. ***Restricted Discretionary Activity***
SUB-R12 Subdivision of a Site Within Coastal Hazard Zones	Not relevant **Complies**
SUB-R13 Subdivision of a Site Within a Heritage Area Overlay	Not relevant **Complies**
SUB-R14 Subdivision of a Site that Contains a Scheduled Heritage Resource	Not relevant **Complies**
SUB-R15 Subdivision of a Site Containing a Scheduled Site and Area of Significance to Maori	Not relevant **Complies**
SUB-R16 Subdivision of Lan Within the Mineral Extraction Zone	Not relevant **Complies**
SUB-R17	Deleted
SUB-R18 Subdivision creating One or More Additional Allotments within an ONL or ONF	Not relevant **Complies**
SUB-R19 Subdivision Creating One or More Additional Allotments within Wetland, Lake and River Margins	Not relevant **Complies**
SUB-R20 Subdivision Creating One or More Additional Allotments Within the Coastal Environment (Excluding ONCA's)	The site is within the Coastal Environment as such, consent is required. ***Discretionary Activity***

Subdivision Chapter	
SUB-RXX Subdivision of Land Within 100m of a Mineral Extraction Zone	Not relevant **Complies**
SUB-RYY Subdivision Creating One of More Additional Allotments that Contain Highly Productive Land	Not relevant **Complies**
SUB-R21 Subdivision Creating One or More Additional Allotments Within ONCA in the Coastal Environment	Not relevant **Complies**
SUB-S1 Minimum Allotment Sizes	The proposal has minimum lot sizes that are at or above 3,000m^2. ***Controlled Activity***
SUB-S2 Requirements for Building Platforms for Each Allotment	Each site can contain a 14m x 14m building envelope as required. **Complies**
SUB-S3 Water Supply	Water tanks proposed for fire fighting and domestic supply. **Complies**
SUB-S4 Stormwater Management	On site means of stormwater disposal is provided, with details in **Appendix C**. **Complies**
SUB-S5 Wastewater Management	On site means of wastewater disposal is provided, with details in **Appendix C**. **Complies**
SUB-S6 Telecommunications and Power Supply	Utility connections are proposed to be provided through the subdivision. **Complies**
SUB-S7 Easements for Any Purpose	No easements are required. **Complies**
SUB-S8 Esplanades	Not relevant

Subdivision Chapter	
	Complies

Table 8: PDP Rules – Settlement Zone

Settlement Zone Chapter	
RSZ-R1 New buildings or structures and relocated buildings or extensions or alterations to existing buildings or structures	This activity is not being proposed. **Complies**
RSZ-R2 Impermeable surface coverage	Each allotment meets the 600m^2 limit. **Complies**
RSZ-R3 Residential Activity	This proposal provides for allotments that are at least 3,000m^2 in size. **Complies**
RSZ-R4 Visitor Accommodation	This activity is not being proposed. **Complies**
RSZ-R5 Home Business	This activity is not being proposed. **Complies**
RSZ-R6 Educational facility	This activity is not being proposed. **Complies**
RSZ-R7 Grazing of animals except pig farming	This activity is not being proposed. **Complies**
RSZ-R8 Commercial activity	This activity is not being proposed. **Complies**
RSZ-R9 Communal activity	This activity is not being proposed. **Complies**
RSZ-R10 Minor residential unit	This activity is not being proposed. **Complies**

Settlement Zone Chapter	
RSZ-R11 Rural Industry	This activity is not being proposed. **Complies**
RSZ-R12 Industrial activity	This activity is not being proposed. **Complies**
RSZ-R13 Activities not otherwise listed in this chapter	No other activities not listed are proposed. **Complies**
RSZ-R14 Mineral extraction activity	This activity is not being proposed. **Complies**
RSZ-R15 Offensive trade	This activity is not being proposed. **Complies**
RSZ-R16 Intensive indoor and outdoor primary production	This activity is not being proposed. **Complies**
RSZ-S1 Maximum Height	Not relevant as no new buildings or structures are proposed. **Complies**
RSZ-S2 Height In Relation To Boundaries	Not relevant as no new buildings or structures are proposed. **Complies**
RSZ-S3 Setback (excluding from MHWS or wetland, lake and river margins)	Not relevant as no new buildings or structures are proposed. **Complies**
RSZ-S4	Deleted
RSZ-S5 Outdoor living space	Not relevant as no new buildings or structures are proposed. **Complies**
RSZ-S6 Outdoor storage	Not relevant or proposed. **Complies**
RSZ-S7 Landscaping and screening	The sites adjoin the Rural Production Zone and these boundaries are screened by vegetation.

Settlement Zone Chapter	
	Complies
RSZ-SX Sensitive activities setback from intensive indoor and outdoor primary production activities	Not relevant **Complies**
RSZ-SY Sensitive activities setback from buildings or structures used to house milk, or feed stock (excluding buildings or structures used for an intensive or outdoor primary production activity)	Not relevant **Complies**

Table 9: PDP Rules – Various Chapters

Various Rules / Chapters	
Coastal Environment Chapter	There are no buildings or structures proposed. Farming, a mineral extraction activity, or a land fill, managed fill or clean fill is not proposed. In terms of earthworks, the vehicle crossing for Lot 1 will be less than 100m^2 and vegetation clearance is proposed to be less than the 400m^2 limit under CE-S3 (2)(b)(ii) **Complies**
Ecosystems and Indigenous Biodiversity Chapter	IB-R1 PER-1(7) provides for up to 1,000m^2 of clearance for the construction of a single residential unit, on site infrastructure and access on an existing title which will be created through the subdivision. The remaining rules in the Chapter are not relevant. **Complies**
Natural Features and Landscapes Chapter	Not relevant. **Complies**
Earthworks Chapter	Earthworks are not a large scale requirement of the subdivision and only required for Lot 1's proposed vehicle crossing which will be less than 100m^2 in size. **Complies**
Light Chapter	Lighting will be provided in accordance with the chapter for proposed residential end use at time of development.

Various Rules / Chapters	
	Complies
Signs Chapter	Not relevant. **Complies**
GMO Chapter	Not relevant. **Complies**
Temporary Activities Chapter	Not relevant. **Complies**
Transport Chapter	Parking and manoeuvring can be provided within the various standards. The subdivision will likely result in residential end use which will be compliant from a traffic generation perspective. The proposed vehicle crossings, where required, will meet the requirements of the PDP. **Complies**
Hazardous Substances Chapter	Not relevant. **Complies**

5.0 SECTION 104 ASSESSMENT

Section 104B of the Resource Management Act (**RMA**) governs the determination of applications for Discretionary activities:

104B Determination of applications for discretionary or non-complying activities

After considering an application for a resource consent for a discretionary activity or non-complying activity, a consent authority—

(a) may grant or refuse the application; and

(b) if it grants the application, may impose conditions under section 108.

Section 104B: inserted, on 1 August 2003, by section 44 of the Resource Management Amendment Act 2003 (2003 No 23).

When considering an application for resource consent, a consent authority must have regard to the matters under section 104 of the Resource Management Act 1991, including any matters relating to

Part 2. References to Part 2 in applications are only required where Plans may be deficient in terms of giving effect to the purpose and principles of the Act.

Section 104 specifies that consent authorities have regard to the following matters when considering an application for a resource consent,

"the consent authority must, subject to Part II, have regard to –

(a) any actual and potential effects on the environment of allowing the activity; and

(ab) any measure proposed or agreed to by the applicant for the purpose of ensuring positive effects on the environment that will or may result from allowing the activity; and

(c) any relevant provisions of –

i. a national environmental standard:

ii. other regulations:

iii. a national policy statement:

iv. a New Zealand Coastal Policy Statement:

v. a regional policy statement or proposed regional policy statement:

vi. a plan or proposed plan; and

(d) any other matter the consent authority considers relevant and reasonably necessary to determine the application."

In the case of the subject application the matters of control are exhaustively listed in Rule 13.7.3, and those considerations include the actual and potential effects of an activity on the environment.

As the site is within the Coastal Environment the NZCPS is relevant.

The following assessment addresses all relevant considerations under s104 of the RMA.

Section 104 (1)(a) Assessment of Effects on the Environment

Section 104(1)(a) requires that consent authorities have regard to any actual or potential effects on the environment of allowing the activity. Section 2 of the RMA defines 'Environment' as follows:

environment includes—

(a) ecosystems and their constituent parts, including people and communities; and

(b) all natural and physical resources; and

(c) amenity values; and

(d) the social, economic, aesthetic, and cultural conditions which affect the matters stated in paragraphs (a) to (c) or which are affected by those matters

Section 3 defines the meaning of 'effect' to include:

3 Meaning of effect

In this Act, unless the context otherwise requires, the term **effect** includes—

(a) any positive or adverse effect; and

(b) any temporary or permanent effect; and

(c) any past, present, or future effect; and

(d) any cumulative effect which arises over time or in combination with other effects—

regardless of the scale, intensity, duration, or frequency of the effect, and also includes—

(e) any potential effect of high probability; and

(f) any potential effect of low probability which has a high potential impact.

Section 3: amended, on 7 July 1993, by section 3 of the Resource Management Amendment Act 1993 (1993 No 65).

Positive effects arising from the subdivision would include enablement of additional coastal-residential sites in close proximity to Russell / Okiato. This form and intensity of the subdivision proposed is anticipated in the Coastal Residential zone. The proposal also seeks to formally protect flora and fauna in perpetuity which better aligns with the High Natural Character mapping recently promoted. The covenanting not only mirrors the HNC extent, it also provides increased coverage across the sites.

Potential adverse effects associated with this activity relate to the subdivision of the site. This will be addressed in the sections below.

Effects arising from subdivision

The following assessment considers the effects that have the potential to arise from the proposed subdivision and how these can be avoided, remedied or mitigated.

Allotment Sizes and Dimensions

Each land has sufficient areas for the intended residential use. A 14m x 14m indicative building envelope has been shown and tested from an engineering perspective on each vacant allotment. Engineering has considered the potential for a roof area of 196m^2 and access of 100m^2. Whilst it is noted above that each allotment will be retained within the confines of the ODP or PDP in terms of vegetation clearance, in either scenario this affords sufficient clearance for curtilage, lawns, access and any accessory type of buildings needed.

The proposal also maps and covenants areas considered to be HNC on each allotment. Engineering investigations support the location of development and servicing on each site, noting that these

assessment prove that it is feasible for future development to be undertaken. Overall, the allotment sizes and dimensions are considered to be appropriate.

Building Locations

The subdivision promotes assesses suitable building sites as outlined in the Engineering Reports in **Appendix B**. The Scheme Plan shows indicative building envelopes of 14m x 14m which is considered sufficient in the Coastal Residential & Settlement zones. The Geotechnical Report sets out building line restrictions which should be adhered to at time of development as well as the recommendations contained within the Civil Report.

Property Access, Traffic and Parking

The proposal will be provided with appropriate vehicle crossings to serve the subdivision. The Civil Engineering Report notes that the existing crossings are not in accordance with the current standards because they lack transition area, however these are to be retained as being appropriate from an engineering perspective. Traffic from the proposed development is in line with what is expected from two titles, which would generate 40 movements. The proposal would result in an additional three household equivalents. That coupled with the existing unit results in 40 movements. In terms of parking, this will be provided at time of development and will be required due to the location of the sites, however I note that provision is no longer required under the ODP. For the reasons outlined above, effects can be mitigated to a less than minor level.

Natural & Other Hazards

While the site is subject to areas of land susceptible to instability, specifically along the steeper eastern and western flanks, the risk to future people and property will be comprehensively mitigated through Specific Engineering Design (SED). The accompanying Geotechnical Report (Geologix, June 2026) has identified a Building Restriction Line (BRL). To ensure the ongoing safe management of this hazard, the applicant proposes a consent notice on the resultant titles for Lots 1, 2, and 3, stipulating that any future building foundations, earthworks, or retaining structures located beyond the BRL must be subject to Specific Engineering Design by a suitably qualified geotechnical engineer at the time of Building Consent. This ensures that while the hazard exists, the subdivision mechanisms effectively mitigate the risk to a less than minor level, aligning with both ODP and PDP directives.

Three Waters

The Engineering Reports provided in **Appendix C** recommend that onsite wastewater disposal systems, rainwater collection for potable supply, and stormwater management measures are provided in accordance with the Engineering Reports and relevant standards.

While the Civil Engineering Report demonstrates that on-site wastewater disposal and stormwater attenuation are conceptually feasible, the final design, sizing, and exact location of the disposal fields and dispersion devices will be refined at the Building Consent stage. This will ensure that the final layout of these services works in tandem with the geotechnical constraints and BRLs, ensuring no adverse effects on global slope stability. Provided that these recommendations are adhered to and promoted as conditions of consent, effects can be mitigated to a less than minor level.

Energy & Telecommunications

The potential for connections have been considered in the Site Suitability Report. A consent condition can be promoted to ensure that power and telecoms are provided to the satisfaction of these utility providers prior to s224[c].

Easements

No easements are required.

Preservation of Resources

As noted above, the applicant proposes to protect via consent notices flora and fauna on the site. This improves the current situation where these impositions do not apply. Accordingly, with respect to these aspects, the proposal promotes positive effects through the mitigation proposed.

As the proposal is permitted in terms of vegetation clearance, there are no specific effects arising with respect to flora and fauna to provide for the subdivision. Therefore adverse effects are avoided.

Access to Reserves & Waterways

This is not relevant.

Land Use Compatibility

The proposed end use for the subdivided lots will be residential. The surrounds are residential. The land use rules for the Coastal Residential / Settlement Zone are of a scope and nature that limits any large scale activity that might affect a residential use in terms of noise, vibration, smell, smoke, dust or spray. Therefore, effects are avoided.

Proximity to Airports

This is not relevant.

Overall, the proposal is considered to result in less than minor adverse effects.

Earthworks & Utilities & Soil

There are no bulk earthworks required outside of the permitted baseline to give effect to the subdivision. Therefore, effects are avoided. In addition, the very limited works required to give effect to the subdivision does not implicate the life supporting capacity of soil in this context, which are Class 6 in any event.

Natural Character

In terms of natural character, the proposed subdivision is located in the Coastal Environment, but this is tempered by its location in the Coastal Residential Zone. The subdivision density meets the Controlled activity standard and is thus suitable from that perspective. Clearance of vegetation is proposed, but permitted. In addition, all clearance required would be outside of the mapped HNC which has been completely proposed to be protected, and topped up.

Energy Efficiency & Renewable Energy

There are opportunities for passive solar gain for each allotment and whether or not solar is undertaken would be a determination at time of building on each site.

National Grid Corridor

Not relevant.

Relevant Plan Considerations

Section 104 (1)(b) requires that regard be given to the relevant provisions of:

- A national environmental standard;
- Other regulations;
- A national policy statement;
- A New Zealand coastal policy statement;
- A regional policy statement or proposed regional policy statement;
- A plan or proposed plan

National Environmental Standards

The National Environment Standards (**NES**) for Assessing and Managing Contaminants in Soil to Protect Human Health is not considered relevant to the site. The site has not historically been used in a capacity that would trigger this legislation, and no contamination is known according to NRC maps. The proposal is considered permitted in terms of this legislation.

The NES for Freshwater is not considered relevant to this site. There are no mapped wetlands according to NRC maps.

None of the other NES are considered relevant.

National Policy Statements

The proposed subdivision successfully aligns with the core directive of the National Policy Statement for Natural Hazards 2025 (NPS-NH), which requires new developments to comprehensively plan for and manage natural hazard risks to reduce potential adverse effects to a less-than-minor level. In direct response to this national mandate, the engineering reports provide a site-specific, risk-based natural hazard assessment that evaluates the likelihood and consequences of overland flow paths, river flooding, coastal inundation, and tsunamis.

The reports demonstrate compliance with the NPS-NH by proving that the habitable building platforms are significantly elevated above the mapped 50-year and 100-year flood zones, isolating the risk to a small, unbuildable portion of the lower site. Furthermore, the inclusion of engineered on-site mitigations, specifically the implementation of standard drainage measures and a robust stormwater attenuation strategy designed to restrict post-development flows to 80% of pre-development levels, ensures that the development actively manages runoff and avoids exacerbating downstream flooding or coastal inundation risks within the wider catchment.

New Zealand Coastal Policy Statement (NZCPS)

The proposed Controlled Activity Subdivision is located within the coastal environment as defined by Policy 1 of the NZCPS, within a site containing areas of indigenous vegetation of high natural character value.

The key protection provisions of the NZCPS applicable to this proposal are Policies 13 and 15. The site does not form part of any area identified as having outstanding natural character, nor does it constitute an outstanding natural feature or landscape. Accordingly, the applicable standard under both policies

is the avoidance of significant adverse effects, and the avoidance, remedy or mitigation of other adverse effects, on natural character and landscape values.

The vegetation clearance associated with the proposal is a Permitted Activity under the Far North ODP, itself a document that must give effect to the NZCPS, confirming that the scale and location of clearance falls within the plan's established thresholds. Any remaining effects on natural character and landscape are appropriately managed through the Controlled Activity consent process, which enables the imposition of conditions addressing building platform location, setbacks, vegetation protection, and restoration planting under Policy 14.

The site has not been identified as subject to coastal hazard risk under Policies 24 and 25, and the proposal therefore does not increase exposure to coastal hazard.

Policy 22 sedimentation requirements will be addressed through sediment and erosion control measures during earthworks.

Esplanade reserve requirements under Policies 18 and 19 are not relevant.

In respect of Policy 2, the mana whenua of the Russell and eastern Bay of Islands area are the hapū of Ngāti Kuta and Patukeha, who share kaitiakitanga of Te Rawhiti and hold mana whenua and mana moana over the Ipipiri (Bay of Islands) district under the broader authority of Ngāpuhi.

Ngāti Kuta and Patukeha have prepared the Te Kupenga o Ngāti Kuta me Patukeha ki Te Rawhiti Hapū Moana Management Plan, which expresses their kaitiaki responsibilities and their vision for the management of the coastal environment within their rohe. Separately, Ngāti Kuta has also prepared its own Hapū Management Plan, which identifies the hapū's vision and responsibilities as kaitiaki of Rakaumangamanga and Ipipiri.

Policy 2(e) requires that these management plans be taken into account to the extent their content has a bearing on resource management issues in the district. Both plans focus primarily on the management of the moana (coastal marine area), including the protection of mahinga kai, fisheries resources, and the mauri of the coastal environment. The proposed subdivision is a terrestrial activity within the Coastal Residential Zone and does not directly affect the coastal marine area.

The proposal will not compromise access to the coastal marine area, will not result in discharges to coastal waters, and will manage earthworks sediment appropriately. On this basis, the proposal is considered to be consistent with the principles and values expressed in the relevant hapū management

plans, and overall is assessed as giving appropriate regard to Policy 2. The proposal is accordingly consistent with the relevant objectives and policies of the NZCPS 2010.

Northland Regional Policy Statement or Proposed Regional Policy Statement

The Regional Policy Statement for Northland (RPS) is the primary regional planning document giving effect to the NZCPS and the RMA in Northland. The most directly relevant provisions to this proposal are Policy 4.6.1 (managing effects on natural character, natural features and landscapes) and Policy 5.1.2 (development in the coastal environment).

Under Policy 4.6.1(1)(a), adverse effects of subdivision, use and development on areas of outstanding natural character, outstanding natural features and outstanding natural landscapes must be avoided. However, as established in the NZCPS assessment above, the site has not been identified as an area of outstanding natural character or an outstanding natural feature or landscape in the RPS Maps.

Accordingly, Policy 4.6.1(1)(b) applies, which requires the avoidance of significant adverse effects and the avoidance, remedy or mitigation of other adverse effects on natural character, natural features and natural landscapes. Policy 4.6.1(1)(b)(ii) specifically provides that in areas of high natural character, indigenous vegetation clearance should be minimised to the extent practicable. The associated vegetation clearance is a Permitted Activity under the operative district plan, reflecting that the scale of clearance has been assessed against the plan's established thresholds as being within acceptable limits.

The Controlled Activity Subdivision provides the mechanism to impose conditions on building platform location and extent of disturbance, ensuring the most sensitive areas of indigenous vegetation are retained and that effects on high natural character are not significant. The proposal is therefore consistent with Policy 4.6.1. Policy 5.1.2 directs that development in the coastal environment should consolidate within or adjacent to existing coastal settlements and avoid sprawling or sporadic patterns of development, ensure sufficient setbacks from the coastal marine area, and ensure adequate infrastructure services are provided.

The proposal, being within the established Coastal Residential Zone, represents consolidation of development within an existing coastal settlement, and will be subject to conditions addressing setbacks and infrastructure servicing.

In relation to Policy 4.5.1 and 4.5.2, the RPS Maps identify the coastal environment and areas of high and outstanding natural character. The site falls within the coastal environment and within an area identified as high natural character on those maps. Policy 4.5.2 recognises that the maps may not

always be accurate at an individual property or site scale, and that suitably qualified site-specific assessment at greater resolution can be used to demonstrate the extent and sensitivity of natural character values in relation to specific proposals.

The natural character values present on the site, principally the indigenous vegetation cover, have been acknowledged and are appropriately managed through the Controlled Activity consent process. Policy 4.7.3 encourages the rehabilitation and restoration of natural character in areas of high natural character and in remnants of indigenous coastal vegetation, and the proposal provides an opportunity to incorporate restoration planting conditions consistent with this policy direction. Policy 5.1.1 requires subdivision, use and development to be located, designed and built in a planned and co-ordinated manner that maintains or enhances the sense of place and character of the surrounding environment. The controlled activity assessment process will ensure that building platforms, access, and lot design are considered in this context. Overall, the proposal is assessed as being consistent with the relevant objectives and policies of the RPS for Northland.

Overall, it is considered that the proposal would not be inconsistent with the Northland Regional Policy Statement objectives and policies.

Operative Far North District Plan

The proposal is a Controlled Activity Subdivision within the Coastal Residential Zone, which is the zone the district plan specifically applies to the most intensive form of residential development in the coastal environment. The zone's context and objectives directly contemplate the type of proposal before the Council.

Objectives 10.8.3.1 to 10.8.3.3 seek to enable residential development in and around existing coastal settlements, protect the coastline from inappropriate subdivision, and enable development where urban amenity and coastal environmental values are compatible. The proposal achieves these objectives as it consolidates residential development within an established coastal settlement, consistent with Policy 10.4.2 which directs that sprawling or sporadic subdivision be avoided through consolidation within or adjoining built-up areas. Policy 10.4.1 sets the overarching test for appropriate subdivision in the coastal environment, requiring that development recognises and provides for natural character, is of a scale and design that minimises adverse effects, and promotes the protection of significant indigenous vegetation and habitats. The associated vegetation clearance has been assessed as a Permitted Activity, reflecting that it falls within the plan's established thresholds.

The Controlled Activity process enables conditions addressing building platform location, vegetation protection, and earthworks management, ensuring the proposal meets the standard of Policy 10.4.1.

Policy 10.4.6 further encourages innovative development that permanently protects, rehabilitates or enhances natural character, and restoration planting conditions can be imposed to give effect to this. Policy 10.4.11, requiring that land use practices minimise erosion and sediment runoff from catchments with potential to enter the coastal marine area, is addressed through the requirement for sediment and erosion control measures during construction.

Turning to Chapter 13, the subdivision objectives and policies are broadly consistent with the proposal. Objective 13.3.1 seeks subdivision consistent with the purpose of the applicable zone and the sustainable management of natural and physical resources, and the proposal achieves this within the Coastal Residential Zone framework.

Objective 13.3.3 requires that subdivision does not jeopardise the protection of outstanding landscapes or natural features in the coastal environment, noting the site does not contain or adjoin any outstanding landscape or natural feature identified in the district plan, and this objective is therefore satisfied. Policy 13.4.1 requires that allotment sizes and dimensions be determined having regard to potential effects including on natural character, ecological, landscape and amenity values. The lot sizes proposed comply with the controlled activity minimum lot size standard for the Coastal Residential Zone under Rule 13.7.2.1(x), providing lots no smaller than 3,000m^2 (unsewered) or 800m^2 (sewered) as applicable, confirming the subdivision is a Controlled Activity.

Policy 13.4.6 requires subdivision proposals to provide for the protection, restoration and enhancement of areas of significant indigenous vegetation, natural character, and riparian margins where appropriate. This is given effect to through consent conditions protecting indigenous vegetation outside of the approved building platforms and requiring restoration planting consistent with Policy 13.4.13, which directs that subdivision avoids adverse effects through clustering development in areas of least impact on natural character and indigenous vegetation, and minimises the visual impact of development as seen from public land and the coastal marine area.

Conditions addressing building platform location, earthworks, sediment control, and planting give practical effect to these policy directions. Rule 13.7.3.9 requires the continued preservation of any area of significant indigenous vegetation as an ongoing condition of consent, and this is addressed accordingly. Overall, the proposal is consistent with the relevant objectives and policies of both Chapter 10 and Chapter 13 of the Far North Operative District Plan.

Overall, it is considered that the proposal would not be contrary to any District Plan objective or policy.

Proposed Far North District Plan

Settlement Zone

Under the PDP the site is zoned Settlement. The Settlement zone applies to areas used predominantly for residential activities in rural or coastal settings that are not supported by reticulated wastewater infrastructure. The Lichen Grove area is consistent with this description, being a small coastal residential community serviced by on-site wastewater and rainwater collection.

The relevant Settlement zone objectives are RSZ-O1 to RSZ-O4. RSZ-O1 seeks that settlements are used predominantly for residential activities and are sustained by compatible activities and services. The proposal creates four residential allotments, which is entirely consistent with this objective. RSZ-O2 requires land use and subdivision to be of a scale and intensity in keeping with the rural or coastal character and amenity of the settlement. The proposed lot sizes (3,000m^2 – 5,120m^2) are consistent with the existing density and character of the Lichen Grove settlement. RSZ-O3 requires that subdivision is appropriate for the physical and environmental attributes of the site and infrastructure constraints. The Engineering Reports in **Appendix C** confirm the site can be appropriately serviced on an on-site basis, and building platforms have been located clear of natural hazards and the High Natural Character overlay. RSZ-O4 requires that reverse sensitivity issues are managed. The proposal is residential in nature, located within an established residential coastal settlement, and does not create any reverse sensitivity conflicts.

The relevant Settlement zone policies are RSZ-P1 to RSZ-P5. RSZ-P1 enables residential and complementary non-residential activities that support the role and function of the Settlement zone – the proposal creates residential allotments consistent with the settlement's established character and function. RSZ-P2 requires land use and subdivision associated with non-residential activities to demonstrate the ability to provide for on-site infrastructure – as the proposal is entirely residential, this policy is satisfied. RSZ-P3 enables non-residential activities of an appropriate scale – not applicable to this residential subdivision. RSZ-P4 directs that reverse sensitivity effects are avoided, both within the zone and at zone interfaces – the residential subdivision will not generate any incompatible effects on adjoining rural production or rural lifestyle activities. RSZ-P5 sets out the matters to be considered in managing land use and subdivision, including scale, character, siting and design, cultural and social wellbeing, reverse sensitivity, infrastructure capacity, and natural hazard management. Each of these matters has been addressed in the assessment above and in the supporting technical reports. The proposal is considered to be consistent with the objectives and policies of the Settlement zone.

Subdivision Chapter

The PDP Subdivision chapter establishes objectives and policies that apply in addition to zone-specific provisions. The relevant objectives are SUB-O1 to SUB-O4. SUB-O1 seeks subdivision that results in the efficient use of land, achieves the objectives of the relevant zone, contributes to local character and sense of place, avoids reverse sensitivity, avoids land use patterns inconsistent with zone objectives, does not increase natural hazard risk, and manages adverse environmental effects. The proposal achieves each of these outcomes: it creates four residential allotments consistent with the Settlement zone, building platforms are located clear of identified hazards, bush covenants permanently protect significant indigenous vegetation, and the lot design and layout reflects the established character of Lichen Grove.

SUB-O2 requires that subdivision provides for the 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. The proposal addresses this objective directly through the bush covenants proposed on all four lots, protecting the entirety of the High Natural Character area identified on the site (Ref 08/24 Orongo Bay) and extending protection beyond the mapped extent on Lots 1 and 4. No Significant Natural Areas, Sites and Areas of Significance to Māori or historic heritage resources are identified on the site.

SUB-O3 requires that infrastructure is planned to service the proposed subdivision. The Engineering Reports in **Appendix C** confirm that all four allotments can be adequately serviced by on-site wastewater disposal, rainwater collection for potable supply, and on-site stormwater management. There is no reticulated network in this area, and the proposal has been designed to meet on-site servicing requirements consistent with SUB-O3(b). SUB-O4 requires that subdivision is accessible, connected and integrated with the surrounding environment and provides for public open spaces and esplanade where applicable. Access to all lots is via Lichen Grove. The lots are below 4ha in area and adjoin the Coastal Marine Area; however, as established under the ODP assessment, esplanade reserve requirements are not applicable in this instance given the topography and separation from MHWS. The proposal is assessed as consistent with all four subdivision objectives.

Turning to the PDP subdivision policies, SUB-P3 requires that subdivision results in allotments consistent with the purpose and characteristics of the zone, complying with minimum allotment sizes, having adequate size and shape to contain a building platform, and having legal and physical access. As assessed in Table 6, the proposal meets the minimum allotment size of 3,000m^2 for the Settlement zone (SUB-S1 Controlled Activity standard), each lot can accommodate a 14m x 14m building platform (SUB-S2), and all lots have legal and physical access via Lichen Grove. SUB-P4 directs that subdivision is managed in accordance with the district-wide, natural environment, historical and cultural values

and hazard provisions. This has been addressed through the PDP district-wide rule assessment in Table 6 above, and through the coastal environment assessment below. SUB-P6 requires that infrastructure is provided in an integrated and comprehensive manner, demonstrated to be appropriately serviced and integrated with existing and planned infrastructure. The Engineering Reports confirm this is achievable for all four allotments. SUB-P7 requires esplanade reserves when subdividing land adjoining the coast or other qualifying waterbodies, where applicable under the RMA (for allotments less than 4ha). As noted, the physical separation of the building platforms from MHWS, and the protection afforded by the bush covenant, satisfies the intent of this policy. The proposal is considered consistent with the relevant PDP Subdivision policies.

Coastal Environment Chapter

The site is located within the Coastal Environment as mapped under the PDP, and is subject to a High Natural Character overlay (Ref 08/24 Orongo Bay). The site does not contain any Outstanding Natural Character area. The relevant PDP Coastal Environment objectives are CE-O1 to CE-O3.

CE-O1 requires that the natural character of the coastal environment is identified and managed to ensure its long-term preservation and protection for current and future generations. The bush covenants proposed on all four lots permanently protect the entirety of the High Natural Character area on site, going beyond the mapped extent in places. This is a positive outcome that gives direct effect to CE-O1. CE-O2 requires that land use and subdivision in the coastal environment preserves the characteristics and qualities of the natural character of the coastal environment, is consistent with surrounding land use, does not result in urban sprawl, promotes restoration and enhancement of natural character, and recognises tangata whenua needs. The proposal consolidates residential development within the established Lichen Grove settlement at a density consistent with the Settlement zone minimum allotment size standard, without extending urban development into the wider coastal environment. The bush covenant areas represent a tangible preservation and enhancement of natural character. The proposal has been designed to be consistent with the surrounding residential land use pattern. CE-O3 requires that land use and subdivision in urban zones is of a scale consistent with existing built development. The Settlement zone is not an urban zone in the strict PDP sense; however, the proposal reflects and is consistent with the scale of existing development in the Lichen Grove settlement.

Turning to the relevant coastal environment policies, CE-P2 requires that adverse effects on areas of outstanding natural character, Outstanding Natural Landscapes and Outstanding Natural Features are avoided. The site does not contain any outstanding natural character, ONL or ONF values, and accordingly CE-P2 is not triggered. CE-P3 requires that significant adverse effects are avoided, and

other adverse effects are avoided, remedied or mitigated, on the characteristics and qualities of the coastal environment not identified as outstanding natural character, ONL or ONF. The site is identified as high natural character. The proposal avoids all adverse effects on the High Natural Character area through the bush covenants, which permanently protect these areas across all four lots. Any residual effects associated with access and building platform establishment outside the covenant areas will be minor in the context of the overall coastal environment and are capable of being managed through consent conditions.

CE-P4 requires that the visual qualities, character and integrity of the coastal environment are preserved by consolidating land use and subdivision around existing urban centres and rural settlements, and avoiding sprawl or sporadic patterns of development. The proposal achieves this by consolidating development within the established Lichen Grove settlement.

CE-P5 enables 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. Whilst the Settlement zone is not an urban zone, the principle is applicable and the proposal satisfies it as on-site infrastructure is confirmed as feasible by the Engineering Reports, and the proposal is consistent with the character and qualities of the coastal environment in this location which is coastal residential.

CE-P8 encourages restoration and enhancement of the natural character of the coastal environment. The bush covenants, and the option for restoration planting conditions, are directly consistent with this policy. CE-P9 prohibits land use and subdivision that would result in any loss or destruction of the characteristics and qualities in outstanding natural character areas. As noted, no outstanding natural character applies to this site and accordingly CE-P9 is not triggered. CE-P10 requires that the matters listed therein are considered in assessing land use and subdivision in the coastal environment. This includes the presence or absence of buildings and structures, the temporary or permanent nature of effects, the location, scale and design of development, the ability of the environment to absorb change, the need for earthworks or vegetation clearance, the likelihood of exacerbating natural hazards, the opportunity to enhance public access and recreation, and the ability to improve coastal water quality. These matters have all been addressed in the assessment above. Overall, the proposal is assessed as being consistent with the relevant objectives and policies of the PDP Coastal Environment chapter.

Natural Hazards Chapter

The proposal must align with the district's primary objective to manage natural hazard risks to people, property, and the environment to ensure community resilience. In accordance with the policy requiring

a comprehensive risk assessment prior to subdivision, the provided engineering reports evaluate the site's vulnerability to specific hazards. By proposing engineered mitigation strategies, the development addresses the objective that new land use and subdivision should not increase the risk from natural hazards and that existing risks are mitigated.

Regarding river flooding, the district's policies mandate that subdivision applications identify building platforms that will not be subject to inundation or material damage during a 1-in-100 year flood event. The engineering reports satisfy this by confirming that while a River Flood Hazard Area encroaches on the site's lower boundary, the proposed building platforms are elevated safely above it. Furthermore, the civil report's stormwater attenuation design aligns with the policy requirement ensuring that development and earthworks do not divert flood flows onto surrounding properties.

The geotechnical report directly addresses the district's policy on land instability, which requires development to avoid land susceptible to instability, or to practically mitigate the risks if avoidance is impossible. Recognising the steep flanks on the site, the engineers have proposed mitigation measures, such as Building Restriction Lines and specialized foundation designs, to safely manage the risks to future buildings and residents.

Finally, the preparation and submission of these specific civil and geotechnical documents fulfil the district's strict information requirements. The plan dictates that any resource consent application for a site potentially affected by natural hazards must be accompanied by a report from a suitably qualified and experienced engineer that specifically addresses the relevant objectives, policies, and performance standards.

Overall, the proposal is assessed as being consistent with the relevant objectives and policies of the PDP Natural Hazards chapter.

Proposed Far North District Plan Objectives & Policies & Weighting

Section 88A(2) provides that “any plan or proposed plan which exists when the application is considered must be had regard to in accordance with section 104(1)(b).” This requires applications to be assessed under both the operative and proposed objective and policy frameworks from the date of notification of the proposed district plan.

In the event of differing directives between objective and policy frameworks, it is well established by case law that the weight to be given to a proposed district plan depends on what stage the relevant provisions have reached, the weight generally being greater as a proposed plan move through the notification and hearing process. In Keystone Ridge Ltd v Auckland City Council, the High Court held

that the extent to which the provisions of a proposed plan are relevant should be considered on a case by case basis and might include:

- *The extent (if any) to which the proposed measure might have been exposed to testing and independent decision making;*
- *Circumstances of injustice; and*
- *The extent to which a new measure, or the absence of one, might implement a coherent pattern of objectives and policies in a plan.*

The PDP was notified on 29 January 2026 and is at a late stage of its progression. The weight to be accorded to PDP objectives and policies must be considered in this context.

The relevant provisions of the PDP relating to the Settlement zone, Subdivision, and Coastal Environment have been through hearings and independent decision-making, and accordingly moderate weight is attributed to them. Notwithstanding this, as the assessment above demonstrates, the proposal is consistent with the relevant PDP objectives and policies for the Settlement zone, Subdivision chapter, Natural Hazards and Coastal Environment chapter. The PDP assessment does not alter the overall conclusion that the proposal is appropriate.

6.0 NOTIFICATION ASSESSMENT (s95matters)

The Council will need to determine the basis on which the application will be processed. These include public notification, limited notification, or non-notification.

Public Notification (S95a)

Section 95A outlines the steps that must be followed to determine whether an application should be publicly notified.

Step 1 – Details requirements for mandatory public notification. None of these apply to the proposal.

Step 2 – Details situations where public notification is precluded (if not required under step 2). The overall application is Discretionary (due to the s221(3) component), therefore public notification is not precluded under this step.

Step 3 – Details requirements for public notification in certain circumstances. This includes applications that are determined to be publicly notified under s95D. For this application, it is concluded that potential adverse effects would be less than minor.

Step 4 – Details requirements in special circumstances. It is considered that there are no special circumstances that would warrant notification.

Limited Notification (S95b)

The amended s95B also includes steps to be followed when deciding whether an application should be subject to limited notification.

Step 1 – relates to the consideration of certain affected groups and affected persons including any protected customary rights groups or affected marine title groups. There are no such groups affected by this application.

Step 2 – details requirements for limited notification where the application is for one or more activities that is precluded from limited notification by a rule or standard or is a controlled or prescribed activity. This step does not preclude this application from limited notification.

Step 3 – relates to boundary adjustments, where an owner of an infringed boundary is to be notified or a prescribed activity. Also relates to any other activity where it is required to determine if a person is an affected person in accordance with s95E. For the purpose of limited notifying an application, a person is an affected person if a consent authority decides that the activity's adverse effects on the person are minor or more than minor (but are not less than minor). Given the proposed lot sizes can meet the restricted discretionary standard, neighbouring property owners are deemed to be affected in a less than minor way.

Step 4 – relates to requirements to notify where special circumstances exist.

There are no special circumstances that would warrant limited notification of this application.

7.0 PART II OF THE RMA

Purpose

The proposal can promote the sustainable management of natural and physical resources on site, as current and future owners and users of the land are able to provide for their social, cultural and economic wellbeing and their health and safety.

Proposed Lots 1, 2, and 3 are vacant and will be available for future residential development within the Lichen Grove coastal settlement. This provides opportunities for people looking to purchase land and build a home within the area. Those persons help contribute to the local economy and utilise local

services and infrastructure. Housing is needed within the local area, in all shapes and sizes to accommodate various members of the community. In doing so, this achieves all four well beings as identified within Part 2. Air, water, soil, and ecosystems are not anticipated to be adversely affected by this subdivision within the Coastal Residential / Settlement zone. Any effects on the environment are not anticipated to be more than minor.

Matters of National Importance

Māori are not considered to be adversely affected by this proposal, nor is any historic heritage likely to be impacted, however in the event anything is discovered the accidental discovery protocol will be adhered to. The site is acknowledged as being in a 'island' of returned treaty settlement land, which that is noted as Commercial Redress Property. The proposal does not implicate any commercial use of the surrounds which appear to be used for primary production such as forestry and farming.

Other Matters

The development will result in an efficient use of resources with the development occurring within the Rural Production zone providing for activities associated with this zone including future housing where other activities will not be adversely impacted. There will be no adverse impacts on local ecosystems or overall.

8.0 CONCLUSION

This application seeks a Controlled Activity resource consent (with a Discretionary component for the s221(3) approval) to undertake a 4-lot subdivision at 21 and 27 Lichen Grove, Russell, within the Coastal Residential Zone under the ODP and the Settlement Zone under the PDP. The assessment of effects on the environment concludes that for the reasons outlined in the application, the effects of undertaking this proposal will be no more than minor on the surrounding environment.

The proposal was considered to be consistent with the purpose of the National Environmental Standard for Assessing and Managing Contaminates in Soil to Protect Human Health and National Environmental Standard for Freshwater.

The New Zealand Coastal Policy Statement (NZCPS) was assessed and the proposal is considered consistent with its relevant objectives and policies. The National Policy Statement for Highly Productive Land was considered and is not relevant to this proposal.

The Regional Policy Statement for Northland was also reviewed as part of this application. The proposal was considered to be consistent with the aims of this document.

In terms of the ODP, the proposal was assessed against the objectives and policies with the conclusion that it is generally compatible with the aims of the ODP as expressed through those relevant objectives and policies. Commentary against the PDP has also been undertaken concluding that to the extent the PDP policies relate to the actual, lawful matters of discretion (such as managing reverse sensitivity, ensuring safe access, and providing adequate servicing), the proposal is entirely consistent with the anticipated outcomes of the PDP.

In terms of the potential adverse effects being minor or more than minor, it is considered that there are no directly affected parties to this proposal as all effects can be adequately mitigated.

An assessment of Part II of the RMA has also been completed with the proposal generally able to satisfy this higher order document also.

We look forward to receiving acknowledgment of the application and please advise if any additional information is required.

Yours sincerely,

Steven Sanson
Consultant Planner

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD

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

R.W. Muir
Registrar-General
of Land

Identifier	**NA118C/181**
Land Registration District	**North Auckland**
Date Issued	28 September 1998

Prior References
NA106C/926

Estate	Fee Simple
Area	9064 square metres more or less
Legal Description	Lot 39 Deposited Plan 188462

Registered Owners
Frank Van Der Pol as to a 1/2 share
Phillippa Ruth Van Der Pol as to a 1/2 share

Interests

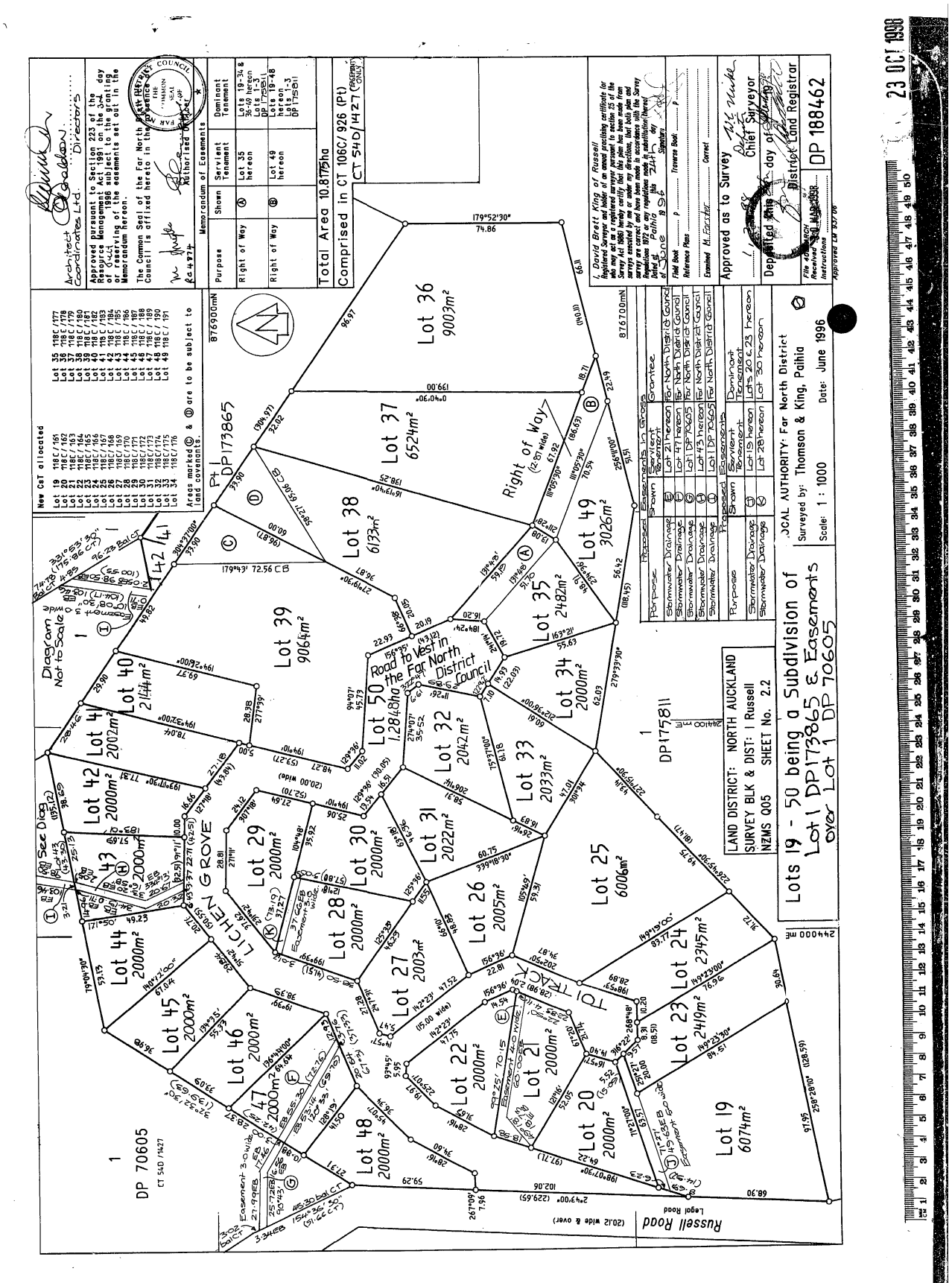
D314934.3 Consent Notice pursuant to Section 221(1) Resource Management Act 1991 - 28.9.1998 at 12.44 pm

Appurtenant hereto are rights of way specified in Easement Certificate D314934.9 - 28.9.1998 at 12.44 pm

The easements specified in Easement Certificate D314934.9 are subject to Section 243 (a) Resource Management Act 1991

Land Covenant in Transfer D496429.7 - 12.4.2000 at 2.10 pm

Fencing Covenant in Transfer D496429.7 - 12.4.2000 at 2.10 pm


Lots 19 - 50 being a Subdivision of Lot 1 DP 173865 & Easements over Lot 1 DP 70605
LAND DISTRICT: NORTH AUCKLAND
SURVEY BLK & DIST: 1 Russell
NZMS Q05 SHEET No. 2.2
LOCAL AUTHORITY: Far North District
Surveyed by: Thomson & King, Paihia
Scale: 1 : 1000
Date: June 1996
Approved as to Survey
Deposited this day of
District Land Registrar
DP 188462
Total Area 10.8175ha
Comprised in CT 106C/926 (Pt)
CT 54D/1427 (Easement Only)
Road To Vest in the Far North District Council
Russell Road
Legal Road
Lot 36 9003m²
Lot 37 6524m²
Lot 38 6133m²
Lot 39 9064m²
Lot 40 2144m²
Lot 41
Lot 42 2002m²
Lot 43 2000m²
Lot 44 2000m²
Lot 45 2000m²
Lot 46 2000m²
Lot 47 2000m²
Lot 48 2000m²
Lot 49 3026m²
Lot 50 1.2848ha
Lot 35 2482m²
Lot 34 2000m²
Lot 33 2033m²
Lot 32 2042m²
Lot 31 2022m²
Lot 30 2000m²
Lot 29 2000m²
Lot 28 2000m²
Lot 27 2003m²
Lot 26 2005m²
Lot 25 6006m²
Lot 24 2345m²
Lot 23 2419m²
Lot 22 2000m²
Lot 21 2000m²
Lot 20 2000m²
Lot 19 6074m²
DP 173865
DP 70605
DP 175811
CT 54D/1427
Right of Way
(12.87 wide)
Licheny Grove
Old Track
Diagram Not to Scale
See Diag
Easement 3.0 wide
Easement 4.0 wide
Easement 5.0 wide
Easement 6.0 wide
Easement 7.0 wide
Easement 8.0 wide
Easement 10.0 wide
Easement 15.0 wide
Easement 20.0 wide
Easement 40.0 wide
Easement 5.0 wide & over
Easement 6.0 wide & over
Easement 10.0 wide & over
Easement 20.0 wide & over
Easement 40.0 wide & over
Proposed Easements in Gross
Purpose | Shown | Servient Tenement | Grantee
Stormwater Drainage | (A) | Lot 21 hereon | Far North District Council
Stormwater Drainage | (B) | Lot 49 hereon | Far North District Council
Stormwater Drainage | (C) | Lot DP 70605 | Far North District Council
Stormwater Drainage | (D) | Lot 43 hereon | Far North District Council
Stormwater Drainage | (E) | Lot 1 DP 70605 | Far North District Council
Proposed Easements
Purpose | Shown | Servient Tenement | Dominant Tenement
Stormwater Drainage | (F) | Lot 19 hereon | Lots 20 & 23 hereon
Stormwater Drainage | (G) | Lot 28 hereon | Lot 30 hereon
Memorandum of Easements
Purpose | Shown | Servient Tenement | Dominant Tenement
Right of Way | (A) | Lot 35 hereon | Lots 19-34 & 36-49 hereon DP 173861
Right of Way | (B) | Lot 49 hereon | Lots 19-48 hereon & 1-3 DP 173861
New CoT allocated
Lot 19 118C/161 ... Lot 35 118C/177
Lot 20 118C/162 ... Lot 36 118C/178
Lot 21 118C/163 ... Lot 37 118C/179
Lot 22 118C/164 ... Lot 38 118C/180
Lot 23 118C/165 ... Lot 39 118C/181
Lot 24 118C/166 ... Lot 40 118C/182
Lot 25 118C/167 ... Lot 41 118C/183
Lot 26 118C/168 ... Lot 42 118C/184
Lot 27 118C/169 ... Lot 43 118C/185
Lot 28 118C/170 ... Lot 44 118C/186
Lot 29 118C/171 ... Lot 45 118C/187
Lot 30 118C/172 ... Lot 46 118C/188
Lot 31 118C/173 ... Lot 47 118C/189
Lot 32 118C/174 ... Lot 48 118C/190
Lot 33 118C/175 ... Lot 49 118C/191
Lot 34 118C/176
Areas marked (G) & (H) are to be subject to land covenants.
I, David Brett King of Russell Registered Surveyor and holder of an annual practising certificate for the year 1 July 1996 hereby certify that this plan has been made from surveys executed by me or under my directions, that both plan and survey are correct and have been made in accordance with the Survey Regulations 1972 or any regulations made in substitution thereof.
Dated at Paihia this 24th day of June 1996
Signature
Field Book ... p ... Traverse Book ... p ...
Reference Plans
Examined ... Correct
Deposited 23 OCT 1998
Received 30 MAR 1998
Instructions
File 4067 MCH
Approved LM 357 06

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD

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

R.W. Muir
Registrar-General
of Land

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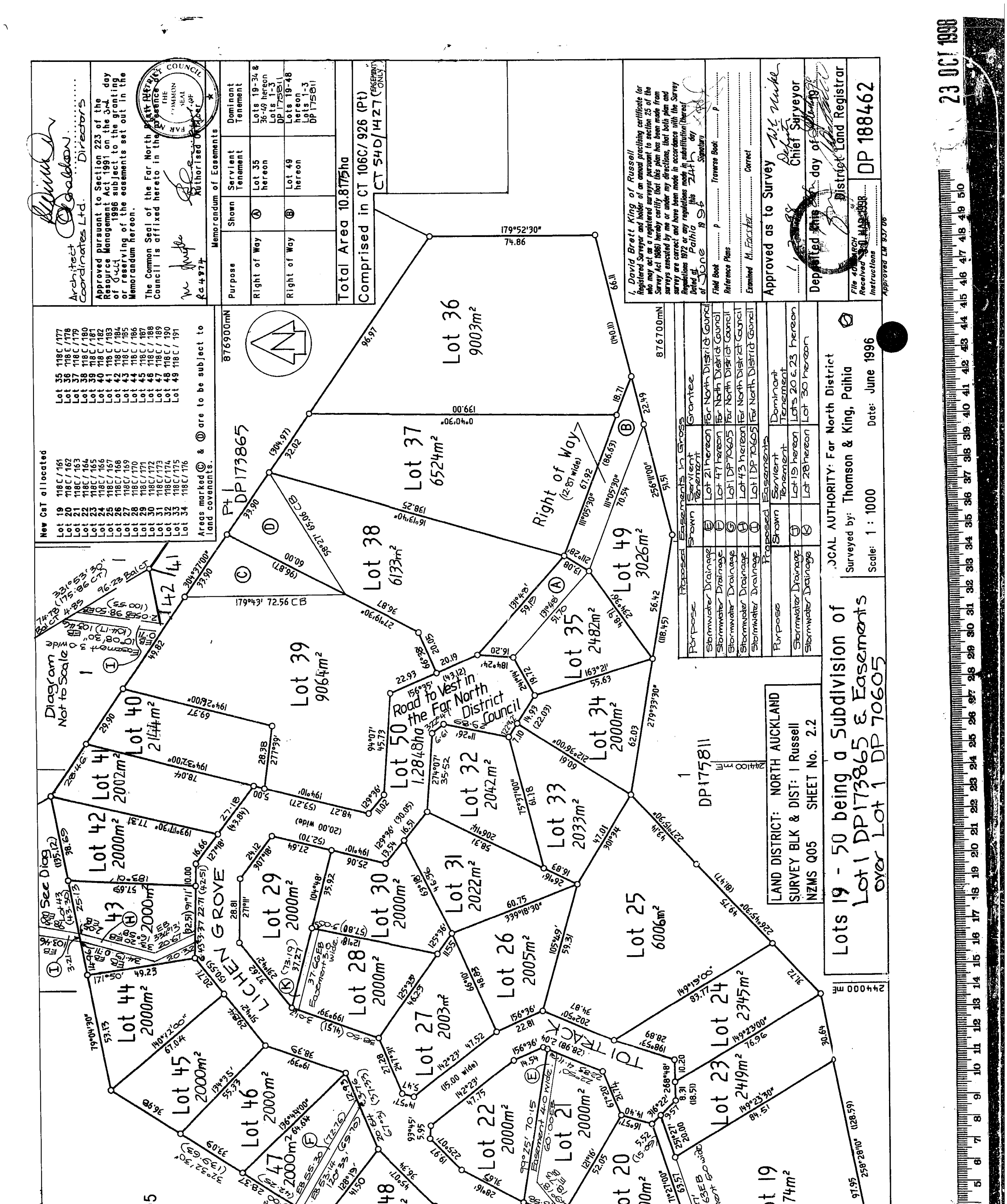
Fencing Covenant in Transfer D496429.7 - 12.4.2000 at 2.10 pm

6482173.1 Mortgage to (now) Westpac New Zealand Limited - 5.7.2005 at 9:00 am


DP 188462
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SURVEY BLK & DIST: I Russell
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LICHEN GROVE
TOI TRACK
Road to Vest in the Far North District Council
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Right of Way (12.51 wide)
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Lot 20 2000m²
Lot 21 2000m²
Lot 22 2000m²
Lot 23 2419m²
Lot 24 2345m²
Lot 25 6006m²
Lot 26 2005m²
Lot 27 2003m²
Lot 28 2000m²
Lot 29 2000m²
Lot 30 2000m²
Lot 31 2022m²
Lot 32 2042m²
Lot 33 2033m²
Lot 34 2000m²
Lot 35 2482m²
Lot 36 9003m²
Lot 37 6524m²
Lot 38 6133m²
Lot 39 9064m²
Lot 40 2144m²
Lot 41 2002m²
Lot 42 2000m²
Lot 43 2000m²
Lot 44 2000m²
Lot 45 2000m²
Lot 46 2000m²
Lot 47 2000m²
Lot 48 2000m²
Lot 49 3026m²
1 DP 70605
1 DP175811
Pt 1 DP173865

D314934.3 CONO

THE RESOURCE MANAGEMENT ACT 1991

SECTION 221 : CONSENT NOTICE

REGARDING The subdivision of Pt Lot 1 DP 173865 Russell S.D North Auckland Registry.

PURSUANT to Section 221 for the purposes of Section 224 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 is to be registered on the appropriate new titles.

SCHEDULE

(1) The construction of any dwellings on the allotment shall be designed in accordance with , and generally located in the positions shown on the engineers report titled "Haigh Development Consultants - report on Tikitikioure Farm Park subdivision suitability of lots" dated 25 October 1996.

(2) Prior to the issue of any building consent on the allotment the applicant shall engage a registered engineer to prepare a specific engineer designed wastewater treatment & disposal system in accordance with appendix E of technical paper No 58 to the satisfaction of the Far North District Council.

SIGNED:

by the FAR NORTH DISTRICT COUNCIL
under delegated authority:
ENVIRONMENTAL SERVICES MANAGER

DATE:

RC

1244 28.SEP98 D 314934.3

LINE COPY

PARTICULARS ENTERED
LAND REGISTRY O TH
ASST LAND REGISTRAR

DISTRICT LAND REGISTRAR
NORTH AUCKLAND NEW ZEALAND

Au.

D4964297T

TRANSFER

Land Transfer Act 1952

This page does not form part of the Transfer.

TRANSFER

Land Transfer Act 1952

If there is not enough space in any of the panels below, cross-reference to and use the approved Annexure Schedule: no other format will be received.

Land Registration District

NORTH AUCKLAND

Certificate of Title No.	All or Part?	Area and legal description — *Insert only when part or Stratum, CT*
(1) 118C 161	ALL	
(2) 118C 164	ALL	
(3) 118C 165	**ALL**	
(4) 118C 180	ALL	
(5) 118C 181	ALL	

Transferor *Surnames must be underlined*

DONALDSON PROPERTY CO-ORDINATES LIMITED

Transferee *Surnames must be underlined*

NORTH
McBREEN JENKINS ~~CONSTRUCTION~~ LIMITED

Estate or Interest or Easement to be created: *Insert e.g. Fee simple; Leasehold in Lease No. .....; Right of way etc.*

In fee simple subject to a land covenant (continued on page 2 Annexure Schedule) and the transferee shall be bound by a fencing covenant as defined in Section 2 of the Fencing Act in favour of the transferor

Consideration

$528,821.91

Operative Clause

For the above consideration (receipt of which is acknowledged) the TRANSFEROR TRANSFERS to the TRANSFEREE all the transferor's estate and interest described above in the land in the above Certificate(s) of Title and if an easement is described above such is granted or created.

Dated this 6th **day of** April 2000

Attestation

DONALDSON PROPERTY CO-ORDINATES LIMITED by its Director ROBERT NOEL DONALDSON

~~ROBERT NOEL DONALDSON~~
Signature, or common seal of Transferor

Signed in my presence by the Transferor
Signature of Witness

Witness to complete in BLOCK letters
(unless typewritten or legibly stamped)

Witness name E.M. DAVIDSON

Occupation SOLICITOR

Address TAUPAHUNA

Certified correct for the purposes of the Land Transfer Act 1952

Certified that no conveyance duty is payable by virtue of Section 24(1) of the Stamp and Cheque Duties Act 1971. (DELETE INAPPLICABLE CERTIFICATE)

Solicitor for the Transferee

REF 4135

Approved by Registrar-General of Land under No. 1995/5003

Annexure Schedule

Insert below "Mortgage", "Transfer", "Lease" etc

Transfer | Dated 6 April 2000 | Page 2 of 5 Pages

Continuation of "Estate or Interest or Easement to be Created"

1. The land comprised in Certificates of Title 118C/161, 118C/164, 118C/165, 118C/180 and 118C/181 shall hereinafter be called "the land first described")

2. The Transferor when registered as proprietor of all the land comprised in Deposited Plan 188462 (hereinafter called "the land secondly described") subdivided the land secondly described in the manner shown and defined in the said Deposited Plan No 188462 for the purpose of sale as residential lots

3. It is the Transferor's intention that all the lots contained in the said Plan No 188462 and all lots into which any of the said lots may be subdivided shall be SUBJECT to a general scheme applicable to and for the time being of each of the said lots and that the owner or occupier for the time being of each of the said lots should be bound by the stipulations and restrictions set out hereunder and that the respective owners and occupiers for the time being of any of the said lots may be able to enforce the observance of such stipulations and restrictions by the owners and occupiers for the time being of any others of the said lots in equity or otherwise howsoever PROVIDED HOWEVER THAT the Transferor may make the stipulations and restrictions contained in any transfer appurtenant only to any one or more of the said lots as the Transferor shall decide and notwithstanding this, the Transferee shall not be entitled to require the Transferor to make the stipulations and restrictions of any Transferee of any of the said lots appurtenant to the land first described.

   Incidental to the transfer of the fee simple the Transferees so as to bind the land first described and for the benefit of the remaining lots on the said Deposited Plan No. 188462 and all lots into which any of the said lots may be subdivided (all of such lots being hereinafter referred to and included in the term "the remaining lots" DO HEREBY JOINTLY AND SEVERALLY COVENANT AND AGREE with the Transferor for the benefit of such of the remaining lots as have not heretofore been transferred by the Transferor and also separately with each and every registered proprietor of and for the benefit of any of the remaining lots heretofore transferred to such proprietors by the Transferor that the Transferees will henceforth faithfully observe perform fufill and keep all and singular the stipulations and restrictions hereinafter set forth that is to say

   (a) Not to erect on the land hereby sold (hereinafter called "the said land") any dwelling except a single private dwelling house of not less than 100 square metres in gross floor area for a single dwelling house and not less than 80 square metres for an apartment/townhouse/unit excluding verandas and patios, detached garages and outbuildings and complying with the construction and materials requirements of clauses (d) and (e) hereof.

   (b) Not to erect a building on the said land unless the plans and specifications thereof have been approved in writing by the Transferor or its appointed Agent and such approval shall not be unreasonably withheld PROVIDED HOWEVER that approval to such plans and specifications shall be deemed to have been given in respect of any building which has been erected and occupied for a period of 12 months or more. All exterior colour schemes are to be submitted to the Transferor or the Transferor's agent for approval at the same time as the plans and specifications.

(continued on page 3 annexure schedule)

If this Annexure Schedule is used as an expansion of an instrument, all signing parties and either their witnesses or their solicitors must put their signatures or initials here.

Approved by Registrar-General of Land under No. 1995/5003

Annexure Schedule

Insert below "Mortgage", "Transfer", "Lease" etc

Transfer Dated 6 April 2000 Page 3 of 5 Pages

Continuation of "Estate or Interest or Easement to be Created"

(c) Not to erect or permit to remain erected any building or buildings on the said land other than with external walls of brick and/or stone and/or concrete and/or glass and/or timber and provided that the proportion of brick and/or timber and/or stone and/or concrete shall not be less than 30% of the total area of the external walls and provided that the basement (including but not limited to basement garage) is fully enclosed to the reasonable satisfaction of the Transferor or the Transferor's agent.

(d) Not to erect or place or permit to be erected or placed on the said land any dwelling, garage, carport or other structure:

(i) Unless all roofs shall be sheathed in either metal or concrete tiles or otherwise approved in writing by the Vendor and/or;

(ii) Having more than 20% of the exterior wall cladding constructed of any fibrous cement product, and/or;

(iii) Having fibrolite sheathing or similar products as wall sheathing.

(iv) Unless the roof if constructed of corrugated iron and any other metal profiles must be painted within one year of erection for weathering purposes.

(e) Not to permit or suffer the erection of any unpainted sheds, garages, temporary building or structure upon the said land except such as may be used in conjunction with the construction of permanent buildings and which will be removed from the land upon completion of the work.

(f) Not to permit or suffer any building in the course of construction to be left without substantial work being carried out for a period exceeding two months and to complete construction of any building within six months of the commencement of work.

(g) Not to permit or suffer the placing or erection upon the said land of any building previously erected on other land excepting temporary structures placed therein in conjunction with the construction of permanent buildings as described in sub-clause (a) hereof unless the plans and specifications for such previously erected building have been approved in writing by the Transferor or its appointed agent and such approval shall not be unreasonably withheld.

(h) Not to permit or suffer the said land to be occupied or used as a residence either by the erection of temporary structures or the placing thereon of vehicles used for human habitation and to use the land as a residence only after a building has been substantially completed in accordance with the terms of this covenant and the requirement of the Local Authority.

(i) Not to permit of suffer any rubbish to accumulate or be placed upon the said land nor permit any excessive growth of grass so that the same exceeds 150mm in height or otherwise becomes unsightly.

(j) Not to permit or suffer any removal of soil from the said land except as shall be necessary for the construction of the building.

(continued on page 4 annexure schedule)

If this Annexure Schedule is used as an expansion of an instrument, all signing parties and either their witnesses or their solicitors must put their signatures or initials here.

Approved by Registrar-General of Land under No. 1995/5003

Annexure Schedule

Insert below
"Mortgage", "Transfer", "Lease" etc

Transfer | Dated 6 April 2000 | Page 4 of 5 Pages

Continuation of "'Estate or Interest or Easement to be Created"

(k) The Transferor shall not be liable to pay for or contribute towards the expense of construction or maintenance of any fence (other than any fence detailed on the plans for any dwelling being constructed on the said land by the Transferor herein for the Transferee herein) between the said land and any contiguous land of the Transferor but this proviso shall not enure for the benefit of any subsequent Purchaser or proprietor of the contiguous land.

(l) Not to allow more than two months to elapse after the date of completion of construction of the dwelling before constructing a Driveway, and Vehicle Crossing (where required by the relevant Territorial Authority) such Driveway and Vehicle Crossing to be constructed in strict compliance with the requirements of the relevant Territorial Authority.

(m) Not to use or permit the land or any dwelling erected thereon to be used for any trading or commercial purposes or any other use other than those permitted by the District Scheme of the Local Authority.

(n) Not to erect or permit to be erected any building or other structure (except for fencing) on the land within 3 metres of any adjoining lots.

(o) Not to allow or permit occupation of any dwelling erected on the said land until all exterior sheathing of the dwelling has been completed, including exterior painting.

(p) Not to allow or permit to be constructed on the land any fence of shell or panel steel, untextured flat fibrolite or plywood.

(q) Not to allow or permit the planting of any new tress on the land without the approval of the Transferor or the Transferor's agent as views must be protected

TO the intent that each of the said stipulations and restrictions shall enure for the benefit of all of the remaining lots PROVIDED ALWAYS that the Transferor shall not be liable for any breach of the aforesaid covenants in respect of any of the said lots in respect of which the Transferor shall have executed a Transfer in favour of the purchaser thereof whether or not such Transfer shall have been registered

AND PROVIDED ALWAYS FURTHER that in any case where the Transferor or its agent is required to give its consent or approval in respect of any of the foregoing covenants and the Transferor or its agent shall be unwilling or incapable of so approving within seven days of such request being made, then approval shall be sought from WAYNE BROWN of Brown and Thompson,

Continued on Page 5 Annexure Schedule

If this Annexure Schedule is used as an expansion of an instrument, all signing parties and either their witnesses or their solicitors must put their signatures or initials here.

CEF

Approved by Registrar-General of Land under No. 1995/5003

Annexure Schedule

Insert below
"Mortgage", "Transfer", "Lease" etc

Transfer | Dated 6 April 2020 | Page 5 of 5 Pages

Continuation of "Estate or Interest or Easement to be Created"

Engineers in Kerikeri, or a suitably qualified person nominated by the said WAYNE BROWN should the said WAYNE BROWN be unavailable to act in that capacity, whose decision shall be final and binding on all parties AND the said WAYNE BROWN shall be so irrevocably appointed AND the costs of the said WAYNE BROWN or his nominated person for approving such request shall be paid by the Transferee in such cases.

Continuation of "Attestation"

Signed in my presence by the Transferee
MCBREEN JENKINS NORTH LIMITED
by:

Signature of Transferee:

David Gerald Booth
Director

Charles Edward Flower
Director

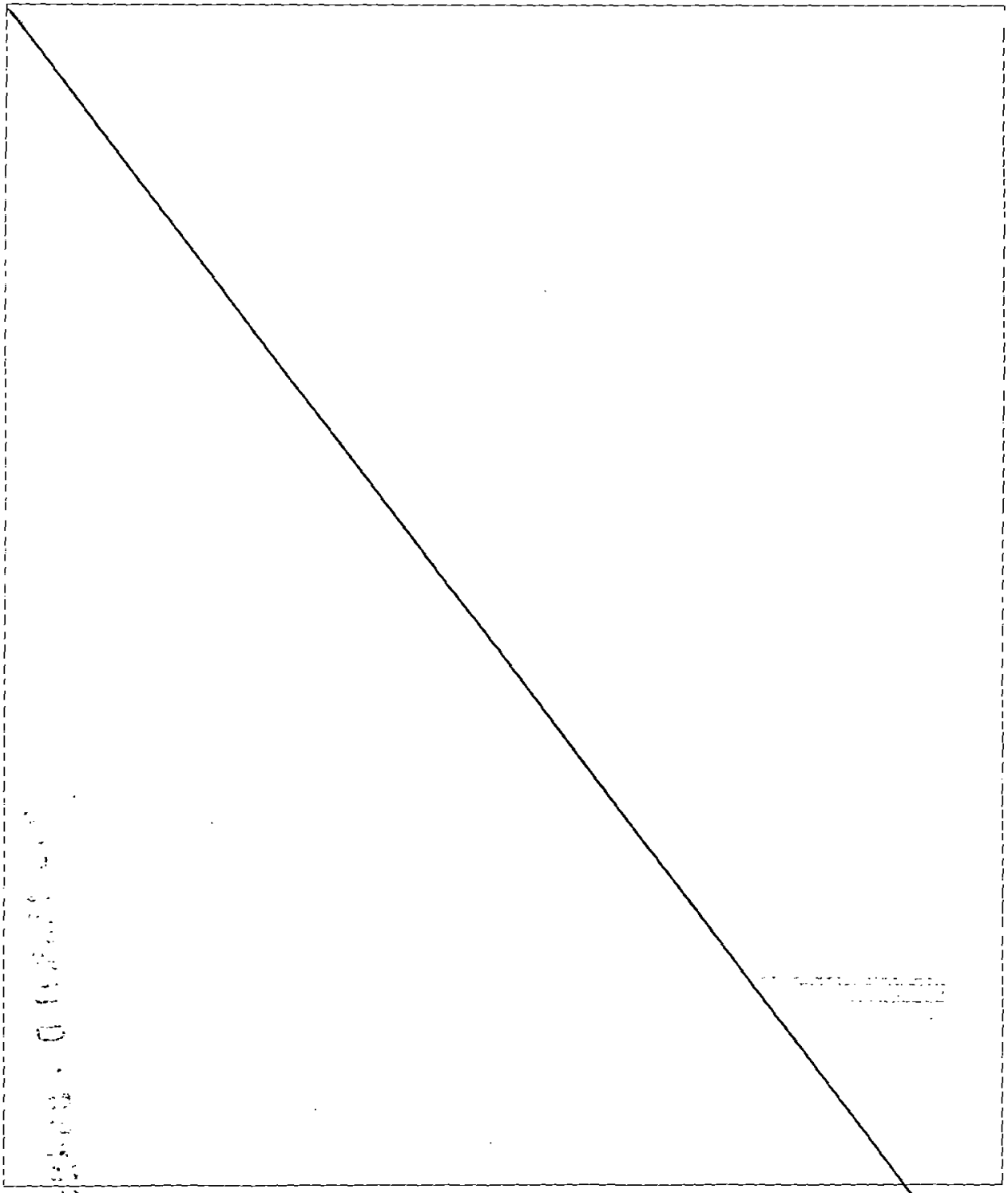
~~Signature of Witness~~:

~~Witness Name~~:
~~Occupation~~:
~~Address~~:

If this Annexure Schedule is used as an expansion of an instrument, all signing parties and either their witnesses or their solicitors must put their signatures or initials here.

Annexure Schedule

TRANSFER Dated 6 April 2000 Page [ ] of [ ] Pages



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Approved by Registrar-General
of Land under No. 1995/1004

TRANSFER

Land Transfer Act 1952

(TF) T $148

Law Firm Acting
Murdoch Hall & Co Solicitors Auckalnd

Auckland District Law Society
REF: 4135

PARTICULARS ENTERED IN REGISTER
LAND REGISTRY NORTH AUCKLAND
for REGISTRAR-GENERAL OF LAND
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118c/161
164-165
180-181

L/C
F/C

REGISTRAR-GENERAL OF LAND
NEW ZEALAND

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NOTES

Areas and measurements are subject to final Survey

This drawing has been prepared solely for the use intended by the client stated on the plan, and must not be used for any other purpose. BOI Survey Ltd accepts no responsibility for this plan, or any data contained on this plan, to be used for any other purpose

Rev.	Reason For Issue or Amendment	Date	Drawn	Checked	Surveyed
A	Scheme Plan 376b PUNGAERE ROAD, WAIPAPA	14/05/26	TW	DC	TW

BOI SURVEY

BOI SURVEY LTD
55B Shepherd Road
Kerikeri 0230

e: Tony@boisurvey.co.nz

PROPOSED SUBDIVISION OF LOTS 37 & 38 DP 188462

21 & 27 Lichen Grove, Russell

CLIENT: VAN DER POEL

JOB NO: 5130			Scale: 1:250 @ A3
Level Datum: N/A	Origin: -		Co-ord System: NZGD 2000
Drawing Number: 5130-001	Revision: A		Sheet: 1 of 1

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GEOTECHNICAL INVESTIGATION REPORT

LOT 39, 27 LICHEN GROVE, RUSSELL

PHILLIPPA AND FRANK VAN DER POL

C0842N-G-01
JUNE 2026
REVISION 1

geologix
consulting engineers

DOCUMENT MANAGEMENT

Document Title	Geotechnical Investigation Report
Site Reference	Lot 39, 27 Lichen Grove, Russell
Client	Phillippa and Frank van der Pol
Geologix Reference	C0842N-G-01
Issue Date	June 2026
Revision	01
Prepared	Luca Guo Intermediate Geotechnical Engineer, BE, ME, MEngNZ
Reviewed	Andre Whyte Principal Geotechnical Engineer, CPEng, CMEngNZ
File Reference	*Z:\Projects\C0800-C0899\C0842N - Lot 39, 27 Lichen Grove Russell\06 - Reports\Review\C0842N-G-01.docx*

REVISION HISTORY

Date	Issue	Prepared	Reviewed
June 2026	First Issue – For Consent	LG	AW

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FIGURES

TABLES

1 INTRODUCTION

This Geotechnical Investigation Report has been prepared by Geologix Consulting Engineers Ltd (Geologix) for our client in accordance with our standard short form agreement and general terms and conditions of engagement.

The purpose of this report is to assist with Resource Consent application in relation to a subdivision development within the properties at 27 Lichen Grove, Russell and the northwestern property, the 'site'. The legal description of the sites are "Lot 38 DP 188462" and "Lot 39 DP 188462".

Specifically, this report provides a detailed interpretation of a site-specific ground investigation and geotechnical assessment to deliver engineering recommendations for the proposed development. This report is intended to support the preliminary design phases and accompany the Resource Consent application.

1.1 Proposed Development

We were provided with a scheme plan of the development, prepared by BOI SURVEY, dated 14 May 2026. Based on this, it is understood that:

- The project involves subdividing the existing two properties into four separate Lots.
- New residential dwellings are proposed to be constructed on the three vacant Lots (Lot 1-3).

Amendments to the referenced development plans may require an update to the scope and/ or recommendations of this report.

2 SITE DESCRIPTION

The proposed site is located within a rural area ~3.4 km southeast of Russell. Based on the most updated DEM from LINZ[1], the development area (comprising Lots 1 to 3) encompasses a portion of a prominent saddle feature that trends generally from southeast to northwest (with the northernmost extent aligning slightly further north). The site also covers the associated eastern flank and a minor section of the western flank.

In general, the western flank exhibits a slightly gentler gradient compared to the eastern flank. A well-defined concave gully feature is situated on the eastern flank; the upper reaches and lateral margins of this gully are notably steeper, with slope

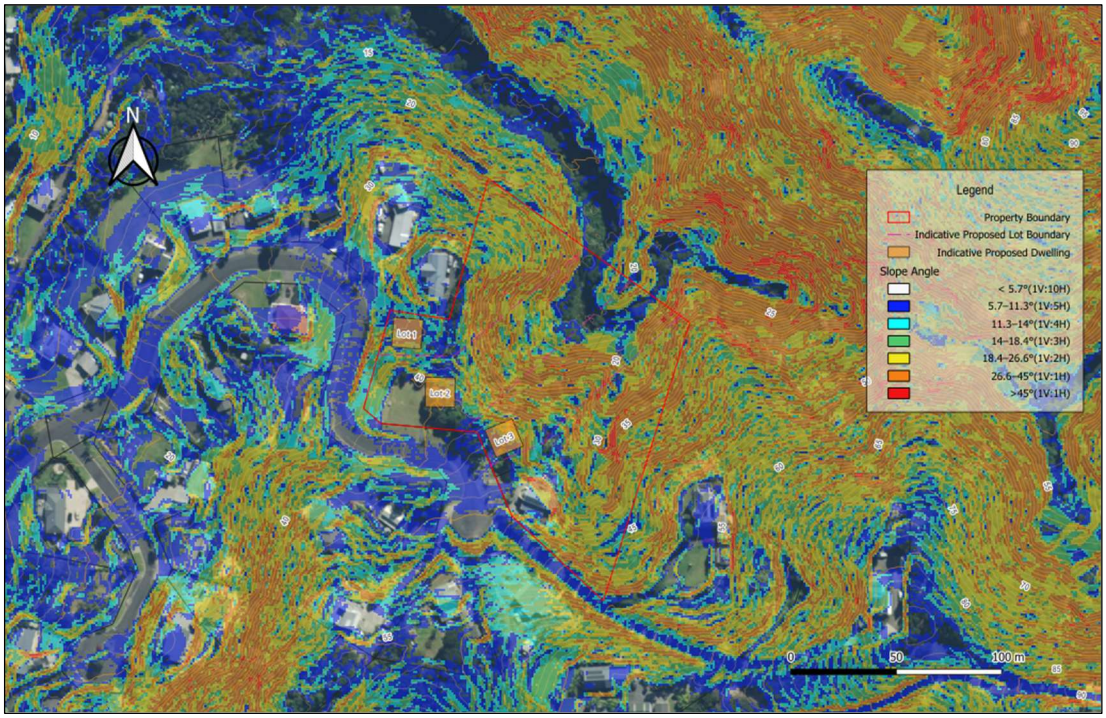
1 Land Information New Zealand (LINZ).

gradients ranging approximately between 1V:3H and 1V:1.5H. Conversely, the topography across the saddle is relatively gentle, typically tracking flatter than 1V:5H.

With respect to the specific building platforms, the proposed dwelling within Lot 1 is situated on a localised gully feature on the western flank. The proposed dwellings within Lots 2 and 3 are positioned near the crest/edge of the saddle, transitioning towards the upper portion of the eastern flank. The site setting is presented schematically as Figure 1 below.

At this stage, detailed architectural concepts and civil engineering designs are not yet available. However, based on the preliminary topographical assessment, it is anticipated that the formation of the building platform for the proposed dwelling within Lot 1 will likely involve a combination of upslope excavation (cut) and downslope filling (fill). For Lots 2 and 3, the construction of the building platforms is expected to primarily involve excavation. To ensure long-term stability, any significant cut and fill faces resulting from these earthworks will likely require engineering support, such as the implementation of designed retaining walls.

Figure 1: Site Setting



3 DESKTOP APPRAISAL

To assist with our geotechnical appraisal, we have undertaken a detailed desktop review of available information with a specific focus upon geotechnical influences.

3.1 Geology

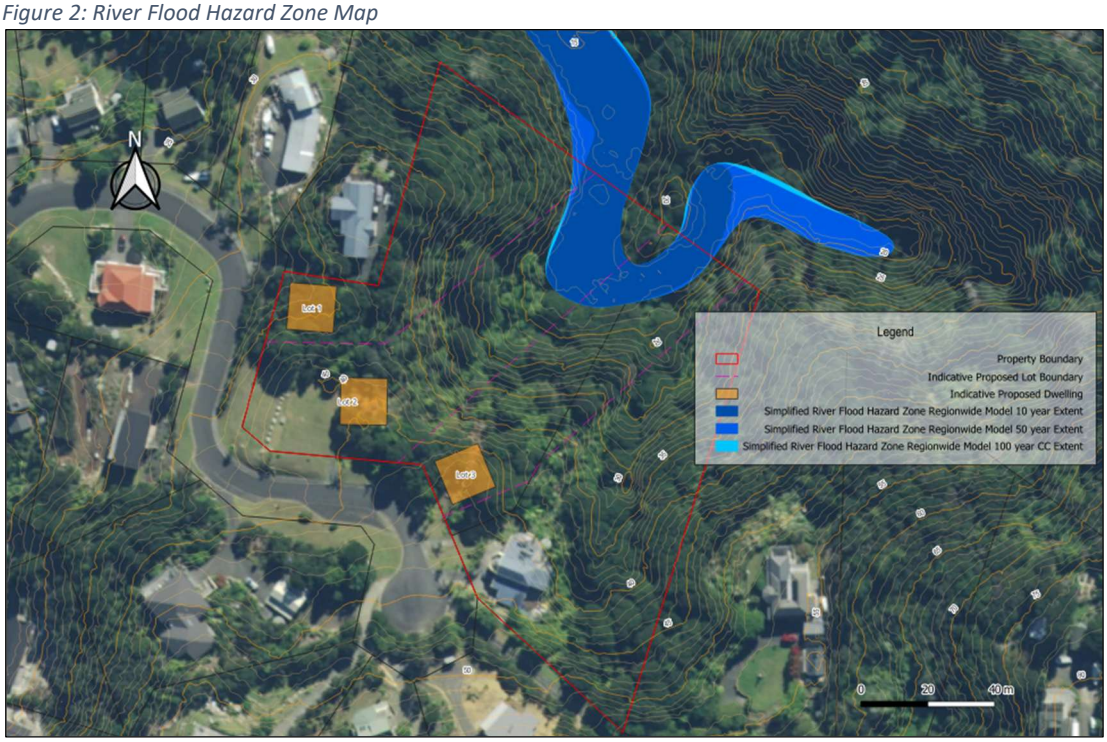
Available GNS geological mapping[2] indicates the site to be directly underlain by Waipapa Group chert (Waipapa Composite Terrane) described as beds dominated by chert and siliceous argillite.

It is classified as "Low Hazard" geological unit in accordance with Far North District Council Section 32 Report[3].

3.2 River Flood Hazard Zones

A review of River Flood Hazard Zone Map from Far North Atlas[4] indicates the area adjacent to the stream located at the bottom of the eastern flank is mapped within "River Flood Hazards Zone", while the proposed dwelling locations are outside of "River Flood Hazards Zone".

Figure 2: River Flood Hazard Zone Map



3.3 Liquefaction Vulnerability

A review of Liquefaction Vulnerability Map from Far North Atlas indicates the area

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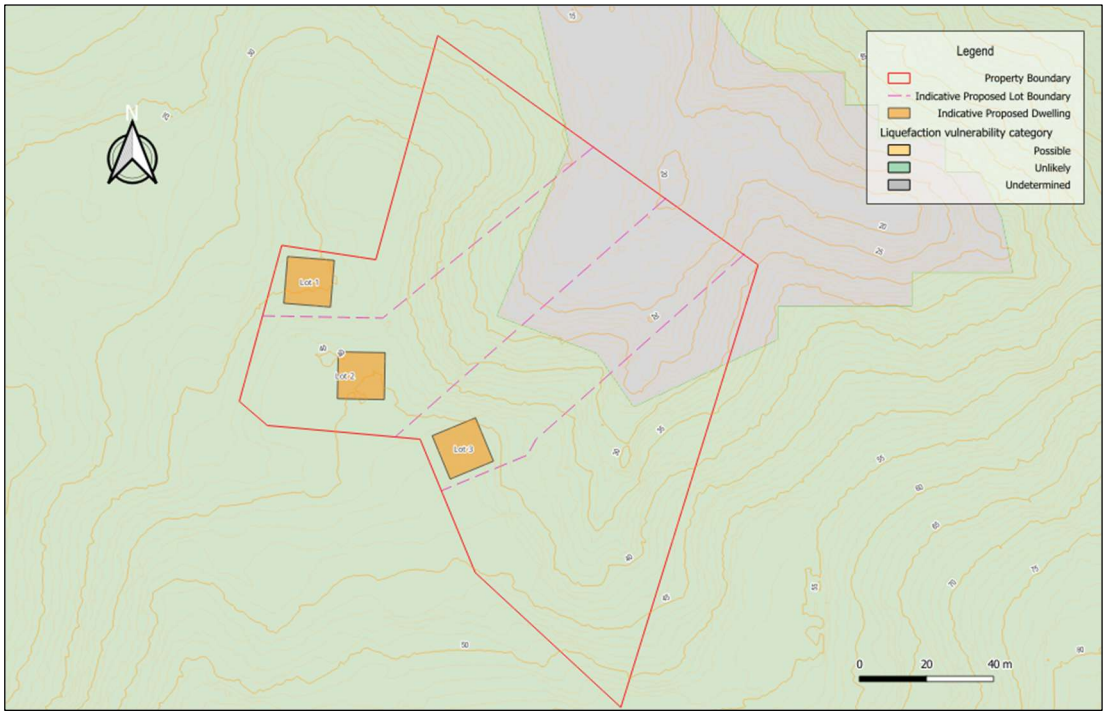
2 GNS geological Units 250k, https://data.gns.cri.nz/tez/index.html?map=NZ%20Geology

3 Far North District Council Section 32 Report, Natural Hazards, May 2022

4 Far North Atlas / Kohinga Mahere

adjacent to the stream located at the bottom of the eastern flank is mapped within "Undetermined Liquefaction Vulnerability Area", while the proposed dwelling locations are mapped within "Unlikely Liquefaction Vulnerability Area".

Figure 3: Liquefaction Vulnerability Map



4 GROUND INVESTIGATION

A site-specific walkover survey and intrusive ground investigation was undertaken by Geologix on 25 May 2026. The ground investigation was scoped to confirm the findings of the above information and to provide site-specific parameters for this geotechnical assessment. The ground investigation comprised:

- Five hand-augered boreholes (HA01–HA05) were advanced across the proposed dwelling footprint and the eastern flank to a target depth of 5.0 m bgl to confirm the shallow subsurface conditions. All boreholes refused before the target depth due to hard strata and were extended by Dynamic Cone Penetrometer (DCP) until an effective refusal. Refusals were accepted in accordance with industry standards (i.e 20 blows per 100 mm penetration).

4.1 Site Walkover Survey

A visual walkover survey of the property confirmed:

- Topography is in general accordance with that outlined in Section 2 and the

available GIS contours.

- No retaining walls were noted near proposed dwellings.
- No clear indicators of slope instability were observed at the time of inspection, such as ground cracking or leaning trees.
- Evidence of water scour was observed on the concave terrain to the east of the saddle, as well as within the gully where the Lot 1 dwelling is proposed, which is suspected to be caused by surface runoff.

Figure 4: Locations of Indicative Surface Run off Signs

4.2 Ground Conditions

Arisings recovered from the exploratory boreholes were logged by a qualified geotechnical engineering professional in accordance with New Zealand Geotechnical Society guidelines[5]. Engineering borehole logs are presented as Appendix B to this report and approximate borehole positions recorded on Drawing No. 200 within Appendix A.

Strata identified during the ground investigation can be summarised as follows:

[5] *New Zealand Geotechnical Society, Field Description of Soil and Rock, 2005.*

- **Topsoil encountered to a depth of 0-0.4 m bgl.**
- **Non-Engineered Fill**

  Non-engineered fill was observed in HA01 and HA03 to a depth of 0.4–0.7 mbgl, mainly comprising Silt and Sandy Silt with Gravel, anticipated to be a blend of site-won material and gravel. Given that the material selection and compaction of such fill are typically uncontrolled, issues regarding inadequate bearing capacity and differential engineering properties may arise. Therefore, it is generally not deemed suitable as a competent bearing layer.

- **Waipapa Group Residual Soils (RS).**

  Topsoil and Non-engineered fill were observed underlain by Cohesive Residual Soils derive from Waipapa Group. The residual soil mainly comprises of low to high plasticity Clay, Silt, Clayey Silt and Silty Clay. The soil is generally light brown, brown and dark grey in colour.

  The residual soil strength generally increases with depth. The upper layer is assessed as stiff to very stiff, becoming hard at depths of approximately 0.8 m to 3.2 m bgl. The hard consistency is supported by field vane shear strengths greater than 200 kPa and/or DCP penetration resistance exceeding 10 blows per 100 mm.

A summary of the above information is presented as Table 1.

Table 1: Summary of Ground Investigation

Hole ID	Auger Depth	Final Depth	Topsoil Depth	Non-engineered Fill Depth	Stiff to Very Stiff Waipapa RS Depth	Hard Waipapa RS Depth	Ground Water Depth[1]
HA01	1.2 m	1.3 m	0-0.1 m	0.1-0.4 m	0.4-1.2 m	1.2-1.3 m	NE
HA02	0.6 m	1.0 m	0-0.4 m	NE	0.4-0.8 m	0.8-1.0 m	NE
HA03	3.0 m	3.6 m	NE	0-0.7 m	0.7-3.2 m	3.2-3.6 m	NE
HA04	1.5 m	3.0 m	NE	NE	0-2.6 m	2.6-3.0 m	NE
HA05	1.7 m	3.3 m	0-0.2 m	NE	0.2-3.0 m	3.0-3.3 m	1.1 m

1.NE: Not encountered.

4.2.1 Groundwater

The ground investigation was undertaken during Winter and formed exploratory boreholes to depths greater than any likely proposed excavation at the building platform locations. Groundwater levels were monitored utilising a groundwater dip meter on the day of drilling.

Groundwater was encountered at 1.1m bgl in HA05 near the bottom of northeast facing flank during the investigation.

Groundwater levels commonly fluctuate according to the season and rainfall events. As such, groundwater levels may vary and be identified at higher levels than monitored during this ground investigation particularly in wet, winter conditions. It is recommended that should any water ingress be noted during construction that further advice is sought from Geologix which may require amendments to the recommendations of this report.

5 GEOTECHNICAL ASSESSMENT

Based on the results of the desktop appraisal, a site walkover survey, and the ground investigation, Geologix have undertaken a site-specific geotechnical assessment relevant to the proposed development concept.

5.1 Geotechnical Design Parameters

Geotechnical design parameters are presented in Table 2 below. They have been developed based on our ground investigation, the results of in-situ testing and experience with similar materials.

Table 2: Geotechnical Parameters

Geological Unit	Unit Weight, kN/m³	Effective Friction Angle, °	Effective Cohesion, kPa	Undrained Shear Strength, kPa
Topsoil and Non-engineered Fill	16	26	0	NA
Stiff to Very Stiff Waipapa RS	17	30	5	50
Hard Waipapa RS	19	34	10	200

N/A: Not Applicable.

Topsoil and Non-engineered Fill are considered unsuitable as bearing layers for the proposed foundations.

5.2 Site Subsoil Class

The site has been designated as Site Subsoil Class C (Shallow Soil) according to the provisions of NZS1170:2004[6].

[6] *NZS1170.5:2004, Structural Design Actions Part 5: Earthquake Actions.*

5.3 Seismic Hazard

New Zealand Standard NZS1170.5:2004 Clause 2.1.4 specifies that to meet the requirements of the New Zealand Building Code, design of structures is to allow for two earthquake scenarios:

1. *Ultimate Limit State (ULS) shall provide for… "avoidance of collapse of the structural system…or loss of support to parts… damage to non-structural systems necessary for emergency building evacuation that renders them inoperable".*

2. *Serviceability Limit State (SLS) are to avoid damage to… "the structure and non-structural components that would prevent the structure from being used as originally intended without repair after the SLS earthquake…".*

Seismic hazard (PGA and magnitude) is summarized in Table 3 based on NZGS Module 1[7]. The proposed buildings are assumed to have an Importance Level of IL2 with a design life of 50 years. The corresponding return periods—25 years for SLS and 500 years for ULS—are based on this design life and Importance Level (NZS 1170.0:2002). Final determination should follow the structural designer's assessment.

Table 3: Summary of Seismic Hazard Parameters

Limit State	Effective Magnitude	Return Period (years)	Unweighted PGA
SLS	5.8	25	0.03 g
ULS	6.5	500	0.19 g

5.4 Site Stability

5.4.1 Qualitative Stability Assessment

Based on our understanding of the local geology and landslide processes, it is understood that:

- Potential triggering mechanisms for landsliding include intense rainfall events, during which soil saturation—particularly within the near-surface materials—results in elevated pore water pressures and a corresponding reduction in shear strength. In addition, desiccation shrinkage cracking that develops during dry periods (associated with potentially expansive soils) may increase soil permeability, thereby exacerbating the effects of subsequent rainfall.

- Furthermore, during seismic events, the horizontal component of earthquake-

7 NZGS Earthquake Geotechnical Engineering Practice Module 1 Overview of the Guidelines (Nov 2021).

induced acceleration may also contribute to slope instability.

5.4.2 *Quantitative Stability Assessment*

Within the scope of this ground investigation Geologix have undertaken a digitally modelled slope stability analysis through the critical section of the site topography and proposed development concept. The cross-sections, alignment as shown on Drawings Sheet 200, were derived from the New Zealand LiDAR 1 m Digital Elevation Model (DEM) provided by LINZ[8].

As the number of storeys, foundation types, and earthworks details for the proposed dwelling are currently unconfirmed, the current model assumes a residential surcharge load of 12 kPa applied to the slope, with no earthworks incorporated. Furthermore, no stabilisation measures such as retaining walls and/or palisade walls have been considered in the analysis. It should be noted that earthworks operations and stabilisation measures can significantly affect the slope stability analysis outcomes; therefore, it is recommended that the slope stability analysis be updated at the Building Consent stage once the proposed plans become available.

The slope was analysed within propriety software Slide 2 Version 9.03, developed by RocScience Inc. The purpose of the stability assessment was to:

- Ensure the proposed development layout are feasible.
- Provide a working, accurate ground model in relation to site stability refined according to observed conditions and the results of this ground investigation.
- Inform the requirements of Consent, developed architectural design and further engineering works.

5.4.3 *Quantitative Stability Analysis Results*

Slope stability analysis results are presented in full as Appendix C and summarised below as Table 4.

Table 4: Summary of Stability Analysis Results

Profile		Scenario	Global Min.	Development Footprint (min FS)	Result
Section A	Existing	Static[1]	3.82	>1.5	Pass
		Elevated GW[2]	2.98	>1.3	Pass
		Seismic[3]	2.14	>1.0	Pass
	Proposed	Static[1]	3.76	>1.5	Pass

8 https://data.linz.govt.nz/layer/121859-new-zealand-lidar-1m-dem/

Profile		Scenario	Global Min.	Development Footprint (min FS)	Result
		Elevated GW[2]	2.97	>1.3	Pass
		Seismic[3]	2.14	>1.0	Pass
Section B	Existing	Static[1]	1.22	<1.5	Failed
		Elevated GW[2]	0.78	<1.3	Failed
		Seismic[3]	0.82	<1.0	Failed
	Proposed	Static[1]	1.22	<1.5	Failed
		Elevated GW[2]	0.78	<1.3	Failed
		Seismic[3]	0.82	<1.0	Failed
Section C	Existing	Static[1]	1.14	<1.5	Failed
		Elevated GW[2]	0.71	<1.3	Failed
		Seismic[3]	0.76	<1.0	Failed
	Proposed	Static[1]	1.10	<1.5	Failed
		Elevated GW[2]	0.71	<1.3	Failed
		Seismic[3]	0.76	<1.0	Failed

1. *Static, normal groundwater minimum FS = 1.5*
2. *Static, elevated groundwater minimum FS = 1.3*
3. *Dynamic, seismic conditions minimum FS = 1.0*

5.4.4 *Quantitative Stability Analysis Conclusions and Engineering Considerations*

The slope stability analysis outputs indicates that:

- Western Flank: The western flank generally exhibits a gentler profile. Slope stability analysis for Section A confirms a low probability of slope failure. However, since potential surface runoff marks were noted near the Lot 1 footprint, the area may face risks of scouring or erosion from higher elevations. Surface water diversion is therefore recommended for this development. Additionally, although earthwork plan for Lot 1 is not yet available, all cut and fill profiles should be supported by retaining walls.

  Localized cut slopes along Lichen Grove may present steep profiles prone to minor failures. A western BRL has been projected at a 1V:3H gradient from the slope toe to mitigate localized instability risks.

- Eastern Flank: The eastern flank features steeper and higher slopes, especially at the concave terrain on Lot 3. Slope stability assessments for Sections B and C indicate that slope failures triggered by extreme weather or seismic events could adversely affect the proposed developments, particularly the Lot 3 dwellings. A corresponding BRL has been plotted on Drawing Sheet 200. Note that strategic cutting works may allow the BRL to be adjusted eastward. Alternatively, SED piles engineered account for lateral soil movement loads, or ground reinforcement like soil nailing, could be adopted to enhance slope stability.

5.5 Soil Expansivity

Clay soil may undergo appreciable volume change in response to changes in moisture content and be classed as expansive. The reactivity and the typical range of movement that can be expected from potentially expansive soils underlying any given building site depends on the amount of clay present, the clay mineral type, and the proportion, depth, and distribution of clay throughout the soil profile. Clay soils typically have a high porosity and low permeability causing moisture changes to occur slowly and produce swelling upon wetting and shrinkage upon drying. Apart from seasonal moisture changes (wet winters and dry summers) other factors that can influence soil moisture content include:

- Influence of garden watering and site drainage.
- The presence of mature vegetation.
- Initial soil moisture conditions at the time of construction.
- Accidental wetting such as failed/leaking on site services.

Based on the identification of low to high-plasticity cohesive soils during the recent investigations, together with the local geological conditions, the site is classified as Site Class H (Highly Expansive).

5.6 Liquefaction Potential

Liquefaction occurs when excess pore pressures are generated within loose, saturated, and generally cohesionless soils (typically sands and silty sands with <30 % fines content) during earthquake shaking. The resulting high pore pressures can cause the soils to undergo a partial to complete loss of strength. This can result in settlement and/ or horizontal movement (lateral spread) of the soil mass.

The proposed dwelling locations are mapped within “Unlikely Liquefaction Vulnerability Area” as shown in Figure 3. Furthermore, the underlying soils consist predominantly of cohesive soils, which have a low susceptibility to liquefaction due to their plasticity and low permeability. Therefore, the overall liquefaction potential at the site is considered to be low.

6 GEOTECHNICAL RECOMMENDATIONS

The following geotechnical recommendations have been developed based on the plans and details supplied to us at the time of writing. No detailed architectural or earthworks plans were available during the preparation of this report. Amendments or revisions to the plans detailed in this report may require a review of the following

recommendations.

Crucially, once the final building platforms, structural architectural layouts, and earthworks/retaining schemes are finalized at the detailed design/building consent stage, an updated and comprehensive slope stability analysis must be undertaken.

6.1 Foundations

From a bearing capacity perspective, the natural residual soil is assessed to have an indicative ultimate bearing capacity of approximately 300 kPa, taking into account the highly expansive soil conditions inherent to the site and applying a geotechnical strength reduction factor 0.5.

However, it is critical to note that global and localized slope stability may significantly impact the proposed dwellings. A preliminary Building Restriction Line (BRL) has been delineated on Drawing Sheet 200 based on the initial stability analysis; development beyond the BRL require that stabilisation controls are implemented.

The risk of global instability varies across the development:

- For Lot 1 and Lot 2: The likelihood of overall slope failure affecting the building platforms is considered relatively low. The potential hazards can be effectively mitigated or avoided through strategic dwelling setbacks, optimized building positioning, and standard earthworks combined with engineered retaining walls.

- For Lot 3: Due to its specific topographic and geological setting, this lot is exposed to a higher risk. Developing Lot 3 is anticipated to involve substantial earthworks and/or large-scale, deep-seated structural stabilization measures (such as heavy retaining structures or palisade walls) to appropriately mitigate slope stability hazards.

6.2 Earthworks

No earthwork plans were provided at the time of drafting this report. However, based on the site topography, earthworks in conjunction with the construction of retaining walls at the cut/fill batters are anticipated to create levelled building platforms.

6.2.1 Cut Earthworks

To reduce the risk of temporary excavation instability, it is recommended that any unsupported excavations have a maximum vertical height of 0.5 m. Temporary unsupported excavations above this height shall be battered at 1V:2H(26°) or gentler.

Finished cut batters should generally not be steeper than 1V:3H (approximately 18°), unless suitably retained by engineered retaining structures.

All works within proximity to excavations should be undertaken in accordance with Occupational Health and Safety regulations. In addition, it is recommended that all earthworks are carried out in periods of fine weather within the typical October to April earthwork season. Consent conditions commonly prescribe working restrictions.

6.2.2 Fill earthworks

Where hardfill is proposed to be used, a suitable material such as GAP40 should be implemented. Hardfill should be placed in maximum 250mm loose layers and compacted to its maximum dry density to achieve adequate compaction levels. Appropriately sized compaction equipment will be required to meet minimum compaction levels required. Clegg hammer CIV values > 25 would be considered appropriate compaction level on hardfill placed in new building platforms in accordance with the requirements of NZS 4431.

Finished fill batters should generally not be steeper than 1V:3H (approximately 18°), unless suitably retained by engineered retaining structures.

Prior to fill placement, the non-engineered fill present within Lot 2 should be removed to mitigate the risk of future settlement and potential bearing capacity issues. These materials are not considered suitable for reuse as site-won material beneath load-bearing areas such as building platforms and driveways.

6.3 Further Geotechnical Inputs

Further geotechnical inputs may include:

- A machine drilled borehole: To acquire data on deeper soil/rock strata, thereby refining the slope stability model and optimizing the BRL particularly for Lot 3.
- Detailed design of stabilisation measures: To be implemented should building platforms remain located beyond the prescribed BRL.

6.4 Construction Monitoring

During construction it is recommended that specific monitoring is undertaken by a professional engineer in accordance with the recommendations of this report and consent conditions. It is anticipated that a professional Geotechnical Engineer will be required to provide inspection of:

- Subgrade at the base of excavations within the footprint of buildings, driveways, and any other areas of structural or vehicle loading.

- Inspection of hard fill compaction where placed >300 mm in thickness and/ or within the footprint of imposed surcharges such as buildings and/ or driveways.
- Inspection of Foundation piles construction if required.
- Inspection of retaining wall construction, primarily of formed pile holes and select material properties

The above items are considered to be capable under CM2 level construction monitoring accompanied by appropriate Producer Statements. Monitoring should be undertaken or supervised by a chartered professional engineer.

7 LIMITATIONS

This report has been prepared for our client. It may be relied upon by our Client and their appointed Consultants, Contractors and for the purpose of Consent as outlined by the specific objectives in this report. This report and associated recommendations, conclusions or intellectual property is not to be relied upon by any other party for any purpose unless agreed in writing by Geologix Consulting Engineers Ltd and our Client. In any case the reliance by any other party for any other purpose shall be at such parties' sole risk and no reliability is provided by Geologix Consulting Engineers Ltd.

The opinions and recommendations of this report are based on plans, specifications and reports provided to us at the time of writing, as referenced. Any changes, additions or amendments to the project scope and referenced documents may require an amendment to this report and Geologix Consulting Engineers should be consulted. Geologix Consulting Engineers Ltd reserve the right to review this report and accompanying plans.

The recommendations and opinions in this report are based on arisings extracted from exploratory boreholes at discrete locations and any available existing borehole records. The nature and continuity of subsurface conditions, interpretation of ground condition and models away from these specific ground investigation locations are inferred. It must be appreciated that the actual conditions may vary based on the assumed ground model. Difference from the encountered ground conditions during subdivision construction may require an amendment to the recommendations of this report.

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APPENDIX A

Drawings

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DRAWN: LG	SIGNED: LG	DATE: 12/06/2026	CLIENT: Kate Ogg	PROJECT: 65 Alec Craig Way, Gulf Harbour, Auckland	DRAWING TITLE: Geotechnical Site Plan FOR Canopy Resource Consent	STATUS: FINAL NOT FOR CONSTRUCTION			
VERIFIED: AW	SIGNED: AW	DATE: 12/06/2026				SCALE: 1:700	SHEET SIZE: A3		
APPROVED: EC	SIGNED: EC	DATE: 12/06/2026				PROJECT NO.: C0856A	TYPE: RC	CLASS: G	SHEET NO.: 200	REV: A

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APPENDIX B

Exploratory Hole Records

HAND AUGER & DCP LOG

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Project Name: Lot 39, 27 Lichen Grove, Russell

Project Ref:	C0842N
Client:	Frank van der Pol
Hole ID:	**HA01**
Date:	2026-05-25
Logged By:	CA
Approved:	AW

Project Location: 27 Lichen Grove Russell

Hole Position: 1704572.91 mE 6095004.21 mN 42.47 m

Ground Surface EL 42.47 m

DEPTH (M)	MATERIAL DESCRIPTION (SEE CLASSIFICATION AND SYMBOLOGY SHEET FOR DETAILS)	LEGEND	SAMPLE	VANE SHEAR STRENGTH (KPA)	PEAK	RESIDUAL	SCALA PENETROMETER (Blows/100mm)	GROUND WATER
0	SILT, with trace rootlets; brown. Very stiff; moist; low plasticity; [TOPSOIL].							
	0.1 m EL 42.37 m							
	SILT, with minor clay, trace gravel; light brown mottled off-white. Stiff; moist to wet; low plasticity. Gravel is fine to medium, sub-rounded to sub-angular; [FILL].				148	17		
	0.4 m EL 42.07 m				88	26		
	SILT, with trace gravel; brown. Stiff; moist; low plasticity. Gravel is fine to medium, sub-rounded to sub-angular. [RESIDUAL SOIL].				68	14		
1	0.6 m EL 41.87 m							
	Clayey SILT; light reddish brown. Stiff; moist to wet; low plasticity; [WAIPAPA COMPOSITE TERRANE].				UTP			
	1 m EL 41.47 m						25	
	SILT, with gravel; dark grey. Very stiff to hard; wet to saturated; friable. Gravel is medium to coarse; sub-rounded to sub-angular; low plasticity;[WAIPAPA COMPOSITE TERRANE].							
	1.2 m EL 41.27 m							
2	Terminated at 1.2 m							
3								
4								
5								

VANE SHEAR STRENGTH (KPA): 25 50 75 100 125 150 175

SCALA PENETROMETER (Blows/100mm): 5 10 15 20

Remarks:

1. Hand auger terminated at 1.20m bgl due to hard strata encountered.
2. Continue with DCP from 1.20m bgl to 1.30m bgl.
3. Groundwater not encountered during drilling.

HAND AUGER & DCP LOG

geologix consulting engineers

Project Ref:	C0842N
Client:	Frank van der Pol
Project Name:	Lot 39, 27 Lichen Grove, Russell
Hole ID:	**HA02**
Project Location:	27 Lichen Grove Russell
Date:	2026-05-25
Hole Position:	1704594.6 mE 6095033.2 mN 41.7 m
Logged By:	CA
Approved:	AW

Ground Surface EL 41.7 m

DEPTH (M)	MATERIAL DESCRIPTION (SEE CLASSIFICATION AND SYMBOLOGY SHEET FOR DETAILS)	LEGEND	SAMPLE	VANE SHEAR STRENGTH (KPA)	PEAK	RESIDUAL	SCALA PENETROMETER (Blows/100mm)	GROUND WATER
0	SILT, with rootlets; dark grey. Very stiff; moist to wet; low plasticity; [TOPSOIL].				103	17		
	0.4 m EL 41.3 m							
	SILT; off-white. Very stiff to hard; moist; low plasticity; [WAIPAPA COMPOSITE TERRANE].				UTP			
	0.6 m EL 41.1 m							
	Terminated at 0.6 m							
1							7, 15, 15, 25	1
2								2
3								3
4								4
5								5

VANE SHEAR STRENGTH (KPA): 25 50 75 100 125 150 175

SCALA PENETROMETER (Blows/100mm): 5 10 15 20

Remarks:

1. Hand Auger terminated at 0.60m bgl due to hard strata.
2. Continue with DCP from 0.60m bgl to 0.70m bgl.
3. Groundwater not encountered during drilling.

HAND AUGER & DCP LOG

geologix consulting engineers

Project Ref:	C0842N
Client:	Frank van der Pol
Project Name:	Lot 39, 27 Lichen Grove, Russell
Hole ID:	**HA03**
Project Location:	27 Lichen Grove Russell
Date:	2026-05-25
Hole Position:	1704590.75 mE 6095006.88 mN 43.47 m
Logged By:	CA
Approved:	AW

Ground Surface EL 43.47 m

MATERIAL DESCRIPTION (SEE CLASSIFICATION AND SYMBOLOGY SHEET FOR DETAILS)

Sandy SILT, with gravel; light brown mottled light grey. Firm to stiff; moist to wet; friable. Gravel is medium to coarse, sub-rounded to sub-angular; [FILL].

0.7 m
EL 42.77 m

SILT; brown. Very stiff; moist; low plasticity; [RESIDUAL SOIL].

0.9 m
EL 42.57 m

Clayey SILT; light brown. Very stiff; moist to wet; high plasticity; [WAIPAPA COMPOSITE TERRANE].

1.8 m
EL 41.67 m

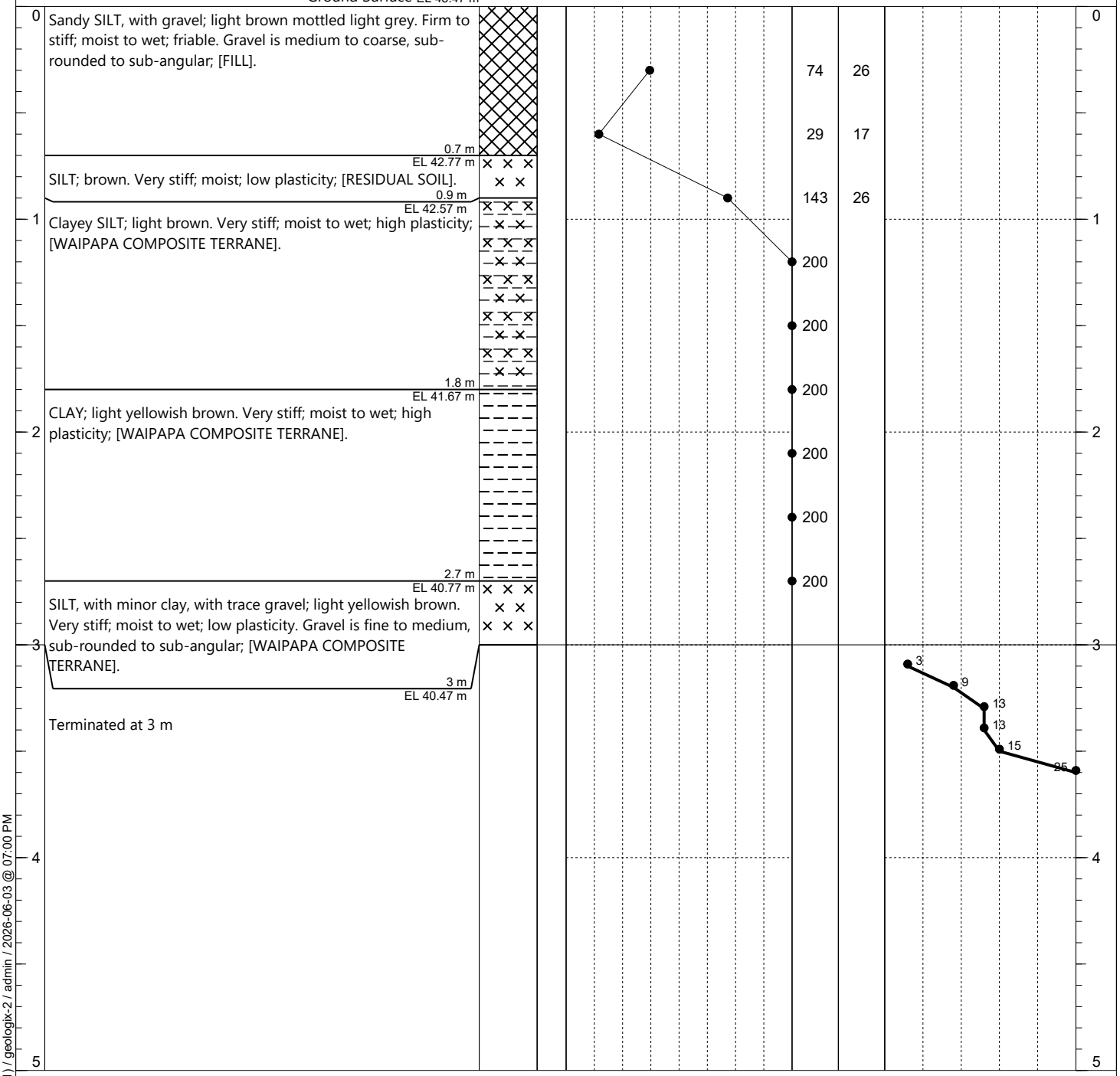
CLAY; light yellowish brown. Very stiff; moist to wet; high plasticity; [WAIPAPA COMPOSITE TERRANE].

2.7 m
EL 40.77 m

SILT, with minor clay, with trace gravel; light yellowish brown. Very stiff; moist to wet; low plasticity. Gravel is fine to medium, sub-rounded to sub-angular; [WAIPAPA COMPOSITE TERRANE].

3 m
EL 40.47 m

Terminated at 3 m



Remarks:

1. Hand Auger terminated at 3.0m bgl due to hard strata.
2. Continue with DCP from 3.0m bgl to 3.60m bgl.
3. Groundwater not encountered during drilling.

HAND AUGER & DCP LOG

geologix consulting engineers

Project Ref:	C0842N
Client:	Frank van der Pol
Project Name:	Lot 39, 27 Lichen Grove, Russell
Hole ID:	**HA04**
Project Location:	27 Lichen Grove Russell
Date:	2026-05-25
Hole Position:	1704631.57 mE 6094987.56 mN 41.66 m
Logged By:	CA
Approved:	AW

Ground Surface EL 41.66 m

DEPTH (M)	MATERIAL DESCRIPTION (SEE CLASSIFICATION AND SYMBOLOGY SHEET FOR DETAILS)	LEGEND	SAMPLE	VANE SHEAR STRENGTH (KPA)	PEAK	RESIDUAL	SCALA PENETROMETER (Blows/100mm)	GROUND WATER
0	SILT, with minor clay; light brown mottled off-white. Very stiff; moist; low plasticity; [WAIPAPA COMPOSITE TERRANE].				128	14		
					171	34		
	0.8 m EL 40.86 m							
1	Silty CLAY; light brown mottled off-white. Very stiff; moist to wet; low plasticity; [WAIPAPA COMPOSITE TERRANE].				151	26		
	1.1 m EL 40.56 m				UTP			
	SILT; off-white becoming yellowish brown. Very stiff; moist; low plasticity; [WAIPAPA COMPOSITE TERRANE].				UTP			
	1.5 m EL 40.16 m							
2	Terminated at 1.5 m							
3								
4								
5								

Remarks:

1. Hand Auger terminated at 1.50m bgl due to hard strata.
2. Continue with DCP from 1.50m bgl to 3.0m bgl.
3. Groundwater not encountered during drilling.

HAND AUGER & DCP LOG

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Project Ref:	C0842N
Client:	Frank van der Pol
Project Name:	Lot 39, 27 Lichen Grove, Russell
Hole ID:	**HA05**
Project Location:	27 Lichen Grove Russell
Date:	2026-05-26
Hole Position:	1704637.99 mE 6095024.5 mN 36.54 m
Logged By:	CA
Approved:	AW

Ground Surface EL 36.54 m

DEPTH (M)	MATERIAL DESCRIPTION (SEE CLASSIFICATION AND SYMBOLOGY SHEET FOR DETAILS)	LEGEND	SAMPLE
0	Clayey SILT, with trace rootlets; dark grey. Very stiff; moist; low plasticity; [TOPSOIL].		
0.2 m EL 36.34 m	SILT, with trace gravel; light brown mottled off-white. Very stiff; moist to wet; low plasticity. Gravel is fine to medium, sub-rounded to sub-angular; [WAIPAPA COMPOSITE TERRANE]. ... 1.10m: Becoming saturated.		
1.2 m EL 35.34 m	Clayey SILT, with trace gravel; light brown mottled off-white. Very stiff; wet; low plasticity. Gravel is fine to medium, sub-rounded to sub-angular; [WAIPAPA COMPOSITE TERRANE].		
1.7 m EL 34.84 m	Terminated at 1.7 m		

VANE SHEAR STRENGTH (KPA) — 25 50 75 100 125 150 175

DEPTH (M)	PEAK	RESIDUAL
0	111	26
	154	26
1	145	29
	200	
	UTP	
	UTP	
2		
3		
4		
5		

SCALA PENETROMETER (Blows/100mm) — 5 10 15 20

3 3 3 6 8 12 5 5 5 6 8 12 8 11 15 25

GROUND WATER

Remarks:

1. Hand Auger terminated at 1.70m bgl due to hard strata.
2. Continue with DCP from 1.70m bgl to 3.30m bgl.
3. Groundwater encountered at 1.10m bgl.

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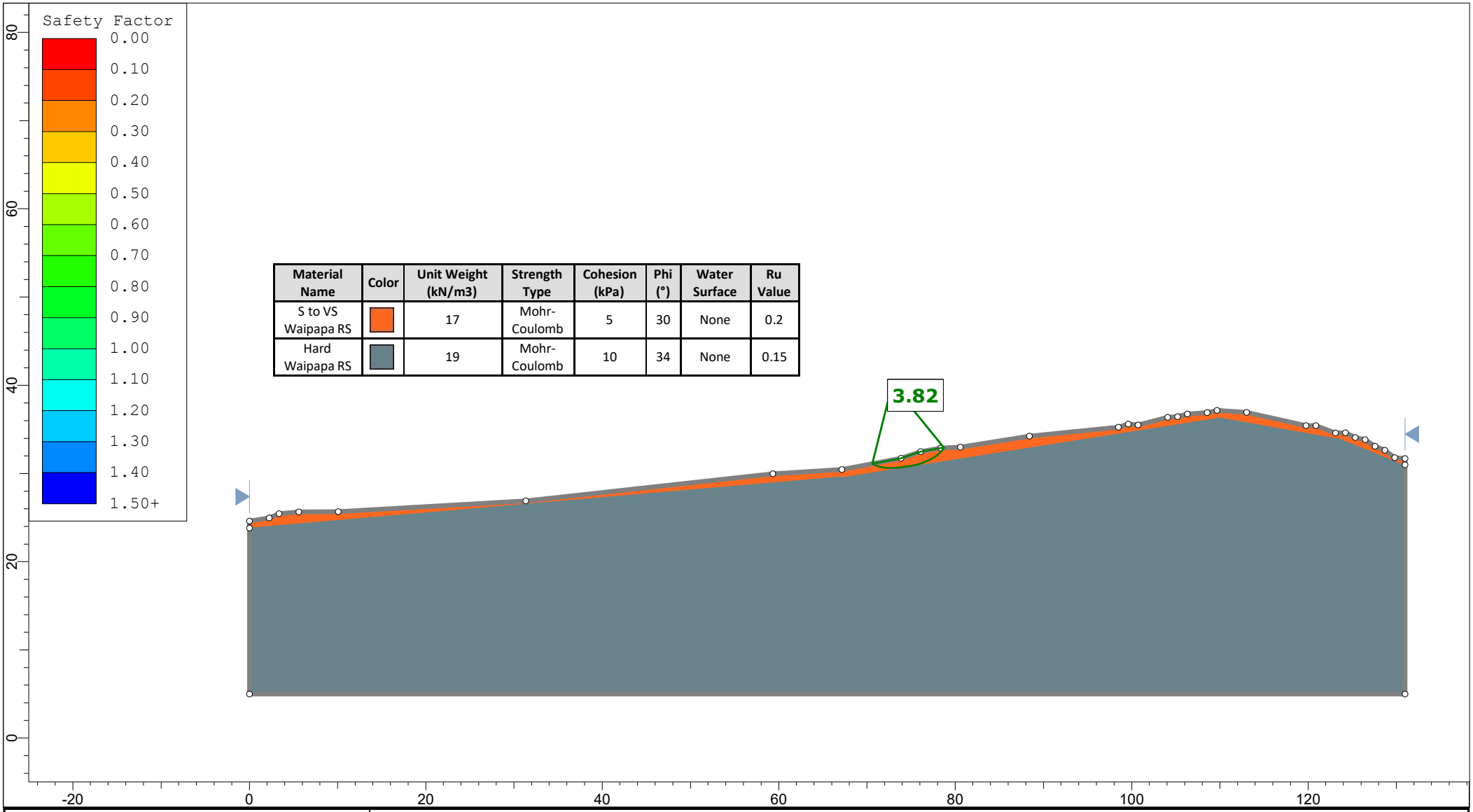
APPENDIX C

Slope Stability Analysis Outputs



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
S to VS Waipapa RS		17	Mohr-Coulomb	5	30	None	0.2
Hard Waipapa RS		19	Mohr-Coulomb	10	34	None	0.15

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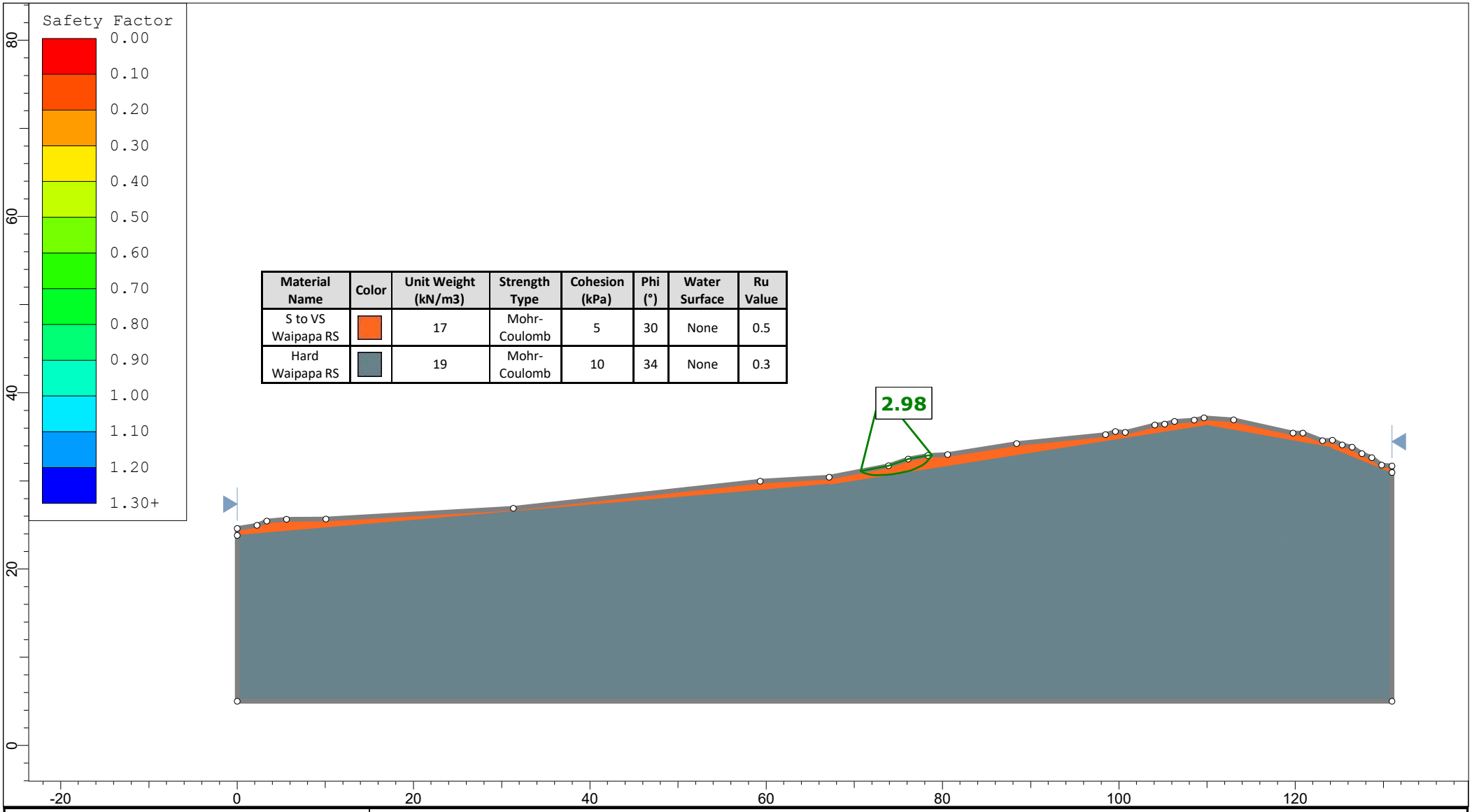
SLIDEINTERPRET 9.039

Project	Lot 39, 27 Lichen Grove Russell		
Group	Existing	*Scenario*	Static
Drawn By	LG	*Company*	Geologix
Date	29/05/2026	*File Name*	Section A.slmd



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
S to VS Waipapa RS		17	Mohr-Coulomb	5	30	None	0.5
Hard Waipapa RS		19	Mohr-Coulomb	10	34	None	0.3

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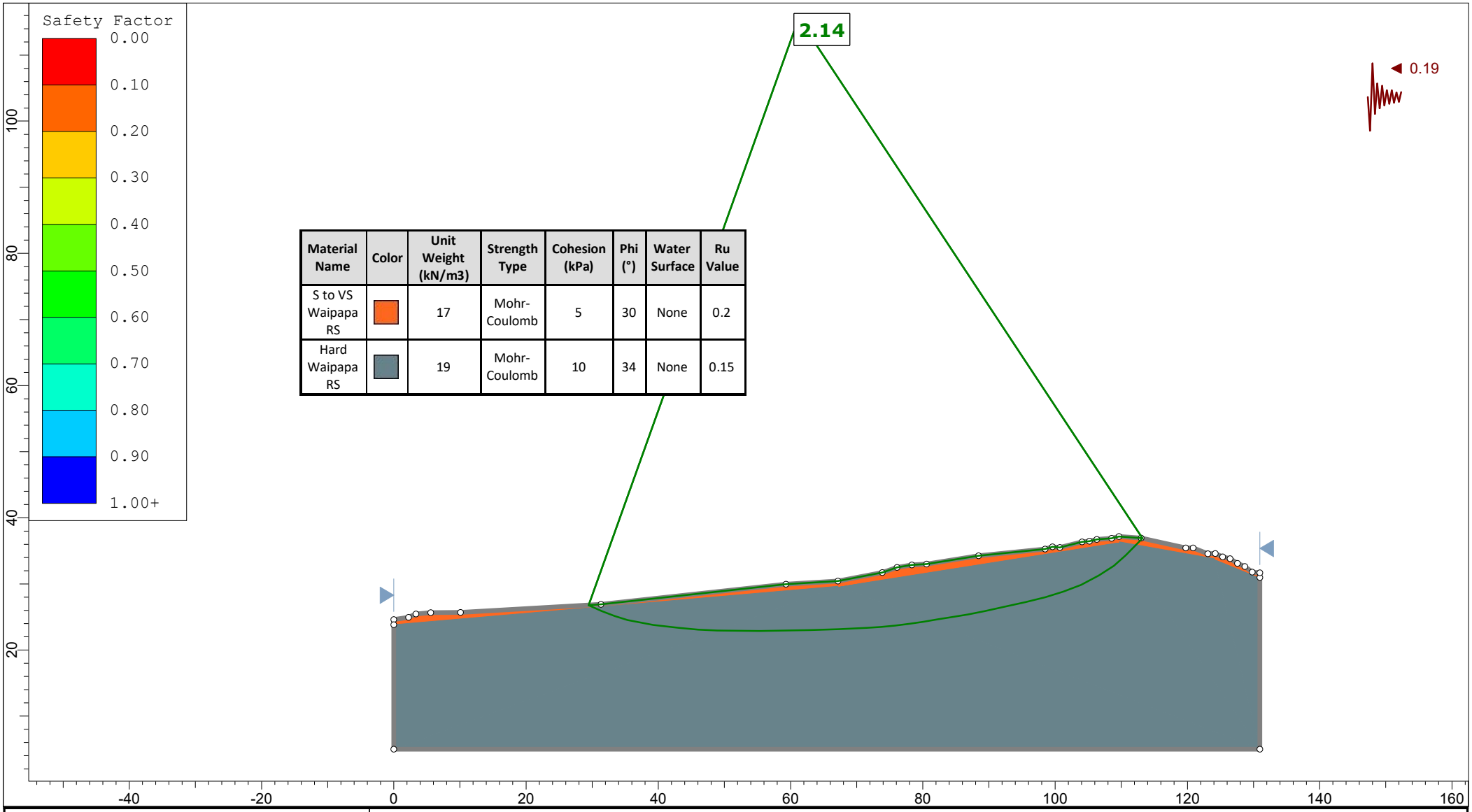
Project	Lot 39, 27 Lichen Grove Russell		
Group	Existing	*Scenario*	Elevated GW
Drawn By	LG	*Company*	Geologix
Date	29/05/2026	*File Name*	Section A.slmd



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
S to VS Waipapa RS		17	Mohr-Coulomb	5	30	None	0.2
Hard Waipapa RS		19	Mohr-Coulomb	10	34	None	0.15

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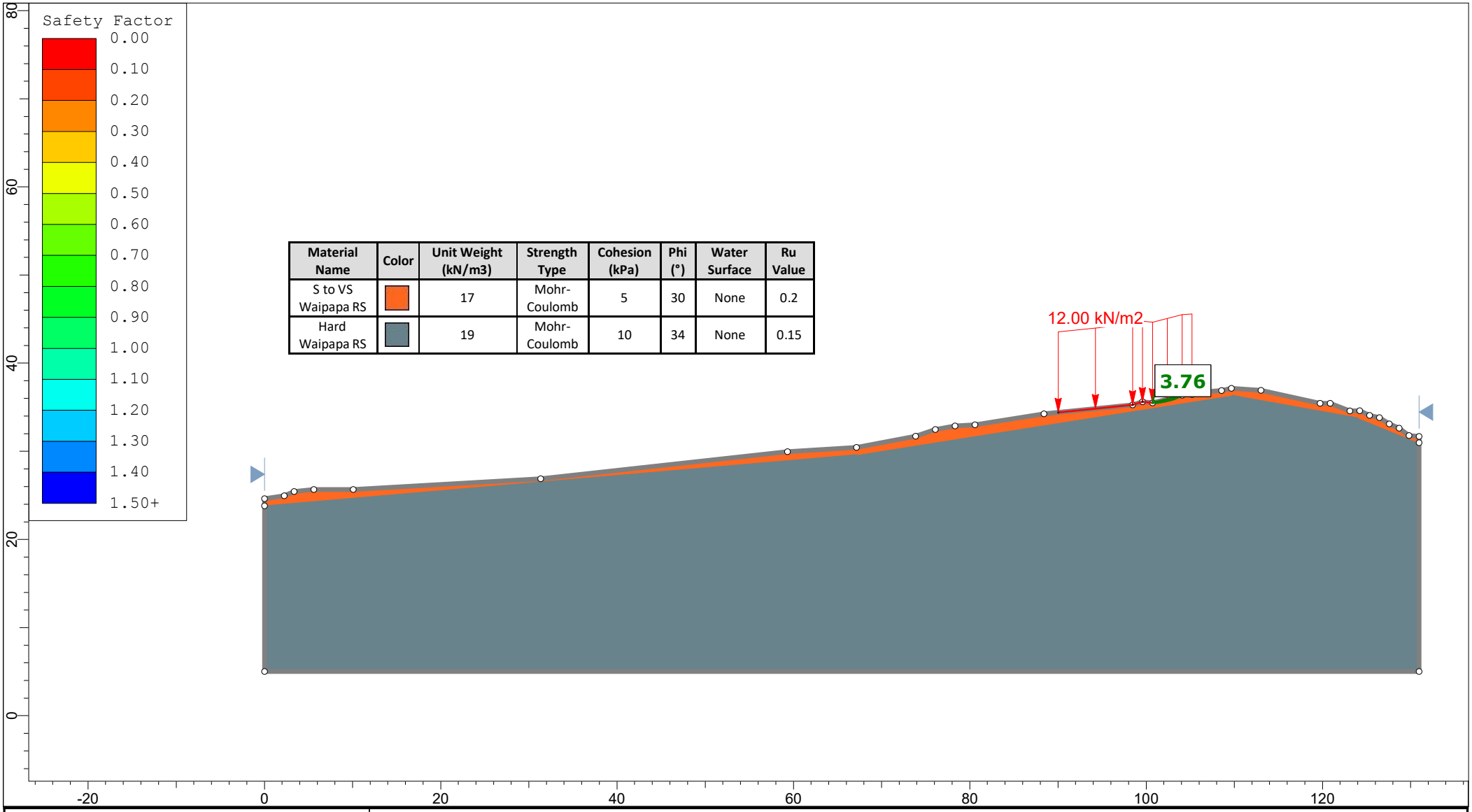
SLIDEINTERPRET 9.039

Project	Lot 39, 27 Lichen Grove Russell		
Group	Existing	*Scenario*	ULS Seismic
Drawn By	LG	*Company*	Geologix
Date	29/05/2026	*File Name*	Section A.slmd



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
S to VS Waipapa RS		17	Mohr-Coulomb	5	30	None	0.2
Hard Waipapa RS		19	Mohr-Coulomb	10	34	None	0.15

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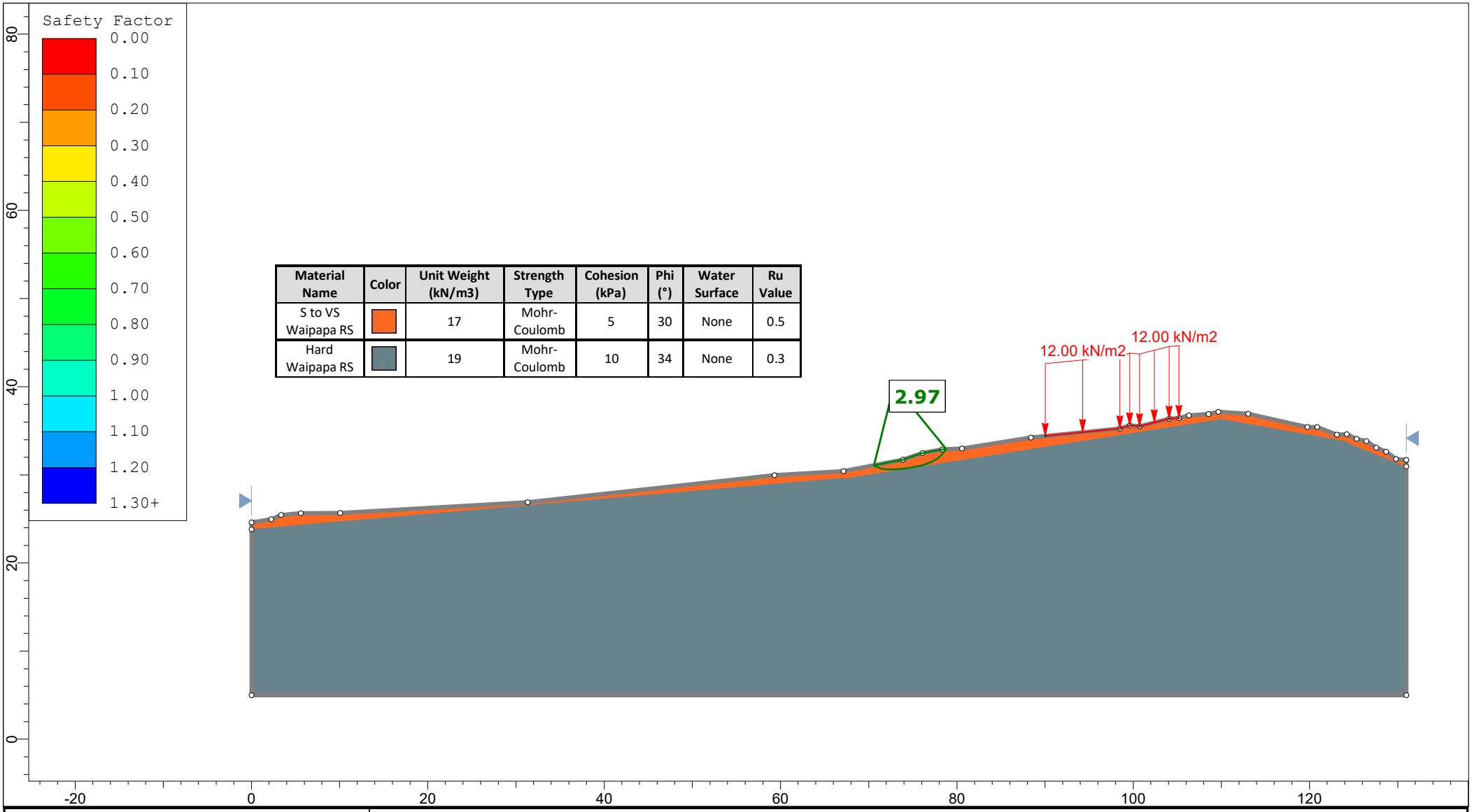
Project	Lot 39, 27 Lichen Grove Russell		
Group	Proposed	*Scenario*	Static
Drawn By	LG	*Company*	Geologix
Date	29/05/2026	*File Name*	Section A.slmd



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
S to VS Waipapa RS		17	Mohr-Coulomb	5	30	None	0.5
Hard Waipapa RS		19	Mohr-Coulomb	10	34	None	0.3

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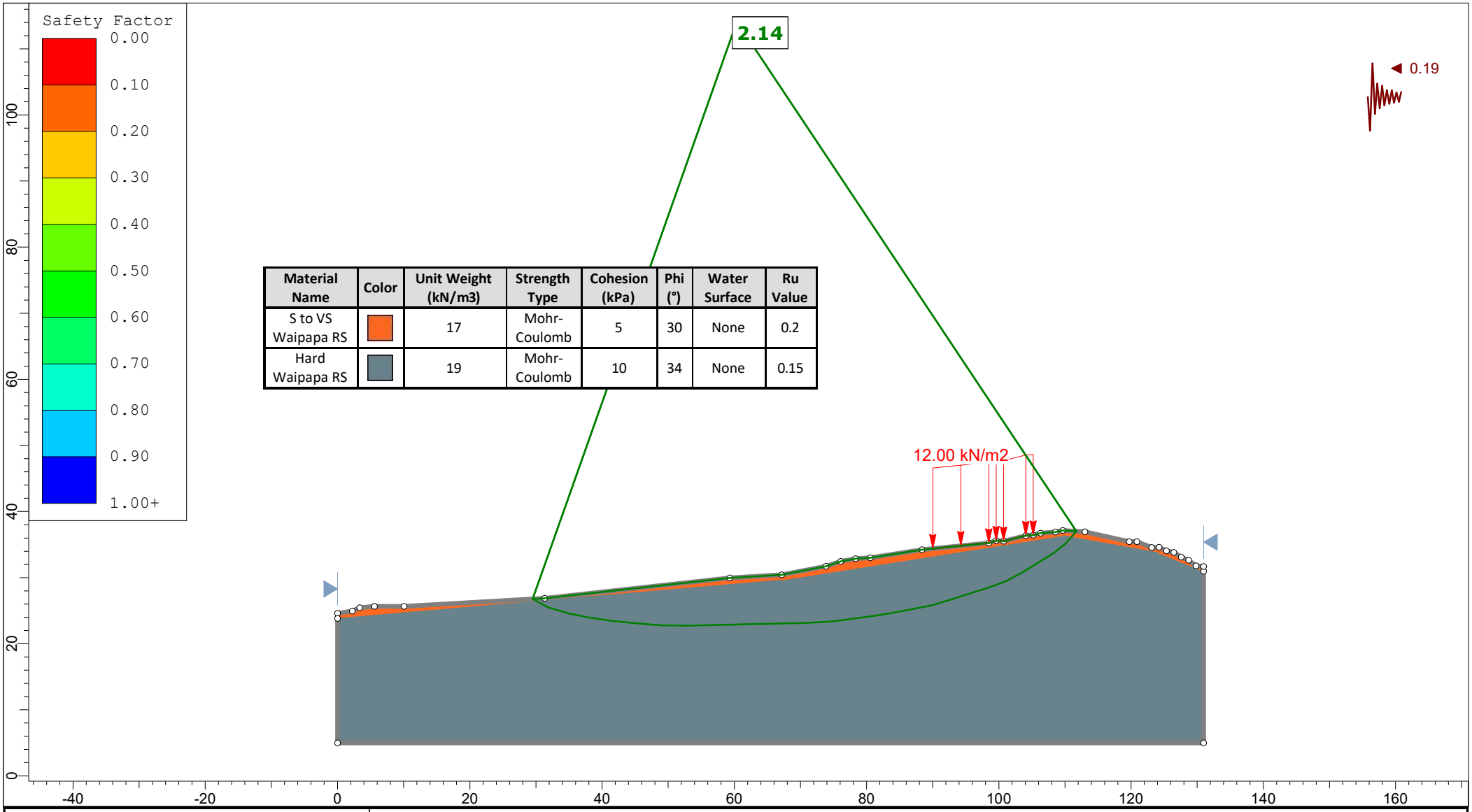
Project	Lot 39, 27 Lichen Grove Russell		
Group	Proposed	*Scenario*	Elevated GW
Drawn By	LG	*Company*	Geologix
Date	29/05/2026	*File Name*	Section A.slmd



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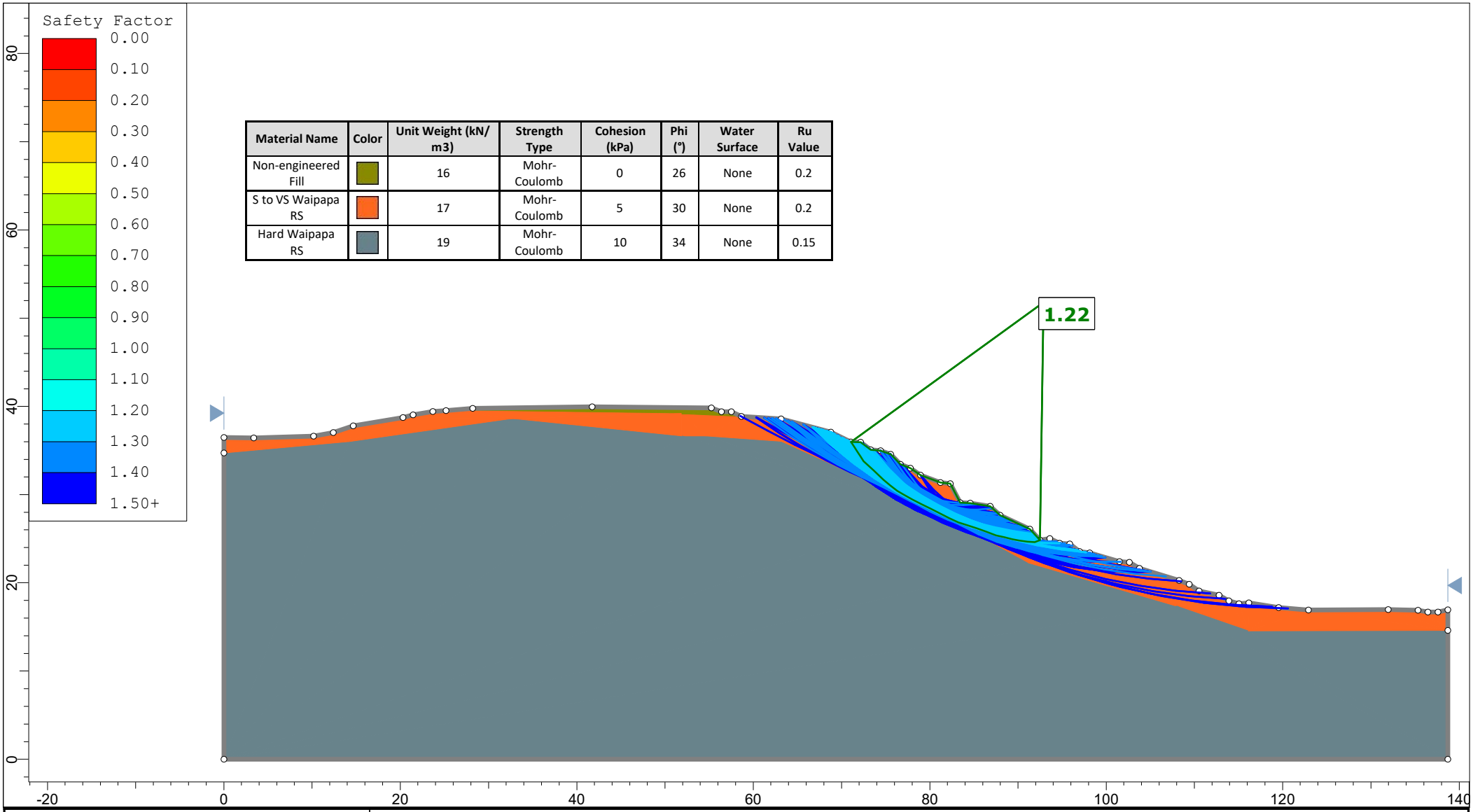
Project	Lot 39, 27 Lichen Grove Russell		
Group	Proposed	*Scenario*	ULS Seismic
Drawn By	LG	*Company*	Geologix
Date	29/05/2026	*File Name*	Section A.slmd



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
Non-engineered Fill		16	Mohr-Coulomb	0	26	None	0.2
S to VS Waipapa RS		17	Mohr-Coulomb	5	30	None	0.2
Hard Waipapa RS		19	Mohr-Coulomb	10	34	None	0.15

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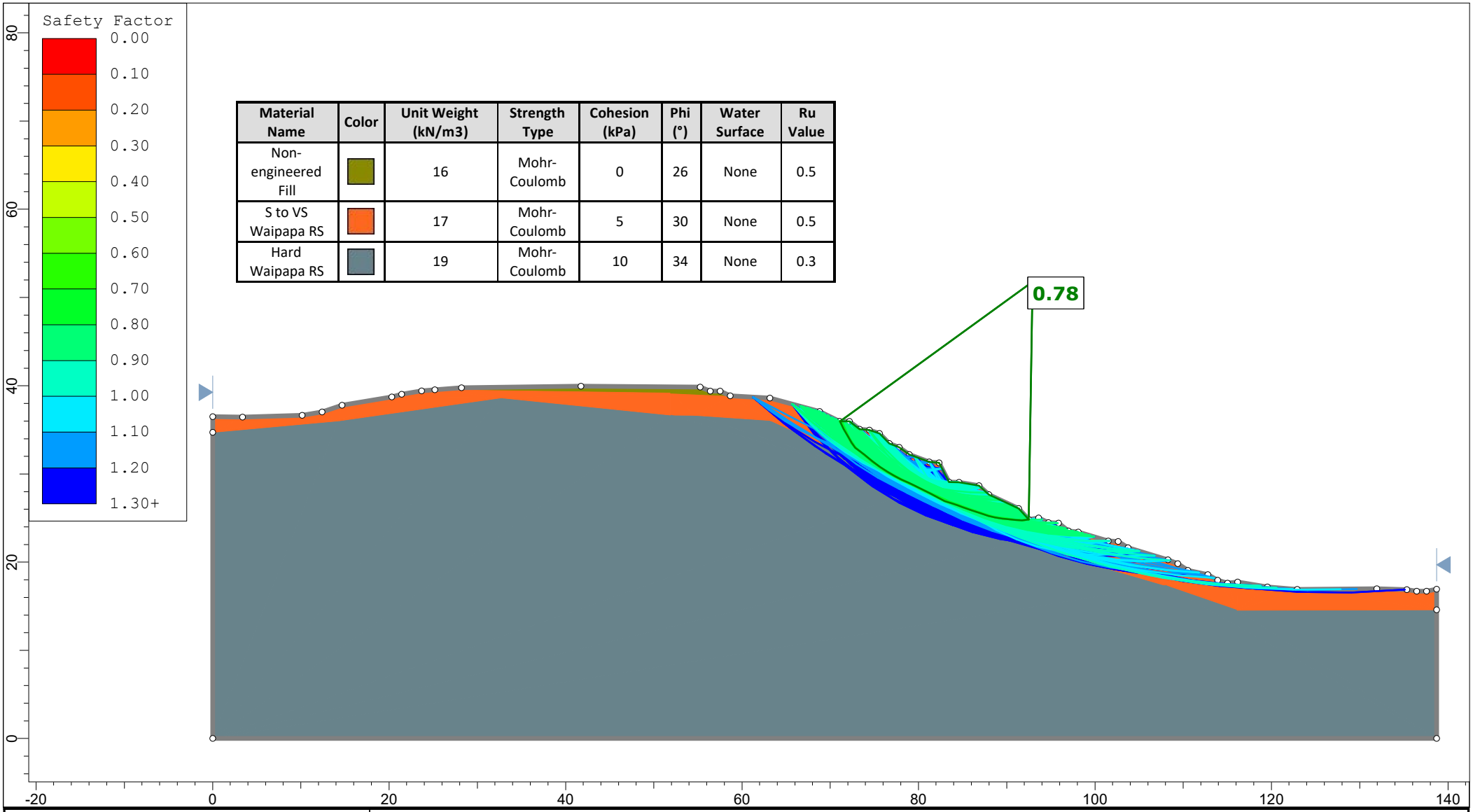
Project	Lot 39, 27 Lichen Grove Russell		
Group	Existing	*Scenario*	Static
Drawn By	LG	*Company*	Geologix
Date	29/05/2026	*File Name*	Section B.slmd



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
Non-engineered Fill		16	Mohr-Coulomb	0	26	None	0.5
S to VS Waipapa RS		17	Mohr-Coulomb	5	30	None	0.5
Hard Waipapa RS		19	Mohr-Coulomb	10	34	None	0.3

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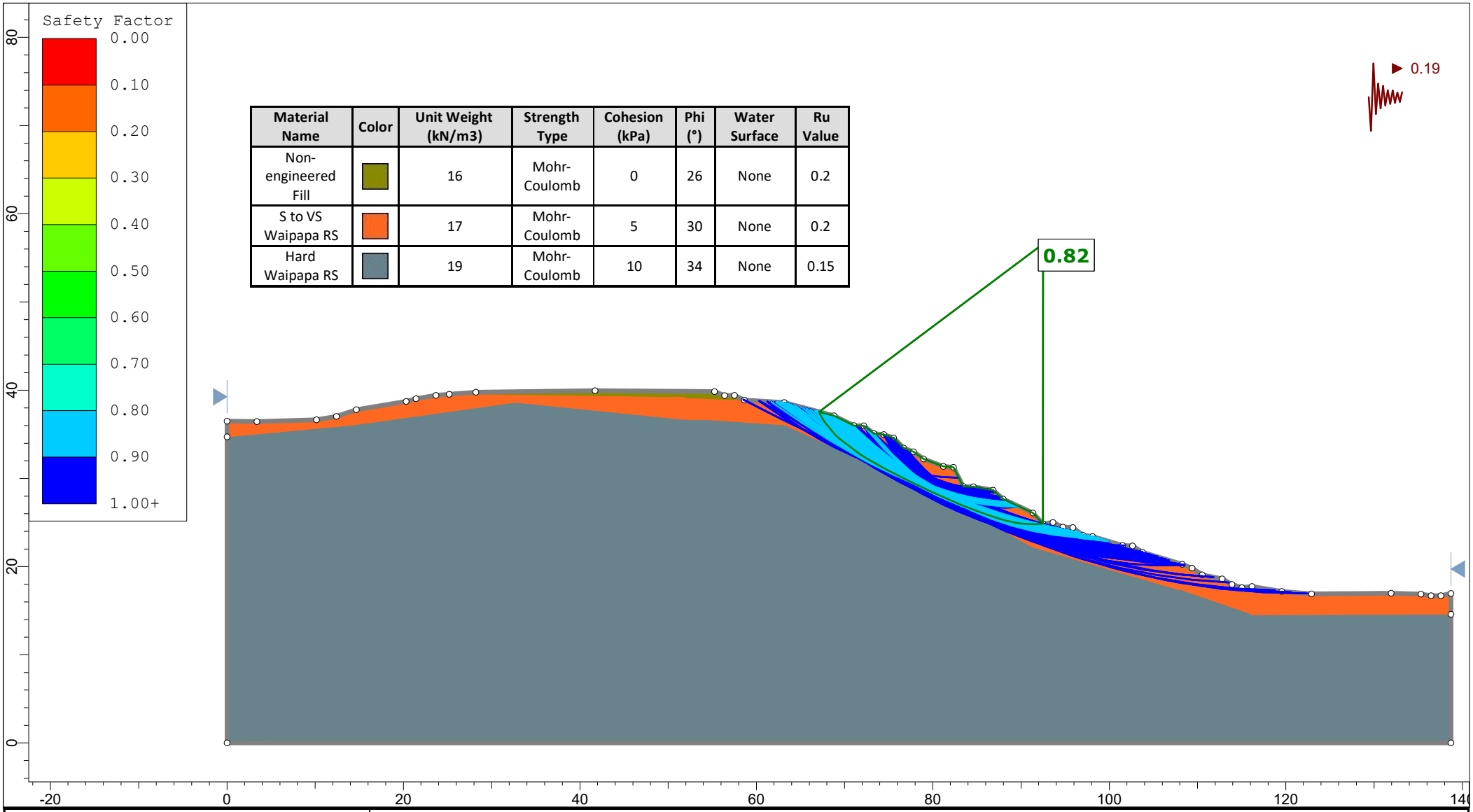
Project	Lot 39, 27 Lichen Grove Russell		
Group	Existing	*Scenario*	Elevated GW
Drawn By	LG	*Company*	Geologix
Date	29/05/2026	*File Name*	Section B.slmd



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
Non-engineered Fill		16	Mohr-Coulomb	0	26	None	0.2
S to VS Waipapa RS		17	Mohr-Coulomb	5	30	None	0.2
Hard Waipapa RS		19	Mohr-Coulomb	10	34	None	0.15

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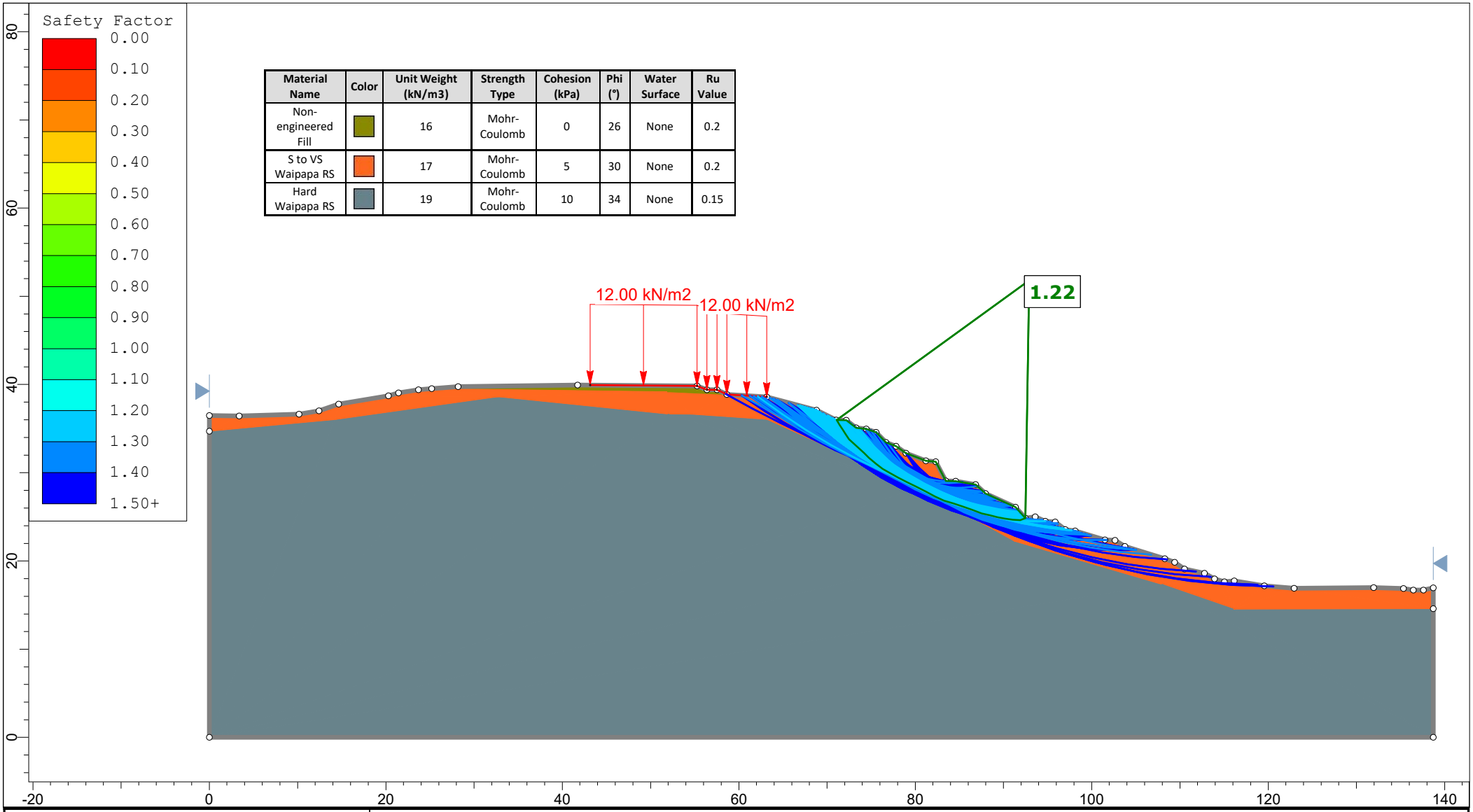
Project	Lot 39, 27 Lichen Grove Russell		
Group	Existing	*Scenario*	ULS Seismic
Drawn By	LG	*Company*	Geologix
Date	29/05/2026	*File Name*	Section B.slmd



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
Non-engineered Fill		16	Mohr-Coulomb	0	26	None	0.2
S to VS Waipapa RS		17	Mohr-Coulomb	5	30	None	0.2
Hard Waipapa RS		19	Mohr-Coulomb	10	34	None	0.15

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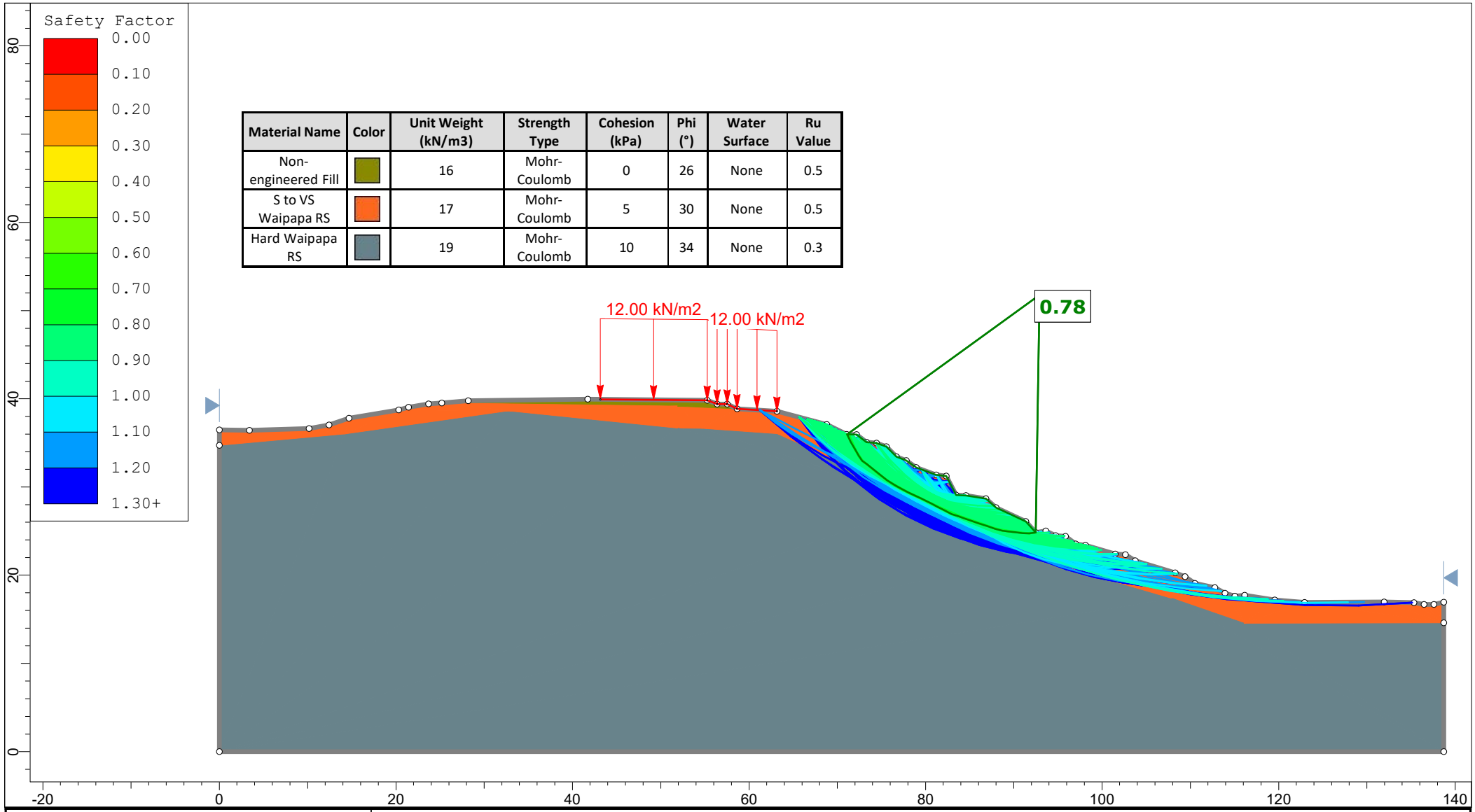
SLIDEINTERPRET 9.039

Project	Lot 39, 27 Lichen Grove Russell		
Group	Proposed	*Scenario*	Static
Drawn By	LG	*Company*	Geologix
Date	29/05/2026	*File Name*	Section B.slmd



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
Non-engineered Fill		16	Mohr-Coulomb	0	26	None	0.5
S to VS Waipapa RS		17	Mohr-Coulomb	5	30	None	0.5
Hard Waipapa RS		19	Mohr-Coulomb	10	34	None	0.3

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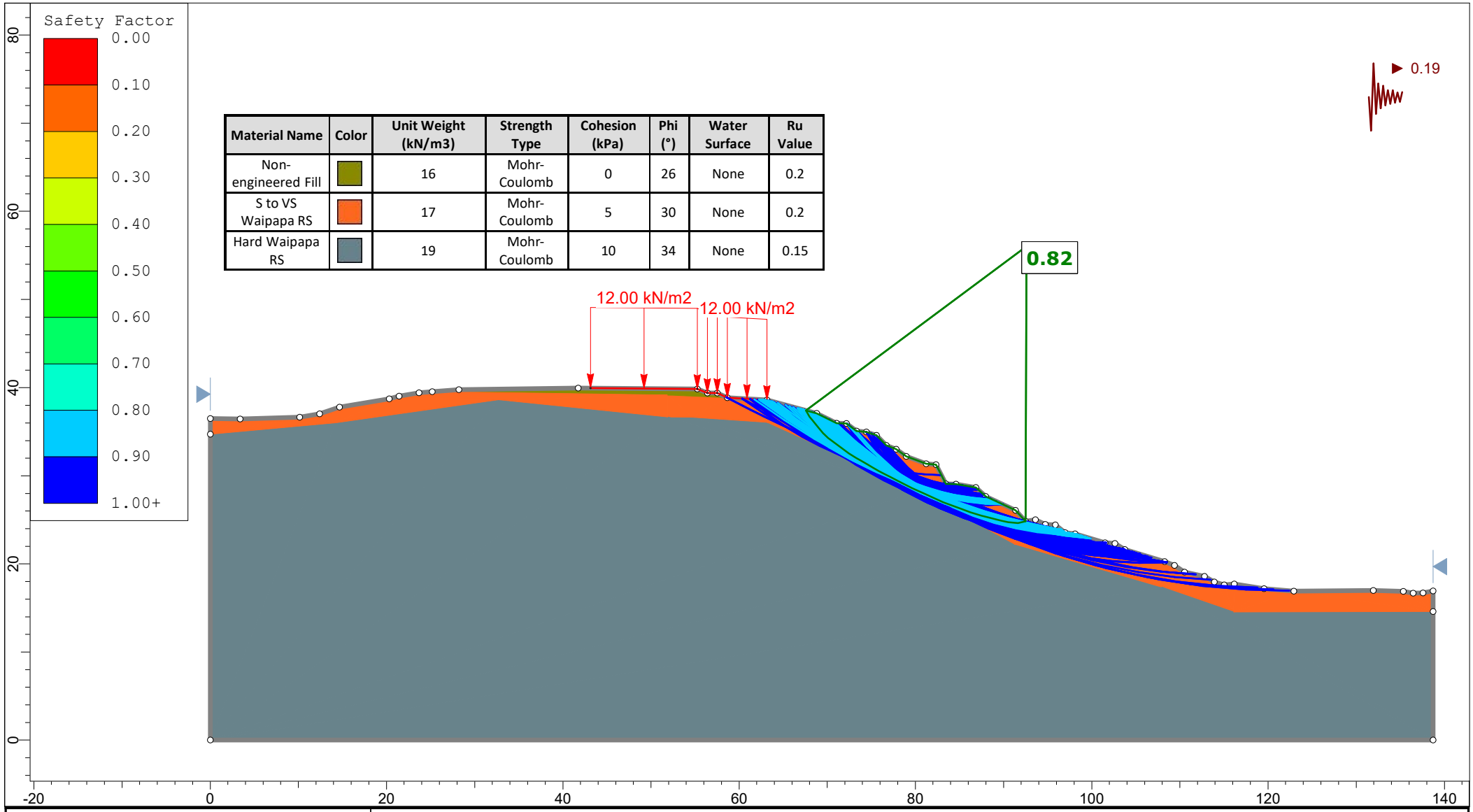
Project	Lot 39, 27 Lichen Grove Russell		
Group	Proposed	*Scenario*	Elevated GW
Drawn By	LG	*Company*	Geologix
Date	29/05/2026	*File Name*	Section B.slmd



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S to VS Waipapa RS		17	Mohr-Coulomb	5	30	None	0.2
Hard Waipapa RS		19	Mohr-Coulomb	10	34	None	0.15

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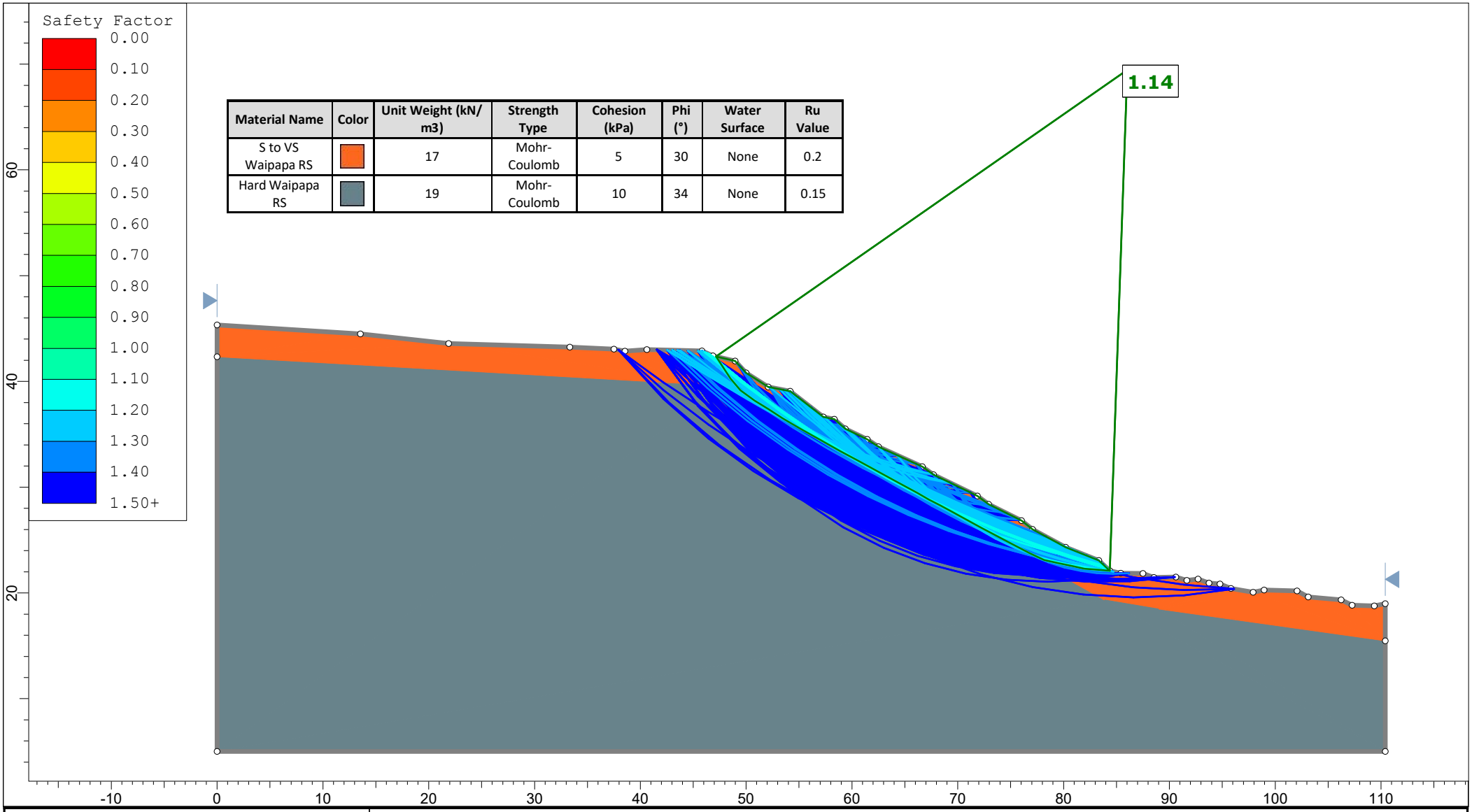
SLIDEINTERPRET 9.039

Project	Lot 39, 27 Lichen Grove Russell		
Group	Proposed	*Scenario*	ULS Seismic
Drawn By	LG	*Company*	Geologix
Date	29/05/2026	*File Name*	Section B.slmd



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
S to VS Waipapa RS		17	Mohr-Coulomb	5	30	None	0.2
Hard Waipapa RS		19	Mohr-Coulomb	10	34	None	0.15

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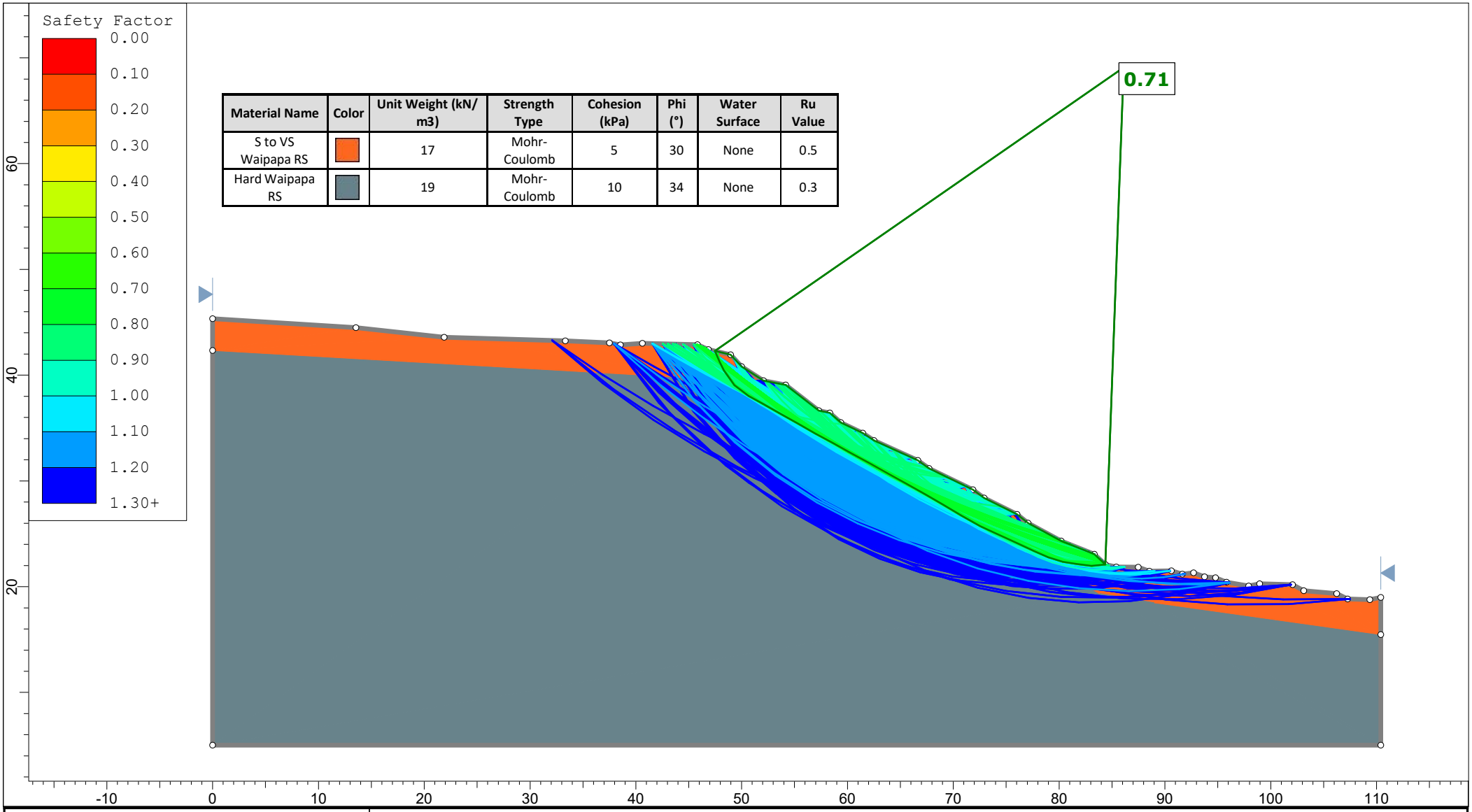
SLIDEINTERPRET 9.039

Project	Lot 39, 27 Lichen Grove Russell		
Group	Existing	*Scenario*	Static
Drawn By	LG	*Company*	Geologix
Date	29/05/2026	*File Name*	Section C.slmd



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
S to VS Waipapa RS		17	Mohr-Coulomb	5	30	None	0.5
Hard Waipapa RS		19	Mohr-Coulomb	10	34	None	0.3

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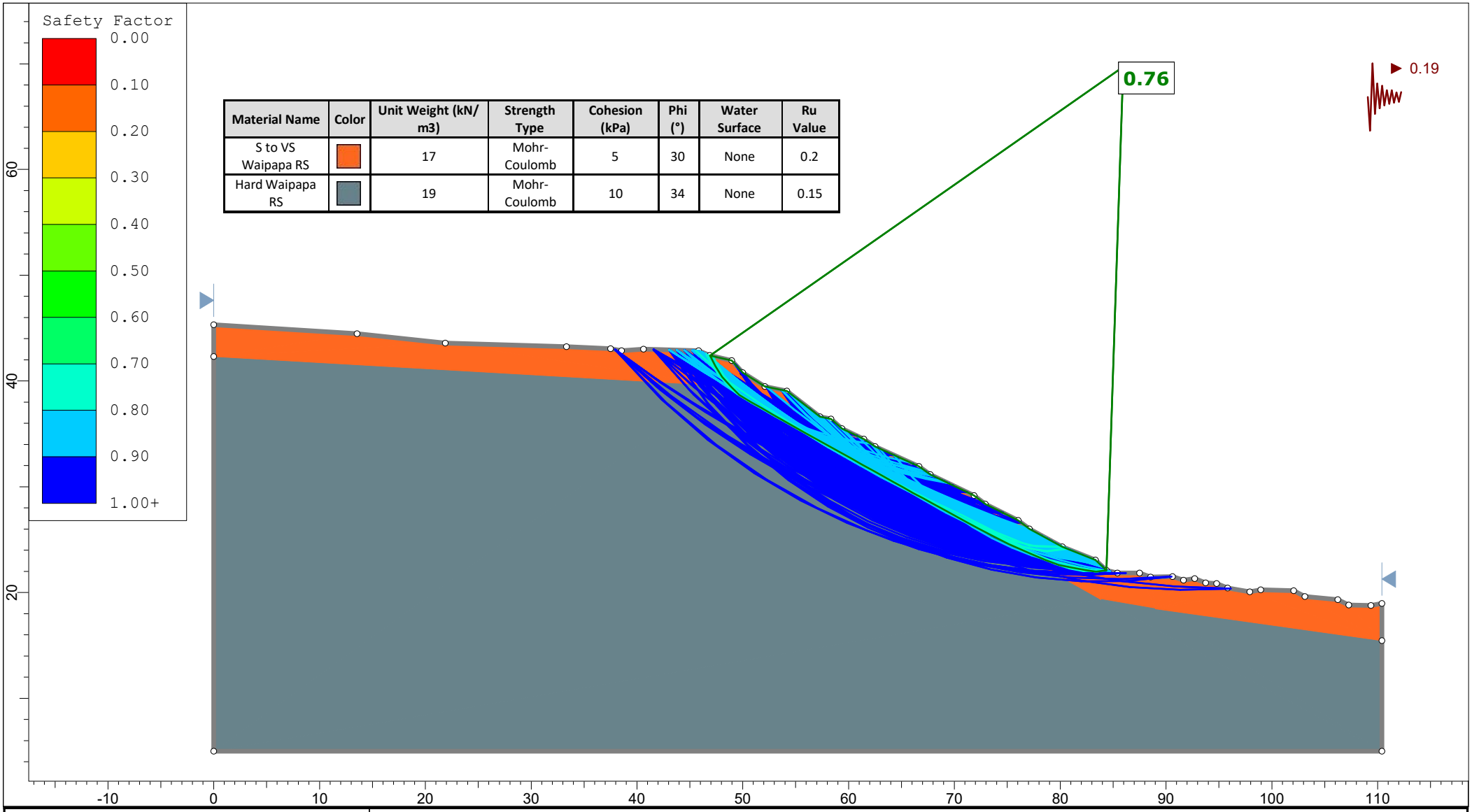
SLIDEINTERPRET 9.039

Project	Lot 39, 27 Lichen Grove Russell		
Group	Existing	*Scenario*	Elevated GW
Drawn By	LG	*Company*	Geologix
Date	29/05/2026	*File Name*	Section C.slmd



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
S to VS Waipapa RS		17	Mohr-Coulomb	5	30	None	0.2
Hard Waipapa RS		19	Mohr-Coulomb	10	34	None	0.15

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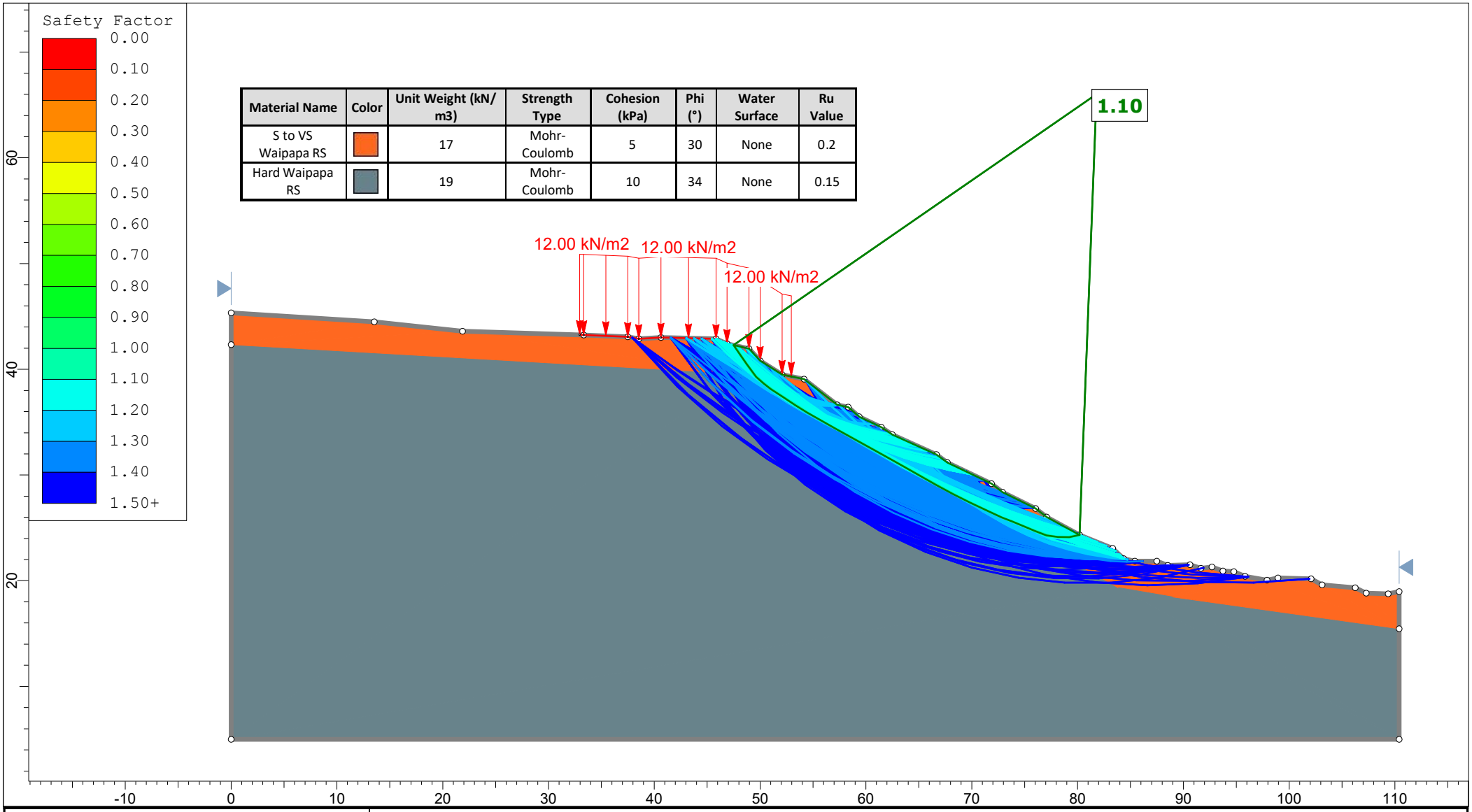
Project	Lot 39, 27 Lichen Grove Russell		
Group	Existing	*Scenario*	ULS Seismic
Drawn By	LG	*Company*	Geologix
Date	29/05/2026	*File Name*	Section C.slmd



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
S to VS Waipapa RS		17	Mohr-Coulomb	5	30	None	0.2
Hard Waipapa RS		19	Mohr-Coulomb	10	34	None	0.15

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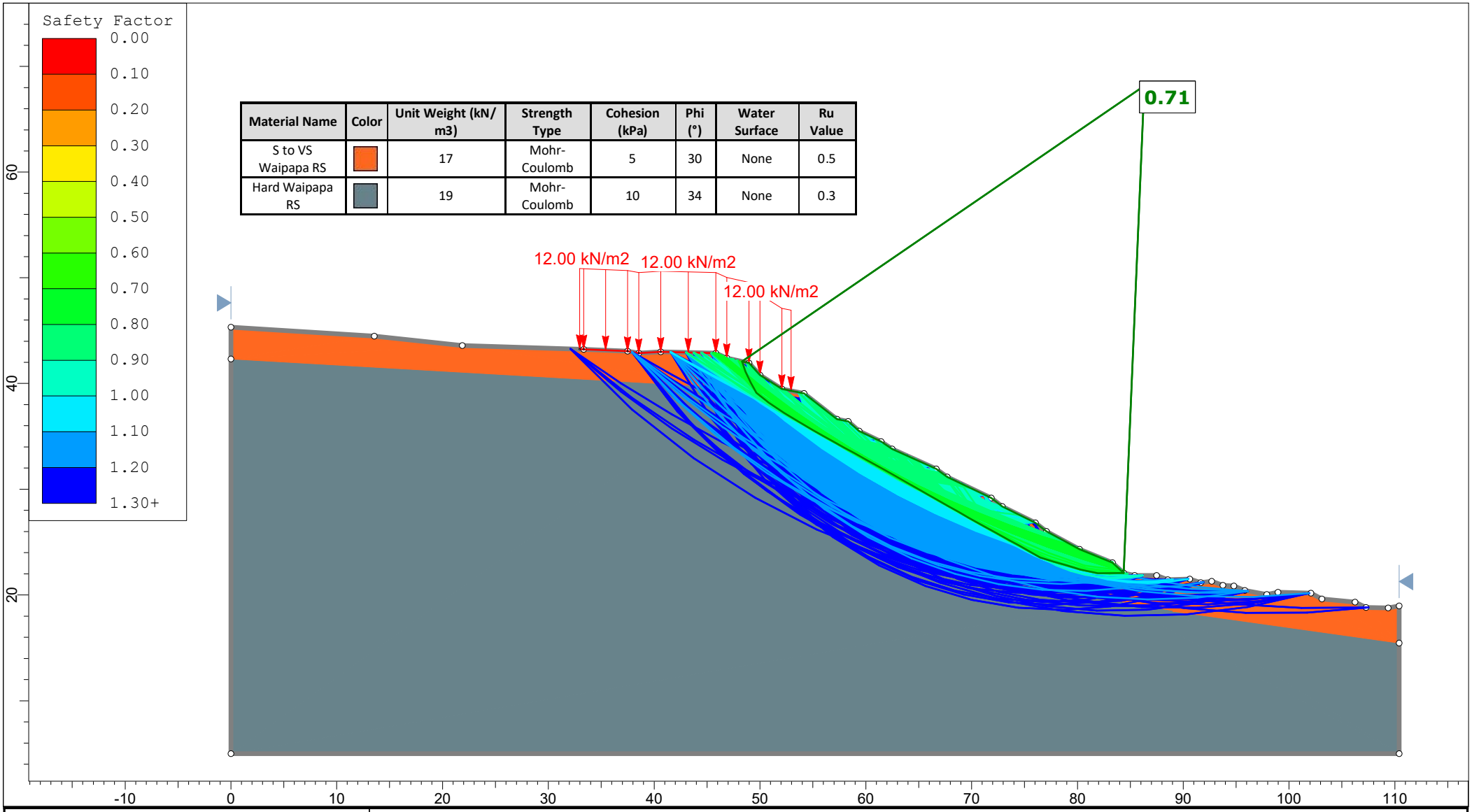
Project	Lot 39, 27 Lichen Grove Russell		
Group	Proposed	*Scenario*	Static
Drawn By	LG	*Company*	Geologix
Date	29/05/2026	*File Name*	Section C.slmd



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
S to VS Waipapa RS		17	Mohr-Coulomb	5	30	None	0.5
Hard Waipapa RS		19	Mohr-Coulomb	10	34	None	0.3

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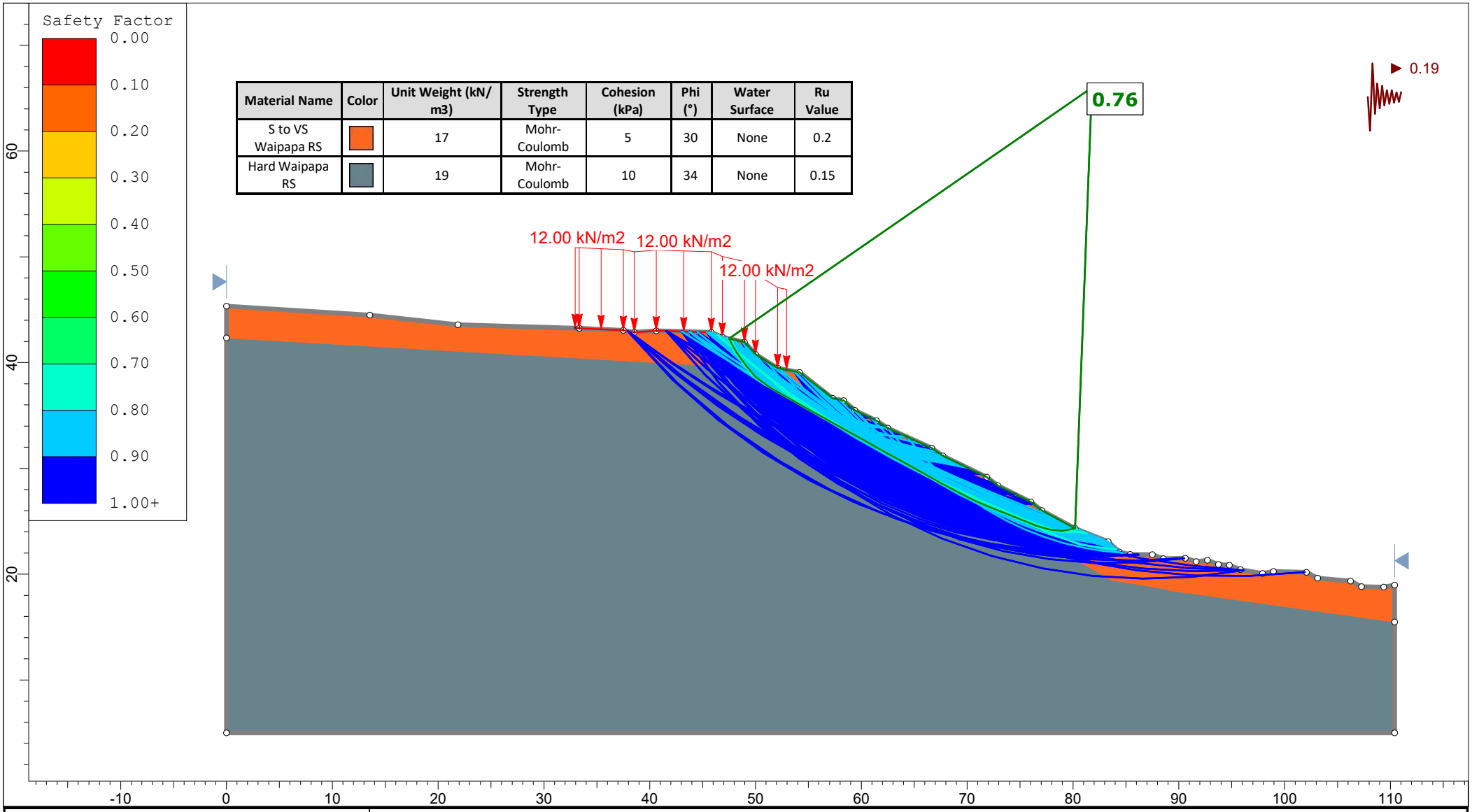
Project	Lot 39, 27 Lichen Grove Russell		
Group	Proposed	*Scenario*	Elevated GW
Drawn By	LG	*Company*	Geologix
Date	29/05/2026	*File Name*	Section C.slmd



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
S to VS Waipapa RS		17	Mohr-Coulomb	5	30	None	0.2
Hard Waipapa RS		19	Mohr-Coulomb	10	34	None	0.15

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SLIDEINTERPRET 9.039

Project	Lot 39, 27 Lichen Grove Russell		
Group	Proposed	*Scenario*	ULS Seismic
Drawn By	LG	*Company*	Geologix
Date	29/05/2026	*File Name*	Section C.slmd

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SUBDIVISION SITE SUITABILITY ENGINEERING REPORT

LOT 39, 27 LICHEN GROVE, RUSSELL

PHILLIPPA AND FRANK VAN DER POL

C0842N-S-01
JUNE 2026
REVISION 1

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DOCUMENT MANAGEMENT

Document Title	Subdivision Site Suitability Engineering Report
Site Reference	Lot 39, 27 Lichen Grove, Russell
Client	Phillippa and Frank van der Pol
Geologix Reference	C0842N-S-01
Issue Date	June 2026
Revision	01
Prepared	Emily Collings Senior Environmental Engineer, MSc, MEngNZ
Reviewed	Sebastian Hicks Principal Civil Engineer, CPEng Reg. 1168062, CMEngNZ, IntPE(NZ) /APEC Engineer
Approved	Edward Collings Managing Director, CEnvP Reg. 0861, CPEng Reg. 1033153, CMEngNZ
File Reference	*C:\Users\EmilyCollings\SynologyDrive\Projects\C0800-C0899\C0842N - Lot 39, 27 Lichen Grove Russell\06 - Reports\Civil\C0842N-S-01-R01.docx*

REVISION HISTORY

Date	Issue	Prepared	Reviewed	Approved
June 2026	First Issue	EJC	SH	EC

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TABLE OF CONTENTS

1 INTRODUCTION

This Site Suitability Engineering Report has been prepared by Geologix Consulting Engineers Ltd (Geologix) for Phillippa and Frank van der Pol, as our Client in accordance with our standard short form agreement and general terms and conditions of engagement.

Our scope of works has been undertaken to assist with the Resource Consent application in relation to the proposed four-lot subdivision of Lot 39, 27 Lichen Grove, Russell, the 'site', to create residential Lots 1-4.

This assessment addresses preliminary engineering elements of onsite wastewater disposal, stormwater management, potable water and firefighting, internal access (vehicle crossings only) and earthwork requirements to suitably service the proposed subdivision outlined in Section 1.1 with less than minor effects on the environment. Additionally, a brief natural hazard risk assessment is included.

This report is purposed to support the Resource Consent application and guide the requirements of future detailed design. This report should be read in conjunction with other reports and documents prepared in support of the application.

1.1 Proposal

A proposed scheme plan was presented to Geologix at the time of writing, prepared BOI Survey Ltd[1] and has been reproduced within Appendix A as Sheet 100. It is understood from the Scheme Plan, and typical assumptions, that the proposed Lots will comprise:

- Proposed Lot 1 - 3,000m^2 (vacant Lot)
- Proposed Lot 2 – 4,075m^2 (vacant Lot)
- Proposed Lot 3 – 3,000m^2 (vacant Lot)
- Proposed Lot 4 - 5,120m^2 (existing dwelling)

The above is summarised in Table 1 and detailed further within this report, with reference to the Preliminary Engineering Design Plans within Appendix A. Any amendments to the referenced scheme plan may require an update to the recommendations of this report.

[1] *BOI Survey Ltd, Scheme Plan Ref. Proposed Subdivision of Lots 37 & 38 DP 188462, 14.05.2026, Ref. 5130-001.*

Table 1: Summary of Proposed Subdivision

Proposed Lot No.	Size	Purpose
1	3,000m^2	New residential
2	4,075m^2	New residential
3	3,000m^2	New residential
4	5,120m^2	Existing residential

Each lot will be serviced by a single vehicle crossing.

The site lies outside the area of Council reticulated wastewater and water supply networks. As such, the subdivision is proposed to be serviced by onsite wastewater and water supply. There is some FNDC stormwater infrastructure present at Lichen Grove and stormwater connection options are considered.

1.2 Site Description

The site is legally described as Lot 37 and 38 DP 188462 (currently two legal titles) with a total site area of 15,195m^2. Details of the site are listed in Table 2.

Table 2: Site Details

Address	Zone	Legal Description	Site Area
Lot 39, 27 Lichen Grove	Coastal Residential (Operative District Plan, ODP) Settlement Zone (Proposed District Plan, PDP)	Lot 37 and 38 DP 188462	15,195m^2

The site is located on the eastern side of Lichen Grove, located near the cul-de-sac head. At present, access is provided via four no. concrete vehicle crossings (it is noted that these are not in accordance with current FNDC vehicle crossing standards).

The site is bound by Lichen Grove to the southwest, residential developments to the north, south and east and bush containing a watercourse to the northeast. The watercourse flows generally northwest and discharges to Orongo Bay. The watercourse has an associated river flood hazard, which encroaches into the site at the central northeastern boundary.

Topographically, the site contains a high point (RL 50m) at the southern site corner and generally slopes moderately-steeply to a low point (RL 15m) located centrally on the northeastern boundary. There is an existing grassed plateau located on the west of the site (RL 39m).

Available LiDAR data indicates minor overland flow paths at the site, draining to the watercourse.

1.3 Existing Infrastructure

Wastewater from the existing dwelling is currently serviced by an onsite septic tank, located to the north of the existing dwelling (refer Sheet 100). The tank was sited, buried with vent and inspection cap. The system is contained within the proposed Lot 4 boundaries.

The existing water supply is via an above ground water tank located to the north of the existing dwelling, below the deck. It is understood that runoff from the existing dwelling is managed by an existing private network (refer to Section 3.1).

The site includes underground low voltage power supply with pillars located along Lichen Grove (Appendix F).

According to Broadband Map NZ[2], the site has access to VDSL (Chorus); Wireless (Spark and Farmside) and Satellite (Gravity) broadband.

2 WASTEWATER ASSESSMENT

2.1 Existing Wastewater System

As detailed above, wastewater from the existing dwelling is currently serviced by an onsite septic tank, and assumed disposal area, located to the north of the existing dwelling. The system appeared to be in working order and contained within the proposed Lot 4 site boundaries. Photographs are enclosed within Appendix B.

No changes are proposed to wastewater management at the existing dwelling (proposed Lot 4).

2.2 Wastewater Volume and Treatment – Lots 1-3

It is proposed that Lots 1-3 are serviced by an on-site wastewater treatment system and disposal area. A preliminary design is presented in this section and on Sheet 100-101 to demonstrate how the proposed new lots can support onsite wastewater management. In lieu of specific development plans, the concept design assumes that the proposed new lots may support up to a four-bedroom dwelling with a peak occupancy of six people[3].

[2] https://broadbandmap.nz

[3] *TP58 Table 6.1.*

The design water volume for roof water supply is estimated at 180 litres/ person/ day[4] based upon standard water fixtures[5] being installed within the future residential dwellings. This results in a total daily wastewater generation of 1,080 litres/ day / lot.

No specific treatment system design restrictions and manufacturers are currently in place. Future developers will be required to elect a treatment system and provide specifications at Building Consent stage. It is recommended that secondary treatment systems are accounted for within future developments. However, primary treatment systems may be suitable, provided the developer can demonstrate suitable treatment quality, disposal area and compliance with the Northland Regional Council (NRC) Regional Plan for Northland.

2.3 Wastewater Discharge

To provide even distribution, evapotranspiration assistance and to minimise runoff it is recommended that secondary treated wastewater is conveyed to land disposal via Pressure Compensating Dripper Irrigation (PCDI).

Published geological mapping[6] indicates the site to be directly underlain by Waipapa Group chert (Waipapa Composite Terrane). This geology can be expected to contain beds dominated by chert and siliceous argillite.

A site walkover survey and intrusive ground investigation was undertaken by Geologix on 25 (Geotechnical) and 26 (wastewater) May 2026. Three hand auger boreholes (WW01, HA01 and WW02) were formed to depths of 1.2 m bgl and are used to inform wastewater design (for Geotechnical Information refer to Geologix Geotechnical Investigation Report[7]). Hand auger locations are recorded on Sheet 100 and engineering borehole logs presented as Appendix C. A qualified engineering geologist recorded the recovered arisings as:

- WW01 - 400mm silt topsoil overlying light brown silt colluvium with minor clay to 1.2m below ground level (bgl).
- HA01 – 100mm silt topsoil overlying 300mm silt fill, followed by brown silt residual soils and clayey silt / silt Waipapa Composite Terrane to 1.2m bgl.
- WW02 - 250mm silt topsoil overlying silt colluvium with minor clay to 750mm depth and Waipapa Composite Terrane light brown silt to 1.2m bgl.

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[4] TP58 Table 6.2, AS/ NZS 1547:2012 Table H3.

[5] Low water consumption dishwashers and no garbage grinders.

[6] Geological & Nuclear Science, https://data.gns.cri.nz/geology/

[7] Geologix Geotechnical Investigation Report, Lot 39, 27 Lichen Grove, Russell. C0842N-G-01. June 2026.

- Groundwater was not encountered during the ground investigation.

The shallow soils are generally inferred to meet the drainage characteristics of TP58 Category 5 which correlates to NZS1547 Category 4. For a typical PCDI system in this category of soils, a Soil Loading Rate (SLR) of 3-4mm/day is recommended by TP58 (Table 9.2) and 3.5mm/ day as per NZS1547 (Table 5.2). A conservative design SLR of 3mm/day is adopted for Lots 1 and 2. Due to steep slopes at Lot 3, a 2mm/day SLR is proposed to minimise impacts.

The PCDI system may be installed surface or subsurface laid:

- Surface laid PCDI – pinned to the surface and covered with minimum 150 mm mulch and planted with specific evapotranspiration species to provide a minimum of 80 % species canopy cover.

- Subsurface laid PCDI - installed into minimum 200 mm good-quality topsoil and planted with lawn grass. Clean, inert site-won topsoil sourced during development from building and/ or driveways footprints may be used in the land disposal system to increase minimum topsoil thicknesses (care should be taken not to compact disposal areas during construction and/or topsoil addition).

To satisfy the preliminary design, primary and reserve disposal areas are required as follows, as presented on Sheet 100.

- **Preliminary Primary Disposal Areas.**

- A minimum PCDI primary disposal area of 360 m^2 laid parallel to the natural contours at Lots 1 and 2.
- 540 m^2 PCDI laid parallel to the natural contours at Lot 3.

- **Preliminary Reserve Areas.** A minimum reserve area equivalent to 30% of the primary disposal area is required under NRP rule C.6.1.3(9)(b) for secondary or tertiary treatment systems.

- A 108 m^2 reserve disposal area is allowed for Lots 1 and 2.
- A 162m^2 reserve area is allowed for on Lot 3.

2.4 Summary and Assessment of Environmental Effects

Based on the above conceptual wastewater design assumptions, a summary of the concept wastewater design is presented as Table 3. It is recommended that Lots 1-3 are subject to Building Consent specific review and design amendment according to final development plans by a suitably qualified professional. This is typically applied as a condition of consent.

Table 3: Concept Wastewater Design Summary.

Design Element	Lot 1	Lot 2	Lot 3
Concept development	Four-bedroom, peak occupancy of 6 people, per lot		
Concept design generation volume	180 litres/ person/ day – 1,080 litres/ day/ lot		
Water saving measures	Standard fixtures including 11litre flush water cisterns; automatic washing machine and dishwasher[4]		
Water meter required?	No		
Recommended treatment quality	Secondary treatment		
Soil drainage category	TP58 Category 5 / NZS1547 Category 4		
Soil loading rate	3 mm/ day	3 mm/ day	2 mm/ day
Concept primary disposal area size	Surface/ subsurface laid PCDI.		
	Min. 360 m^2	Min. 360 m^2	Min. 540 m^2
Concept reserve area size	30 % reserve area		
	108 m^2	108 m^2	162 m^2
Concept disposal area level	Sited above 5 % AEP event. No specific site requirements.		
Dosing method	Pump with high water level visual and audible alarm. Minimum 24-hour emergency storage volume.		
Stormwater Control	Divert surface/ stormwater drains away from disposal areas. Stormwater management discharges downslope of disposal area.		
NRC Regional Plan for Northland Activity Status	Permitted (where slopes are <25 degrees).		

A preliminary site-specific Assessment of Environmental Effects (AEE) is presented as Appendix D to demonstrate the proposed wastewater disposal concept will have a less than minor effect on the environment. It is recommended that the AEE is reviewed at the time of Building Consent once specific development plans, final disposal area locations and treatment systems are established.

3 STORMWATER ASSESSMENT

3.1 Reticulated Network

There is an existing public reticulated Council stormwater network (300-375mm dia. pipes) within Lichen Grove Road corridor. The road has a dish drain and kerb and channel with double catchpits which drain into this network. The public stormwater network outlets via a swale drain (Asset Id: 20081014161138) towards the open watercourse. The outlet is located just 93m downslope of the site, located on private property, Lot 43 DP 188462 (Figure 1).

Proposed Lot 2 has an existing kerb outlet to Lichen Grove kerb and channel, associated with the existing vehicle crossing at this lot (Figure 1). From review, this outlet appears damaged

and its relative elevation may be too high to be effectively utilised, subject to future development.

It is also noted that there is an existing private stormwater network present within the ROW over neighbouring Lot 35 DP 188462 (Figure 1). This network is understood to service the existing dwelling at the site via 300mm dia. connection. No changes are proposed to wastewater management at the existing dwelling (proposed Lot 4).

Figure 1. FNDC Reticulated Stormwater Network (Source: Far North Atlas)

3.2 Downstream Environment

The site is bound by an open watercourse to the northeast. The watercourse flows generally northwest and discharges to Orongo Bay Coastal Marine Area (CMA). The watercourse has an associated river flood hazard (refer Figure 2), which encroaches into the site at the central northeastern boundary. There is some downstream flooding hazard identified. A review of the downstream flood hazard identified a lot (Lot 13 DP 173865) which is entirely mapped within the River Flood Hazard Zone. It is understood that this lot is 'scenic reserve', subject to the Reserves Act 1977 and therefore will never be developed as a habitable lot. Other downstream properties are located above the mapped 1% hazard. Overall, downstream flood hazards do not appear to affect downstream property.

Figure 2. River Flood Hazard (Source: NRC Natural Hazards Map).

3.3 Impervious Surfaces and Management Concept

To comply with permitted activity standards for the Coastal Residential zone, the maximum proportion or amount of the gross site area covered by buildings and other impermeable surfaces shall be 50% or 1,000m², whichever is the lesser; 1,000m² is applicable. Furthermore, any new impervious area shall be managed such that its effective runoff is mitigated in accordance with the ODP and FNDC Engineering Standards 2023 for Flood and Flow Control.

Existing impervious surface covering at the time of writing are approximately 460m^2 (existing dwelling and associated impermeable surfaces), contained within the boundaries of proposed Lot 4. This is a permitted activity pre-subdivision (<1,000m^2/lot).

The proposed activity (subdivision) will increase impervious surfaces across the site due to future development. The preliminary design accounts for the following impervious surfaces (Table 4).

Table 4: Summary of Proposed (Concept) Surface Covering.

Parameter		Lot 1 (future development)	Lot 2 (future development)	Lot 3 (future development)	Lot 4 (existing development)
Roof	m^2	196 (concept)	196 (concept)	196 (concept)	225 (approx.)
Driveway/ Parking	m^2	100 (concept)	100 (concept)	100 (concept)	235 (approx.)
Total Impervious	m^2	296	296	296	460
	%	*9.87 (of 3,000m^2)*	*7.26 (of 4,075m^2)*	*9.87 (of 3,000m^2)*	*8.98 (of 5,120m^2)*
ODP Threshold	m^2	1,000	1,000	1,000	1,000
Permitted		Yes	Yes	Yes	Yes

It is proposed for Lots 1-3 that additional/ future impervious surfaces will be mitigated by attenuation within roof water tanks to 80 % of pre-development peak flows in accordance with FNDC Engineering Standards 2023 Table 4-1 and Operative Plan Section 12.7.3.4(a). The preliminary design has been prepared to account for a typical residential development scale to demonstrate the proposed lot can support the intended use. However, the preliminary design must be advanced at Building Consent stage by a future developer.

Impervious surfaces within proposed Lot 4 are not anticipated to increase due to the proposed subdivision, however as the parent title becomes smaller due to the proposed subdivision, the proportion of impervious surfaces to gross lot area increases. As the total impervious area remains within the permitted activity threshold, no attenuation is proposed for proposed Lot 4; stormwater management will remain as existing.

3.4 Design Storm Event

FNDC Engineering Standards 2023 Table 4-1 stipulates that flow attenuation controls reduce the post-development peak discharge to 80% of the pre-development condition for the 50% and 20% AEP storm event. Furthermore, the concept design has also considered the 10 % AEP pre-development requirement to comply with NRP Rule C6.4.2(2) and with the ODP 13.10.4. Attenuation modelling under this scenario avoids exacerbating downstream flooding and provides for sufficient flood control.

No 1% AEP attenuation is proposed for the subdivision as downstream properties are above the mapped 1% hazard (as discussed in Section 3.2), therefore there are no adverse effects anticipated on neighbouring properties or the downstream environment.

Relevant design rainfall intensity and depths have been ascertained for the site location from the NIWA HIRDS meteorological model[8]. Provision for climate change has been adopted by means of applying a factor of 20 % to rainfall intensities, in accordance with FNDC Engineering Standards 2023.

3.5 Preliminary Stormwater Attenuation

The rational method has been adopted by Geologix with run-off coefficients as published by FNDC Engineering Standards[9] to provide a suitable preliminary attenuation design by installing specifically sized low-flow orifices into the attenuation devices.

Overall, stormwater attenuation is proposed for estimated roof and driveway areas internal to proposed Lots 1-3 (concept level only).

Calculations to support the preliminary design are presented as Appendix E to this report. A summary of the probable future development attenuation concept design is presented as Table 5. A typical schematic retention/ detention tank arrangement detail is presented as Sheet 400 within Appendix A. As above, it is recommended that this concept design is refined at the Building Consent/ 223 stage as required by conditions of consent.

Table 5: Concept Attenuation (Lots 1-3).

Design Parameter	Flow Attenuation: 50 % AEP (80% of pre-dev)	Flow Attenuation: 20 % AEP (80% of pre-dev)	Flood Control: 10 % AEP
Lots 1-3 Concept Design (196m² roof, 100m² driveway/parking)			
Regulatory Compliance	FNDC Engineering Standards Table 4-1	FNDC Engineering Standards Table 4-1	NRC Regional Plan for Northland
Pre-development peak flow (Q_{pre})	3.42 L/s	4.45 L/s	5.20 L/s
80 % pre-development peak flow ($Q_{pre80\%)}$)	2.73 L/s	3.56 L/s	-
Post-development peak flow (Q_{post})	6.91 L/s	8.99 L/s	10.5 L/s
Max. Storage Volume Req.	6,961 L	9,072 L	4,920 L

[8] *NIWA High Intensity Rainfall Data System, https://hirds.niwa.co.nz.*

[9] *FNDC Engineering Standards 2023, Version 0.6, Issued May 2023.*

Concept Summary:	-	Attenuation storage calculation considers concept impermeable roof and driveway areas (to be confirmed) to confirm that attenuation is achievable. Refer Appendix E for calcs in full.
	-	Attenuation for 20 % AEP storm represents maximum storage requirement and is therefore adopted.
	-	10,000 litre tank is sufficient for attenuation requirements; however, 2 x 25,000 L tanks are proposed to provide both attenuation and water supply.
	-	20 % AEP attenuation (in isolation) requires a 22 mm orifice 0.36m below overflow and (bottom 150mm reserved for sediment retention). Regulatory requirements are to consider an additional orifice/s to control the 50 %, 20 % AEP events specifically. We note this may vary the concept orifice indicated above. Generally, this results in slightly larger volume requirements. We have allowed for 2 x 25,000L tanks in the concept, however the attenuation storage component may increase when considering the 50 %, 20 % AEP events. This should be confirmed at building consent when impermeable areas are finalised.

3.6 Stormwater Discharge

There is an available stormwater network in the vicinity of the site. This network discharges to the same watercourse as the site naturally drains to.

The following stormwater discharge locations are considered appropriate for the site, refer Table 6.

Table 6: Appropriate Stormwater Discharge locations.

	Network Connection	Kerb Discharge	On-lot private Dispersion Device
Proposed Lot 1	✓ (to stormwater manhole)	X	✓
Proposed Lot 2	X	✓ (existing)	✓
Proposed Lot 3	X	X	✓
Proposed Lot 4	Connection to existing private stormwater network (no changes proposed)		

Overall, all lots require water tanks for water supply and firefighting. Stormwater attenuation is also proposed for Lots 1-3 in accordance with Section 3.5. Tank overflow, following stormwater attenuation and water supply, should be managed by an appropriate stormwater discharge. As outlined in Table 6, some lots have multiple options for stormwater discharge locations.

Should on lot-private dispersion devices be adopted, these should be directed downslope of building platforms and wastewater disposal areas, towards the watercourse. Discharge shall be suitably controlled; dispersion devices should be designed to manage the 10% AEP event to reduce scour and erosion at discharge locations.

3.7 Stormwater Quality

The key contaminant risks of the site setting include:

- Sediments and minor contaminants washed from impervious surfaces.
- Leaf matter, grass, and other organic debris.

Stormwater treatment requirements are minor to maintain good quality stormwater discharge. Stormwater quality will be provided by:

- Leaf guards on roof guttering/ first flush devices on roof guttering and downpipes.
- Rainwater tank for potable use onsite only to be filled by roof runoff.
- Allowance of dead storage for sedimentation (minimum 150 mm recommended as per Auckland Council GD01) within the base of the stormwater attenuation roof runoff tanks.
- Stormwater discharges directed towards low points and OLFPs, where possible.

The risk of other contaminants being discharged outside of the site boundaries (hydrocarbons, metals, etc.,) that will affect the downstream water quality due to proposed residential activities is considered low, once stormwater has been processed through the above measures.

4 POTABLE WATER

Roof water tanks will supply water supply for all lots (Lot 1-4). Suitable treatment is required prior to potable use within dwellings e.g. filtration and UV disinfection.

5 FIRE FIGHTING

In the absence of potable water infrastructure and fire hydrants in the area, the site requires provision of on-lot roof water supply tanks to be used for firefighting purposes. Specific analysis and calculation for firefighting is outside the scope of this report and may require specialist input. Supply for firefighting should be made in accordance with SNZ PAS4509:2008.

6 ACCESS (VEHICLE CROSSINGS)

The site has four no. concrete vehicle crossings from Lichen Grove. These are located as follows:

- Proposed Lot 2 – 1 no. vehicle crossing

- Proposed Lot 3 – 1 no. vehicle crossing
- Proposed Lot 4 – 2 no. vehicle crossings

It is noted that these vehicle crossings are rectangular in shape and are not in accordance with current FNDC vehicle crossing standards. When compared to Residential Vehicle Crossing standards the crossings are missing the transition areas. Given, the crossings have received relevant FNDC approvals, it is proposed that the vehicle crossings can be retained as present.

Proposed Lot 1 requires a new vehicle crossing to provide access to the Lot. This should be constructed with FNDC Engineering Standards for a Residential Vehicle Crossing (Sheet 18). A vehicle crossing permit is required from FNDC.

7 EARTHWORKS

The only earthworks provisions anticipated to form the subdivision is a vehicle crossing to provide access to proposed Lot 1.

Earthwork volumes up to 200m³ (in any 12-month period) are a Permitted Activity, as outlined by FNDC ODP Rule 12.3.6.1.3(a), and the maximum cut and fill height of <3.0 m combined cut and fill is permitted under 12.3.6.1.3(b). Earthworks required to form the Lot 1 vehicle crossing will be within permitted activity volumes.

8 NATURAL HAZARD ASSESSMENT

To satisfy the NPS for Natural Hazards 2025 the proposed subdivision must plan for and manage the risk from natural hazards to reduce the potential adverse effects to less than minor. Following our ground investigation and considering the measures presented in this report, a summary of the proposed activities against defined natural hazards is presented as Table 8 of

Appendix F of this document. Regulatory assessment of natural hazards at the site location are managed under the jurisdiction of the FNDC District Plan, Northland Regional Council (NRC) Regional Plan for Northland[10] and Regional Water and Soil Plan for Northland.

9 SUMMARY

Overall, the proposed subdivision to create four residential lots is deemed feasible. There is sufficient space within proposed Lots 1-3 to comprise future residential development (conceptual 196m^2 dwelling roof + 100m^2 driveway and parking) and associated water

[10] *Northland Regional Council, Regional Plan for Northland, March 2026.*

supply, stormwater and wastewater management. Lot 4 existing development is within proposed lot boundaries and stormwater, and wastewater management will remain as present. The natural hazard aspects assessed in this report have been determined as low risk while adopting reasonable and practical mitigation measures.

10 LIMITATIONS

This report has been prepared for Phillippa and Frank van der Pol as our Client. It may be relied upon by our Client and their appointed Consultants, Contractors and for the purpose of Consent as outlined by the specific objectives in this report. This report and associated recommendations, conclusions or intellectual property is not to be relied upon by any other party for any purpose unless agreed in writing by Geologix Consulting Engineers Ltd and our Client. In any case the reliance by any other party for any other purpose shall be at such parties' sole risk and no reliability is provided by Geologix Consulting Engineers Ltd.

The opinions and recommendations of this report are based on plans, specifications and reports provided to us at the time of writing, as referenced. Any changes, additions or amendments to the project scope and referenced documents may require an amendment to this report and Geologix Consulting Engineers should be consulted. Geologix Consulting Engineers Ltd reserve the right to review this report and accompanying plans.

The recommendations and opinions in this report are based on arisings extracted from exploratory boreholes at discrete locations and any available existing borehole records. The nature and continuity of subsurface conditions, interpretation of ground condition and models away from these specific ground investigation locations are inferred. It must be appreciated that the actual conditions may vary from the assumed ground model. Differences from the encountered ground conditions during subdivision construction may require an amendment to the recommendations of this report.

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APPENDIX A

Geologix Drawings

LEGEND:

- MAJOR CONTOUR
- MINOR CONTOUR
- INDICATIVE VXG FNDC RESIDENTIAL CROSSING
- EXISTING VXG (APPROX.)
- PROPOSED LOTS
- PROPOSED WASTEWATER DISPOSAL AREA
- PROPOSED RESERVE AREA
- CONCEPT BUILDING ENVELOPE
- CONCEPT 2 x 25,000 LITER WATER TANKS FOR WATER SUPPLY AND ATTENUATION PURPOSES
- EXAMPLE DISPERSION DEVICE
- HAXX GEOLOGIX HAND AUGER
- OVERLAND FLOW PATH/ WATERCOURSE (APPROX.)
- 100 YEAR FLOOD ZONE (SOURCE: NRC)
- 50 YEAR FLOOD ZONE (SOURCE: NRC)

Lot 1
3000m^2

Lot 2
4075m^2

Lot 3
3000m^2

Lot 4
5120m^2

FNDC CULVERT

FNDC CULVERT

FNDC DISH DRAIN

PRIVATE CULVERT

SURFACE RUNOFF HA05

14 x 14
HA02

14 x 14
HA03

14 x 14
HA04

HA01

WW02

1.5 m

1.5 m

18.7m

0 20 40 Meters

DRAWN	SIGNED	DATE					
GB	GB	17/06/26					
VERIFIED	SIGNED	DATE					
EJC	EJC	17/06/26					
APPROVED	SIGNED	DATE					
SH	SH	17/06/26	A	17/06/26	FIRST ISSUE	GB	EJC
			REV.	DATE	REVISION DETAILS	BY	APP.

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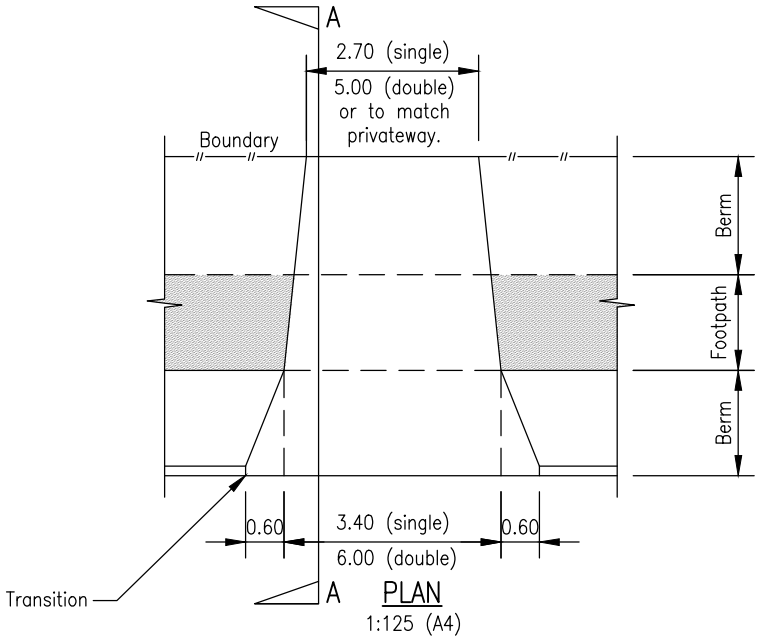
CLIENT.
PHILLIPA & FRANK
VAN DER POL

PROJECT.
21 & 27 LICHEN GROVE
RUSSEL
NORTHLAND
LOTS 3 7 & 38 DP 188462

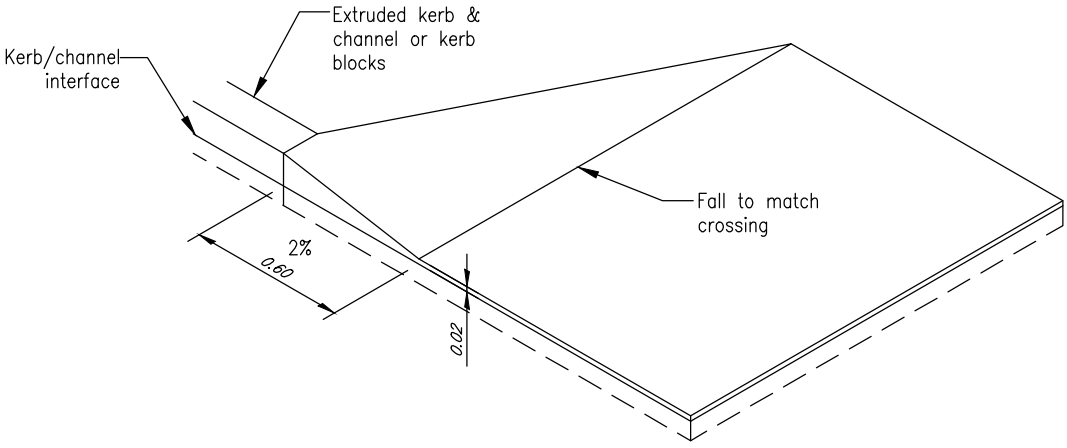
DRAWING TITLE.
SITE PLAN
FOR
SUBDIVISION RESOURCE CONSENT

STATUS. FINAL
NOT FOR CONSTRUCTION

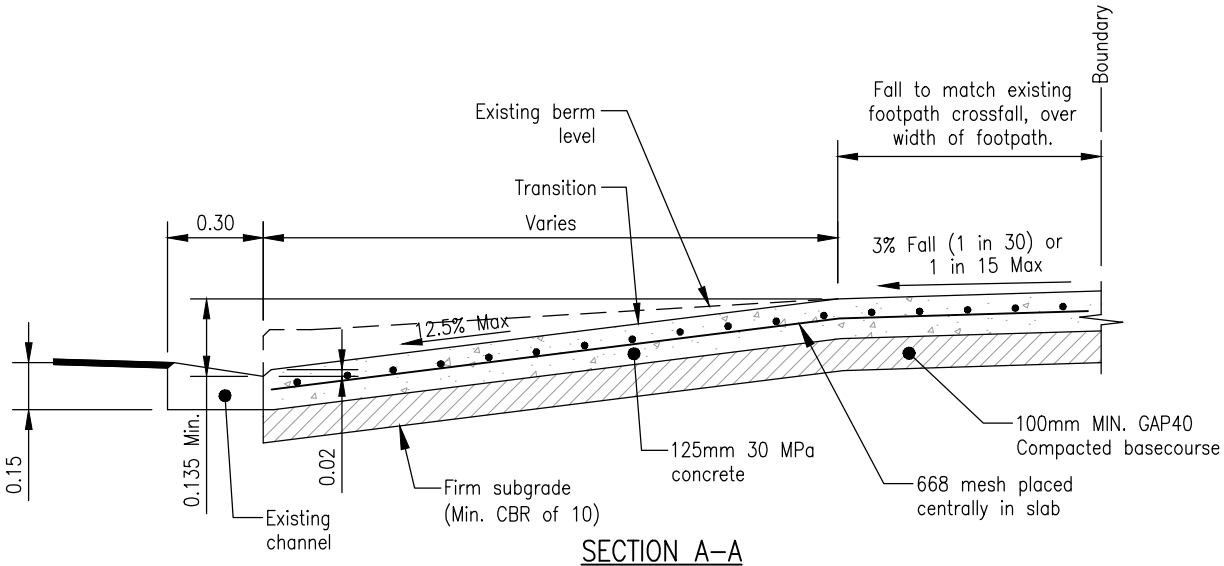
SCALE	SHEET SIZE.			
1:1000	A3			
PROJECT NO.	TYPE.	CLASS.	SHEET NO.	REV.
C0842N	RC		100	A



PLAN
1:125 (A4)



DETAIL OF KERB TRANSITION AT CROSSING
N.T.S.



SECTION A–A
1:25 (A4)

For further notes refer to Sheet 22

VEHICLE CROSSING – RESIDENTIAL

FAR NORTH DISTRICT COUNCIL
ENGINEERING STANDARDS

Date:	JAN 2021
Revision:	0.1
Scale:	AS SHOWN
SHEET No.	18

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APPENDIX B

Site Photographs

Figure 3. Existing buried septic tank (Lot 4)

Figure 4. Existing water tank (Lot 4)

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APPENDIX C

Engineering Borehole Records

HAND AUGER & DCP LOG

geologix consulting engineers

Project Ref:	C0842N
Client:	Frank van der Pol
Project Name:	Lot 39, 27 Lichen Grove, Russell
Hole ID:	**HA01**
Project Location:	27 Lichen Grove Russell
Date:	2026-05-25
Hole Position:	1704572.91 mE 6095004.21 mN 42.47 m
Logged By:	CA
Approved:	AW

Ground Surface EL 42.47 m

DEPTH (M)	MATERIAL DESCRIPTION (SEE CLASSIFICATION AND SYMBOLOGY SHEET FOR DETAILS)	LEGEND	SAMPLE	VANE SHEAR STRENGTH (KPA) PEAK	VANE SHEAR STRENGTH (KPA) RESIDUAL	SCALA PENETROMETER (Blows/100mm)	GROUND WATER
0	SILT, with trace rootlets; brown. Very stiff; moist; low plasticity; [TOPSOIL]. 0.1 m EL 42.37 m			148	17		
	SILT, with minor clay, trace gravel; light brown mottled off-white. Stiff; moist to wet; low plasticity. Gravel is fine to medium, sub-rounded to sub-angular; [FILL]. 0.4 m EL 42.07 m			88	26		
1	SILT, with trace gravel; brown. Stiff; moist; low plasticity. Gravel is fine to medium, sub-rounded to sub-angular. [RESIDUAL SOIL]. 0.6 m EL 41.87 m			68	14		
	Clayey SILT; light reddish brown. Stiff; moist to wet; low plasticity; [WAIPAPA COMPOSITE TERRANE]. 1 m EL 41.47 m			UTP		25	
	SILT, with gravel; dark grey. Very stiff to hard; wet to saturated; friable. Gravel is medium to coarse; sub-rounded to sub-angular; [WAIPAPA COMPOSITE TERRANE]. 1.2 m EL 41.27 m						
2	Terminated at 1.2 m						
3							
4							
5							

Remarks:

1. Hand auger terminated at 1.20m bgl due to hard strata encountered.
2. Continue with DCP from 1.20m bgl to 1.30m bgl.
3. Groundwater not encountered during drilling.

WASTEWATER LOG

geologix consulting engineers

Project Ref:	C0842N
Client:	Frank van der Pol
Project Name:	Lot 39, 27 Lichen Grove, Russell
Hole ID:	**WW01**
Project Location:	27 Lichen Grove Russell
Date:	2026-05-26
Hole Position:	1704608.92 mE 6095057.85 mN 38.63 m
Logged By:	CA
Approved:	EC

DEPTH (M)	MATERIAL DESCRIPTION (SEE CLASSIFICATION AND SYMBOLOGY SHEET FOR DETAILS)	LEGEND	WASTEWATER CATEGORY (NZS1547)	WASTEWATER ASSESSMENT		GROUND WATER
				MOISTURE	COLOR	
	Ground Surface EL 38.63 m					
0	SILT, with trace rootlets; dark brown; moist; low plasticity; [TOPSOIL].					0
	0.4 m EL 38.23 m					
	SILT, with minor clay; light brown; moist to wet; low plasticity; [COLLUVIUM].					
1						1
	1.2 m EL 37.43 m					
	Terminated at 1.2 m					
2						2

Remarks:

1. Hand Auger terminated at 1.20m bgl as target depth.

2. Groundwater not encountered.

WASTEWATER LOG

Project Ref:	C0842N
Client:	Frank van der Pol
Project Name:	Lot 39, 27 Lichen Grove, Russell
Hole ID:	**WW02**
Project Location:	27 Lichen Grove Russell
Date:	2026-05-26
Hole Position:	1704646.19 mE 6094994.89 mN 38.56 m
Logged By:	CA
Approved:	EC

DEPTH (M)	MATERIAL DESCRIPTION (SEE CLASSIFICATION AND SYMBOLOGY SHEET FOR DETAILS)	LEGEND	WASTEWATER CATEGORY (NZS1547)	WASTEWATER ASSESSMENT		GROUND WATER
				MOISTURE	COLOR	
	Ground Surface EL 38.56 m					
0	SILT, with trace rootlets; dark brown; moist; low plasticity; [TOPSOIL].					0
	0.25 m EL 38.31 m SILT, with minor clay, trace gravel; light reddish brown; moist; low plasticity. Gravel is fine, sub-rounded to sub-angular; [COLLUVIUM].					
	0.75 m EL 37.81 m SILT, with minor clay; light brown; moist; low plasticity; [WAIPAPA COMPOSITE TERRANE].					
1	1.2 m EL 37.36 m Terminated at 1.2 m					1
2						2

Remarks:

1. Hand Auger terminated at 1.20m bgl as target depth.

2. Groundwater not encountered.

APPENDIX D

Wastewater Assessment of Effects

Table 7: Wastewater Assessment of Environmental Effects (Lots 1-3).

Item	NRC Separation Requirement[2]	FNDC Separation Requirement	Site Assessment[3]
Individual System Effects			
Flood plains	Above 5% AEP	*NR*	Complies.
Stormwater flowpath[4]	5 m	*NR*	Complies.
Surface water feature[5]	15 m	15 – 30 m	Complies, 15m.
Coastal Marine Area	15 m	30 m	Complies.
Existing water supply bore.	20 m	*NR*	Complies.
Property boundary	1.5 m	1.5 m	Complies. Including proposed subdivision boundaries.
Winter groundwater table	0.6 m	0.6 m	Complies.
Topography			Complies, <25 °.
Cut off drain required?			TBC
Discharge Consent Required?			No.
	TP58	NZS1547	
Cumulative Effects			
Biological Oxygen Demand	≤20 g/m^3		Complies – secondary treatment proposed.
Total Suspended Solids	≤30 g/m^3		
Total Nitrogen	10 – 30 g/m^3	15 – 75 g/m^3	
Phosphorous	*NR*	4 – 10 g/m^3	
Ammonia	*NR*	Negligible	
Nitrites/ Nitrates	*NR*	15 – 45 g/m^3	
Conclusion: Effects on the environment are considered less than minor.			

1. AEE based on proposed secondary treated effluent.
2. Regional Plan for Northland, Table 9.
3. Based on the recommendations of this report and Sheet 100.
4. Including any formed road with kerb and channel, and water-table drain that is down-slope of the disposal area.
5. River, lake, stream, pond, dam, or natural wetland.

AEP - Annual Exceedance Probability; NR - No Requirement.

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APPENDIX E

Stormwater Calculations

Project Ref:	C0842		**STORMWATER ATTENUATION TANK DESIGN**	geologix consulting engineers
Project Address:	Lot 39, 27 Lichen Grove, Russell			
Design Case:	CONCEPT FUTURE DEVELOPMENT		**50 % AEP STORM EVENT, 80 % OF PRE DEVELOPMENT**	
Date:	9 June 2026	REV 1		

ATTENUATION DESIGN PROVIDED IN ACCORDANCE WITH NEW ZEALAND BUILDING CODE E1 FOR THE RATIONALE METHOD ACCOUNTING FOR THE EFFECTS OF CLIMATE CHANGE (20% FACTOR AS PER 2023 FNDC ENGINEERING STANDARDS).
PRE-DEVELOPMENT RUNOFF IS FACTORED BY 80% TO SUIT FNDC STANDARDS
RUNOFF COEFFICIENTS DETERMINED FROM FNDC ENGINEERING STANDARDS 2023 TABLE 4-3.

PRE DEVELOPMENT CATCHMENT PARAMETERS

ITEM	AREA, A, m2	COEFFICIENT, C	DESCRIPTION
EX. PERVIOUS	296	0.57	BUSH
TOTAL	**296**	TYPE D	

POST DEVELOPMENT CATCHMENT PARAMETERS

ITEM	AREA, A, m2	COEFFICIENT, C	DESCRIPTION
TO TANK	196	0.96	ROOF
OFFSET	100	0.96	DRIVEWAY - CONCRETE
PERVIOUS	0	0	
EX. CONSENTED	0	0	
TOTAL	**296**	TYPE D	

RAINFALL INTENSITY, 50% AEP, 10MIN DURATION

50 % AEP RAINFALL INTENSITY, 10 MIN, I, mm/hr	72.9	mm/hr
CLIMATE CHANGE FACTOR, 2.1 DEG, 10 MIN*	20	%
50 % AEP RAINFALL INTENSITY, 10 MIN WITH CC	87.48	mm/hr

* CLIMATE CHANGE FACTOR OF 20% APPLIED IN ACCORDANCE WITH FNDC ENGINEERING STANDARDS 4.3.9.1. NIWA HISTORIC RAINFALL INTENSITY DATA, 10MIN, IS MULTIPLIED BY CLIMATE CHANGE FACTOR.

PRE AND POST-DEVELOPMENT RUNOFF, 50%AEP, VARIOUS DURATIONS

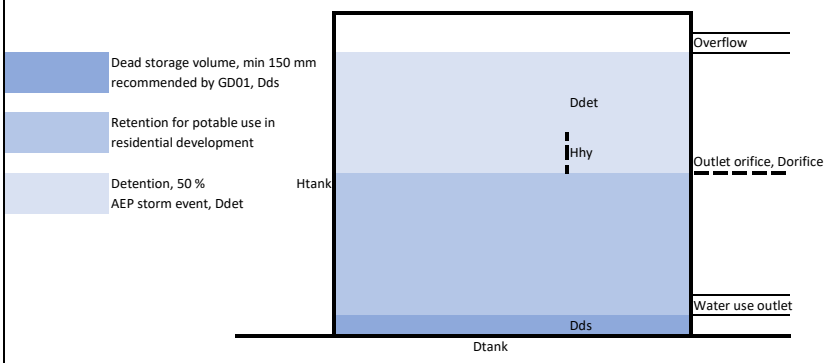
DURATION, min	INTENSITY, mm/hr	CC FACTOR	INTENSITY WITH CC, mm/hr	POST DEV RUNOFF, Qpost, l/s	PRE DEV RUNOFF, Qpre, l/s	80% of PRE DEV RUNOFF, Qpre(80%), l/s	COMMENTS
10	72.90	1.2	87.48	6.91	3.42	2.73	*Critical duration (time of concentration) for the catchments is 10min*
20	53.50	1.2	64.20	5.07	2.51	2.01	
30	44.30	1.2	53.16	4.20	2.08	1.66	
60	31.40	1.2	37.68	2.97	1.47	1.18	
120	21.80	1.2	26.16	2.06	1.02	0.82	*Pre-dev calculated on Intensity without CC factor*
360	11.40	1.2	13.68	1.08	0.53	0.43	
720	7.24	1.2	8.69	0.69	0.34	0.27	
1440	4.42	1.2	5.30	0.42	0.21	0.17	
2880	2.58	1.2	3.10	0.24	0.12	0.10	
4320	1.84	1.2	2.21	0.17	0.09	0.07	

ATTENUATION ANALYSIS, VARIOUS DURATIONS

DURATION, min	OFFSET FLOW, Qoff, l/s	TANK INFLOW , Qin, l/s	ALLOWABLE TANK OUTFLOW, Qpre(80%) - Qoff, l/s	SELECTED TANK OUTFLOW, Qout, l/s	DIFFERENCE (Qin - Qout), l/s	Required Storage, litres	
10	2.33	4.57	0.40	0.40	4.17	2,503	*Selected Tank Outflow is selected for critical duration (time of concentration).*
20	1.71	3.36	0.29	0.40	2.96	3,546	
30	1.42	2.78	0.24	0.40	2.38	4,280	
60	1.00	1.97	0.17	0.40	1.57	5,648	
120	0.70	1.37	0.12	0.40	0.97	6,961	*select largest required storage , regardless of duration, to avoid overflow for event of any duration*
360	0.36	0.72	0.06	0.40	0.31	6,794	
720	0.23	0.45	0.04	0.40	0.05	2,317	
1440	0.14	0.28	0.02	0.40	No Att. Req.	0	
2880	0.08	0.16	0.01	0.40	No Att. Req.	0	
4320	0.06	0.12	0.01	0.40	No Att. Req.	0	

ATTENUATION TANK DESIGN OUTPUT

Concept sizing for 25,000 litre tank



SPECIFICATION

TOTAL STORAGE REQUIRED	6.961	m3	Select largest storage as per analysis
TANK HEIGHT, Htank	2.6	m	Concept sizing for 25,000 litre tank
TANK DIAMETER, Dtank	3.5	m	No. of Tanks 2
TANK AREA, Atank	19.24	m2	Area of two tanks hydraulically linked
TANK MAX STORAGE VOLUME, Vtank	50030	litres	
REQUIRED STORAGE HEIGHT, Ddet	0.36	m	Below overflow
DEAD STORAGE VOLUME, Dds	0.15	m	GD01 recommended minimum
TOTAL WATER DEPTH REQUIRED	0.51	m	
SELECTED TANK OUTFLOW, Qout, l/s	0.00040	m3/s	Selected tank outflow
AVERAGE HYDRAULIC HEAD, Hhy	0.18	m	
AREA OF ORIFICE, Aorifice	3.43E-04	m2	
ORIFICE DIAMETER, Dorifice	21	mm	
VELOCITY AT ORIFICE	2.66	m/s	At max. head level

Project Ref:	C0842		**STORMWATER ATTENUATION TANK DESIGN**	geologix consulting engineers
Project Address:	Lot 39, 27 Lichen Grove, Russell			
Design Case:	CONCEPT FUTURE DEVELOPMENT			
Date:	9 June 2026	REV 1	**20 % AEP STORM EVENT, 80 % OF PRE DEVELOPMENT**	

ATTENUATION DESIGN PROVIDED IN ACCORDANCE WITH NEW ZEALAND BUILDING CODE E1 FOR THE RATIONALE METHOD ACCOUNTING FOR THE EFFECTS OF CLIMATE CHANGE (20% FACTOR AS PER 2023 FNDC ENGINEERING STANDARDS).
PRE-DEVELOPMENT RUNOFF IS FACTORED BY 80% TO SUIT FNDC STANDARDS
RUNOFF COEFFICIENTS DETERMINED FROM FNDC ENGINEERING STANDARDS 2023 TABLE 4-3.

PRE DEVELOPMENT CATCHMENT PARAMETERS

ITEM	AREA, A, m2	COEFFICIENT, C	DESCRIPTION
0	0	0	
0	0	0	
0	0	0	
EX. PERVIOUS	296	0.57	BUSH
TOTAL	**296**	TYPE D	

POST DEVELOPMENT CATCHMENT PARAMETERS

ITEM	AREA, A, m2	COEFFICIENT, C	DESCRIPTION
TO TANK	196	0.96	ROOF
OFFSET	100	0.96	DRIVEWAY - CONCRETE
PERVIOUS	0	0	
EX. CONSENTED	0	0	
0	0	0	
TOTAL	**296**	TYPE D	

RAINFALL INTENSITY, 20% AEP, 10MIN DURATION

20 % AEP RAINFALL INTENSITY, 10 MIN, I, mm/hr	94.9	mm/hr
CLIMATE CHANGE FACTOR, 2.1 DEG, 10 MIN*	20	%
20 % AEP RAINFALL INTENSITY, 10 MIN WITH CC	113.9	mm/hr

* CLIMATE CHANGE FACTOR OF 20% APPLIED IN ACCORDANCE WITH FNDC ENGINEERING STANDARDS 4.3.9.1. NIWA HISTORIC RAINFALL INTENSITY DATA, 10MIN, IS MULTIPLIED BY CLIMATE CHANGE FACTOR.

PRE AND POST-DEVELOPMENT RUNOFF, 20%AEP, VARIOUS DURATIONS

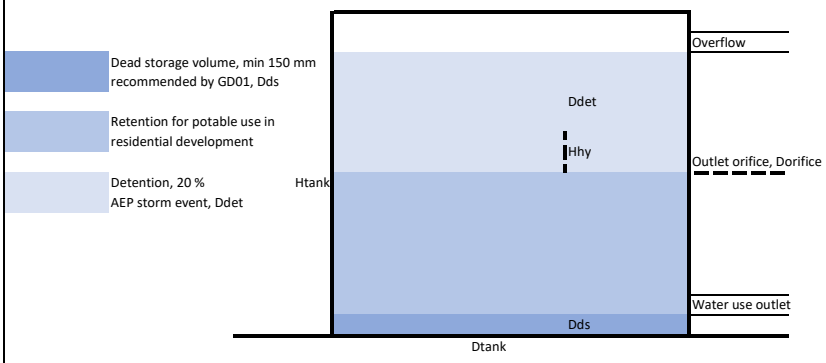
DURATION, min	INTENSITY, mm/hr	CC FACTOR	INTENSITY WITH CC, mm/hr	POST DEV RUNOFF, Qpost, l/s	PRE DEV RUNOFF, Qpre, l/s	80% of PRE DEV RUNOFF, Qpre(80%), l/s	COMMENTS
10	94.90	1.2	113.88	8.99	4.45	3.56	*Critical duration (time of concentration) for the catchments is 10min*
20	69.70	1.2	83.64	6.60	3.27	2.61	
30	57.70	1.2	69.24	5.47	2.70	2.16	
60	41.00	1.2	49.20	3.88	1.92	1.54	
120	28.40	1.2	34.08	2.69	1.33	1.06	*Pre-dev calculated on Intensity without CC factor*
360	14.90	1.2	17.88	1.41	0.70	0.56	
720	9.49	1.2	11.39	0.90	0.44	0.36	
1440	5.80	1.2	6.96	0.55	0.27	0.22	
2880	3.39	1.2	4.07	0.32	0.16	0.13	
4320	2.43	1.2	2.92	0.23	0.11	0.09	

ATTENUATION ANALYSIS, VARIOUS DURATIONS

DURATION, min	OFFSET FLOW, Qoff, l/s	TANK INFLOW , Qin, l/s	ALLOWABLE TANK OUTFLOW, Qpre(80%) - Qoff, l/s	SELECTED TANK OUTFLOW, Qout, l/s	DIFFERENCE (Qin - Qout), l/s	Required Storage, litres	
10	3.04	5.95	0.52	0.52	5.43	3,258	*Selected Tank Outflow is selected for critical duration (time of concentration).*
20	2.23	4.37	1.04	0.52	3.85	4,620	
30	1.85	3.62	0.86	0.52	3.10	5,576	
60	1.31	2.57	0.61	0.52	2.05	7,381	
120	0.91	1.78	0.42	0.52	1.26	9,072	*select largest required storage , regardless of duration, to avoid overflow for event of any duration*
360	0.48	0.93	0.22	0.52	0.41	8,925	
720	0.30	0.60	0.14	0.52	0.07	3,192	
1440	0.19	0.36	0.09	0.52	No Att. Req.	0	
2880	0.11	0.21	0.05	0.52	No Att. Req.	0	
4320	0.08	0.15	0.04	0.52	No Att. Req.	0	

ATTENUATION TANK DESIGN OUTPUT

Concept sizing for 25,000 litre tank



SPECIFICATION

TOTAL STORAGE REQUIRED	9.072	m3	Select largest storage as per analysis
TANK HEIGHT, Htank	2.6	m	Concept sizing for 25,000 litre tank
TANK DIAMETER, Dtank	3.5	m	No. of Tanks 2
TANK AREA, Atank	19.24	m2	Area of two tanks hydraulically linked
TANK MAX STORAGE VOLUME, Vtank	50,030	litres	
REQUIRED STORAGE HEIGHT, Ddet	0.47	m	Below overflow
DEAD STORAGE VOLUME, Dds	0.15	m	GD01 recommended minimum
TOTAL WATER DEPTH REQUIRED	0.62	m	
SELECTED TANK OUTFLOW, Qout, l/s	0.00052	m3/s	Selected tank outflow
AVERAGE HYDRAULIC HEAD, Hhy	0.24	m	
AREA OF ORIFICE, Aorifice	3.91E-04	m2	
ORIFICE DIAMETER, Dorifice	22	mm	
VELOCITY AT ORIFICE	3.04	m/s	At max. head level

Project Ref:	C0842		**STORMWATER ATTENUATION TANK DESIGN**	geologix consulting engineers
Project Address:	Lot 39, 27 Lichen Grove, Russell			
Design Case:	CONCEPT FUTURE DEVELOPMENT		**10 % AEP STORM EVENT, TO PRE-DEVELOPMENT FLOW**	
Date:	9 June 2026	REV 1		

ATTENUATION DESIGN PROVIDED IN ACCORDANCE WITH NEW ZEALAND BUILDING CODE E1 FOR THE RATIONALE METHOD ACCOUNTING FOR THE EFFECTS OF CLIMATE CHANGE (20% FACTOR AS PER 2023 FNDC ENGINEERING STANDARDS). THE 10% AEP SCENARIO IS PROVIDED TO SATISFY FNDC DISTRICT PLAN RULE 13.7.3.4 (FOR CONTROLLED ACTIVITY). PRE-DEVELOPMENT RUNOFF REMAINS UNFACTORED IN THIS SCENARIO.
RUNOFF COEFFICIENTS DETERMINED FROM FNDC ENGINEERING STANDARDS 2023 TABLE 4-3.

PRE DEVELOPMENT CATCHMENT PARAMETERS

ITEM	AREA, A, m2	COEFFICIENT, C	DESCRIPTION
0	0	0	
0	0	0	
0	0	0	
EX. PERVIOUS	296	0.57	BUSH
0	0	0	
TOTAL	**296**	TYPE D	

POST DEVELOPMENT CATCHMENT PARAMETERS

ITEM	AREA, A, m2	COEFFICIENT, C	DESCRIPTION
TO TANK	196	0.96	ROOF
OFFSET	100	0.96	DRIVEWAY - CONCRETE
PERVIOUS	0	0	
EX. CONSENTED	0	0	
0	0	0	
TOTAL	**296**	TYPE D	

RAINFALL INTENSITY, 10% AEP, 10MIN DURATION

10 % AEP RAINFALL INTENSITY, 10 MIN, I, mm/hr	111.0	mm/hr
CLIMATE CHANGE FACTOR, 2.1 DEG, 10 MIN*	20	%
10 % AEP RAINFALL INTENSITY, 10 MIN WITH CC	133.2	mm/hr

* CLIMATE CHANGE FACTOR OF 20% APPLIED IN ACCORDANCE WITH FNDC ENGINEERING STANDARDS 4.3.9.1. NIWA HISTORIC RAINFALL INTENSITY DATA, 10MIN, IS MULTIPLIED BY CLIMATE CHANGE FACTOR.

PRE AND POST-DEVELOPMENT RUNOFF, 10%AEP, VARIOUS DURATIONS

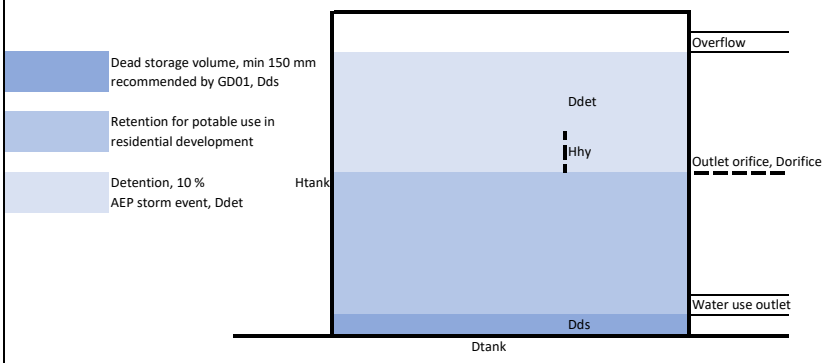
DURATION, min	INTENSITY, mm/hr	CC FACTOR	INTENSITY WITH CC, mm/hr	POST DEV RUNOFF, Qpost, l/s	PRE DEV RUNOFF, Qpre, l/s		COMMENTS
10	111.00	1.2	133.20	10.51	5.20		*Critical duration (time of concentration) for the catchments is 10min*
20	81.70	1.2	98.04	7.74	3.83		
30	67.60	1.2	81.12	6.40	3.17		
60	48.10	1.2	57.72	4.56	2.25		
120	33.40	1.2	40.08	3.16	1.57		*Pre-dev calculated on Intensity without CC factor*
360	17.50	1.2	21.00	1.66	0.82		
720	11.20	1.2	13.44	1.06	0.52		
1440	6.83	1.2	8.20	0.65	0.32		
2880	4.00	1.2	4.80	0.38	0.19		
4320	2.86	1.2	3.43	0.27	0.13		

ATTENUATION ANALYSIS, VARIOUS DURATIONS

DURATION, min	OFFSET FLOW, Qoff, l/s	TANK INFLOW , Qin, l/s	ALLOWABLE TANK OUTFLOW, Qpre - Qoff, l/s	SELECTED TANK OUTFLOW, Qout, l/s	DIFFERENCE (Qin - Qout), l/s	Required Storage, litres	
10	3.55	6.96	1.65	1.65	5.31	3,187	*Selected Tank Outflow is selected for critical duration (time of concentration).*
20	2.61	5.12	1.21	1.65	3.47	4,169	
30	2.16	4.24	1.00	1.65	2.59	4,661	
60	1.54	3.02	0.72	1.65	1.37	4,920	
120	1.07	2.09	0.50	1.65	0.44	3,201	*select largest required storage , regardless of duration, to avoid overflow for event of any duration*
360	0.56	1.10	0.26	1.65	No Att. Req.	0	
720	0.36	0.70	0.17	1.65	No Att. Req.	0	
1440	0.22	0.43	0.10	1.65	No Att. Req.	0	
2880	0.13	0.25	0.06	1.65	No Att. Req.	0	
4320	0.09	0.18	0.04	1.65	No Att. Req.	0	

ATTENUATION TANK DESIGN OUTPUT

Concept sizing for 25,000 litre tank



SPECIFICATION

TOTAL STORAGE REQUIRED	4.920	m3	Select largest storage as per analysis
TANK HEIGHT, Htank	2.6	m	Concept sizing for 25,000 litre tank
TANK DIAMETER, Dtank	3.5	m	No. of Tanks 2
TANK AREA, Atank	19.24	m2	Area of two tanks hydraulically linked
TANK MAX STORAGE VOLUME, Vtank	50030	litres	
REQUIRED STORAGE HEIGHT, Ddet	0.26	m	Below overflow
DEAD STORAGE VOLUME, Dds	0.15	m	GD01 recommended minimum
TOTAL WATER DEPTH REQUIRED	0.41	m	
SELECTED TANK OUTFLOW, Qout, l/s	0.00165	m3/s	Selected tank outflow
AVERAGE HYDRAULIC HEAD, Hhy	0.13	m	
AREA OF ORIFICE, Aorifice	1.68E-03	m2	
ORIFICE DIAMETER, Dorifice	46	mm	
VELOCITY AT ORIFICE	2.24	m/s	At max. head level

HIRDS V4 Intensity-Duration-Frequency Results
Sitename: 27 Lichen Grove
Coordinate system: WGS84
Longitude: 174.1507
Latitude: -35.2831

DDF Model Parameters:	c	d	e	f	g	h	i
Values:	0.00167243	0.48753367	-0.02709199	-0.00194463		0.25810747	-0.01224321	3.35514767

Example:	Duration (hrs)	ARI (yrs)	x	y	Rainfall Rate (mm/hr)
	24	100	3.17805383	4.600149227	10.41401598

Rainfall intensities (mm/hr) :: Historical Data

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	66.5	48.8	40.3	28.6	19.8	10.4	6.58	4.01	2.34	1.67	1.3	1.07
2	0.5	72.9	53.5	44.3	31.4	21.8	11.4	7.24	4.42	2.58	1.84	1.44	1.18
5	0.2	94.9	69.7	57.7	41	28.4	14.9	9.49	5.8	3.39	2.43	1.89	1.55
10	0.1	111	81.7	67.6	48.1	33.4	17.5	11.2	6.83	4	2.86	2.23	1.83
20	0.05	127	93.8	77.7	55.4	38.4	20.2	12.9	7.88	4.62	3.31	2.58	2.12
30	0.033	137	101	83.7	59.6	41.4	21.8	13.9	8.51	4.99	3.57	2.79	2.29
40	0.025	144	106	88	62.7	43.6	22.9	14.6	8.97	5.26	3.76	2.94	2.41
50	0.02	149	110	91.3	65.1	45.2	23.8	15.2	9.32	5.47	3.91	3.06	2.51
60	0.017	154	113	94	67	46.6	24.6	15.7	9.61	5.64	4.04	3.15	2.59
80	0.013	161	119	98.3	70.1	48.7	25.7	16.4	10.1	5.9	4.23	3.3	2.71
100	0.01	166	122	102	72.5	50.4	26.6	17	10.4	6.11	4.38	3.42	2.81
250	0.004	187	138	115	82	57.1	30.2	19.3	11.8	6.96	4.99	3.9	3.2

Intensity standard error (mm/hr) :: Historical Data

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	8.4	5.4	4.2	2.7	1.9	1.2	0.81	0.62	0.38	0.27	0.23	0.19
2	0.5	9.2	5.9	4.6	2.9	2.1	1.3	0.9	0.69	0.42	0.3	0.25	0.21
5	0.2	13	8.2	6.5	4.1	3	1.8	1.3	0.94	0.57	0.41	0.34	0.28
10	0.1	17	11	8.5	5.4	4	2.3	1.6	1.1	0.68	0.49	0.41	0.34
20	0.05	21	14	11	7.1	5.3	3	2.1	1.3	0.8	0.58	0.48	0.4
30	0.033	25	16	13	8.4	6.3	3.5	2.4	1.5	0.88	0.64	0.53	0.44
40	0.025	27	17	14	9.4	7	3.9	2.7	1.6	0.94	0.68	0.57	0.47
50	0.02	30	19	15	10	7.7	4.3	2.9	1.7	0.99	0.72	0.59	0.5
60	0.017	31	20	16	11	8.3	4.6	3.1	1.7	1	0.75	0.62	0.52
80	0.013	35	22	18	12	9.3	5.1	3.5	1.8	1.1	0.8	0.66	0.55
100	0.01	37	24	20	14	10	5.6	3.8	1.9	1.2	0.84	0.69	0.58
250	0.004	51	32	27	19	14	8.1	5.4	2.4	1.4	1	0.84	0.71

Rainfall intensities (mm/hr) :: RCP2.6 for the period 2031-2050

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	71.2	52.2	43.2	30.6	21.1	10.9	6.89	4.18	2.42	1.72	1.34	1.1
2	0.5	78.2	57.4	47.5	33.7	23.3	12	7.6	4.6	2.67	1.9	1.48	1.21
5	0.2	102	75	62.1	44.1	30.5	15.8	10	6.07	3.53	2.51	1.96	1.6
10	0.1	120	88	72.9	51.9	35.9	18.7	11.8	7.16	4.16	2.97	2.31	1.89
20	0.05	137	101	83.8	59.7	41.3	21.5	13.6	8.27	4.82	3.43	2.68	2.19
30	0.033	148	109	90.3	64.4	44.6	23.2	14.7	8.93	5.21	3.71	2.89	2.37
40	0.025	155	115	94.9	67.7	46.9	24.5	15.5	9.41	5.48	3.92	3.05	2.5
50	0.02	161	119	98.6	70.3	48.7	25.4	16.1	9.78	5.7	4.07	3.17	2.6
60	0.017	166	122	102	72.4	50.2	26.2	16.6	10.1	5.88	4.2	3.27	2.68
80	0.013	174	128	106	75.7	52.5	27.4	17.4	10.6	6.17	4.4	3.43	2.81
100	0.01	179	132	110	78.3	54.3	28.4	18	10.9	6.38	4.56	3.55	2.91
250	0.004	202	149	124	88.6	61.5	32.2	20.4	12.4	7.27	5.19	4.05	3.32

Rainfall intensities (mm/hr) :: RCP2.6 for the period 2081-2100

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	71.2	52.2	43.2	30.6	21.1	10.9	6.89	4.18	2.42	1.72	1.34	1.1
2	0.5	78.2	57.4	47.5	33.7	23.3	12	7.6	4.6	2.67	1.9	1.48	1.21
5	0.2	102	75	62.1	44.1	30.5	15.8	10	6.07	3.53	2.51	1.96	1.6
10	0.1	120	88	72.9	51.9	35.9	18.7	11.8	7.16	4.16	2.97	2.31	1.89
20	0.05	137	101	83.8	59.7	41.3	21.5	13.6	8.27	4.82	3.43	2.68	2.19
30	0.033	148	109	90.3	64.4	44.6	23.2	14.7	8.93	5.21	3.71	2.89	2.37
40	0.025	155	115	94.9	67.7	46.9	24.5	15.5	9.41	5.48	3.92	3.05	2.5
50	0.02	161	119	98.6	70.3	48.7	25.4	16.1	9.78	5.7	4.07	3.17	2.6
60	0.017	166	122	102	72.4	50.2	26.2	16.6	10.1	5.88	4.2	3.27	2.68
80	0.013	174	128	106	75.7	52.5	27.4	17.4	10.6	6.17	4.4	3.43	2.81
100	0.01	179	132	110	78.3	54.3	28.4	18	10.9	6.38	4.56	3.55	2.91
250	0.004	202	149	124	88.6	61.5	32.2	20.4	12.4	7.27	5.19	4.05	3.32

Rainfall intensities (mm/hr) :: RCP4.5 for the period 2031-2050

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	72.3	53.1	43.9	31.2	21.4	11.1	6.97	4.22	2.44	1.74	1.35	1.1
2	0.5	79.5	58.4	48.3	34.3	23.6	12.2	7.69	4.65	2.7	1.92	1.49	1.22
5	0.2	104	76.4	63.2	44.9	31	16.1	10.1	6.14	3.56	2.54	1.97	1.61
10	0.1	122	89.6	74.2	52.8	36.5	18.9	11.9	7.24	4.21	3	2.33	1.91
20	0.05	140	103	85.4	60.8	42	21.9	13.8	8.36	4.87	3.47	2.7	2.21
30	0.033	151	111	92	65.6	45.4	23.6	14.9	9.04	5.26	3.75	2.92	2.39
40	0.025	158	117	96.7	68.9	47.7	24.9	15.7	9.52	5.54	3.95	3.08	2.52
50	0.02	164	121	100	71.6	49.6	25.8	16.3	9.9	5.76	4.11	3.2	2.62
60	0.017	169	125	103	73.7	51.1	26.6	16.8	10.2	5.94	4.24	3.3	2.7
80	0.013	177	130	108	77.2	53.5	27.9	17.6	10.7	6.23	4.45	3.46	2.83
100	0.01	183	135	112	79.8	55.3	28.9	18.2	11.1	6.45	4.6	3.59	2.93
250	0.004	206	152	126	90.3	62.6	32.7	20.7	12.6	7.34	5.24	4.09	3.34

Rainfall intensities (mm/hr) :: RCP4.5 for the period 2081-2100

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	76.1	55.8	46.2	32.8	22.5	11.5	7.22	4.35	2.51	1.78	1.38	1.13
2	0.5	83.7	61.4	50.8	36.1	24.8	12.7	7.98	4.8	2.77	1.97	1.53	1.25
5	0.2	110	80.5	66.7	47.4	32.7	16.8	10.5	6.35	3.67	2.61	2.02	1.65
10	0.1	129	94.6	78.4	55.8	38.5	19.8	12.4	7.5	4.34	3.08	2.39	1.96
20	0.05	148	109	90.2	64.3	44.4	22.9	14.4	8.67	5.02	3.57	2.77	2.27
30	0.033	159	117	97.3	69.3	47.9	24.8	15.5	9.37	5.43	3.86	3	2.45
40	0.025	167	123	102	72.9	50.3	26.1	16.4	9.88	5.72	4.07	3.16	2.59
50	0.02	174	128	106	75.7	52.3	27.1	17	10.3	5.95	4.24	3.29	2.69
60	0.017	179	132	109	78	53.9	28	17.6	10.6	6.14	4.37	3.4	2.77
80	0.013	187	138	114	81.7	56.5	29.3	18.4	11.1	6.44	4.58	3.56	2.91
100	0.01	193	143	118	84.4	58.4	30.3	19.1	11.5	6.67	4.75	3.69	3.02
250	0.004	218	161	134	95.5	66.1	34.4	21.6	13.1	7.59	5.4	4.2	3.44

Rainfall intensities (mm/hr) :: RCP6.0 for the period 2031-2050

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	71.9	52.7	43.6	31	21.3	11	6.94	4.21	2.44	1.73	1.35	1.1
2	0.5	79	58	48	34	23.5	12.2	7.65	4.63	2.69	1.91	1.49	1.22
5	0.2	103	75.8	62.8	44.6	30.8	16	10.1	6.11	3.55	2.53	1.97	1.61
10	0.1	121	88.9	73.7	52.4	36.2	18.8	11.9	7.21	4.19	2.99	2.32	1.9
20	0.05	139	102	84.8	60.4	41.8	21.7	13.7	8.32	4.85	3.45	2.69	2.2
30	0.033	150	110	91.3	65.1	45	23.5	14.8	8.99	5.24	3.74	2.91	2.38
40	0.025	157	116	96	68.4	47.4	24.7	15.6	9.48	5.52	3.94	3.07	2.51
50	0.02	163	120	99.7	71.1	49.2	25.7	16.2	9.85	5.74	4.09	3.19	2.61
60	0.017	168	124	103	73.2	50.7	26.5	16.7	10.2	5.92	4.23	3.29	2.69
80	0.013	176	129	107	76.6	53.1	27.7	17.5	10.6	6.21	4.43	3.45	2.82
100	0.01	181	134	111	79.2	54.9	28.7	18.1	11	6.43	4.59	3.57	2.92
250	0.004	205	151	125	89.6	62.2	32.5	20.6	12.5	7.31	5.22	4.07	3.33

Rainfall intensities (mm/hr) :: RCP6.0 for the period 2081-2100

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	79.4	58.3	48.2	34.2	23.4	12	7.44	4.47	2.57	1.81	1.4	1.15
2	0.5	87.4	64.2	53.1	37.7	25.9	13.2	8.24	4.93	2.84	2.01	1.56	1.27
5	0.2	115	84.3	69.8	49.6	34.1	17.5	10.9	6.54	3.76	2.67	2.07	1.69
10	0.1	135	99.1	82.1	58.4	40.2	20.6	12.9	7.73	4.45	3.16	2.45	2
20	0.05	155	114	94.6	67.4	46.4	23.9	14.9	8.94	5.16	3.66	2.84	2.32
30	0.033	167	123	102	72.7	50.1	25.8	16.1	9.67	5.59	3.96	3.08	2.51
40	0.025	175	129	107	76.4	52.7	27.2	17	10.2	5.88	4.18	3.24	2.65
50	0.02	182	134	111	79.4	54.8	28.2	17.7	10.6	6.12	4.35	3.38	2.75
60	0.017	188	138	115	81.8	56.5	29.1	18.2	10.9	6.32	4.49	3.48	2.84
80	0.013	196	145	120	85.7	59.1	30.5	19.1	11.5	6.63	4.71	3.65	2.98
100	0.01	203	150	124	88.6	61.2	31.6	19.8	11.9	6.86	4.87	3.78	3.09
250	0.004	229	169	140	100	69.3	35.8	22.5	13.5	7.81	5.55	4.31	3.52

Rainfall intensities (mm/hr) :: RCP8.5 for the period 2031-2050

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	73.2	53.7	44.4	31.5	21.7	11.2	7.03	4.25	2.46	1.75	1.36	1.11
2	0.5	80.5	59.1	48.9	34.7	23.9	12.3	7.76	4.69	2.71	1.93	1.5	1.23
5	0.2	105	77.3	64	45.5	31.4	16.3	10.2	6.19	3.59	2.55	1.98	1.62
10	0.1	123	90.8	75.2	53.5	36.9	19.1	12.1	7.3	4.24	3.02	2.35	1.92
20	0.05	142	104	86.5	61.6	42.6	22.1	13.9	8.43	4.9	3.49	2.72	2.22
30	0.033	153	113	93.2	66.4	45.9	23.9	15.1	9.11	5.3	3.78	2.94	2.4
40	0.025	160	118	98	69.9	48.3	25.2	15.9	9.61	5.58	3.98	3.1	2.53
50	0.02	167	123	102	72.6	50.2	26.1	16.5	9.98	5.81	4.14	3.22	2.64
60	0.017	171	126	105	74.7	51.7	26.9	17	10.3	5.99	4.27	3.32	2.72
80	0.013	179	132	110	78.2	54.2	28.2	17.8	10.8	6.28	4.48	3.48	2.85
100	0.01	185	137	113	80.9	56	29.2	18.4	11.2	6.5	4.64	3.61	2.95
250	0.004	209	154	128	91.5	63.4	33.1	20.9	12.7	7.4	5.28	4.11	3.37

Rainfall intensities (mm/hr) :: RCP8.5 for the period 2081-2100

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	86.9	63.8	52.7	37.4	25.5	12.9	7.94	4.74	2.69	1.89	1.46	1.19
2	0.5	95.9	70.4	58.2	41.3	28.3	14.3	8.82	5.24	2.99	2.1	1.63	1.32
5	0.2	126	92.8	76.8	54.6	37.5	19	11.7	6.97	3.98	2.81	2.17	1.77
10	0.1	149	109	90.5	64.4	44.2	22.4	13.9	8.26	4.72	3.34	2.58	2.1
20	0.05	171	126	104	74.3	51.1	26	16.1	9.55	5.48	3.87	2.99	2.43
30	0.033	184	136	113	80.3	55.2	28.1	17.4	10.3	5.93	4.19	3.24	2.64
40	0.025	194	143	118	84.4	58	29.6	18.4	10.9	6.25	4.42	3.42	2.78
50	0.02	201	148	123	87.8	60.4	30.8	19.1	11.3	6.51	4.6	3.56	2.9
60	0.017	207	153	127	90.4	62.2	31.8	19.7	11.7	6.71	4.75	3.67	2.99
80	0.013	217	160	133	94.7	65.2	33.3	20.6	12.3	7.05	4.98	3.85	3.14
100	0.01	224	165	137	97.9	67.4	34.5	21.4	12.7	7.3	5.16	4	3.25
250	0.004	253	187	155	111	76.4	39.1	24.3	14.5	8.3	5.88	4.55	3.7

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APPENDIX F

NPS for Natural Hazards Risk Assessment

To satisfy the National Policy Statement for Natural Hazards 2025 (December 2025), the proposed subdivision must plan for and manage the risk from natural hazards to reduce the potential adverse effects to less than minor.

Following our site investigation and considering the measures presented in this report, a summary of the risk-based assessment of defined natural hazards is presented as Table 8.

Table 8: Summary of Natural Hazards Risk Assessment

Natural Hazard	Likelihood	Consequence	Risk	Mitigation / Considerations
Overland flow paths	Unlikely	Minor	Low	On-site mitigations: Standard drainage measures to be applied for buildings. Downstream effect mitigation: Attenuation offered for to 80% pre-development for Lots 1-3
Flooding (River), inundation	Almost Certain	Negligible	Low	On-site mitigations: Buildings and their surrounding external use area are significantly elevated above hazard. (Flooding is isolated to lower elevation and small portion of site only) Downstream effect mitigation: Attenuation offered for to 80% pre-development for Lots 1-3
Coastal Inundation	Likely (shall affect egress only)	Negligible	Low	No effect at the site. It is acknowledged that during coastal inundation events, egress routes through the surrounding local area may become inundated, so occupants may have to shelter at home.
Tsunami	Possible (shall affect egress only)	Negligible	Low	No effect at the site. All lots in Green Zone – Safe Area. It is acknowledged that during a Tsunami, egress routes through the surrounding local area may become inundated, so occupants may have to shelter at home.

NA – Not Applicable.

Consequence Level	Likelihood Level						
	Almost Certain	Very Likely	Likely	Possible	Unlikely	Rare	Very Rare
ARI (years)	up to 10	10-20	20-50	50-100	100-500	500-5000	> 5000
AEP	10% or more	10% to 5%	5% to 2%	2% to 1%	1% to 0.2%	0.2% to 0.02%	< 0.02%
Catastrophic	Very High	Very High	Very High	High	Medium	Medium	Medium
Major	Very High	Very High	High	High	Medium	Medium	Medium
Moderate	High	High	High	Medium	Medium	Low	Low
Minor	Medium	Medium	Medium	Medium	Low	Low	Low
Negligible	Low	Low	Low	Low	Low	Low	Low